Appendix F
Hydrodynamic modelling

Port Kembla Re-Gasification Project

Long Waves, Sediment & Thermal Plume Modelling

59919002

Prepared for

WorleyParsons

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Cardno

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1 Introduction

WorleyParsons have been engaged to undertake the Front End Engineering and Design (FEED) for a proposed floating storage and regasification unit (FSRU), which is to be moored permanently within the Port Kembla Inner Harbour (IH) at Berth 101 and would receive liquid gas periodically from a visiting LNG carrier.

As part of the process, the facility would draw-in seawater from within the inner harbour and then discharge colder water back into the harbour as part of the liquid gas warming process

WorleyParsons have in turn engaged Cardno to provide numerical modelling and coastal processes investigations in support of their design process. Cardno's tasks for this project involve, in total, four studies:

1. Long wave analyses
2. Long wave modelling
3. Dredge plume modelling to describe the suspended sediment plumes caused by the dredging in the Inner Harbour and reclamation in the Outer Harbour.
4. Thermal modelling to predict the near field dispersion and far field transport of the cold water discharged by the FSRU for two proposed locations; summer and winter cases.

This report presents the investigations and outcomes of these studies.

1.1 Project Description

The proposed FSRU will be will be constructed at Berth 101 in the Port Kembla Inner Harbour. The proposed layout of the new berth is presented in **Figure 1.1**.

2 Data

2.1 General

A range of data items were required to set up and operate the numerical models applied to this study, and then to assess the impacts. Some of these inputs were prepared and adopted for the previous ICP modelling studies undertaken by Lawson and Treloar. The following section describes the inputs used in the modelling process and the sensitivity of the model to each of these inputs.

These inputs are described in Table 2.1, below.

Figure 2-1 Data requirements for the various modelling studies

Input	Required for	Source
Bathymetry	Hydrodynamic modelling	Surveys and nautical charts, described below
Tidal Forcing	Hydrodynamic Modelling	Global tide models
Measured ADCP data	Long wave analysis	Port Authority of NSW
Heat Loads	Thermal Plume Modelling	Cardno's previous studies, WorleyParsons for FSRU data
Meteorological forcing	Thermal Plume Modelling	Cardno's previous studies, BoM
Seawater Temperature	Thermal Plume Modelling	Cardno's previous studies at Port Kembla
Salinity	Thermal Plume Modelling	Cardno's previous studies at Port Kembla
Dredging Method	Dredge Plume Modelling	WorleyParsons
Reclamation Method	Dredge Plume Modelling	WorleyParsons
Soil Strata and Particle Size	Dredge Plume Modelling	WorleyParsons

This data has been collated and is described in the relevant sections of the report.

3 Long Wave Analyses

3.1 Long Wave Measurements

The Port Authority of NSW operate a real-time wave and current meter at a location about 600m north of the entrance to the Outer Harbour, see **Figure 3.1**. This instrument (RDI 300 kHz Sentinel ADCP with waves) records waves and currents in a depth of about 19m with the water level sensor (pressure) located about 0.5m above the seabed. The current data is recorded in about 15m of depth using 0.5m bins. This ADCP was installed in 2007; however, the raw data was not archived routinely prior to 2011.

Previous studies (Cardno Lawson Treloar, 2008 and 2009), indicated that long waves are likely to occur at the site when the parameter Hs * Tz is larger than 20. The archived, processed wave dataset was interrogated to select storms with Hs * Tz above 20. This resulted in the selection of 38 storms for long wave analysis, as indicated in **Table 3-1** and **Figures 3.2** to **3.14**.

Of these 38 storms, raw data was found for 23 of them, as indicated in bold in **Table 3-1**. Storms shown in red were not analysed for long waves because no raw ADCP data was available from the Port Authority's archives.

Table 3-1 Long Wave Records

Storm Id	Time of Peak	Peak Hs * Tz (ms)	Hs (m)	Tz (s)	Storm Id	Time of Peak	Peak Hs * Tz (ms)	Hs (m)	Tz (s)
1	9/07/2007 21:40	25.85	2.78	9.30	20	10/07/2014 06:10	33.56	2.38	14.10
2	5/11/2007 17:10	26.62	3.37	7.90	21	18/08/2014 20:30	39.42	3.79	10.40
3	22/07/2008 21:30	23.97	2.35	10.20	22	30/08/2014 05:10	40.63	3.66	11.10
4	10/09/2008 17:20	23.86	2.23	10.70	**23**	**14/10/2014 22:40**	**27.54**	**2.93**	**9.40**
5	8/10/2009 22:30	23.50	2.50	9.40	24	12/12/2014 11:30	29.26	3.18	9.20
6	15/05/2010 00:00	27.07	2.53	10.70	**25**	**30/01/2015 10:20**	**32.33**	**2.74**	**11.80**
7	30/05/2010 14:30	32.99	2.82	11.70	**26**	**21/04/2015 22:10**	**59.66**	**5.28**	**11.30**
8	13/08/2010 11:30	36.96	3.52	10.50	27	26/08/2015 01:00	31.68	3.20	9.90
9	**2/06/2011 23:00**	**32.85**	**3.07**	**10.70**	**28**	**20/03/2016 17:40**	**32.57**	**2.76**	**11.80**
10	**17/06/2011 00:40**	**35.84**	**3.20**	**11.20**	**29**	**25/05/2016 08:20**	**34.00**	**2.72**	**12.50**
11	**9/03/2012 07:40**	**30.08**	**2.71**	**11.10**	**30**	**5/06/2016 12:20**	**54.51**	**5.62**	**9.70**
12	**6/06/2012 05:20**	**35.86**	**3.55**	**10.10**	**31**	**10/07/2016 13:30**	**32.25**	**2.78**	**11.60**
13	**1/08/2012 04:30**	**45.60**	**3.80**	**12.00**	**32**	**25/07/2016 07:20**	**29.93**	**2.05**	**14.60**
14	**23/02/2013 13:00**	**29.63**	**3.75**	**7.90**	**33**	**24/10/2016 18:30**	**39.24**	**3.27**	**12.00**
15	**19/04/2013 15:40**	**26.86**	**2.42**	**11.10**	**34**	**22/07/2017 13:30**	**38.68**	**3.07**	**12.60**
16	**24/06/2013 23:00**	**31.67**	**3.77**	**8.40**	**35**	**20/08/2017 02:20**	**56.12**	**4.49**	**12.50**
17	17/09/2013 05:10	27.80	3.31	8.40	**36**	**10/09/2017 07:00**	**26.22**	**2.32**	**11.30**
18	**11/11/2013 22:10**	**30.71**	**3.53**	**8.70**	**37**	**16/01/2018 10:10**	**32.55**	**3.10**	**10.50**
19	18/04/2014 23:20	43.22	2.96	14.60	**38**	**11/04/2018 09:00**	**28.56**	**2.42**	**11.80**

3.2 Long Wave Analysis

For each of the storm events identified in **Table 3-1** the raw pressure data has been extracted. A series of Matlab routines were then developed to convert pressure to surface elevation.

For each event, wave bursts were defined as 8192 samples when the ADCP was recording at 2 Hz or 4096 samples when recording at 1 Hz. These bursts were extracted every 90 minutes from the continuous record available from the event and linear spectral analysis undertaken to generate a time series of long wave parameters. Low pass filtering was undertaken with 50% attenuation at a period of 20 seconds. Hence samples greater than 8192 and 4096 were originally extracted and then the leading and trailing tails (not filtered part of the records) removed.

Long wave parameters were analysed for:

1. Spectrally derived significant wave height (H_{m0});
2. Peak wave period (Tp); and
3. Spectrally derived mean wave periods (Tm_{01} and Tm_{02})

Wave parameters were derived from 7 wave frequency bands and the complete infragravity wave spectrum (> 30 seconds). The bands selected for analysis are outlined in **Table 3-2**.

Table 3-2 Long wave analysis frequency bands

Band	Period (seconds)	
	From	To
1	210	250
2	180	210
3	150	180
4	120	150
5	90	120
6	60	90
7	30	60

Appendix A provides these results in Microsoft Excel form.

3.3 Directional Long Wave Analysis

Directional infragravity wave spectra were analysed for the peak long wave events identified in each storm record. The analysis was undertaken using the DIWASP Matlab Toolbox, using concurrent surface elevation and east and north velocities measured by the ADCP. For this analysis, the measured wave orbital velocities in ADCP bins 2, 3 and 4 above the seabed were vertically averaged in order to filter any spurious measurements and to generate a smoother signal. This process also removes surface noise, which is greater higher in the water column. Long waves will have a nearly constant horizontal velocity profile, except near the seabed.

Polar spectral plots for the peak of each identified storm event are presented in **Appendix B**. These figures show that the long wave events are typically multi-directional, with long waves from multiple directions occurring at the same time. The predominant directions are from the east, the north, and also from the west, which is likely to be due to waves reflecting off of the beach.

4 Long Wave Modelling

As part of the FSRU project, it is planned to undertake dredging at the coal loader berth, (proposed FSRU berth), to provide sufficient draft for moored vessels and the re-gasification floating unit. It is then proposed to place the dredged spoil at the southern end of the re-entrant berth area that forms part of the currently proposed container port area being constructed gradually on the southern side of the Outer Harbour. Placing spoil in that area will reduce the available berth area, but may also change the structure of long waves – complex incident and reflected waves of varying period and magnitude, that affect the Outer Harbour. The proposed change is illustrated in **Figures 5.1** and **5.2**, in terms of the approved layout and the proposed change.

Cardno Lawson Treloar (2009) report the results of numerical long wave modelling undertaken in 2008-2009 that led to the adoption of the approved Outer Harbour layout. That work was undertaken using the numerical wave modelling system MIKE-21 Boussinesq Waves. In one model set-up, a bi-modal long wave spectrum with peaks at 200 and 60 seconds was developed, based on the combination of two single-peaked spectral shapes with peakedness parameters of 4. The lower frequency peak at 200 seconds contains the larger part of the energy, which is in line with observed water level signal measurements. A total long wave height (Hs) of 0.34m was adopted, with long wave energy propagating seaward from Coniston Beach to the north of Port Kembla (Hs=0.23m) and long wave energy also propagating landward from the offshore model boundary (Hs=0.25m).

That model set-up has been replicated for the present investigation using archived files, with a grid size of 7.5m. As there have been changes made to the MIKE-21 BW modelling system since 2008, the existing approved Outer Harbour layout has been re-run using the latest version of MIKE21-BW (version 2017). This ensures that when comparing the modelling results, a like-for-like comparison can be made. A shorter model time-step of 0.1 seconds, compared with 0.4 seconds adopted previously, was adopted for these investigations.

4.1 Scope of Work

Cardno's Scope of Work for this project has been to investigate whether or not the proposed change to the reclamation area at the southern end of the proposed re-entrant container berths quay lines will cause a deleterious change in long wave structure within Port Kembla.

4.2 Long Wave Model Study Approach / Methodology

In order to quantify any possible change in the long wave climate arising from this proposed design change, Cardno has applied MIKE-21 BW (version 2017) to both layouts using the long wave spectral inputs described above. Each simulation extended for 90 minutes using a time-step of 0.1 seconds. The first 15 minutes of each simulation were discarded because this period represents a period of dynamic equilibrium development within the modelled harbour. Analyses were undertaken to describe long wave coefficient – long wave height (Hs) at each output grid point relative to the total offshore long wave Hs (0.34m – consistent with previous modelling), and the relevant change in the disturbance coefficient.

4.3 Model Bathymetry

Two layouts have been simulated in the MIKE21 BW Model. They represent the existing approved Outer Harbour layout, and the proposed modifications to the Outer Harbour, as illustrated in **Figures 5.1** and **5.2**.

Other than the layout change applied in the model, all other model parameters have been kept the same as those applied in the previous long wave modelling investigations, as reported in Cardno Lawson Treloar (2009).

4.4 Results

Figures 5.3, **5.4** and **5.5** present the simulated wave disturbance coefficients for the existing approved Outer Harbour layout, the proposed modifications to the Outer Harbour, and the simulated change in the long wave coefficient, respectively.

The long wave height disturbance coefficients presented in these figures is relative to the total offshore long wave height, which in these simulations is 0.34 m. The modelling results indicate that the proposed changes to the Outer Harbour reclamation footprint will increase the long wave height in the proposed re-entrant berth

area in the Outer Harbour at the southern end. In this area the modelling is predicting that the wave disturbance coefficient will increase by up to 0.37 (approximately 0.13m).

The model is also predicting that long wave heights will increase adjacent to the northern breakwater, where the increase is up to 0.15 (or 5cm).

5 Hydrodynamic Model

5.1 General

The scope of work to be undertaken by Cardno included modelling the cooling water outflows associated with the FSRU during operations, as well as predicting the extent and magnitude of the dredge plume associated with the proposed dredging and reclamation works.

In order to undertake these studies, a 3-Dimensional hydrodynamic model is required. For this study, Cardno's existing, calibrated 3D model of Port Kembla has been extended and applied.

5.2 DELFT 3D

Whilst the hydrodynamics required for this application could be modelled successfully by many models, it is our experienced opinion that no other package offers the same extensive cooling water modelling capabilities and backup experience as the Deltares modelling system Delft3D.

The Delft3D modelling system includes wind, pressure, tide and wave forcing, three dimensional current, stratification, sediment transport, cooling water and water quality descriptions and is capable of using rectilinear or curvilinear coordinates.

Delft3D has been used recently by Cardno Lawson Treloar for cooling water re-circulation studies in Lake Macquarie, in Lake Illawarra for power station investigations and in the Hunter River to assess the impact of a heated nitric acid spill near Kooragang Island. During these projects, the model produced either good agreement between modelled output and observed temperature data or was readily accepted by regulators.

Delft3D is comprised of several modules that provide the facility to undertake a range of studies. All studies generally begin with the Delft3D-FLOW module. From Delft3D-FLOW, details such as velocities, water levels, density, salinity, vertical eddy viscosity and vertical eddy diffusivity can be provided as inputs to the other modules. The wave and sediment transport modules work interactively with the FLOW module through a common communications file.

5.2.1 Hydrodynamic Numerical Scheme

The Delft3D FLOW module is based on the robust numerical finite-difference scheme developed by G. S. Stellling (1984) of the Delft Technical University in The Netherlands. Since its inception, the Stelling Scheme has had considerable development and review by Stelling and others.

The Delft3D Stelling Scheme arranges modelled variables on a staggered Arakawa C-grid. The water level points (pressure points) are designated in the centre of a continuity cell and the velocity components are perpendicular to the grid cell faces. Finite difference staggered grids have several advantages including:

- Boundary conditions can be implemented in the scheme in a rather simple way;
- It is possible to use a smaller number of discrete state variables in comparison with discretisations on non-staggered grids to obtain the same accuracy; and
- Staggered grids minimise spatial oscillations in the water levels.

Delft3D can be operated in 2D (vertically averaged) or 3D mode. In 3D mode, the model uses the σ-coordinate system first introduced by N Phillips in 1957 for atmospheric models. The σ-coordinate system is a variable layer-thickness modelling system, meaning that over the entire computational area, irrespective of the local water depth, the number of layers is constant. As a result a smooth representation of the bathymetry is obtained. Also, as opposed to fixed vertical grid size 3D models, the full definition of the 3D layering system is maintained into the shallow waters and until the computational point is dried.

From a user point of view, the construction of a 3D model from a 2D model using the σ-coordinate system in Delft3D is effected by entering how many layers are required and the percentage of the depth for each layer. It is most common to define more resolution at the surface and at the bed where the largest vertical gradients occur. Boundary conditions can also be adjusted from depth averaged to specific discharges and concentrations per layer also.

Horizontal solution is undertaken using the Alternating Direction Implicit (ADI) method of Leendertse for shallow water equations. In the vertical direction (in 3D mode) a fully implicit time integration method is also applied.

Vertical turbulence closure in Delft3D is based on the eddy viscosity concept.

5.2.2 Wetting and Drying of Intertidal Flats

Many estuaries and embayments contain shallow intertidal areas; consequently Delft3D incorporates a robust and efficient wetting and drying algorithm for handling this sort of phenomenon.

Careful refinement in the intertidal areas and appropriate setting of drying depths to minimise discontinuous movement of the boundaries ensures oscillations in water levels and velocities are minimised and the characteristics of the intertidal effects are modelled accurately.

5.2.3 Conservation of Mass

Problems with conservation of mass, such as a 'leaking mesh', do not occur within the Delft3D system.

However, whilst the Delft3D scheme is unconditionally stable, inexperienced use of Delft3D, as with most modelling packages, can result in potential mass imbalances.

Potential causes of mass imbalance and other inaccuracies include: -

- Inappropriately large setting of the wet/dry algorithm and unrefined inter-tidal grid definition;
- Inappropriate bathymetric and boundary definition causing steep gradients; and
- Inappropriate timestep selection (i.e. lack of observation of the scheme's allowable Courant Number condition) for simulation

5.2.4 Other Issues

Note that there were a number of processes not included in the modelling, such as currents caused by shipping and freshwater floods. Shipping would cause greater mixing and flooding would transport surface plumes further downstream. Both processes would be intermittent and transitory.

5.3 Model Setup

5.3.1 Grid Resolution and Extent

Figure 6.1 presents the model grid applied to this study. A rectilinear grid of 30m resolution was applied, with 251 by 253 grid cells in the north-south and east-west directions, respectively.

The model has been run with 10 vertical sigma layers, of varying thickness as described in **Table 5-1** below. The model includes higher vertical resolution at the surface and near the seabed.

Table 5-1 Vertical Grid Resolution

Sigma Layer	Thickness (% of water depth)
1 (surface layer)	2
2	5
3	9
4	14
5 (mid-depth)	20
6	20
7	14
8	9
9	5
10 (bottom layer)	2

5.3.2 Bathymetry

Bathymetric data is required to describe the seabed of the harbour basins, Allans Creek and the shoreline perimeter of the waterways of Port Kembla. This detailed information was available from a range of sources including

1. Recent bathymetric survey data provided by WorleyParsons inside the Inner and Outer Harbours
2. Nautical charts offshore of Port Kembla (AUS Chart 195)
3. Survey data in Cardno's internal database from previous projects in Port Kembla.

The model bathymetry is depicted in **Figure 6.2**. The model bathymetry has been defined based upon the datasets depicted in **Section 2.2** of this report. Before interpolating the bathymetric data onto the model grid, each dataset was transformed to common horizontal and vertical datums (MGA zone 56 and AHD). The data interpolation process was also prioritised such that where overlapping survey data is available, the more recent surveyed data is used.

5.3.3 Boundary Conditions

Offshore tidal boundary conditions were extracted from a combination of the DTU10 (Technical University of Denmark Tidal Model), which is based on a finite element solution of the global tides with data assimilated from seventeen years of satellite altimeter readings. The methodology of the global tide models is described in Cheng and Anderson (2010). DTU10 provides up to twelve tidal constants on a 1/8 degree resolution full global grid. The tides are provided as complex amplitudes of earth-relative sea-surface elevation for ten primary (M_2, S_2, N_2, K_2, K_1, O_1, P_1, Q_1, S_1 and M_4) harmonic constituents. Four additional constituents (M_f, M_m, MS_4 and MN_4) were sourced from the TPx07.2 tide model, which uses along track averaged altimeter data from the TOPEX/Poseidon and Jason (on TOPEX/Poseidon tracks since 2002) satellites.

5.3.4 Time-Step

A time-step of 6 seconds was adopted to fulfil accuracy requirements based on the Courant Number.

6 Sediment Plume Modelling

The proposed dredging for the construction of the new berth, and concurrent reclamation within the Outer Harbour will cause some re-suspension of fine sediments. These processes are discussed below.

6.1 Dredging

As the dredging footprint is relatively small, only one dredger location for plume development has been selected; which is at the southern end of the proposed new FSRU berth.

The proposed dredging plan (WorleyParsons, 2018, presented **in Appendix C**) identified eight different sediment strata to be either dredged or excavated from the proposed berth location. Of these strata, the majority of the material is either clay, clayey sand, clay and weathered rock, harbour mud and silty/clayey sand. Based on the particle size information provided to Cardno, portions of this material have a very high fines concentration of 97%.

The proposed dredging rate for the backhoe dredge is 200m^3/hr when dredging the mud and soft sediments. Barnard (1978) advises that for these dredgers only 10% or less of available fines will escape the process. This amounts to a production rate (to the water column) of 6.5kg/s of fine sediments when dredging the clay material. This sediment production rate has been input into the model at the dredging location. The source point is assumed to be confined to the lower 1/3rd of the water column.

6.2 Reclamation

The dredging strategy currently adopted by the project team is to load the dredged material onto hopper barges (1,200 m^3 capacity). These barges then transport the material to the Outer Harbour and bottom dump into the reclamation area.

The barges will not overflow, so sediment plumes associated with this work would mainly be associated with the bottom dumping process. On the basis of this work schedule and the anticipated rate of dredging of 200m^3/hour, it would take 6 hours to completely fill one barge with sediment. However, given the requirement for the barges to not overflow, it has been assumed that these barges would only be 80% full of sediment (960 m^3) before travelling to the reclamation area. Based on this assumption, there would be one load approximately every 4.8 hours.

In the modelling, it has been assumed that the barges would empty their load over a two minute period. Because the coarse sediment (i.e. everything other than the re-suspended fines fraction) would fall from the hopper barge to the seabed in a time of about 10 seconds to 2 minutes. Hence the fall rate would depend on how the released sediment would break-up. It was assumed that the mass of fine sediments put into suspension by the shear between the parcel(s) of falling sediment and the sea water would be distributed evenly throughout the ten vertical model layers and therefore evenly through the water depth.

Based on observations made by Barnard (1978), about 10% of the total fines within this sediment mass (the sediment load) would be released to the water column. This results in a fine sediment release rate of 853.6 kg/sec over each 2 minute dumping period. It is worth noting that some of the fines would have already been washed from the hopper barge during the dredging process, but this reduction has been ignored in the modelling simulations.

The dredging simulation covered a full 30 day period of continuous days of work. A fall velocity of 0.4mm/s (van Rijn, 1990) was adopted for these fine particles. A similar fall velocity has been found to be appropriate for previous fine sediment investigations undertaken by Cardno at Cairns, Bowen and in Botany Bay.

6.3 Results

Appendix D presents contour plots of the simulated suspended sediment concentrations. They are presented as percentile plots, including the minimum TSS concentration, 5th, 10th, 15th, 20th, 50th (median), 80th, 85th, 90th, 95th and the maximum. These plots do not represent a snapshot in time, but rather provide a statistical representation of the plume extent and concentration over the duration of the project. The percentile values represent the percent of time for which the plume is predicted to be at or below the values presented in the plots. For example, the TSS values presented on the 85th percentile plots is the TSS concentrations that is exceeded for 15% of the time; and these concentrations vary spatially.

Suspended concentration plots have been provided for the surface, mid-depth and bottom layers of the model. The model is predicting that the plume will be confined to the port. The maximum TSS concentration in the entrance to the Port is predicted to be 5 mg/L.

Figures 7.1 and **7.2** present the predicted deposition thickness at the end of the simulation as well as the average rate of deposition of the fine sediment over the simulation period. The model has been run with a dredging period of 28 days and assuming a constant dredging rate of 200 m^3/hour (no downtime has been assumed in the modelling). Based on the above assumptions, this 28 day period is equivalent to the dredging period required for the mud layer.

These figures show that sedimentation is predicted to occur close to the point of dredging and the bottom dumping. This is due to the very low current speeds within the harbour, which minimises the spreading and travel distance of the suspended sediment, despite the high proportions of fines. No noticeable sedimentation is predicted to occur outside of the port.

Around the dredging area, the approximately 10 cm of fine sediment siltation is predicted. Given that this is within the dredging footprint most of this sediment would be cleaned up as the dredging progresses. Similarly, the bulk of the sedimentation around the bottom dumping point is within the proposed reclamation area. This material would therefore become part of the reclamation.

7 Thermal Plume Modelling

7.1 Introduction

During the operational phase of the project, the FSRU will use seawater for its internal processes. The seawater would be drawn into the FSRU through the hull of the floating unit and used for heating. The seawater is then discharged back into the port through an outlet in the hull. During this process the seawater is cooled by a maximum of 7 degrees compared to the water drawn in through the intake.

Two FSRU's are currently being considered for the project, both of which have differing intake and discharge arrangements.

There are also a number of cooling water intakes and outfalls currently in operation within Port Kembla, operated by BlueScope Steel. The discharge and heat load for these existing intakes/outfalls have been taken from Cardno's previous cooling water investigations in Port Kembla (Cardno Lawson Treloar, 2007).

The discharge data applied in the model are presented below in **Tables 8.1** and **8.2**. Note that the warming water modelling has been undertaken for typical summer and winter conditions. In these simulations the average flows from the existing intakes and outfalls have been applied to the model.

Table 7-1 Existing cooling water flows – summer conditions

Modelled Drain Flows - Existing Summer Conditions					
Model Source No	Drain	Average Condition		Peak Condition	
		Flow (m^3/s)	ΔT(°C)	Flow (m^3/s)	ΔT(°C)
1	Main Drain	1.174	7.1	1.431	9.5
2	No.2 Blower Station	7.953	6.44	8.233	8.5
3	Iron Making East	0.208	4.05	0.232	7.5
4	3500mm Plate Mill Drain	0.395	2.84	0.43	3.5
5	Slab Mill Drain	0.013	31.41*	0.013	32.68*
6	No. 1 Flat Products East Drain	0.112	4.64	0.112	10.5
7	Allans Creek Flow	0.17	22.5*	0.17	22.5*
8	North Gate Drain	0.077	28.06*	0.13	30.22*

* presented as absolute temperature rather than excess

Table 7-2 Existing cooling water flows – winter conditions

Modelled Drain Flows - Existing Winter Conditions					
Model Source No	Drain	Average Condition		Peak Condition	
		Flow (m^3/s)	ΔT(°C)	Flow (m^3/s)	ΔT(°C)
1	Main Drain	1.517	6.28	2.993	6.2
2	No.2 Blower Station	8.211	7.11	8.413	13.2
3	Iron Making East	0.100	3.06	0.127	4.2
4	3500mm Plate Mill Drain	0.408	2.41	0.405	4.21
5	Slab Mill Drain	0.016	21.37*	0.081	22.0*
6	No. 1 Flat Products East Drain	0.196	4.35	0.189	9.21
7	Allans Creek Flow	0.170	16.80*	0.170	16.8*
8	North Gate Drain	0.102	17.98*	0.172	17.0*

* presented as absolute temperature rather than excess

7.2 FSRU Outflows

Two separate FSRU's are being considered for the project. Both of these require seawater for heating in the regasification operation. The flow rates provided for these vessels are:

FSRU1, Q = 2.917 m^3/s (10,500 m^3/hour);

FSRU2, Q = 2.708 m^3/s (9,750 m^3/hour).

The ΔT for both of these FSRU's is -7ºC (i.e., cools the seawater passing through the plant by seven degrees). Cooling water is drawn-in through the hull of both vessels, and discharged horizontally out of the side of the vessel.

7.3 Nearfield Modelling

In order to properly model and understand the plume behaviour, both near and far field modelling has been undertaken. The main purpose of the near field assessment was to estimate the plume width, height and dilution at the end of the near field region. This data is then fed into the Delft3D modelling system to simulate the far field dispersion.

7.3.1 CORMIX

CORMIX is a nearfield analytical model developed by Mixzon Inc. and is used by the U.S. E.P.A. for regulatory investigations. It describes the development of a positively or negatively buoyant jet(s) as it discharges into the receiving water environment. It includes single port, multi-port and surface channel discharges. The model is useful in describing the interaction in mixing zones – where a discharge is introduced to a receiving water. The model includes the effects of density difference, receiving water velocity, depth of the jet(s) below the surface, merging of jets, wind mixing, discharge port configuration and discharge rate.

Cardno has used this system for a number of outfall diffuser systems with success. CORMIX has been shown to suitably predict mixing effects. As part of investigations undertaken for Hunter Water for augmentation of the Belmont ocean outfall, Cardno Lawson Treloar undertook a field verification of the CORMIX model. That work entailed the measurement of salinity in the water column near the existing outfall in known discharge and receiving water conditions. Analyses of the results showed that CORMIX provided realistic results though it slightly under-estimated dilution. The 'map' of dilution above a discharge point is spatially and temporally very variable and this characteristic needs to be considered in analyses of this type by recognising this variability in any sampling that may be undertaken

For this assessment, CORMIX was selected from a suite of available near-field models and was used to assess the mixing zone effects. The results of the CORMIX modelling are provided below.

7.3.2 CORMIX Results

For this assessment the CORMIX modelling has been undertaken using the CORMIX 1 model, which is for submerged single port discharges.

Note that CORMIX does not natively support a cool water discharge. To overcome this, the model has been setup based on the ambient and discharged density based on a seven degree temperature difference, and a conservative tracer with an initial concentration of 7 was applied to the effluent.

Given the modelling is predicting only very small current speeds in the area (of the order of 2cm/s), the near field modelling has been undertaken under calm conditions. Therefore a total of four near field simulations were undertaken to estimate the plume characteristics at the end of the near field mixing zone. These characteristics are presented below in **Table 8-3**.

Table 7-3 Simulated Plume Characteristics at the End of the Near Field

Simulation			Plume Width	Plume Height	Centerline Excess Temperature
1	FSRU1	Summer	15.52	3.06	-1.39
2	FSRU1	Winter	15.23	2.88	-1.38
3	FSRU2	Summer	13.60	3.10	-1.48
4	FSRU2	Winter	12.04	3.08	-1.55

7.4 Far Field Modelling

7.4.1 Scenarios

Far field modelling was undertaken in Deflt3D for six scenarios. These scenarios were:

1. Existing case during summer
2. Existing case during winter
3. Existing + FSRU1 during summer
4. Existing + FSRU1 during winter
5. Existing + FSRU2 during summer
6. Existing + FSRU2 during winter.

For the FSRU1 and FSRU2 simulations, the Delft3D model was coupled with CORMIX in the sense that the outlet flow was distributed over the horizontal and vertical grid cells covered by the plume at the end of the near field zone.

Ambient seawater temperature was assumed to be 22ºC in summer and 16.8ºC in winter. An ambient salinity of 33.5 PSU was applied in all of the simulations. These are consistent with the previous cooling water simulations undertaken by Cardno at Port Kembla.

Each simulation was undertaken over a period of 45 days, with the first 5 days being discarded – to allow for development of dynamic heat content equilibrium. Simulations included solar heating.

7.4.2 Results

Far field modelling results are presented in **Appendices E** through **J**. These results include contour plots of the seawater temperature percentiles during each of the simulations. The predicted change in seawater temperature are also presented in **Appendices K** through **N**.

The modelling indicates that the proposed FSRU will only have minor impacts on seawater temperatures. These impacts are confined to be within the port limits. The model is predicting that the seawater temperature within the port will generally decrease by 0.1 to 0.2 degrees, on average. No changes are predicted outside of the port breakwaters.

8 Discussion

This report presents the outcomes of the long wave, sediment and thermal plume modelling studies undertaken for the proposed FSRU berth in Port Kembla. The main outcomes from the modelling are:

1. Long wave modelling undertaken for the currently approved Outer Harbour reclamation and re-entrant port area and the proposed altered reclamation footprint of that area indicates that long wave heights could increase by up to 13cm within Outer Harbour at its southern end.
2. Increases to the long wave height are generally localised to the proposed new berths, and no impacts to long waves are predicted within the inner harbour;
3. Sediment plume modelling indicates that the sediment plumes, at the dredger and discharge point, will be confined within the port. The model predicts that the excess suspended sediment concentration outside of the port breakwaters will be less than 2 mg/L during the dredging operations.
4. Thermal plume modelling has been undertaken for the operational phase of the project. The modelling predicts that only minor changes to the seawater temperature will be caused by the FSRU discharge.
5. The discharge from two different FSRU's was simulated as part of this study. Given the cooling water flows and heat load for both FSRU's are similar, the model is predicting that the impacts on port water temperature for those alternatives will be very similar.

Other considerations for the proposed development include impacts to tidal flushing and the general hydrodynamics of the port. Given the very small scale of the FSRU berth dredging, this is not expected to cause any substantial impacts to the overall flushing of the port.

The Outer Harbour reclamation is also proposed to be altered from its existing approved layout. This altered layout includes a smaller re-entrant (proposed container ship port), basin in the Outer Harbour. Given the basin area will be reduced, this will result in a reduced tidal prism of the Outer Harbour. In effect, the altered layout is expected to cause slightly better flushing of the Outer Harbour due to the reduced consequent tidal prism in the Outer Harbour.

9 References

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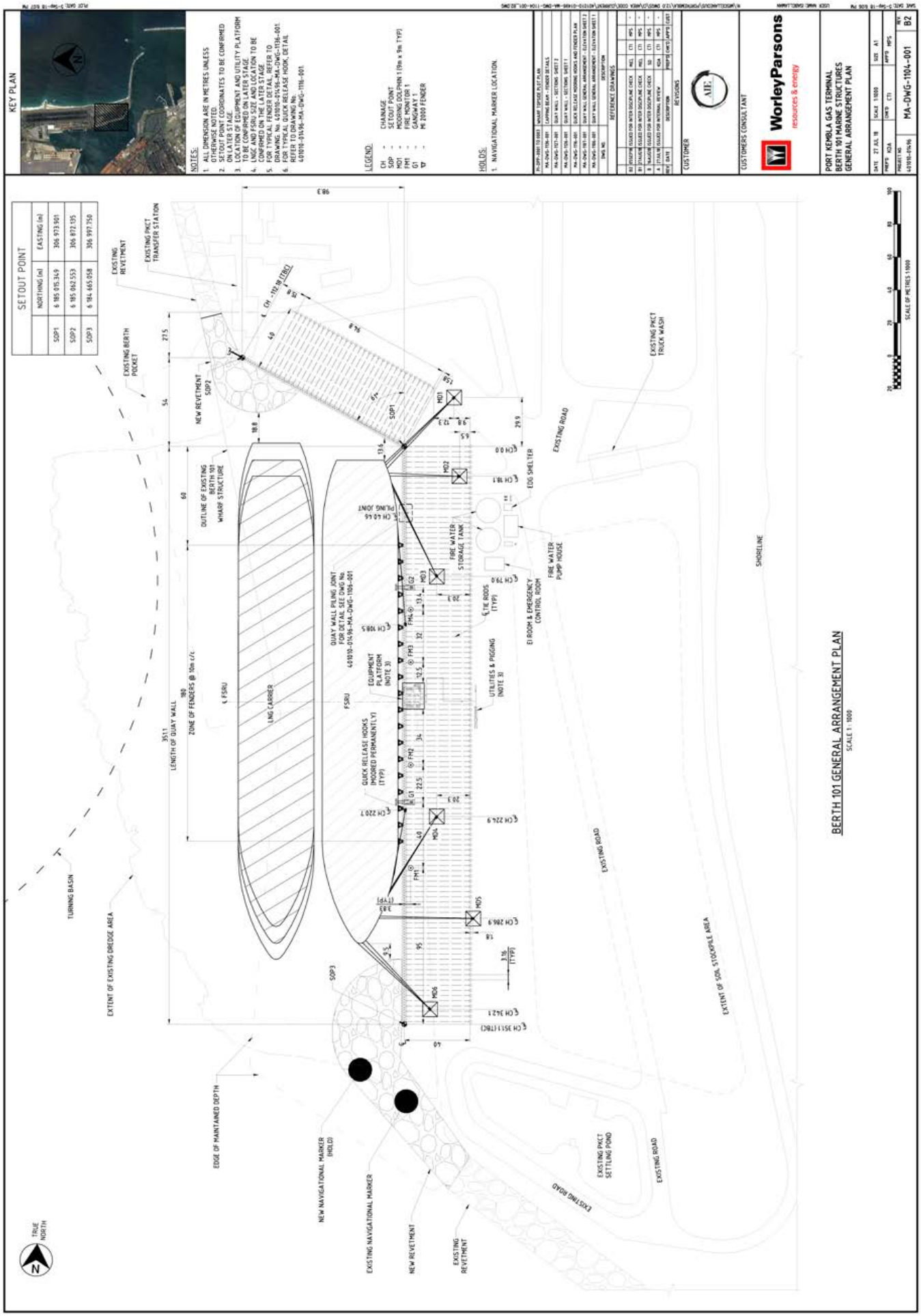
FIGURES



Port Kembla Long Waves, Sediment and Thermal Modelling

General Arrangement of the Proposed FSRU Berth

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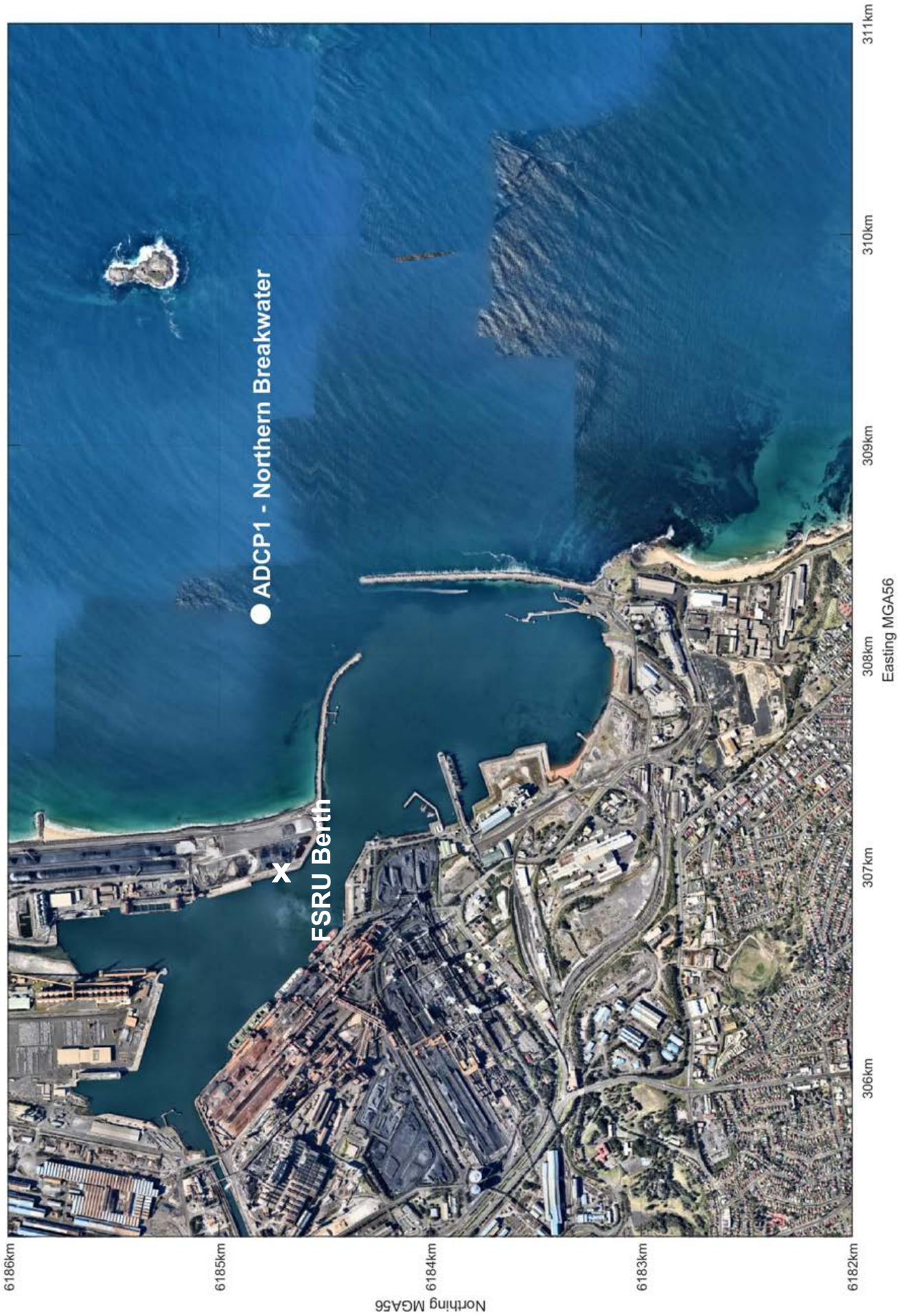
Figure 1.1



Cardno

Port Kembla Long Waves, Sediment and Thermal Modelling

Location of ADCP 1
150.9119°E, 34.4605°S

Figure 3.1

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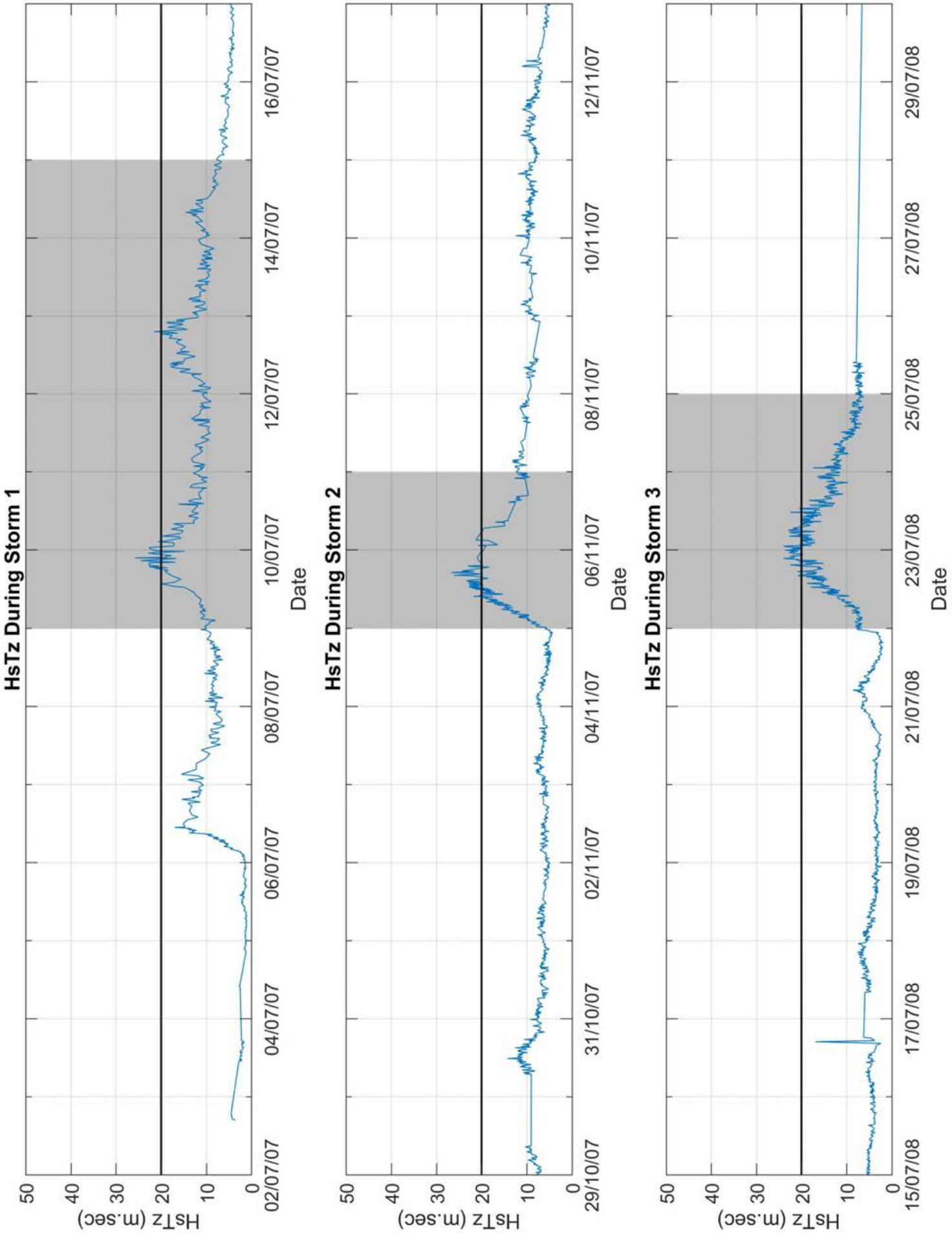

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Port Kembla Long Waves, Sediment and Thermal Modelling

Long Wave Storm Selection
Storms 1 to 3

Figure 3.2

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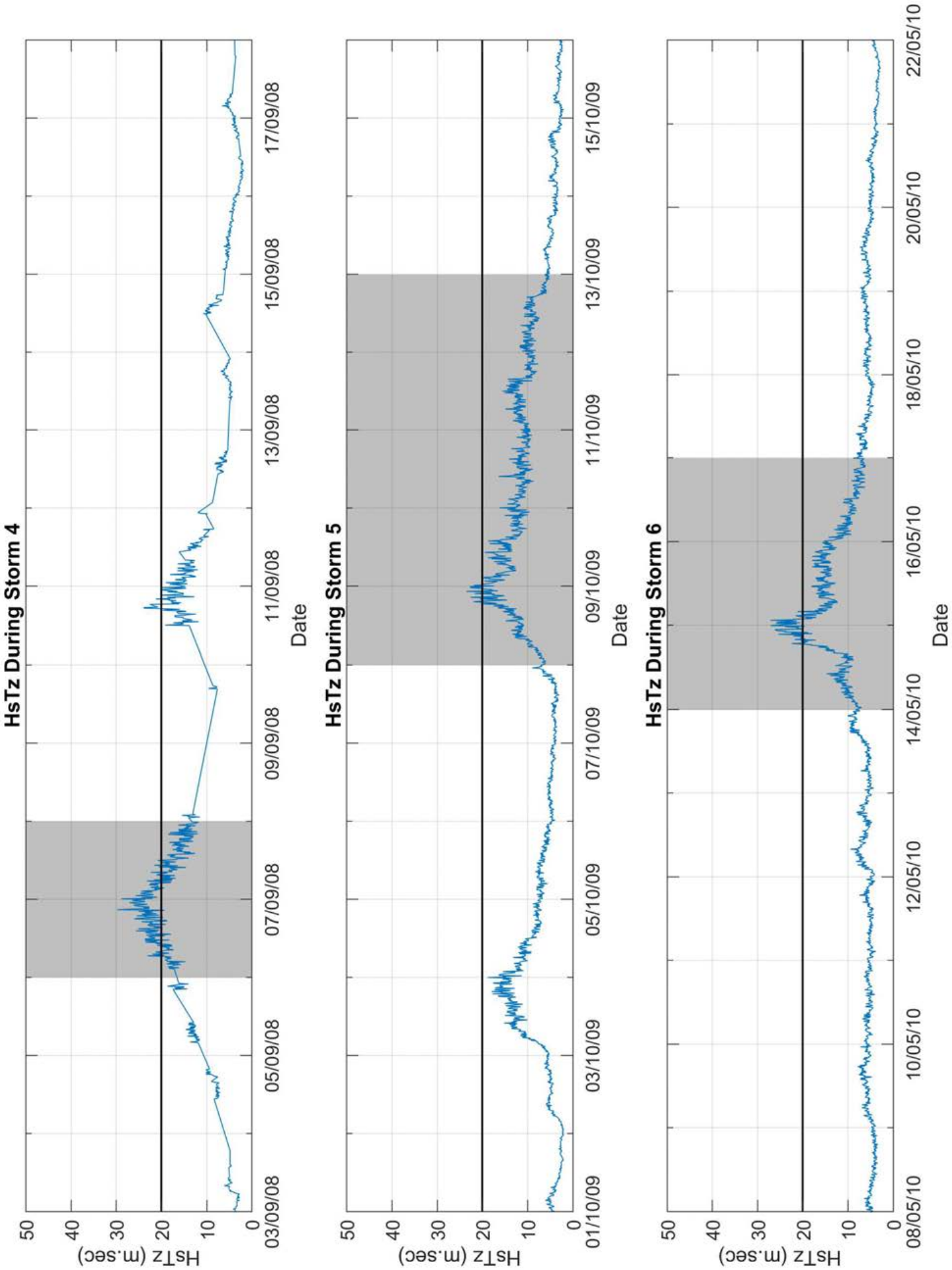

Cardno

Port Kembla Long Waves, Sediment and Thermal Modelling

Long Wave Storm Selection
Storms 4 to 6

Figure 3.3

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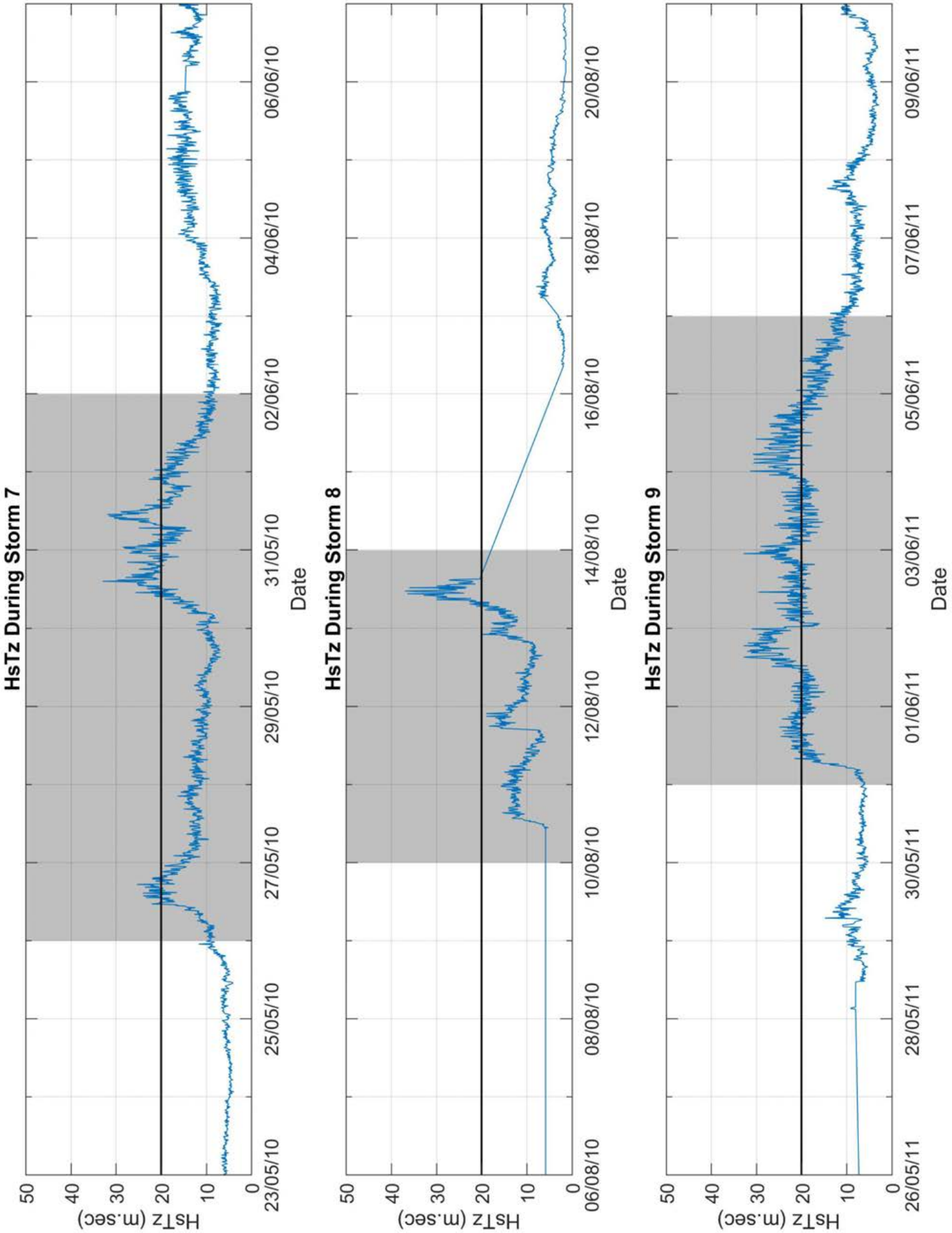

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Port Kembla Long Waves, Sediment and Thermal Modelling

Long Wave Storm Selection
Storms 7 to 9

Figure 3.4

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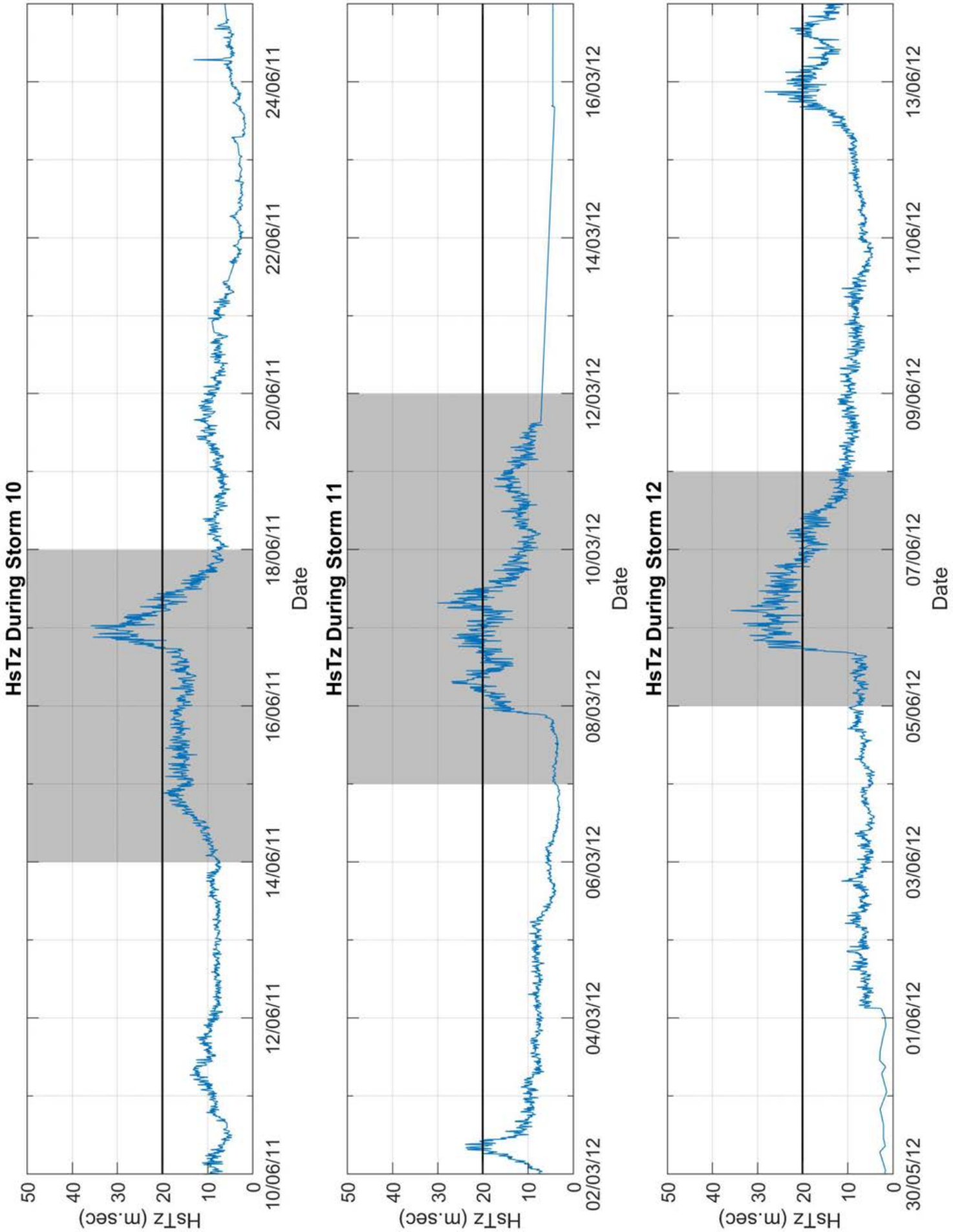

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Port Kembla Long Waves, Sediment and Thermal Modelling

Long Wave Storm Selection
Storms 10 to 12

Figure 3.5

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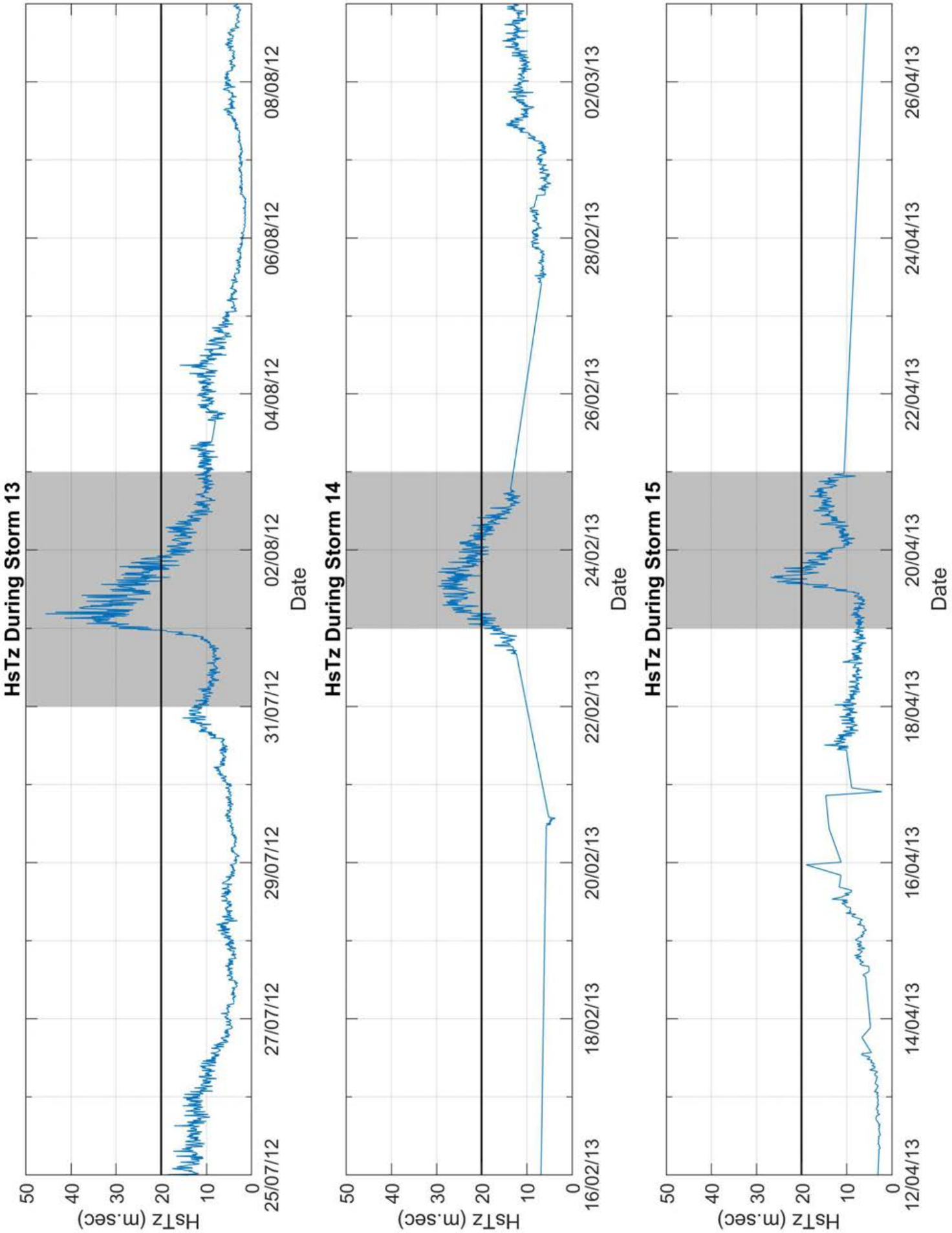

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Port Kembla Long Waves, Sediment and Thermal Modelling

Long Wave Storm Selection
Storms 13 to 15

Figure 3.6

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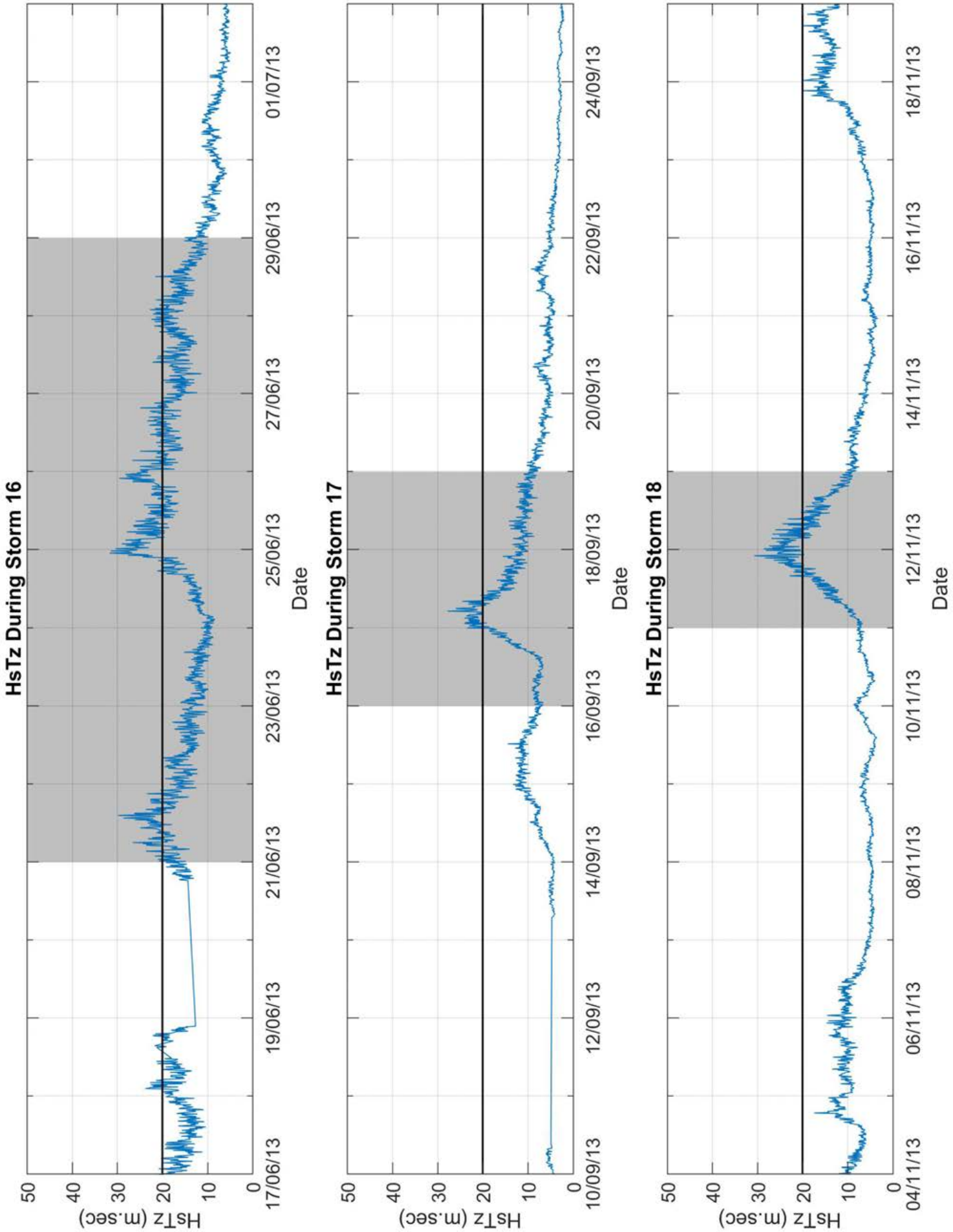

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Port Kembla Long Waves, Sediment and Thermal Modelling

Long Wave Storm Selection
Storms 16 to 18

Figure 3.7

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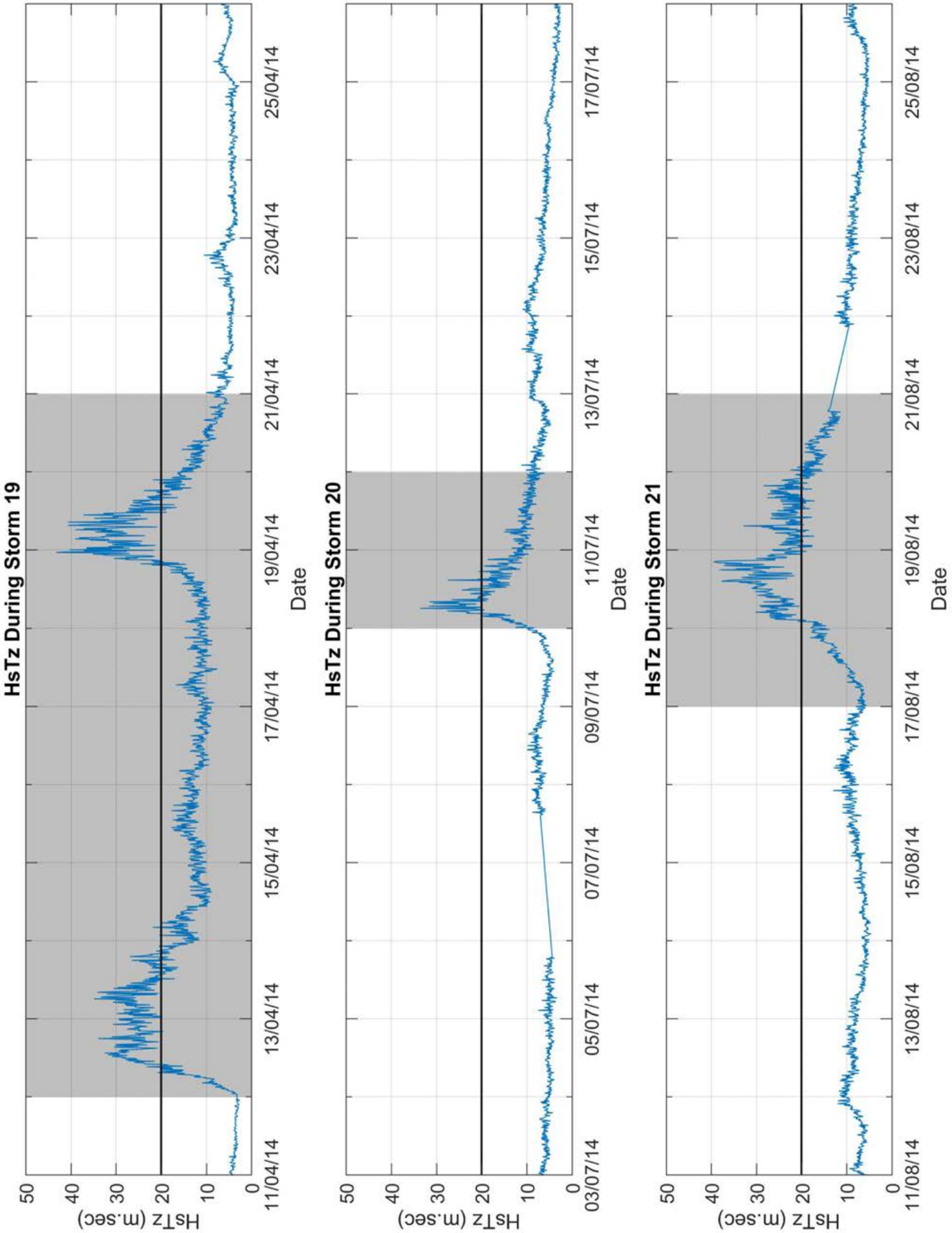

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Port Kembla Long Waves, Sediment and Thermal Modelling

Long Wave Storm Selection
Storms 19 to 21

Figure 3.8

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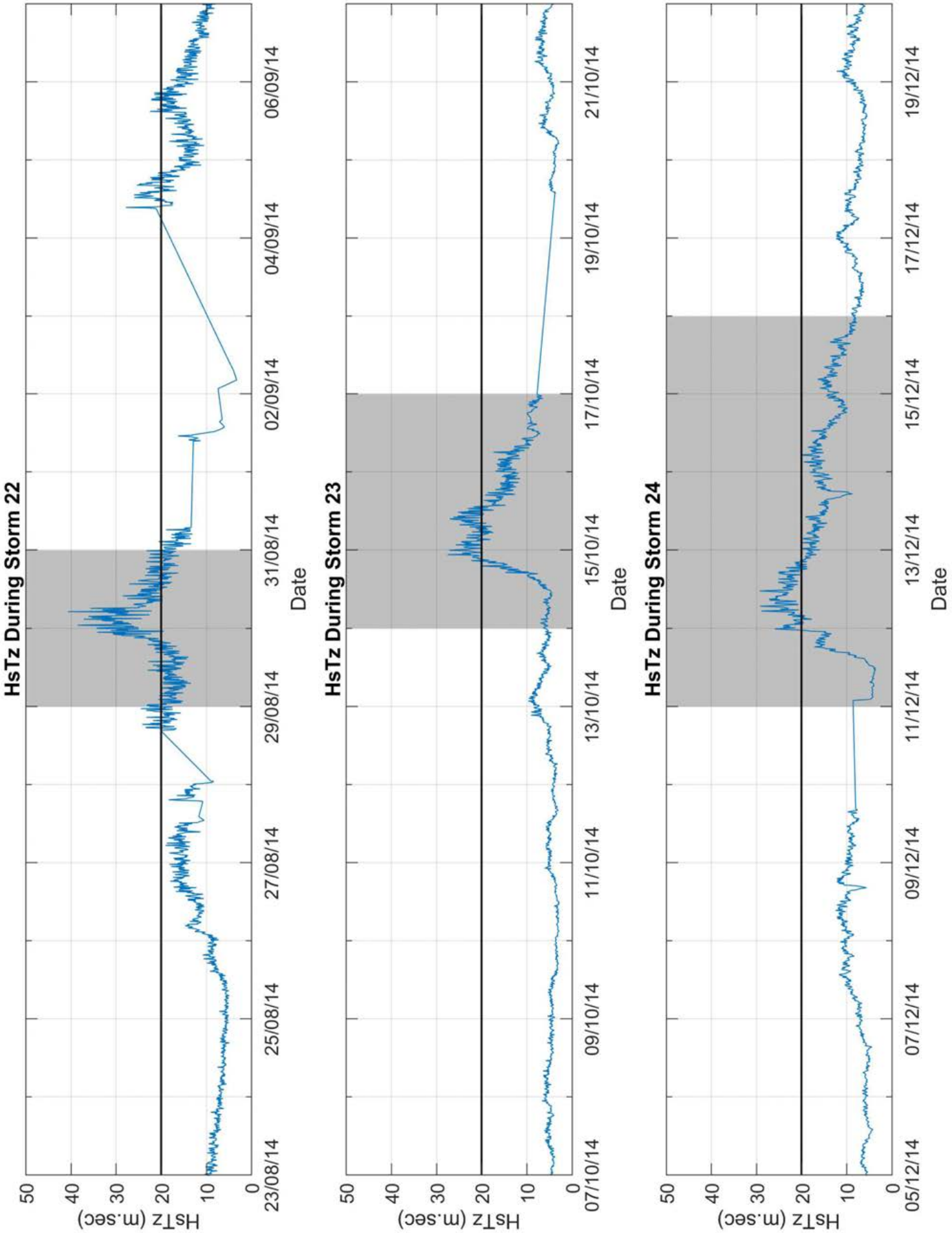

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Port Kembla Long Waves, Sediment and Thermal Modelling

Long Wave Storm Selection
Storms 22 to 24

Figure 3.9

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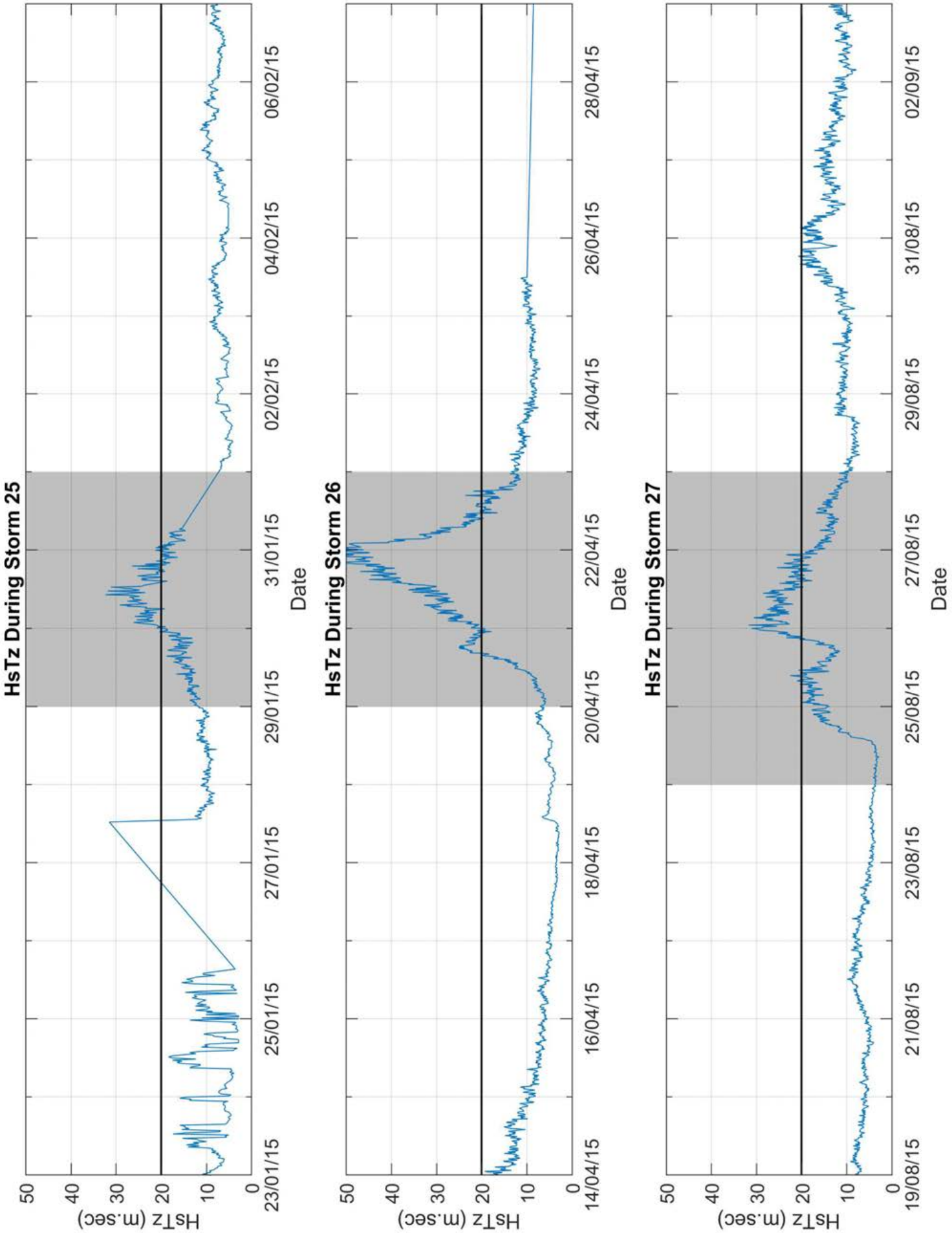

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Port Kembla Long Waves, Sediment and Thermal Modelling

Long Wave Storm Selection
Storms 25 to 27

Figure 3.10

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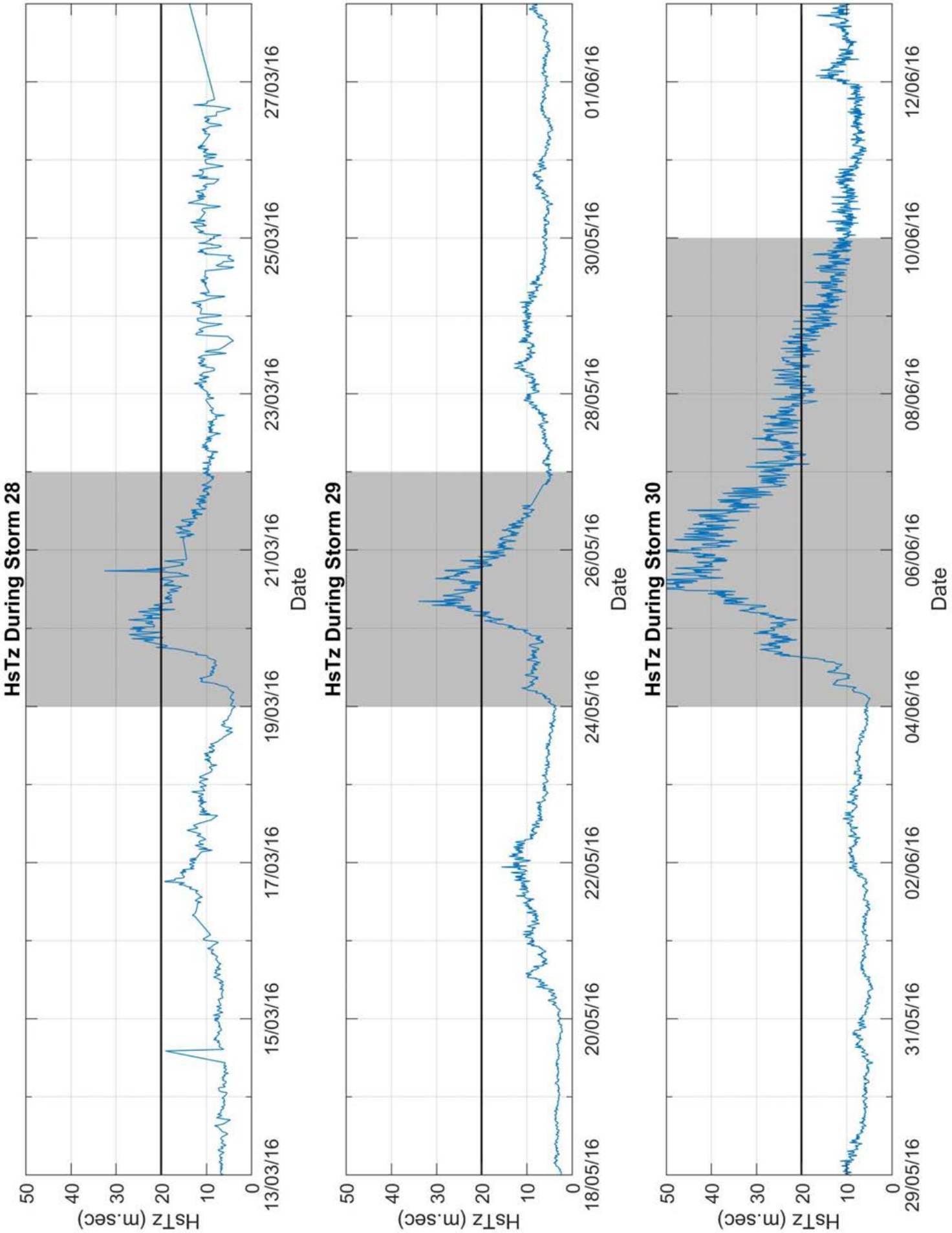

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Port Kembla Long Waves, Sediment and Thermal Modelling

Long Wave Storm Selection
Storms 28 to 30

Figure 3.11

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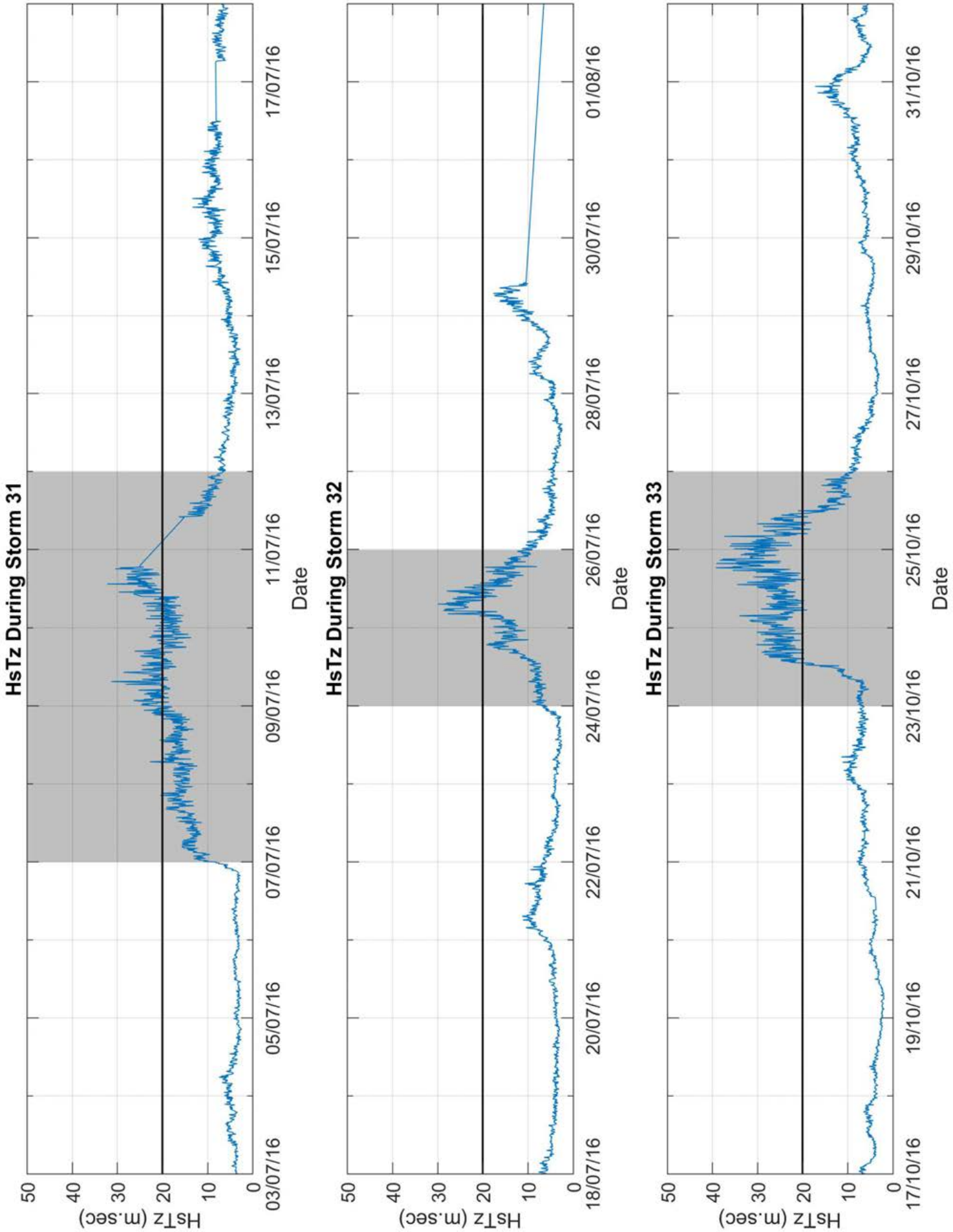

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Port Kembla Long Waves, Sediment and Thermal Modelling

Long Wave Storm Selection
Storms 31 to 33

Figure 3.12

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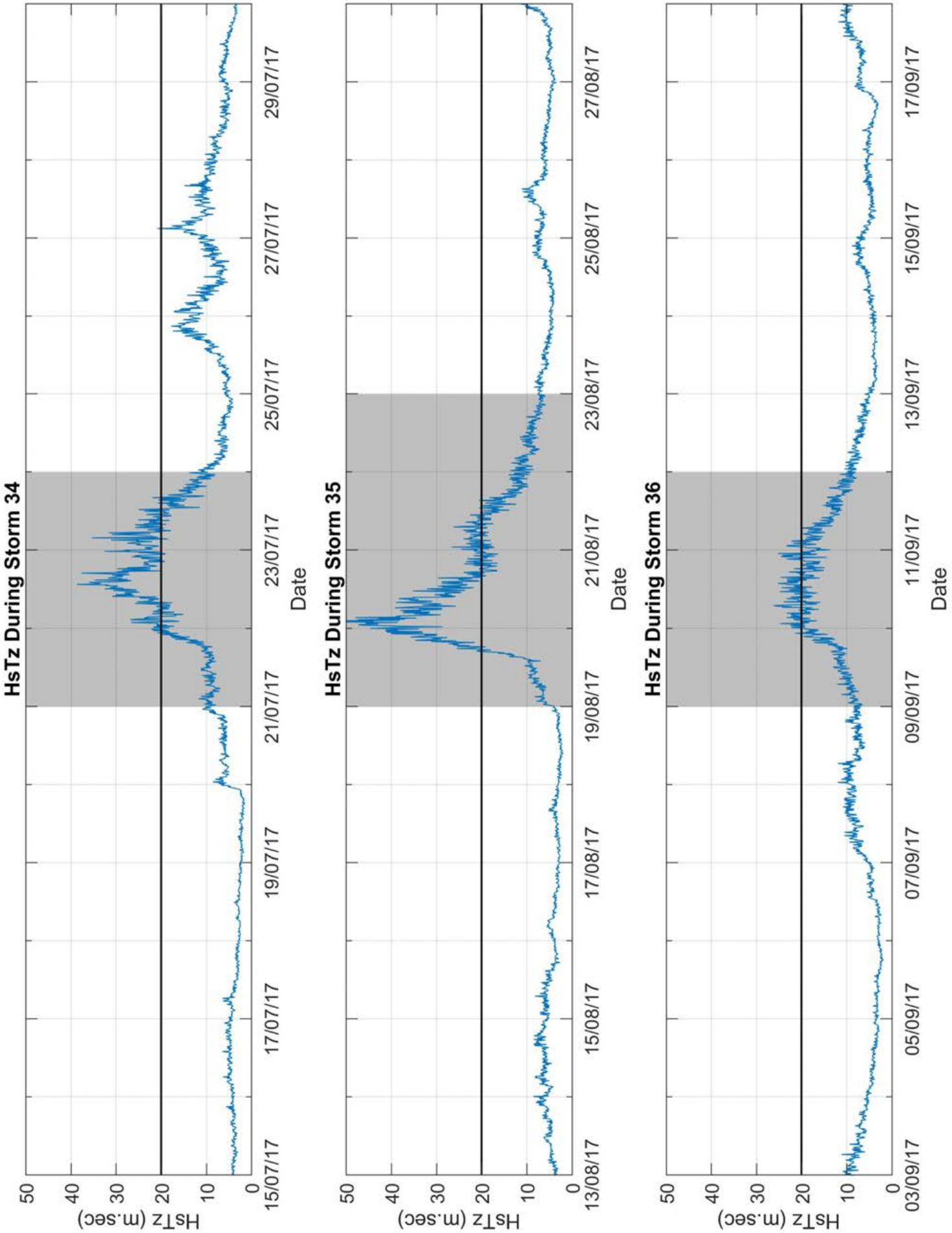

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Port Kembla Long Waves, Sediment and Thermal Modelling

Long Wave Storm Selection
Storms 34 to 36

Figure 3.13

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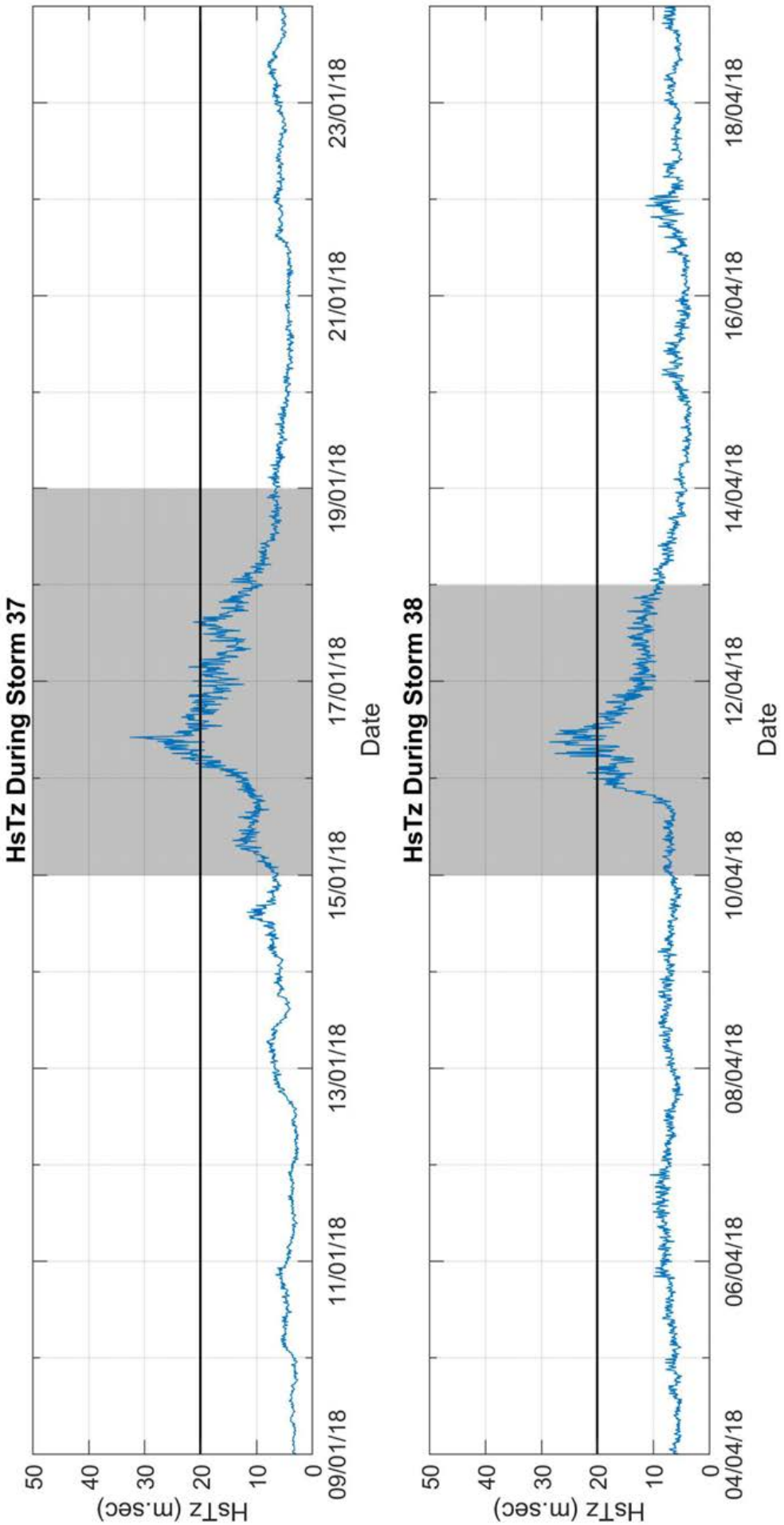

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Port Kembla Long Waves, Sediment and Thermal Modelling

Long Wave Storm Selection
Storms 37 to 38

Figure 3.14

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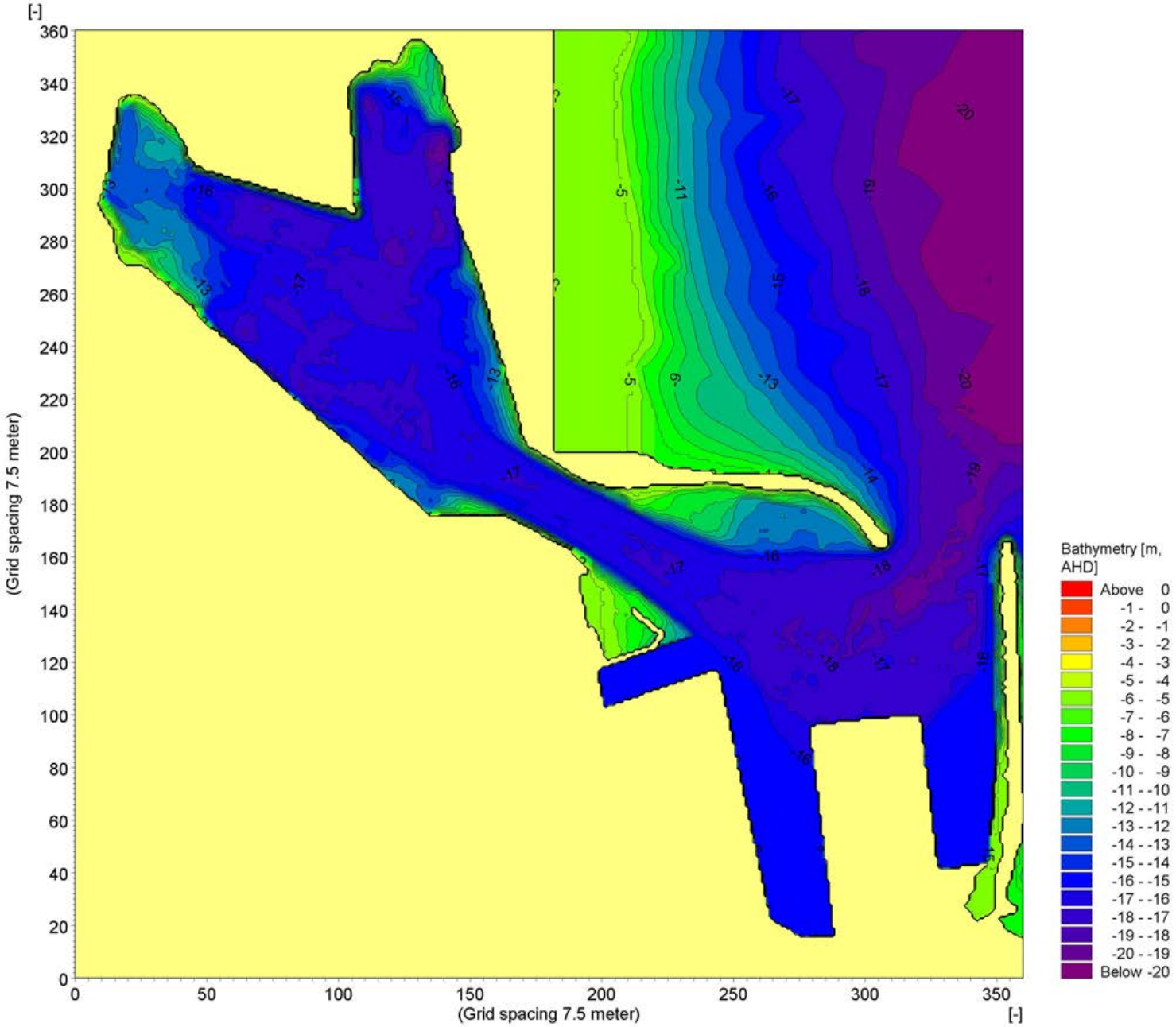

Port Kembla Long Waves, Sediment and Thermal Modelling

Approved Layout of the Outer Harbour

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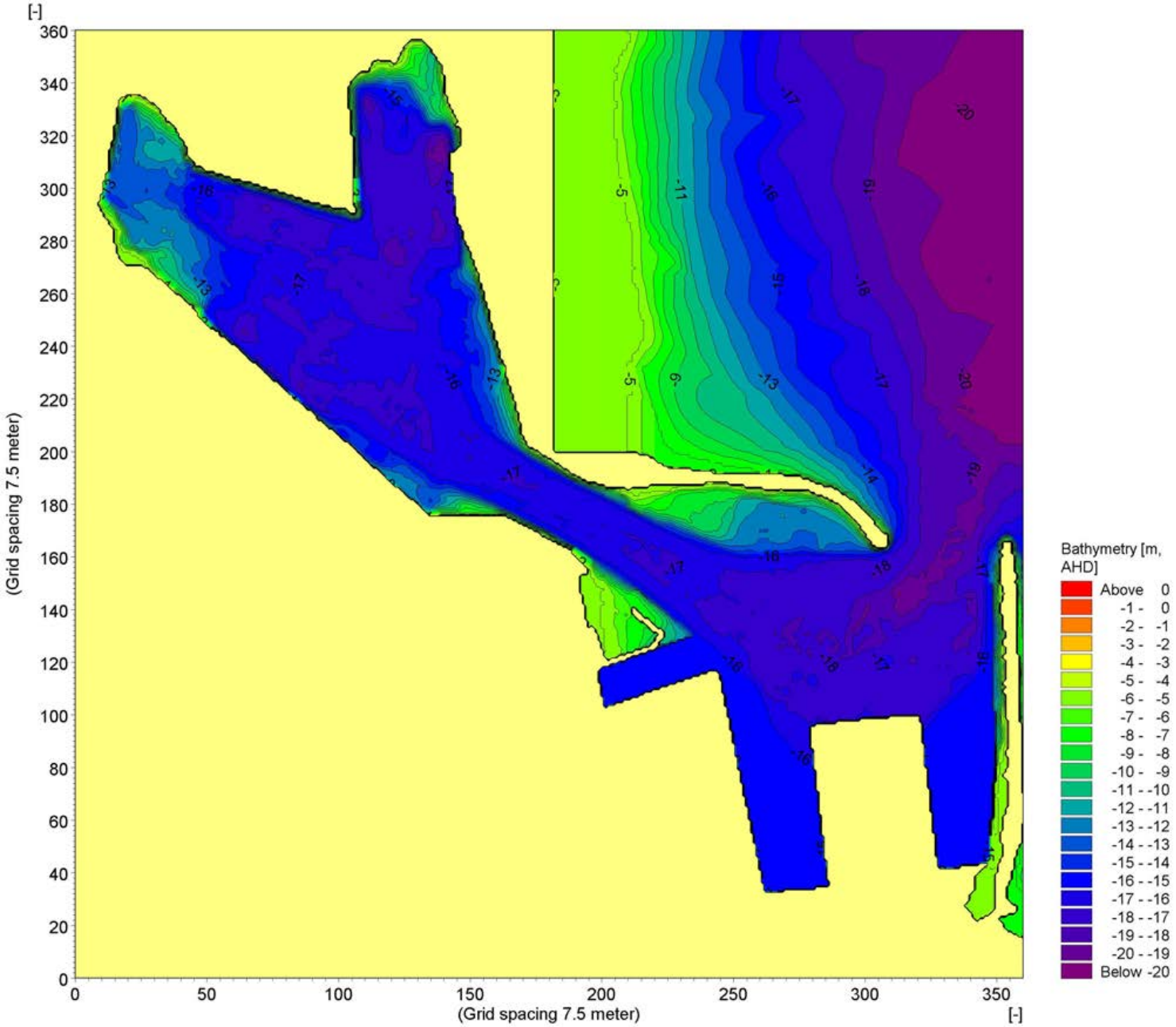
Figure 5.1



Port Kembla Long Waves, Sediment and Thermal Modelling

Amended Layout of the Outer Harbour

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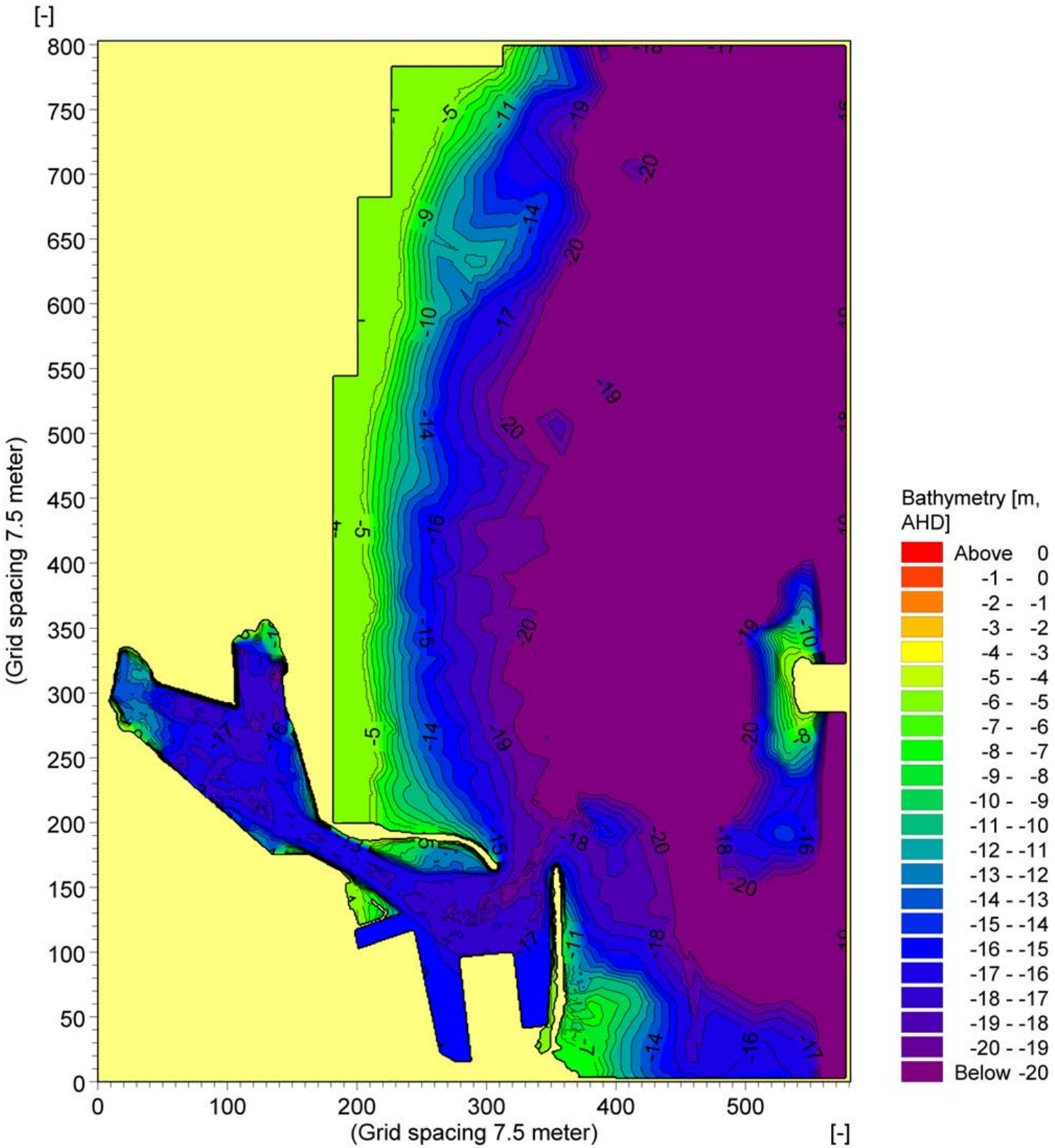
Figure 5.2



Port Kembla Long Waves, Sediment and Thermal Modelling

MIKE21 BW Model Bathymetry and Extent

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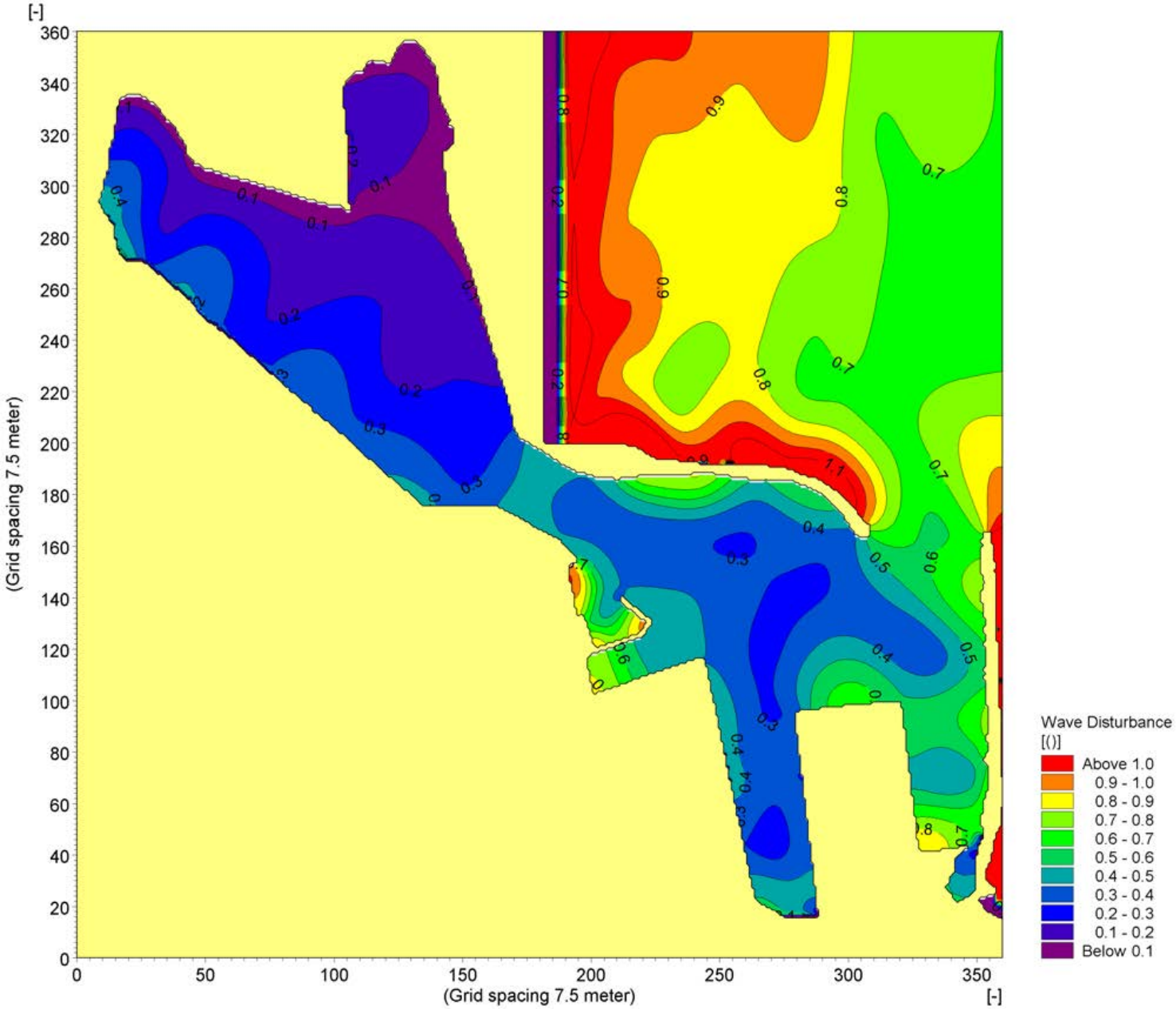
Figure 5.3



Port Kembla Long Waves, Sediment and Thermal Modelling

Modelled Wave Disturbance Coefficients
Approved Outer Harbour Layout

Figure 5.4

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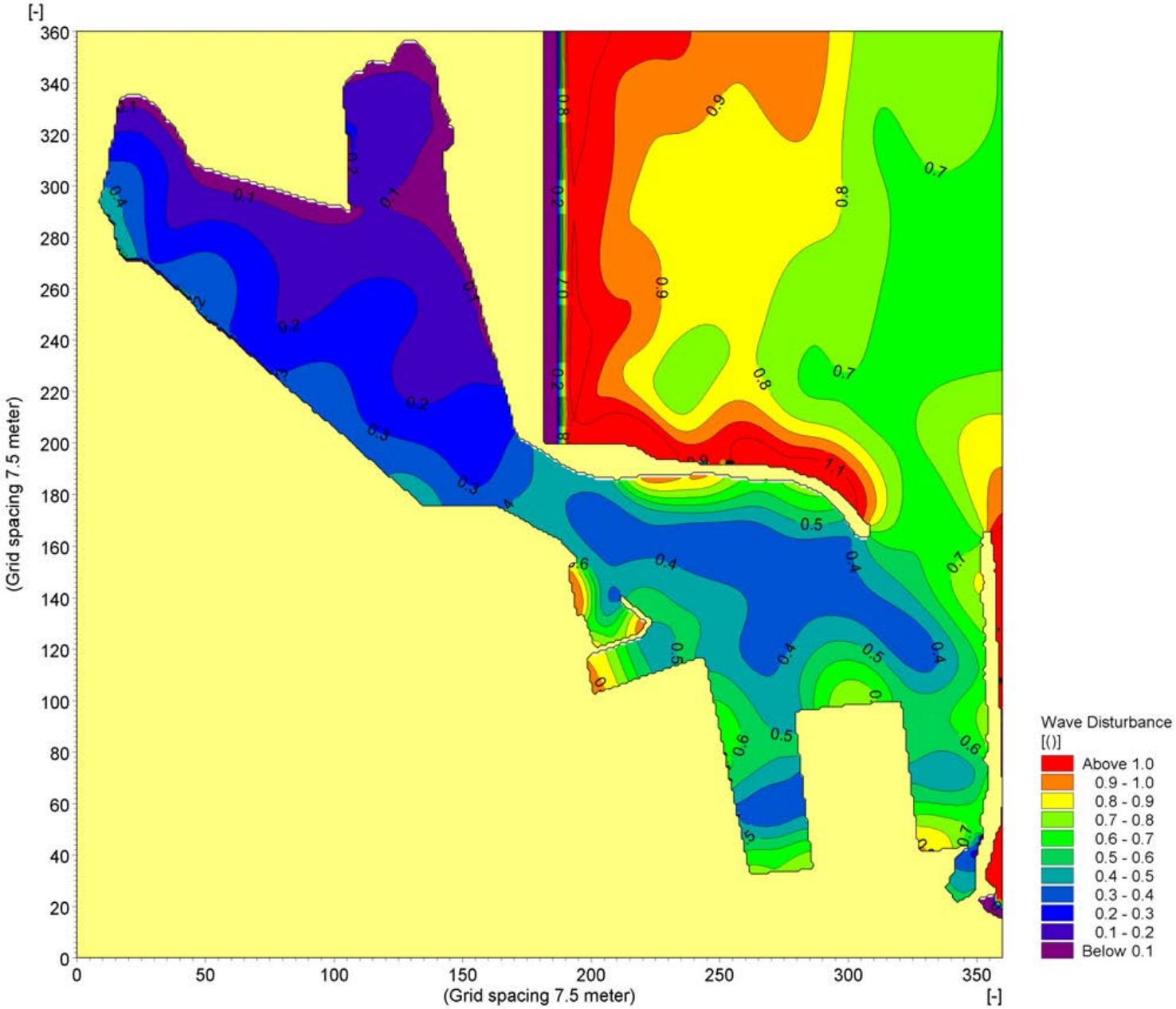

Port Kembla Long Waves, Sediment and Thermal Modelling

Modelled Wave Disturbance Coefficients
Amended Outer Harbour Layout

Figure 5.5

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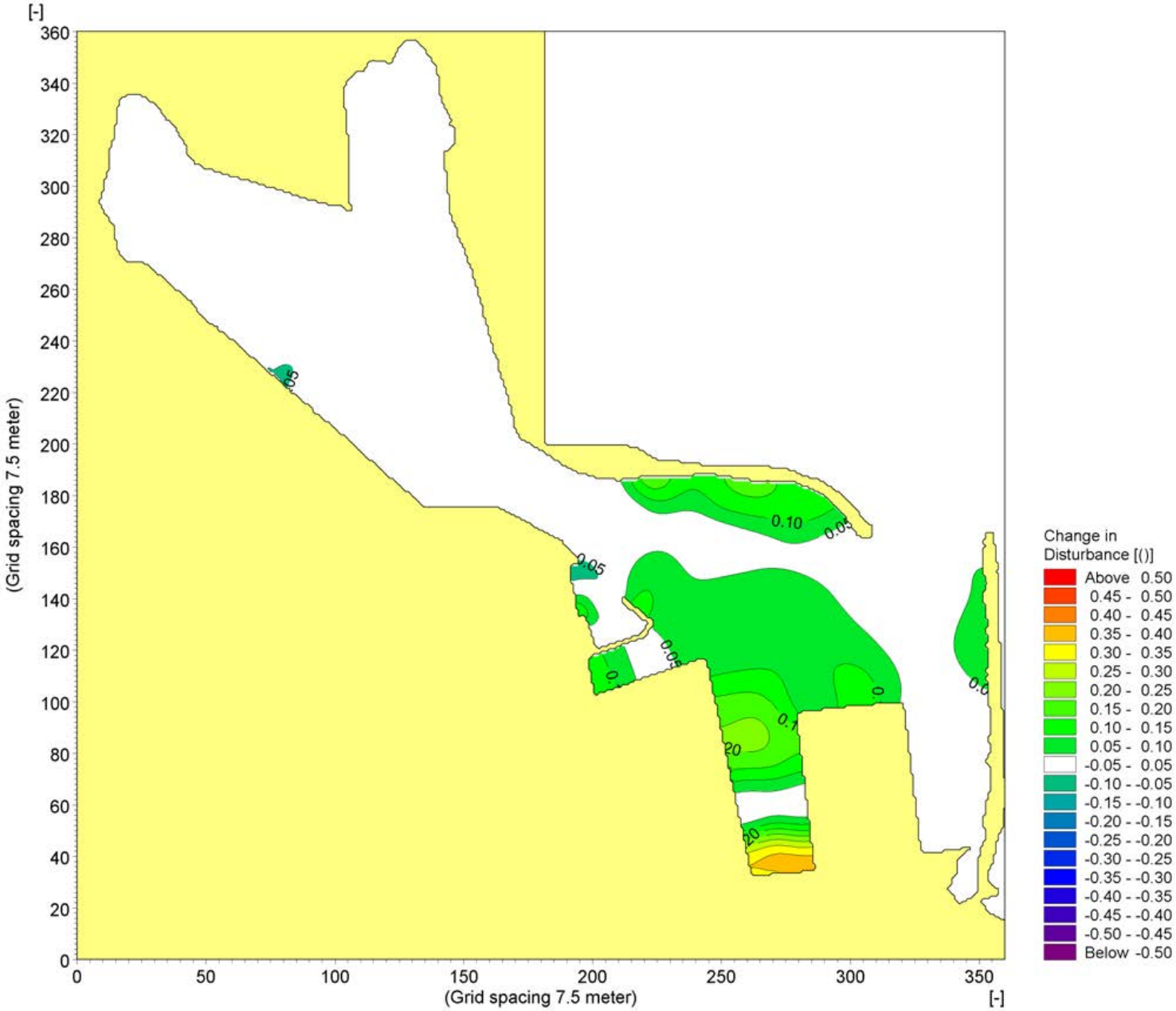

Port Kembla Long Waves, Sediment and Thermal Modelling

Modelled Change in Long Wave Disturbance Coefficients
Amended − Approved layout

Figure 5.6

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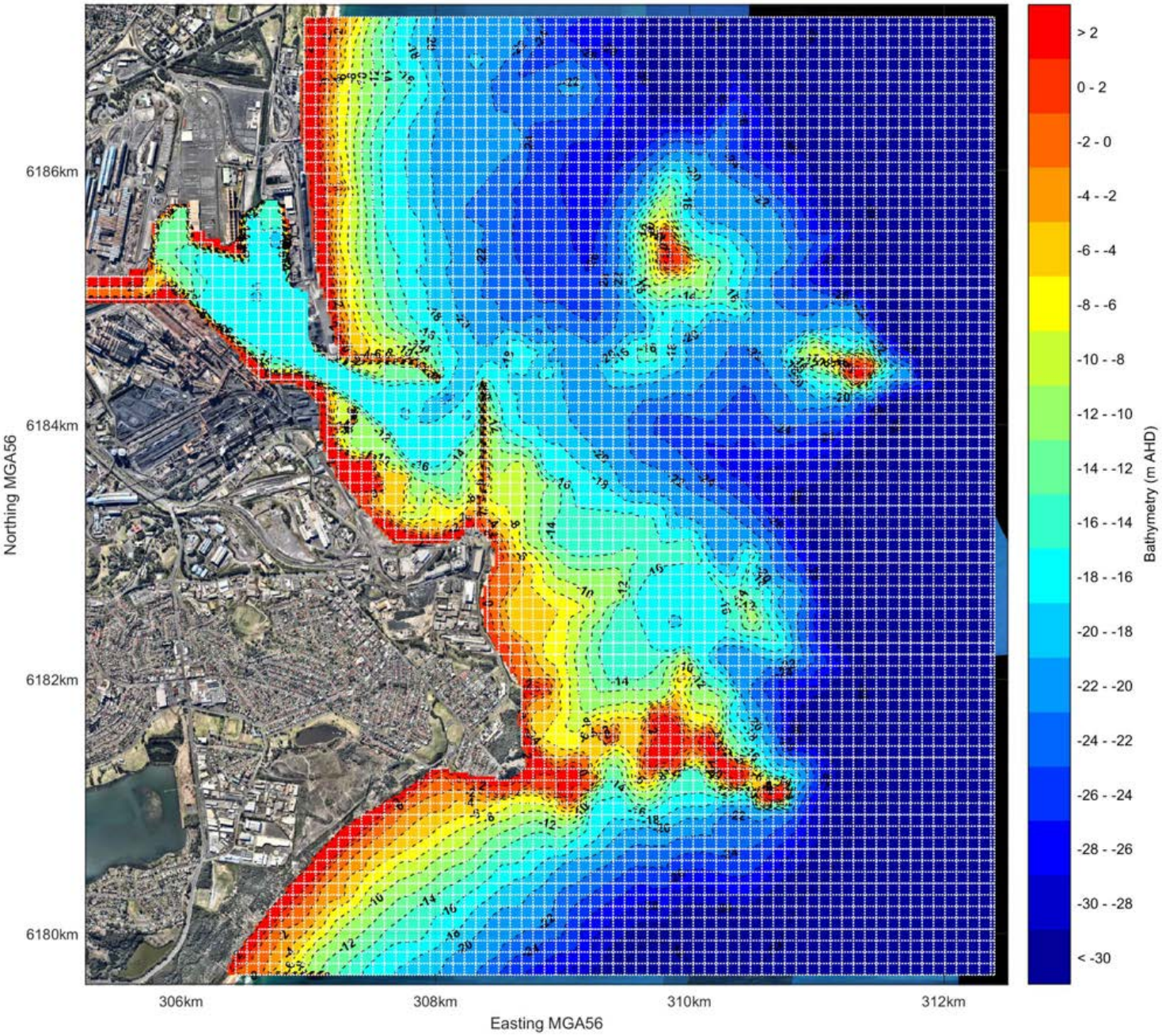

Port Kembla Long Waves, Sediment and Thermal Modelling

Delft3D Model Extent and Bathymetry
Every 3rd Grid Line Shown

Figure 6.1

Cardno

Port Kembla Long Waves, Sediment and Thermal Modelling

Modelled Thickness of Settled Fine Sediment After Dredging the Mud Layer

Figure 7.1

59919002 Oct 2018

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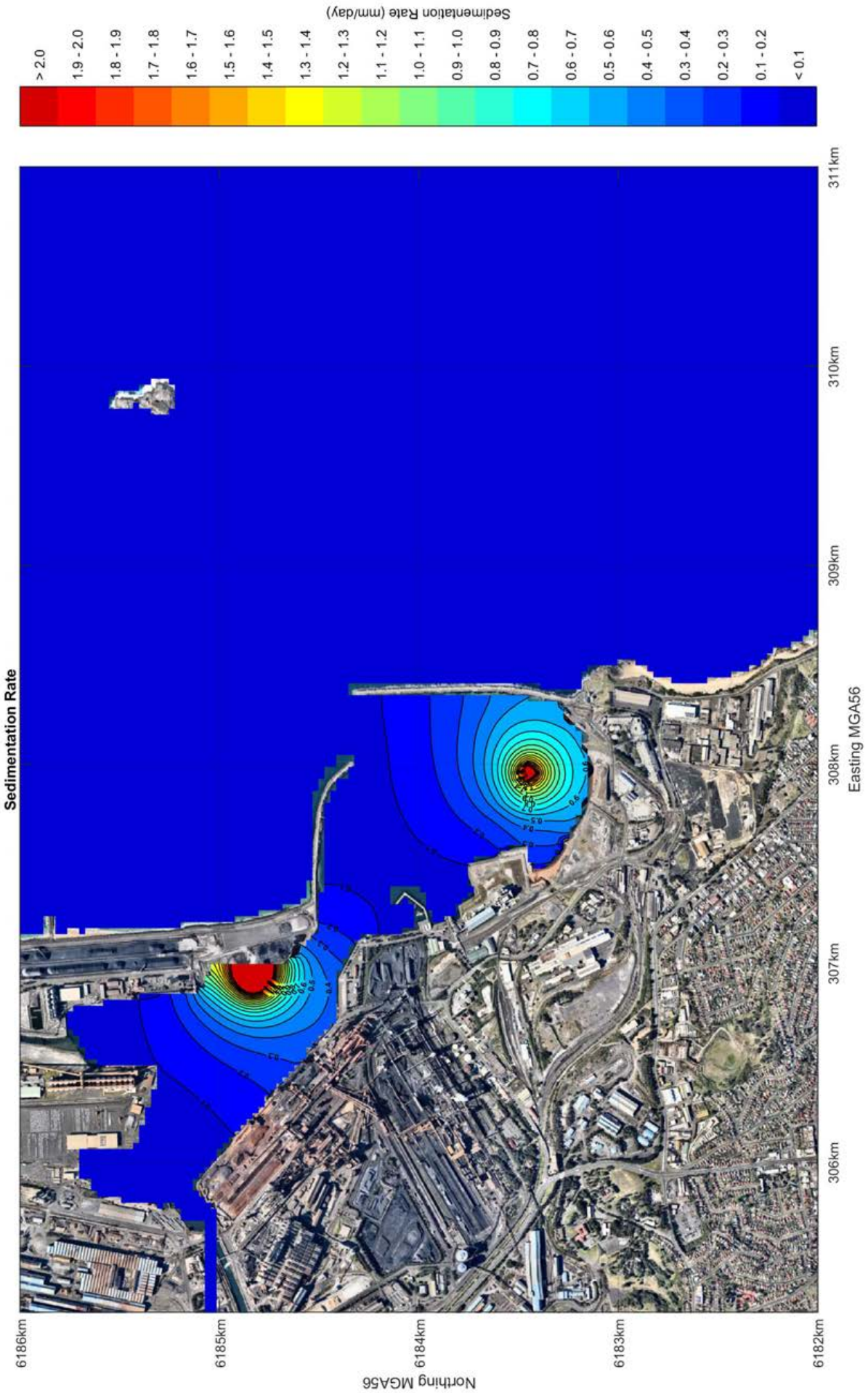

Cardno

Port Kembla Long Waves, Sediment and Thermal Modelling

Modelled Sedimentation Rate During Dredging

59919002 Oct 2018

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Figure 7.2

APPENDIX A

LONG WAVE MEASUREMENTS

							Total Long Wave Spectrum (>30 seconds)				Band 1 (210 -250 seconds)				Band 2 (180 -210 seconds)				Band 3 (150 -180 seconds)				Band 4 (120 -150 seconds)				Band 5 (90 -120 seconds)				Band 6 (60 -90 seconds)				Band 7 (30 -60 seconds)			
yyyy	mm	dd	HH	MM	SS	Date+Time	Hm0 (m)	Tp (Sec)	Tm01 (sec)	Tm02 (sec)

2011	6	4	6	0	0	04/06/2011 06:00	0.21	146.29	61.62	55.01	0.03	243.90	237.96	237.80	0.04	183.09	195.03	194.88	0.04	150.25	163.31	162.89	0.06	145.63	142.16	141.99	0.06	104.90	102.03	101.77	0.10	65.74	70.42	70.01	0.14	55.35	41.84	40.96
2011	6	4	7	30	0	04/06/2011 07:30	0.20	61.13	58.53	54.06	0.02	250.00	234.33	234.09	0.02	183.09	189.50	189.39	0.04	176.82	166.18	165.90	0.05	123.97	128.82	128.64	0.06	90.63	102.05	101.49	0.11	60.93	68.53	68.10	0.14	43.17	42.94	42.21
2011	6	4	9	0	0	04/06/2011 09:00	0.19	53.90	57.32	52.24	0.01	217.39	227.56	227.25	0.03	186.50	190.58	190.49	0.04	170.78	169.32	169.19	0.06	132.16	135.39	135.18	0.05	120.00	106.99	106.52	0.08	78.67	73.96	73.57	0.14	53.86	43.55	42.47
2011	6	4	10	30	0	04/06/2011 10:30	0.19	32.00	55.68	51.13	0.01	250.00	241.58	241.43	0.02	186.50	193.57	193.42	0.03	152.54	161.92	161.71	0.05	135.75	131.81	131.66	0.05	91.46	98.81	98.53	0.09	62.85	68.54	68.19	0.14	31.98	42.44	41.34
2011	6	4	12	0	0	04/06/2011 12:00	0.17	58.51	57.55	51.52	0.03	212.77	225.84	225.60	0.03	205.68	202.01	201.91	0.04	159.86	161.75	161.62	0.05	123.97	132.07	131.80	0.05	104.90	103.95	103.67	0.07	69.39	71.81	71.46	0.12	58.59	41.34	40.34
2011	6	4	13	30	0	04/06/2011 13:30	0.15	62.06	63.10	57.13	0.01	227.27	228.53	228.40	0.02	186.50	187.51	187.47	0.04	165.14	164.13	164.03	0.04	132.16	135.94	135.83	0.05	117.19	108.83	108.34	0.09	62.07	69.97	69.63	0.09	56.29	42.66	41.74
2011	6	4	15	0	0	04/06/2011 15:00	0.15	73.14	60.70	54.57	0.02	212.77	222.96	222.80	0.03	193.73	196.68	196.60	0.03	157.34	163.40	163.18	0.04	145.63	136.46	136.17	0.04	96.77	100.23	99.91	0.08	72.93	72.20	71.85	0.09	47.02	40.34	39.58
2011	6	4	16	30	0	04/06/2011 16:30	0.14	63.02	57.56	52.01	0.02	243.90	234.49	234.16	0.02	183.09	195.88	195.68	0.03	176.82	169.40	169.14	0.03	132.16	136.08	135.94	0.04	104.90	100.59	100.39	0.07	62.85	68.73	68.38	0.10	56.93	41.46	40.50
2011	6	4	18	0	0	04/06/2011 18:00	0.15	31.75	58.30	52.51	0.02	227.27	225.63	225.53	0.02	186.50	191.02	190.88	0.03	170.78	167.34	167.14	0.04	123.97	131.96	131.67	0.05	91.46	99.68	99.40	0.07	81.89	71.41	70.92	0.10	53.86	41.09	40.18
2011	6	4	19	30	0	04/06/2011 19:30	0.15	58.51	57.21	52.46	0.03	227.27	226.05	225.92	0.01	210.00	193.31	193.11	0.02	150.25	158.73	158.54	0.04	145.63	139.50	139.20	0.05	93.17	98.93	98.67	0.07	70.87	71.35	70.94	0.11	58.59	43.24	42.23
2011	6	4	21	0	0	04/06/2011 21:00	0.13	117.03	57.12	52.28	0.01	212.77	224.35	224.08	0.02	186.50	192.08	191.94	0.02	170.78	165.95	165.79	0.03	128.76	130.96	130.83	0.05	117.19	104.57	104.15	0.05	62.85	70.94	70.37	0.10	59.29	42.99	42.02
2011	6	4	22	30	0	04/06/2011 22:30	0.13	67.15	58.77	53.70	0.01	243.90	231.59	231.31	0.02	183.09	195.54	195.34	0.03	176.82	168.10	167.87	0.03	141.51	136.17	135.92	0.03	110.70	103.87	103.47	0.07	67.06	71.32	70.84	0.09	55.97	43.22	42.36
2011	6	5	0	0	0	05/06/2011 00:00	0.12	61.13	56.54	51.69	0.02	238.10	229.42	229.19	0.02	193.73	195.04	194.91	0.02	170.78	166.57	166.39	0.03	135.75	133.04	132.85	0.03	117.19	107.02	106.37	0.06	61.31	69.63	69.19	0.09	53.29	42.80	41.88
2011	6	5	1	30	0	05/06/2011 01:30	0.10	59.36	57.95	52.73	0.02	227.27	225.52	225.38	0.02	210.00	195.28	195.11	0.02	152.54	161.29	161.07	0.03	141.51	134.85	134.62	0.03	91.46	97.95	97.62	0.04	90.00	72.88	72.19	0.08	59.29	44.17	43.12
2011	6	5	3	0	0	05/06/2011 03:00	0.11	87.15	61.36	54.32	0.01	243.90	237.64	237.46	0.02	193.73	195.85	195.79	0.02	152.54	160.35	160.13	0.04	123.97	131.43	131.18	0.04	113.21	103.85	103.48	0.06	86.87	70.90	70.36	0.07	33.04	40.16	39.37
2011	6	5	4	30	0	05/06/2011 04:30	0.10	93.09	69.69	61.13	0.01	217.39	228.89	228.65	0.02	186.50	191.71	191.60	0.03	170.78	164.22	164.03	0.03	123.97	133.85	133.58	0.04	93.17	99.61	99.30	0.04	75.69	73.34	72.92	0.06	50.59	42.44	41.58
2011	6	5	6	0	0	05/06/2011 06:00	0.09	128.00	58.67	52.35	0.02	238.10	238.18	238.06	0.01	186.50	193.79	193.64	0.02	170.78	169.67	169.61	0.03	128.76	131.04	130.88	0.03	97.72	100.49	100.30	0.04	81.89	74.07	73.61	0.06	41.73	40.93	40.14
2011	6	5	7	30	0	05/06/2011 07:30	0.09	67.15	58.11	53.26	0.01	238.10	239.11	239.00	0.01	205.68	202.14	202.07	0.01	162.45	161.58	161.47	0.02	128.76	128.42	128.35	0.03	117.19	109.08	108.81	0.05	67.06	70.54	70.14	0.07	53.86	42.89	42.02
2011	6	5	9	0	0	05/06/2011 09:00	0.09	69.42	54.86	49.13	0.01	227.27	228.21	228.05	0.01	205.68	200.19	200.04	0.01	152.54	161.26	160.99	0.02	135.75	134.97	134.79	0.03	92.31	100.59	100.13	0.04	69.39	71.39	71.04	0.06	40.21	38.45	37.77
2011	6	5	10	30	0	05/06/2011 10:30	0.09	51.20	58.99	52.82	0.01	250.00	233.01	232.80	0.01	186.50	190.46	190.33	0.02	165.14	165.07	164.91	0.02	128.76	131.85	131.69	0.02	97.72	101.04	100.73	0.03	78.67	75.90	75.45	0.06	51.11	42.49	41.68
2011	6	5	12	0	0	05/06/2011 12:00	0.09	53.90	58.86	53.61	0.01	227.27	227.18	227.09	0.01	193.73	192.88	192.81	0.02	170.78	165.57	165.34	0.03	135.75	134.06	133.96	0.02	93.17	97.08	96.91	0.03	60.20	71.29	70.72	0.07	53.86	44.50	43.50
2011	6	5	13	30	0	05/06/2011 13:30	0.09	120.47	62.40	55.24	0.01	238.10	231.14	230.86	0.02	193.73	193.74	193.62	0.02	165.14	165.10	164.95	0.03	120.97	134.77	134.39	0.03	120.00	103.02	102.51	0.04	66.18	70.16	69.82	0.06	45.11	41.18	40.33
2011	6	5	15	0	0	05/06/2011 15:00	0.08	62.06	59.06	53.38	0.01	217.39	222.98	222.83	0.01	193.73	193.91	193.77	0.02	165.14	166.63	166.51	0.02	120.97	131.27	130.97	0.02	120.00	106.51	105.98	0.04	62.07	67.72	67.33	0.05	56.93	42.38	41.49
2011	6	5	16	30	0	05/06/2011 16:30	0.07	93.09	58.47	52.36	0.01	212.77	230.49	230.14	0.01	205.68	202.70	202.60	0.01	176.82	166.18	165.83	0.02	132.16	133.51	133.31	0.03	93.17	97.80	97.53	0.04	78.67	73.52	73.20	0.05	31.48	38.45	37.66
2011	6	5	18	0	0	05/06/2011 18:00	0.07	56.11	57.24	52.17	0.01	238.10	239.77	239.70	0.01	186.50	190.81	190.75	0.01	170.78	164.37	164.16	0.02	123.97	129.04	128.78	0.03	93.17	96.41	96.18	0.03	89.20	77.98	77.43	0.05	55.97	43.25	42.11
2011	6	5	19	30	0	05/06/2011 19:30	0.08	57.69	53.72	49.27	0.01	217.39	224.27	223.99	0.01	193.73	194.68	194.55	0.01	170.78	170.33	170.27	0.01	135.75	134.29	134.18	0.02	117.19	103.74	103.35	0.03	62.85	70.98	70.41	0.06	57.58	42.16	41.11
2011	6	5	21	0	0	05/06/2011 21:00	0.08	53.20	55.14	50.10	0.01	243.90	234.32	234.03	0.01	205.68	198.70	198.51	0.02	157.34	161.80	161.66	0.02	132.16	136.47	136.31	0.02	104.90	101.53	101.26	0.03	62.07	72.06	71.64	0.06	46.58	42.07	41.25
2011	6	5	22	30	0	05/06/2011 22:30	0.09	48.19	52.26	48.83	0.01	238.10	240.18	240.13	0.00	183.09	183.09	183.09	0.02	157.34	162.18	162.03	0.01	123.97	126.03	125.91	0.02	110.70	106.52	106.31	0.04	65.31	70.43	70.04	0.07	48.15	43.18	42.33
2011	6	6	0	0	0	06/06/2011 00:00	0.07	42.23	53.13	49.36	0.01	250.00	232.41	232.19	0.01	193.73	196.86	196.79	0.00	157.34	164.16	163.91	0.01	120.97	130.17	129.86	0.02	91.46	99.67	99.25	0.03	74.57	72.05	71.79	0.05	42.25	41.58	40.84
2011	6	6	1	30	0	06/06/2011 01:30	0.06	91.02	58.45	53.33	0.00	212.77	227.37	227.05	0.01	186.50	190.64	190.49	0.01	170.78	169.51	169.30	0.02	145.63	140.69	140.51	0.02	90.63	99.00	98.49	0.03	90.00	71.92	71.45	0.05	42.61	43.44	42.54
2011	6	6	3	0	0	06/06/2011 03:00	0.05	141.24	56.98	51.38	0.00	#N/A	#N/A	#N/A	0.00	186.50	187.43	187.41	0.01	170.78	164.11	163.96	0.01	141.51	135.73	135.48	0.01	104.90	108.73	108.43	0.02	66.18	72.66	72.16	0.03	35.01	39.60	38.97
2011	6	6	4	30	0	06/06/2011 04:30	0.05	73.14	64.59	57.95	0.01	250.00	240.56	240.17	0.01	205.68	199.92	199.83	0.01	157.34	157.89	157.83	0.01	135.75	136.31	136.24	0.02	99.67	99.84	99.63	0.03	72.93	70.65	70.43	0.03	51.11	43.11	42.25
2011	6	6	6	0	0	06/06/2011 06:00	0.05	58.51	56.11	50.50	0.00	212.77	212.77	212.77	0.01	205.68	196.78	196.61	0.01	162.45	162.38	162.22	0.01	128.76	131.39	131.21	0.01	93.17	97.68	97.36	0.02	62.07	67.63	67.24	0.04	58.59	41.31	40.22
2011	6	6	7	30	0	06/06/2011 07:30	0.05	53.20	60.84	55.23	0.01	227.27	225.38	225.25	0.00	210.00	204.74	204.70	0.01	150.25	161.20	160.93	0.02	123.97	132.33	132.03	0.01	90.63	98.19	97.96	0.02	62.07	73.32	72.85	0.03	53.29	43.50	42.57
2011	6	6	9	0	0	06/06/2011 09:00	0.05	75.85	56.01	51.25	0.01	250.00	239.96	239.80	0.00	183.09	184.25	184.24	0.01	170.78	162.86	162.60	0.01	128.76	135.16	134.84	0.02	94.94	103.31	102.95	0.03	75.69	69.99	69.50	0.04	59.29	41.93	41.17
2011	6	6	10	30	0	06/06/2011 10:30	0.05	113.78	57.73	51.65	0.00	212.77	223.14	222.80	0.01	205.68	202.45	202.38	0.01	152.54	160.09	159.90	0.02	135.75	132.83	132.70	0.02	113.21	106.93	106.50	0.02	86.87	74.69	74.11	0.03	53.29	41.28	40.48
2011	6	6	12	0	0	06/06/2011 12:00	0.05	55.35	52.63	49.34	0.00	212.77	231.06	230.75	0.01	186.50	193.21	193.03	0.00	152.54	157.87	157.70	0.01	120.97	129.18	129.02	0.01	120.00	99.10	98.77	0.02	62.07	69.20	68.62	0.04	55.35	45.07	43.94
2011	6	6	13	30	0	06/06/2011 13:30	0.05	57.69	54.48	50.13	0.01	238.10	240.18	240.13	0.00	186.50	190.50	190.44	0.01	157.34	159.90	159.84	0.01	135.75	133.85	133.62	0.01	117.19	105.16	104.72	0.02	61.31	71.83	71.43	0.04	57.58	42.25	41.24
2011	6	6	15	0	0	06/06/2011 15:00	0.05	44.04	58.27	53.34	0.01	217.39	217.68	217.65	0.01	186.50	192.22	192.09	0.01	152.54	158.46	158.28	0.01	132.16	135.37	135.17	0.01	99.67	101.22	101.02	0.02	60.93	70.11	69.61	0.03	44.12	43.17	42.38
2011	6	6	16	30	0	06/06/2011 16:30	0.04	215.58	62.79	54.71	0.01	217.39	219.33	219.22	0.01	210.00	198.17	198.06	0.01	157.34	157.93	157.80	0.01	141.51	139.84	139.65	0.01	104.90	104.41	104.15	0.02	81.89	74.75	74.32	0.03	30.33	40.05	39.14
2011	6	6	18	0	0	06/06/2011 18:00	0.05	56.89	55.34	49.57	0.01	227.27	230.86	230.71	0.01	193.73	196.31	196.24	0.01	152.54	160.16	159.95	0.01	150.00	132.80	132.21	0.01	113.21	108.47	108.09	0.02	60.93	67.48	66.98	0.04	56.93	41.05	40.14
2011	6	6	19	30	0	06/06/2011 19:30	0.05	95.26	59.83	53.63	0.01	227.27	231.93	231.77	0.00	186.50	195.53	195.34	0.01	157.34	162.71	162.55	0.01	135.75	135.39	135.21	0.01	94.94	96.64	96.55	0.02	60.20	74.04	73.44	0.04	48.15	42.73	41.65
2011	6	6	21	0	0	06/06/2011 21:00	0.05	186.18	54.64	49.70	0.00	238.10	238.99	238.86	0.02	186.50	191.47	191.39	0.01	180.00	167.50	167.30	0.01	123.97	128.16	127.96	0.01	104.90	107.78	107.40	0.02	75.69	70.05	69.91	0.04	54.45	41.11	40.31
2011	6	6	22	30	0	06/06/2011 22:30	0.06	50.57	50.53	47.00	0.01	250.00	236.36	236.06	0.01	205.68	198.48	198.29	0.01	150.25	163.00	162.71	0.01	145.63	140.00	139.75	0.02	113.21	102.48	102.11	0.02	68.44	71.82	71.50	0.05	50.59	41.56	40.79
2011	6	7	0	0	0	07/06/2011 00:00	0.06	46.02	52.73	47.50	0.01	243.90	234.73	234.55	0.00	183.09	195.72	195.51	0.01	176.82	166.08	165.86	0.01	135.75	132.67	132.52	0.01	90.63	105.89	105.45	0.02	69.39	66.94	66.66	0.04	45.94	40.21	39.56
2011	6	7	1	30	0	07/06/2011 01:30	0.05	30.34	48.43	44.93	0.00	212.77	215.68	215.65	0.01	205.68	199.02	198.84	0.01	157.34	161.69	161.52	0.01	141.51	139.37	139.31	0.02	93.17	98.28	98.06	0.02	67.06	72.78	72.16	0.05	30.33	39.79	38.86
2011	6	7	3	0	0	07/06/2011 03:00	0.05	31.51	47.16	43.81	0.01	217.39	219.98	219.89	0.00	210.00	201.19	200.82	0.01	152.54	157.84	157.56	0.01	141.51	135.93	135.62	0.01	90.63	99.97	99.50	0.02	74.57	73.43	72.91	0.04	31.48	38.85	38.05
2011	6	7	4	30	0	07/06/2011 04:30	0.05	47.63	51.80	47.89	0.00	250.00	241.56	241.50	0.01	183.09	186.75	186.72	0.01	176.82	170.15	169.86	0.01	123.97	130.52	130.28	0.01	95.85	102.71	102.44	0.02	74.57	73.79	73.33	0.04	47.70	41.49	40.68
2011	6	7	6	0	0	07/06/2011 06:00	0.05	47.08	62.49	56.17	0.01	227.27	230.20	230.02	0.00	183.09	190.00	189.89	0.01	170.78	164.42	164.20	0.01	137.61	139.03	138.92	0.01	102.74	101.85	101.53	0.02	77.45	72.37	71.91	0.03	47.02	43.61	42.77
2011	6	7	7	30	0	07/06/2011 07:30	0.05	120.47	63.15	56.42	0.01	250.00	234.01	233.76	0.01	201.54	199.48	199.40	0.01	170.78	168.58	168.50	0.01	120.97	127.76	127.47	0.02	120.00	102.53	101.97	0.02	68.44	74.05	73.57	0.03	34.40	40.51	39.90
2011	6	7	9	0	0	07/06/2011 09:00	0.06	37.24	57.14	51.60	0.01	217.39	219.99	219.92	0.01	210.00	195.33	195.13	0.01	157.34	157.44	157.40	0.01	123.97	126.05	125.88	0.02	120.00	103.81	103.28	0.03	70.87	72.98	72.42	0.04	37.22	40.35	39.72
2011	6	7	10	30	0	07/06/2011 10:30	0.05	52.51	55.09	51.22	0.00	217.39	222.53	222.32	0.00	183.09	191.35	190.98	0.01	170.78	165.16	164.89	0.02	132.16	137.71	137.47	0.01	93.17	101.00	100.61	0.02	63.25	69.59	69.29	0.04	55.35	44.13	43.29
2011	6	7	12	0	0	07/06/2011 12:00	0.06	31.51	54.40	48.99	0.00	217.39	217.68	217.65	0.01	193.73	196.94	196.85	0.01	165.14	164.19	164.06	0.01	135.75	135.41	135.26	0.02	117.19	109.09	108.69	0.03	67.98	69.17	68.85	0.04	31.48	39.29	38.60
2011	6	7	13	30	0	07/06/2011 13:30	0.07	31.03	47.99	44.04	0.01	250.00	240.19	240.05	0.01	193.73	194.97	194.86	0.01	176.82	163.98	163.59	0.02	132.16	136.23	136.02	0.02	90.63	100.76	100.48	0.03	64.89	68.87	68.41	0.05	32.50	38.11	37.36
2011	6	7	15	0	0	07/06/2011 15:00	0.07	33.85	50.15	46.65	0.01	238.10	237.87	237.71	0.01	205.68	201.52	201.45	0.01	170.78	165.29	165.15	0.01	120.97	127.44	127.20	0.02	120.00	107.67	106.86	0.03	90.00	68.87	68.48	0.06	33.82	41.86	40.88
2011	6	7	16	30	0	07/06/2011 16:30	0.06	57.69	61.20	53.73	0.01	212.77	228.79	228.36	0.02	205.68	201.50	201.41	0.01	165.14	165.68	165.58	0.01	120.97	132.65	132.37	0.02	120.00	108.62	108.20	0.02	89.20	78.16	77.45	0.05	57.58	42.32	41.32
2011	6	7	18	0	0	07/06/2011 18:00	0.06	372.36	62.91	54.08	0.01	217.39	220.28	220.11	0.02	210.00	194.65	194.49	0.01	170.78	170.39	170.32	0.01	123.97	132.06	131.83	0.01	94.94	99.68	99.45	0.02	64.06	68.84	68.51	0.04	47.24	40.51	39.82
2011	6	7	19	30	0	07/06/2011 19:30	0.06	54.61	56.30	50.63	0.00	212.77	218.09	217.82	0.01	205.68	197.80	197.61	0.02	176.82	168.00	167.78	0.02	141.51	133.98	133.78	0.01	114.50	111.66	111.24	0.02	62.07	68.41	68.01	0.05	54.45	41.46	40.62
2011	6	7	21	0	0	07/06/2011 21:00	0.06	186.18	66.84	57.00	0.01	227.27	224.12	224.02	0.02	186.50	189.93	189.85	0.01	180.00	164.86	164.69	0.02	132.16	137.72	137.53	0.01	120.00	103.90	103.46	0.02	85.39	76.54	76.02	0.04	58.59	42.30	41.19
2011	6	7	22	30	0	07/06/2011 22:30	0.06	186.18	54.15	48.51	0.00	212.77	222.23	221.76	0.02	186.50	191.60	191.46	0.01	180.00	166.12	165.77	0.02	132.16	134.05	133.91	0.02	93.17	99.18	98.75	0.02	76.86	71.11	70.68	0.05	44.91	39.74	39.08
2011	6	8	0	0	0	08/06/2011 00:00	0.05	186.18	61.19	54.92	0.01	227.27	233.93	233.76	0.01	186.50	187.46	187.43	0.01	170.78	164.68	164.52	0.01	120.97	130.88	130.47	0.02	108.30	105.61	105.36	0.02	72.93	70.96	70.69	0.04	42.25	43.45	42.63
2011	6	8	1	30	0	08/06/2011 01:30	0.05	55.35	52.17	47.28	0.01	238.10	233.25	233.09	0.01	186.50	189.71	189.64	0.01	180.00	167.32	167.14	0.01	123.97	133.76	133.49	0.01	117.19	108.79	108.38	0.02	86.87	75.35	74.92	0.04	55.35	41.48	40.28
2011	6	8	3	0	0	08/06/2011 03:00	0.05	32.25	54.34	49.05	0.00	217.39	217.68	217.65	0.01	193.73	192.62	192.56	0.01	165.14	162.99	162.81	0.01	141.51	139.94	139.80	0.01	113.21	104.05	103.55	0.02	81.89	72.29	71.80	0.04	32.29	39.63	38.92
2011	6	8	4	30	0	08/06/2011 04:30	0.04	36.25	56.97	50.57	0.01	243.90	236.54	236.31	0.00	193.73	194.37	194.24	0.01	157.34	158.07	157.99	0.01	132.16	135.48	135.27	0.01	120.00	105.05	104.52	0.02	81.89	74.02	73.65	0.03	36.28	40.52	39.71
2011	6	8	6	0	0	08/06/2011 06:00	0.04	49.95	59.36	52.31	0.01	250.00	234.93	234.70	0.01	205.68	202.28	202.18	0.01	176.82	164.81	164.55	0.01	120.97	134.19	133.71	0.01	94.94	101.87	101.56	0.01	83.26	71.20	70.68	0.03	49.83	41.22	40.57
2011	6	8	7	30	0	08/06/2011 07:30	0.04	64.00	63.75	54.52	0.01	227.27	225.44	225.35	0.01	186.50	192.58	192.47	0.01	170.78	163.73	163.48	0.01	150.00	137.81	137.54	0.01	90.63	97.14	96.90	0.02	64.06	67.78	67.54	0.03	38.36	41.20	40.24
2011	6	8	9	0	0	08/06/2011 09:00	0.04	57.69	59.53	53.21	0.01	227.27	227.55	227.49	0.01	193.73	194.78	194.74	0.00	150.25	162.54	162.18	0.01	123.97	133.86	133.55	0.01	96.77	100.01	99.76	0.01	72.93	74.23	73.92	0.03	57.58	43.01	42.08
2011	6	8	10	30	0	08/06/2011 10:30	0.04	163.84	81.48	67.29	0.01	238.10	237.97	237.84	0.02	193.73	192.48	192.40	0.02	165.14	166.42	166.34	0.01	141.51	135.58	135.41	0.01	117.19	113.75	113.60	0.02	78.67	73.17	72.73	0.02	31.98	42.17	41.19
2011	6	8	12	0	0	08/06/2011 12:00	0.05	315.

							Total Long Wave Spectrum (>30 seconds)				Band 1 (210 -250 seconds)				Band 2 (180 -210 seconds)				Band 3 (150 -180 seconds)				Band 4 (120 -150 seconds)				Band 5 (90 -120 seconds)				Band 6 (60 -90 seconds)				Band 7 (30 -60 seconds)			
yyyy	mm	dd	HH	MM	SS	Date+Time	Hm0 (m)	Tp (Sec)	Tm01 (sec)	Tm02 (sec)

2011	6	18	0	0	0	18/06/2011 00:00	0.06	163.84	57.90	52.34	0.01	227.27	232.87	232.73	0.01	193.73	191.98	191.92	0.02	165.14	161.30	161.16	0.01	150.00	138.97	138.77	0.01	117.19	104.61	104.16	0.02	64.06	72.57	72.13	0.04	56.93	43.67	42.86
2011	6	18	1	30	0	18/06/2011 01:30	0.05	47.08	49.47	46.30	0.01	227.27	224.45	224.32	0.00	210.00	199.80	199.67	0.01	152.54	154.45	154.39	0.01	150.00	135.71	135.12	0.01	94.94	100.34	100.02	0.02	60.20	71.73	71.24	0.04	47.02	41.79	40.91
2011	6	18	3	0	0	18/06/2011 03:00	0.05	58.51	52.21	48.36	0.00	250.00	234.70	234.43	0.00	186.50	188.00	187.95	0.01	170.78	168.14	167.99	0.01	132.16	135.37	135.20	0.02	104.90	100.14	99.97	0.02	62.07	69.44	69.06	0.04	58.25	41.72	40.81
2011	6	18	4	30	0	18/06/2011 04:30	0.05	56.89	57.25	50.46	0.00	212.77	215.46	215.43	0.01	205.68	199.98	199.89	0.01	150.25	165.82	165.46	0.01	145.63	141.26	140.98	0.02	104.90	102.18	101.86	0.02	67.06	69.59	69.38	0.03	56.93	39.28	38.59
2011	6	18	6	0	0	18/06/2011 06:00	0.05	34.13	56.18	50.64	0.01	238.10	235.99	235.79	0.01	193.73	194.24	194.16	0.01	157.34	159.38	159.24	0.01	145.63	137.25	136.83	0.01	93.17	99.41	99.05	0.02	80.57	71.53	71.05	0.04	34.17	40.90	40.06
2011	6	18	7	30	0	18/06/2011 07:30	0.06	93.09	54.32	49.39	0.01	243.90	238.59	238.48	0.01	193.73	194.50	194.45	0.01	176.82	167.20	166.89	0.01	123.97	129.89	129.62	0.02	93.17	95.79	95.66	0.03	86.87	77.41	76.86	0.04	45.11	40.20	39.56
2011	6	18	9	0	0	18/06/2011 09:00	0.06	136.53	53.32	48.24	0.00	212.77	218.64	218.49	0.01	205.68	203.13	203.08	0.01	152.54	158.12	157.99	0.02	135.75	133.94	133.80	0.02	117.19	103.51	103.01	0.03	79.93	75.42	75.01	0.05	30.61	39.31	38.56
2011	6	18	10	30	0	18/06/2011 10:30	0.06	56.89	54.77	50.09	0.01	212.77	229.10	228.72	0.01	205.68	197.74	197.52	0.02	157.34	161.58	161.43	0.01	127.12	133.38	133.06	0.01	93.17	100.26	99.86	0.03	61.31	70.69	70.09	0.05	56.93	42.50	41.63
2011	6	18	12	0	0	18/06/2011 12:00	0.06	77.28	54.51	49.70	0.01	227.27	228.62	228.42	0.00	210.00	203.52	203.29	0.01	162.45	161.95	161.85	0.01	141.51	140.05	139.91	0.01	91.46	98.38	98.13	0.03	77.45	74.15	73.73	0.04	33.82	40.81	39.94
2011	6	18	13	30	0	18/06/2011 13:30	0.06	95.26	58.15	51.59	0.01	217.39	221.60	221.51	0.01	183.09	193.09	192.88	0.01	157.34	161.28	161.06	0.02	132.16	134.06	133.84	0.02	94.94	97.24	97.10	0.03	69.39	70.11	69.71	0.04	34.76	39.66	38.86
2011	6	18	15	0	0	18/06/2011 15:00	0.06	56.89	60.75	54.82	0.01	243.90	233.93	233.66	0.01	186.50	192.84	192.66	0.02	159.86	162.72	162.61	0.01	137.61	138.84	138.77	0.02	94.94	102.93	102.68	0.03	86.87	77.32	76.81	0.05	56.93	45.01	43.98
2011	6	18	16	30	0	18/06/2011 16:30	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
2011	6	18	18	0	0	18/06/2011 18:00	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
2011	6	18	19	30	0	18/06/2011 19:30	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
2011	6	18	21	0	0	18/06/2011 21:00	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
2011	6	18	22	30	0	18/06/2011 22:30	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
2011	6	19	0	0	0	19/06/2011 00:00	0.06	45.01	52.47	47.58	0.01	212.77	229.87	229.57	0.01	193.73	196.92	196.80	0.01	170.78	172.13	172.09	0.02	132.16	131.86	131.80	0.01	93.17	99.72	99.37	0.02	81.89	71.74	71.31	0.05	44.91	40.02	39.19
2011	6	19	1	30	0	19/06/2011 01:30	0.05	93.09	58.59	52.69	0.00	227.27	228.23	228.07	0.01	193.73	195.87	195.76	0.01	157.34	163.36	163.18	0.01	132.16	133.51	133.39	0.01	93.17	93.93	93.89	0.03	71.89	73.41	72.97	0.03	55.35	40.70	39.95
2011	6	19	3	0	0	19/06/2011 03:00	0.05	36.90	59.73	52.95	0.01	227.27	228.89	228.69	0.01	186.50	191.40	191.28	0.01	152.54	159.45	159.25	0.02	128.76	134.64	134.42	0.01	102.74	100.81	100.50	0.02	85.39	72.40	71.75	0.04	36.95	41.61	40.79
2011	6	19	4	30	0	19/06/2011 04:30	0.06	37.24	57.39	51.40	0.01	243.90	236.04	235.75	0.01	183.09	193.38	193.15	0.02	165.14	162.32	162.10	0.01	150.00	138.55	138.30	0.01	94.94	97.28	97.12	0.02	78.67	75.93	75.47	0.04	37.22	40.58	39.96
2011	6	19	6	0	0	19/06/2011 06:00	0.06	186.18	54.50	49.16	0.00	217.39	225.17	224.89	0.01	186.50	187.44	187.41	0.01	152.54	160.63	160.24	0.01	150.00	138.41	138.14	0.02	97.72	98.44	98.18	0.02	90.00	70.79	70.19	0.04	47.02	40.22	39.46
2011	6	19	7	30	0	19/06/2011 07:30	0.06	74.47	51.92	47.57	0.00	250.00	240.90	240.61	0.00	205.68	203.78	203.75	0.01	157.34	159.77	159.71	0.01	135.75	134.77	134.57	0.02	91.46	98.39	97.92	0.03	74.57	72.69	72.36	0.05	30.80	39.89	38.97
2011	6	19	9	0	0	19/06/2011 09:00	0.07	85.33	58.32	53.73	0.00	212.77	230.63	230.04	0.01	186.50	194.73	194.56	0.01	157.34	163.21	162.98	0.01	120.97	128.12	127.86	0.02	117.19	104.73	104.15	0.03	85.39	74.49	73.88	0.05	52.45	43.44	42.62
2011	6	19	10	30	0	19/06/2011 10:30	0.07	54.61	56.50	50.86	0.01	243.90	239.11	239.01	0.01	183.09	195.33	195.07	0.01	176.82	163.56	163.23	0.02	132.16	134.47	134.23	0.02	120.00	105.48	105.02	0.02	67.06	69.67	69.29	0.05	54.75	42.74	41.82
2011	6	19	12	0	0	19/06/2011 12:00	0.07	53.90	50.51	47.45	0.01	238.10	239.77	239.69	0.01	201.54	199.17	199.08	0.01	157.34	158.03	157.93	0.01	141.51	138.47	138.27	0.01	117.19	104.89	104.48	0.03	67.06	69.88	69.43	0.06	53.86	43.66	42.65
2011	6	19	13	30	0	19/06/2011 13:30	0.07	49.95	52.06	47.29	0.01	227.27	227.79	227.61	0.01	193.73	195.51	195.41	0.02	170.78	165.40	165.19	0.02	145.63	138.86	138.54	0.02	113.21	106.16	105.69	0.03	71.89	74.36	74.02	0.05	43.54	39.34	38.65
2011	6	19	15	0	0	19/06/2011 15:00	0.07	33.30	53.96	48.57	0.01	238.10	234.80	234.62	0.01	205.68	196.61	196.41	0.02	152.54	158.42	158.27	0.01	150.00	143.63	143.33	0.02	108.30	101.11	100.80	0.03	81.89	75.32	74.84	0.05	33.26	40.01	39.19

							Total Long Wave Spectrum (>30 seconds)				Band 1 (210 -250 seconds)				Band 2 (180 -210 seconds)				Band 3 (150 -180 seconds)				Band 4 (120 -150 seconds)				Band 5 (90 -120 seconds)				Band 6 (60 -90 seconds)				Band 7 (30 -60 seconds)			
yyyy	mm	dd	HH	MM	SS	Date+Time	Hm0 (m)	Tp (Sec)	Tm01 (sec)	Tm02 (sec)

2012	3	11	6	0	0	11/03/2012 06:00	0.06	32.51	54.21	48.46	0.01	238.10	234.49	234.34	0.01	186.50	187.43	187.41	0.01	152.54	155.45	155.38	0.01	120.97	132.93	132.53	0.01	120.00	111.84	111.56	0.03	71.89	71.89	71.47	0.04	32.50	38.56	37.58
2012	3	11	7	30	0	11/03/2012 07:30	0.06	89.04	58.90	52.66	0.00	243.90	240.35	240.27	0.00	205.68	203.78	203.75	0.02	157.34	160.16	160.03	0.01	137.61	136.73	136.57	0.01	117.19	105.57	105.20	0.03	89.20	75.22	74.76	0.04	31.78	39.96	39.16
2012	3	11	9	0	0	11/03/2012 09:00	0.06	40.16	50.17	45.94	0.01	227.27	227.54	227.48	0.00	183.09	191.44	191.31	0.01	152.54	163.49	163.24	0.01	128.76	133.57	133.31	0.01	117.19	105.37	104.79	0.02	77.45	72.72	72.48	0.05	37.93	39.29	38.64
2012	3	11	10	30	0	11/03/2012 10:30	0.06	31.27	51.52	47.54	0.01	243.90	231.85	231.56	0.01	186.50	188.12	188.06	0.01	162.45	161.74	161.63	0.01	141.51	136.41	136.10	0.02	93.17	101.15	100.68	0.03	69.39	72.43	72.06	0.05	31.28	40.51	39.64
2012	3	11	12	0	0	11/03/2012 12:00	0.06	68.27	52.25	48.18	0.01	227.27	227.31	227.15	0.01	205.68	203.81	203.78	0.01	162.45	159.44	159.36	0.01	145.63	141.23	141.12	0.02	97.72	98.86	98.67	0.02	68.44	74.43	74.09	0.05	53.86	41.14	40.48
2012	3	11	13	30	0	11/03/2012 13:30	0.05	51.85	56.37	52.15	0.01	243.90	239.40	239.22	0.01	201.54	199.58	199.50	0.01	152.54	157.57	157.44	0.01	127.12	129.82	129.63	0.01	93.17	102.04	101.66	0.03	64.06	70.65	70.21	0.04	51.90	44.19	43.12
2012	3	11	15	0	0	11/03/2012 15:00	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
2012	3	11	16	30	0	11/03/2012 16:30	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
2012	3	11	18	0	0	11/03/2012 18:00	0.05	54.61	56.05	50.93	0.01	238.10	234.50	234.36	0.00	186.50	187.43	187.41	0.01	152.54	152.95	152.94	0.01	150.00	138.54	138.19	0.01	117.19	111.26	110.87	0.02	62.85	66.29	66.13	0.04	54.75	42.13	41.06
2012	3	11	19	30	0	11/03/2012 19:30	0.06	58.51	60.21	54.81	0.01	212.77	220.98	220.80	0.01	183.09	195.67	195.47	0.02	165.14	166.73	166.61	0.01	120.97	128.36	128.16	0.02	102.74	100.77	100.47	0.03	71.89	67.89	67.61	0.04	58.59	43.63	42.73
2012	3	11	21	0	0	11/03/2012 21:00	0.05	59.36	54.02	49.42	0.01	212.77	227.94	227.72	0.01	205.68	202.18	202.11	0.01	157.34	156.93	156.90	0.01	123.97	132.48	132.22	0.02	110.70	103.88	103.66	0.02	69.39	69.99	69.66	0.04	59.29	42.75	41.61
2012	3	11	22	30	0	11/03/2012 22:30	0.05	78.77	56.12	50.61	0.00	238.10	239.88	239.81	0.00	183.09	192.66	192.52	0.01	157.34	163.95	163.73	0.00	123.97	127.23	127.10	0.01	97.72	100.55	100.25	0.03	78.67	75.38	74.95	0.04	56.93	40.87	40.02
2012	3	12	0	0	0	12/03/2012 00:00	0.05	56.11	52.50	48.62	0.01	227.27	228.02	227.89	0.00	186.50	187.91	187.87	0.00	150.25	157.98	157.79	0.01	145.63	138.00	137.68	0.01	120.00	113.45	113.21	0.02	74.57	71.47	71.12	0.04	55.97	42.07	41.31
2012	3	12	1	30	0	12/03/2012 01:30	0.04	58.51	53.29	49.07	0.01	217.39	222.91	222.66	0.00	183.09	196.03	195.60	0.01	157.34	162.39	162.14	0.01	145.63	138.01	137.78	0.01	90.63	96.19	95.81	0.02	70.87	72.06	71.70	0.03	58.59	42.46	41.47
2012	3	12	3	0	0	12/03/2012 03:00	0.05	62.06	49.78	46.23	0.00	212.77	215.42	215.39	0.01	193.73	196.21	196.15	0.01	170.78	167.41	167.35	0.01	123.97	124.21	124.20	0.01	91.46	97.60	97.25	0.02	62.07	66.77	66.50	0.03	31.98	39.57	38.81
2012	3	12	4	30	0	12/03/2012 04:30	0.04	35.01	57.34	50.73	0.01	250.00	233.63	233.42	0.00	183.09	183.09	183.09	0.01	170.78	164.72	164.58	0.01	132.16	130.03	129.89	0.02	113.21	103.24	102.92	0.02	61.31	67.76	67.21	0.03	35.01	39.20	38.49
2012	3	12	6	0	0	12/03/2012 06:00	0.04	178.09	52.54	47.47	0.01	217.39	223.28	223.18	0.01	183.09	189.54	189.37	0.01	176.82	176.71	176.69	0.00	120.97	122.79	122.78	0.01	102.74	101.36	101.13	0.02	77.45	72.47	72.08	0.03	30.61	39.40	38.53
2012	3	12	7	30	0	12/03/2012 07:30	0.04	93.09	70.02	60.09	0.01	250.00	235.15	234.86	0.01	205.68	203.63	203.60	0.00	152.54	159.13	158.82	0.01	141.51	142.52	142.48	0.02	93.17	98.35	98.07	0.01	62.85	68.18	67.83	0.02	32.50	41.05	40.01
2012	3	12	9	0	0	12/03/2012 09:00	0.04	36.25	60.48	55.13	0.00	238.10	232.79	232.48	0.00	205.68	204.25	204.22	0.00	170.78	167.40	167.20	0.01	145.63	138.72	138.24	0.01	120.00	102.31	101.98	0.02	72.93	72.87	72.35	0.03	36.28	44.55	43.74
2012	3	12	10	30	0	12/03/2012 10:30	0.04	39.77	56.93	51.35	0.01	227.27	224.11	224.00	0.00	183.09	195.56	195.14	0.01	176.82	171.63	171.37	0.01	132.16	133.57	133.28	0.01	120.00	114.67	114.50	0.02	78.67	74.30	73.66	0.03	39.74	42.36	41.46
2012	3	12	12	0	0	12/03/2012 12:00	0.04	37.93	47.56	43.77	0.00	250.00	247.52	247.50	0.00	#N/A	#N/A	#N/A	0.01	159.86	160.48	160.43	0.01	137.61	133.12	132.92	0.01	117.19	104.48	103.93	0.01	80.57	77.86	77.60	0.03	37.93	37.71	37.26
2012	3	12	13	30	0	12/03/2012 13:30	0.04	70.62	51.12	47.48	0.00	#N/A	#N/A	#N/A	0.01	193.73	195.08	195.04	0.00	170.78	168.35	168.19	0.01	132.16	134.33	134.23	0.01	90.63	95.81	95.56	0.02	70.87	70.36	69.97	0.03	45.94	39.61	38.99
2012	3	12	15	0	0	12/03/2012 15:00	0.04	41.80	57.28	52.02	0.00	227.27	227.55	227.49	0.00	186.50	187.43	187.41	0.01	170.78	164.19	164.00	0.01	132.16	133.77	133.56	0.01	102.74	102.89	102.62	0.02	64.89	69.44	69.10	0.03	41.73	41.56	40.94
2012	3	12	16	30	0	12/03/2012 16:30	0.04	32.51	50.63	46.20	0.00	243.90	241.53	241.46	0.00	193.73	195.08	195.04	0.01	152.54	156.97	156.86	0.01	120.97	135.32	134.97	0.01	93.17	99.82	99.47	0.01	64.06	68.00	67.77	0.03	32.50	40.44	39.56
2012	3	12	18	0	0	12/03/2012 18:00	0.04	141.24	63.19	54.02	0.01	217.39	221.88	221.75	0.01	210.00	196.77	196.59	0.01	176.82	173.01	172.91	0.01	141.51	133.52	133.26	0.01	120.00	106.96	106.75	0.01	71.89	69.79	69.39	0.02	45.94	38.32	37.63
2012	3	12	19	30	0	12/03/2012 19:30	0.03	47.63	54.25	49.12	0.00	#N/A	#N/A	#N/A	0.00	183.09	183.09	183.09	0.01	152.54	162.67	162.42	0.01	141.51	136.16	135.89	0.01	104.90	101.94	101.79	0.01	61.31	67.41	66.86	0.02	47.70	39.46	38.84
2012	3	12	21	0	0	12/03/2012 21:00	0.04	45.01	47.65	44.75	0.00	212.77	233.36	233.00	0.01	205.68	201.67	201.55	0.00	170.78	172.98	172.93	0.00	120.97	121.82	121.82	0.01	120.00	110.94	110.72	0.01	61.31	71.81	71.16	0.03	45.11	40.89	40.19
2012	3	12	22	30	0	12/03/2012 22:30	0.04	292.57	55.08	47.08	0.01	217.39	226.98	226.69	0.01	210.00	199.94	199.84	0.01	157.34	157.53	157.51	0.01	141.51	132.95	132.71	0.01	97.72	99.28	99.10	0.01	66.18	70.92	70.49	0.03	34.76	35.85	35.27
2012	3	13	0	0	0	13/03/2012 00:00	0.03	43.57	56.15	50.27	0.00	238.10	238.58	238.46	0.00	183.09	187.27	187.23	0.00	180.00	176.88	176.87	0.00	135.75	135.79	135.73	0.01	101.69	100.44	100.39	0.02	78.67	78.47	78.24	0.03	43.54	40.06	39.36
2012	3	13	1	30	0	13/03/2012 01:30	0.04	54.61	53.24	49.60	0.00	250.00	244.82	244.60	0.00	183.09	193.05	192.76	0.01	176.82	172.50	172.29	0.01	128.76	127.08	127.02	0.01	93.17	96.77	96.45	0.02	60.20	67.99	67.63	0.03	59.64	42.54	41.49
2012	3	13	3	0	0	13/03/2012 03:00	0.04	48.76	48.08	44.61	0.01	227.27	231.04	230.84	0.01	186.50	193.75	193.56	0.00	170.78	170.01	169.95	0.00	132.16	132.34	132.32	0.01	97.72	98.01	97.83	0.01	72.93	70.63	70.26	0.03	48.86	39.52	38.86
2012	3	13	4	30	0	13/03/2012 04:30	0.04	51.85	58.34	51.72	0.00	250.00	237.43	236.86	0.00	205.68	203.78	203.75	0.01	170.78	168.94	168.88	0.01	128.76	131.61	131.49	0.01	113.21	104.34	104.00	0.02	78.67	74.34	73.83	0.03	51.90	40.95	40.05
2012	3	13	6	0	0	13/03/2012 06:00	0.03	273.07	52.47	47.17	0.00	250.00	242.99	242.66	0.00	193.73	196.65	196.59	0.00	152.54	157.52	157.37	0.01	120.97	132.06	131.76	0.01	120.00	101.51	101.09	0.01	78.67	78.85	78.51	0.03	39.74	38.51	37.90

							Total Long Wave Spectrum (>30 seconds)				Band 1 (210 -250 seconds)				Band 2 (180 -210 seconds)				Band 3 (150 -180 seconds)				Band 4 (120 -150 seconds)				Band 5 (90 -120 seconds)				Band 6 (60 -90 seconds)				Band 7 (30 -60 seconds)			
yyyy	mm	dd	HH	MM	SS	Date+Time	Hm0 (m)	Tp (Sec)	Tm01 (sec)	Tm02 (sec)

2012	6	9	10	30	0	09/06/2012 10:30	0.06	53.90	49.62	45.43	0.01	243.90	239.01	238.91	0.01	186.50	190.19	190.13	0.01	170.78	169.37	169.31	0.01	123.97	130.16	129.95	0.01	90.63	97.48	97.06	0.03	64.06	69.91	69.53	0.05	53.86	38.93	38.13
2012	6	9	12	0	0	09/06/2012 12:00	0.08	87.15	56.12	50.15	0.01	227.27	229.90	229.73	0.00	183.09	191.51	191.25	0.02	165.14	165.21	165.02	0.03	135.75	136.74	136.61	0.02	91.46	98.10	97.69	0.03	86.87	78.00	77.68	0.05	56.29	40.30	39.36
2012	6	9	13	30	0	09/06/2012 13:30	0.08	44.04	49.12	45.67	0.01	250.00	246.55	246.47	0.01	193.73	194.40	194.34	0.01	152.54	159.22	158.92	0.01	132.16	133.07	132.85	0.01	120.00	100.90	100.60	0.02	60.20	69.21	68.58	0.07	45.52	41.61	40.65
2012	6	9	15	0	0	09/06/2012 15:00	0.07	132.13	59.56	53.41	0.01	227.27	227.55	227.49	0.01	193.73	194.83	194.79	0.01	157.34	158.71	158.66	0.02	132.16	129.94	129.90	0.02	117.19	103.51	102.92	0.03	61.31	71.81	71.12	0.05	32.50	41.65	40.85
2012	6	9	16	30	0	09/06/2012 16:30	0.07	178.09	60.63	52.13	0.01	217.39	225.94	225.66	0.02	193.73	194.10	194.00	0.02	176.82	170.26	170.05	0.01	132.16	132.66	132.56	0.02	93.17	102.48	102.13	0.02	75.69	73.15	72.79	0.05	31.09	39.20	38.45
2012	6	9	18	0	0	09/06/2012 18:00	0.06	75.85	65.71	57.64	0.01	227.27	228.58	228.39	0.02	186.50	194.85	194.66	0.02	157.34	160.68	160.56	0.02	135.75	132.43	132.28	0.01	97.72	97.29	97.22	0.03	75.69	76.01	75.72	0.04	57.58	41.92	40.87
2012	6	9	19	30	0	09/06/2012 19:30	0.07	58.51	53.37	49.30	0.01	227.27	227.39	227.32	0.01	186.50	194.21	194.04	0.01	165.14	164.64	164.50	0.01	128.76	129.77	129.66	0.01	108.30	103.77	103.38	0.03	62.07	69.86	69.41	0.05	58.59	43.26	42.18
2012	6	9	21	0	0	09/06/2012 21:00	0.08	52.51	57.74	51.31	0.01	212.77	222.11	221.81	0.01	205.68	203.40	203.34	0.02	152.54	158.40	158.23	0.02	150.00	133.82	133.44	0.02	99.67	101.46	101.16	0.03	77.45	72.31	71.68	0.06	52.45	40.97	40.16
2012	6	9	22	30	0	09/06/2012 22:30	0.07	124.12	60.97	54.87	0.01	238.10	237.36	237.19	0.00	183.09	188.56	188.38	0.02	152.54	161.17	160.84	0.02	123.97	130.38	130.09	0.01	110.70	104.95	104.55	0.04	60.20	71.11	70.69	0.05	60.00	44.30	42.89
2012	6	10	0	0	0	10/06/2012 00:00	0.08	120.47	56.32	50.42	0.01	243.90	236.75	236.55	0.02	193.73	193.61	193.54	0.02	157.34	157.32	157.24	0.02	120.97	131.22	130.79	0.02	120.00	108.19	107.68	0.03	78.67	75.63	75.34	0.06	59.29	41.10	40.23
2012	6	10	1	30	0	10/06/2012 01:30	0.07	35.01	52.85	47.53	0.01	212.77	224.34	224.19	0.01	205.68	199.38	199.21	0.00	150.25	155.69	155.31	0.03	141.51	134.45	134.20	0.02	120.00	108.80	108.26	0.03	72.93	74.01	73.61	0.06	35.01	38.53	37.81

							Total Long Wave Spectrum (>30 seconds)				Band 1 (210 -250 seconds)				Band 2 (180 -210 seconds)				Band 3 (150 -180 seconds)				Band 4 (120 -150 seconds)				Band 5 (90 -120 seconds)				Band 6 (60 -90 seconds)				Band 7 (30 -60 seconds)			
yyyy	mm	dd	HH	MM	SS	Date+Time	Hm0 (m)	Tp (Sec)	Tm01 (sec)	Tm02 (sec)

2012	8	4	10	30	0	04/08/2012 10:30	0.06	58.51	57.09	51.91	0.01	217.39	229.97	229.66	0.01	210.00	200.93	200.79	0.01	157.34	156.74	156.70	0.02	145.63	138.92	138.72	0.02	117.19	106.62	105.98	0.03	77.45	71.75	71.22	0.05	58.59	43.29	42.32
2012	8	4	12	0	0	04/08/2012 12:00	0.07	54.61	55.09	50.70	0.01	217.39	221.74	221.55	0.01	210.00	200.33	200.03	0.01	176.82	163.81	163.44	0.02	141.51	137.43	137.17	0.01	93.17	97.92	97.60	0.03	89.20	71.84	71.22	0.05	54.75	43.49	42.45
2012	8	4	13	30	0	04/08/2012 13:30	0.06	35.01	52.54	48.76	0.00	250.00	235.04	234.79	0.00	193.73	197.18	197.11	0.01	157.34	157.54	157.52	0.01	123.97	128.84	128.70	0.01	113.21	105.52	105.08	0.03	85.39	70.70	70.04	0.05	35.01	42.18	41.41
2012	8	4	15	0	0	04/08/2012 15:00	0.06	46.55	56.26	51.46	0.01	243.90	240.12	240.06	0.01	193.73	195.11	195.06	0.01	176.82	168.85	168.71	0.02	132.16	133.95	133.82	0.00	120.00	101.84	101.22	0.02	78.67	74.75	74.32	0.04	46.58	43.44	42.58
2012	8	4	16	30	0	04/08/2012 16:30	0.04	58.51	62.51	54.47	0.01	250.00	233.97	233.78	0.01	197.55	197.67	197.60	0.01	152.54	156.30	156.22	0.01	141.51	137.43	137.26	0.01	97.72	102.54	102.28	0.01	77.45	72.17	71.96	0.03	58.59	42.73	41.98
2012	8	4	18	0	0	04/08/2012 18:00	0.05	195.05	62.97	55.89	0.01	227.27	232.32	232.12	0.01	193.73	195.72	195.67	0.01	152.54	160.08	159.85	0.01	132.16	133.79	133.61	0.02	107.14	103.80	103.57	0.02	60.20	69.82	69.22	0.03	60.00	41.79	40.90
2012	8	4	19	30	0	04/08/2012 19:30	0.05	42.67	49.57	46.29	0.01	212.77	221.58	221.38	0.01	210.00	204.65	204.61	0.01	165.14	163.82	163.80	0.00	120.97	122.60	122.54	0.01	120.00	104.87	104.42	0.02	60.20	66.84	66.43	0.04	42.61	41.59	40.86
2012	8	4	21	0	0	04/08/2012 21:00	0.05	31.03	54.12	48.03	0.01	217.39	222.12	221.87	0.01	210.00	196.09	195.80	0.01	150.25	160.85	160.65	0.01	145.63	140.37	140.08	0.02	93.17	102.78	102.35	0.02	69.39	71.69	71.34	0.03	30.99	37.36	36.77
2012	8	4	22	30	0	04/08/2012 22:30	0.05	32.51	55.28	50.21	0.00	212.77	212.77	212.77	0.00	183.09	192.85	192.71	0.01	176.82	174.52	174.48	0.01	123.97	127.09	127.02	0.02	94.94	101.82	101.43	0.02	86.87	71.84	71.22	0.04	32.50	40.96	40.21

							Total Long Wave Spectrum (>30 seconds)				Band 1 (210 -250 seconds)				Band 2 (180 -210 seconds)				Band 3 (150 -180 seconds)				Band 4 (120 -150 seconds)				Band 5 (90 -120 seconds)				Band 6 (60 -90 seconds)				Band 7 (30 -60 seconds)			
yyyy	mm	dd	HH	MM	SS	Date+Time	Hm0 (m)	Tp (Sec)	Tm01 (sec)	Tm02 (sec)	Hm0 (m)	Tp (Sec)	Tm01 (sec)	Tm02 (sec)	Hm0 (m)	Tp (Sec)	Tm01 (sec)	Tm02 (sec)	Hm0 (m)	Tp (Sec)	Tm01 (sec)	Tm02 (sec)	Hm0 (m)	Tp (Sec)	Tm01 (sec)	Tm02 (sec)	Hm0 (m)	Tp (Sec)	Tm01 (sec)	Tm02 (sec)	Hm0 (m)	Tp (Sec)	Tm01 (sec)	Tm02 (sec)	Hm0 (m)	Tp (Sec)	Tm01 (sec)	Tm02 (sec)
2013	2	22	16	30	0	22/02/2013 16:30	0.11	78.77	54.00	49.80	0.01	227.27	227.16	226.95	0.01	183.09	195.20	194.98	0.02	170.78	167.11	166.89	0.03	132.16	132.74	132.52	0.02	97.72	98.12	97.95	0.06	78.67	72.01	71.68	0.08	36.28	40.36	39.64
2013	2	22	18	0	0	22/02/2013 18:00	0.14	54.61	52.85	49.05	0.01	227.27	227.95	227.86	0.01	186.50	192.96	192.78	0.02	152.54	159.23	159.12	0.03	132.16	134.92	134.76	0.03	117.19	105.03	104.62	0.06	67.06	70.45	70.19	0.11	54.75	43.31	42.07
2013	2	22	19	30	0	22/02/2013 19:30	0.16	64.00	57.59	52.58	0.02	243.90	239.92	239.85	0.01	186.50	188.09	188.03	0.03	157.34	163.05	162.89	0.03	120.97	129.50	129.31	0.06	90.63	102.12	101.64	0.09	64.06	69.94	69.35	0.11	60.00	40.93	40.03
2013	2	22	21	0	0	22/02/2013 21:00	0.16	61.13	54.25	50.26	0.02	243.90	235.13	234.96	0.02	193.73	194.96	194.88	0.02	157.34	161.52	161.26	0.03	123.97	132.89	132.51	0.04	104.90	100.27	100.08	0.08	60.93	69.81	69.39	0.12	53.29	42.21	41.36
2013	2	22	22	30	0	22/02/2013 22:30	0.18	77.28	55.64	50.38	0.03	227.27	226.43	226.30	0.01	186.50	192.41	192.24	0.04	157.34	161.39	161.20	0.03	150.00	133.52	133.23	0.06	93.17	98.72	98.56	0.09	77.45	73.10	72.62	0.12	36.01	39.87	39.03
2013	2	23	0	0	0	23/02/2013 00:00	0.17	186.18	58.31	52.64	0.01	212.77	225.13	224.86	0.04	186.50	189.63	189.54	0.04	157.34	163.45	163.24	0.04	123.97	132.61	132.38	0.05	99.67	100.73	100.47	0.08	78.67	71.68	71.25	0.12	58.25	41.40	40.53
2013	2	23	1	30	0	23/02/2013 01:30	0.17	35.93	56.28	51.49	0.02	217.39	220.01	219.92	0.03	193.73	193.71	193.59	0.03	176.82	167.13	166.84	0.03	128.76	129.15	129.07	0.04	113.21	105.91	105.61	0.10	79.93	71.40	71.00	0.12	35.89	41.38	40.54
2013	2	23	3	0	0	23/02/2013 03:00	0.20	77.28	57.51	52.70	0.02	227.27	226.55	226.42	0.02	193.73	193.27	193.18	0.04	157.34	162.13	161.98	0.04	132.16	136.20	135.98	0.06	93.17	96.42	96.28	0.10	77.45	72.34	71.99	0.15	56.93	43.37	42.20
2013	2	23	4	30	0	23/02/2013 04:30	0.22	151.70	56.09	51.86	0.01	217.39	217.74	217.70	0.01	210.00	200.28	200.12	0.06	152.54	160.73	160.50	0.05	150.00	135.61	135.29	0.05	94.94	98.46	98.22	0.11	64.89	69.83	69.57	0.16	51.11	42.15	41.49
2013	2	23	6	0	0	23/02/2013 06:00	0.24	75.85	53.15	49.15	0.03	217.39	228.09	227.86	0.03	186.50	191.76	191.63	0.03	170.78	171.18	171.04	0.06	127.12	128.86	128.76	0.06	110.70	106.24	105.86	0.11	75.69	71.99	71.68	0.19	44.51	41.86	41.00
2013	2	23	7	30	0	23/02/2013 07:30	0.27	70.62	53.03	48.92	0.02	227.27	226.88	226.68	0.03	186.50	192.19	192.02	0.03	150.25	162.13	161.89	0.05	132.16	135.87	135.67	0.07	90.63	101.54	101.23	0.14	70.37	74.06	73.55	0.20	58.59	40.99	40.11
2013	2	23	9	0	0	23/02/2013 09:00	0.25	56.11	53.60	49.36	0.02	217.39	227.17	226.83	0.04	183.09	193.31	193.18	0.05	176.82	168.00	167.72	0.04	128.76	132.37	132.21	0.06	90.63	99.39	99.10	0.12	60.20	71.98	71.49	0.20	56.29	42.19	41.17
2013	2	23	10	30	0	23/02/2013 10:30	0.23	170.67	54.03	49.66	0.02	250.00	229.89	229.63	0.02	183.09	192.15	192.02	0.06	170.78	168.84	168.68	0.05	127.12	130.69	130.47	0.06	93.17	97.64	97.47	0.10	60.20	71.88	71.35	0.18	55.35	41.59	40.88
2013	2	23	12	0	0	23/02/2013 12:00	0.26	33.57	52.59	47.95	0.03	227.27	229.52	229.37	0.06	186.50	190.77	190.65	0.04	180.00	168.13	167.83	0.06	123.97	130.30	130.00	0.07	93.17	103.49	103.13	0.10	66.18	70.76	70.36	0.21	33.60	40.52	39.69
2013	2	23	13	30	0	23/02/2013 13:30	0.24	170.67	53.16	48.26	0.03	217.39	223.11	222.96	0.04	183.09	191.32	191.19	0.07	170.78	168.72	168.57	0.06	128.76	132.35	132.17	0.05	102.74	101.81	101.53	0.11	77.45	70.58	70.27	0.19	36.01	40.15	39.26
2013	2	23	15	0	0	23/02/2013 15:00	0.27	95.26	54.51	49.17	0.03	217.39	225.65	225.42	0.04	183.09	192.06	191.91	0.05	180.00	164.88	164.62	0.07	128.76	131.72	131.58	0.07	94.94	96.43	96.28	0.12	89.20	73.59	73.17	0.20	43.17	40.08	39.25
2013	2	23	16	30	0	23/02/2013 16:30	0.27	48.76	53.66	49.51	0.01	238.10	234.42	234.17	0.03	183.09	190.41	190.31	0.06	176.82	167.15	166.90	0.05	132.16	135.30	135.09	0.08	91.46	97.58	97.40	0.13	64.06	69.05	68.67	0.20	56.29	41.58	40.60
2013	2	23	18	0	0	23/02/2013 18:00	0.25	50.57	47.70	45.03	0.02	227.27	227.76	227.67	0.03	186.50	192.90	192.75	0.02	150.25	163.26	162.87	0.04	145.63	133.79	133.45	0.05	97.72	99.43	99.24	0.09	60.20	70.06	69.55	0.22	50.59	42.10	41.07
2013	2	23	19	30	0	23/02/2013 19:30	0.22	57.69	52.47	48.55	0.02	227.27	230.35	230.17	0.03	186.50	191.77	191.69	0.03	152.54	160.46	160.22	0.05	123.97	129.22	128.97	0.06	120.00	104.04	103.70	0.10	75.69	74.43	74.02	0.18	57.58	41.71	40.76
2013	2	23	21	0	0	23/02/2013 21:00	0.26	56.89	52.38	49.08	0.01	227.27	230.37	230.15	0.03	186.50	189.47	189.39	0.05	170.78	164.14	163.91	0.04	128.76	133.32	133.07	0.05	93.17	99.06	98.79	0.10	62.85	71.55	71.09	0.22	56.93	45.17	43.89
2013	2	23	22	30	0	23/02/2013 22:30	0.24	33.03	46.59	43.52	0.02	217.39	220.92	220.79	0.02	183.09	193.98	193.80	0.03	176.82	169.86	169.63	0.03	127.12	126.83	126.78	0.06	94.94	98.43	98.12	0.09	62.07	70.87	70.40	0.20	33.04	38.91	38.10
2013	2	24	0	0	0	24/02/2013 00:00	0.22	53.20	51.37	47.47	0.02	227.27	226.12	225.99	0.02	183.09	196.61	196.43	0.05	170.78	166.27	166.00	0.04	150.00	135.87	135.56	0.05	90.63	100.45	100.00	0.08	90.00	72.83	72.28	0.18	38.66	41.15	40.38
2013	2	24	1	30	0	24/02/2013 01:30	0.23	31.51	49.79	46.10	0.01	212.77	224.64	224.38	0.03	186.50	190.84	190.72	0.04	170.78	167.37	167.16	0.03	150.00	134.97	134.71	0.05	113.21	106.67	106.35	0.11	74.57	70.73	70.43	0.19	31.48	40.17	39.17
2013	2	24	3	0	0	24/02/2013 03:00	0.26	57.69	47.28	44.29	0.02	243.90	239.67	239.57	0.03	186.50	193.32	193.19	0.04	165.14	164.30	164.08	0.05	145.63	135.18	134.91	0.06	91.46	101.13	100.77	0.08	61.31	72.42	71.84	0.22	57.58	40.41	39.62
2013	2	24	4	30	0	24/02/2013 04:30	0.21	56.89	50.78	46.97	0.02	238.10	239.68	239.59	0.03	193.73	195.06	194.98	0.03	176.82	171.22	171.00	0.03	137.61	134.18	133.94	0.05	102.74	101.04	100.75	0.09	85.39	72.43	72.02	0.16	56.93	40.35	39.54
2013	2	24	6	0	0	24/02/2013 06:00	0.18	44.04	53.00	48.82	0.01	217.39	220.64	220.49	0.03	186.50	190.53	190.44	0.04	157.34	162.27	162.05	0.04	128.76	132.85	132.59	0.05	102.74	100.37	100.15	0.07	85.39	73.86	73.35	0.14	44.12	41.83	41.07
2013	2	24	7	30	0	24/02/2013 07:30	0.19	33.85	48.05	45.31	0.01	250.00	232.08	231.81	0.01	186.50	193.27	193.08	0.02	165.14	163.17	163.09	0.02	141.51	141.10	141.00	0.06	93.17	97.79	97.50	0.08	62.07	70.76	70.36	0.16	33.82	40.62	39.77
2013	2	24	9	0	0	24/02/2013 09:00	0.15	31.75	50.70	46.45	0.01	238.10	236.89	236.72	0.03	193.73	193.05	192.96	0.03	170.78	169.19	169.02	0.03	145.63	136.10	135.77	0.04	99.67	97.69	97.57	0.07	69.39	71.74	71.30	0.12	31.78	38.72	38.05
2013	2	24	10	30	0	24/02/2013 10:30	0.12	57.69	52.62	48.85	0.01	227.27	226.08	225.95	0.02	193.73	194.97	194.91	0.02	157.34	160.11	159.97	0.02	145.63	137.80	137.45	0.03	95.85	99.61	99.34	0.05	64.06	72.39	71.78	0.10	57.58	42.23	41.43
2013	2	24	12	0	0	24/02/2013 12:00	0.13	91.02	50.69	46.54	0.02	227.27	227.09	227.02	0.01	183.09	194.15	193.95	0.02	152.54	161.51	161.21	0.03	128.76	133.36	133.17	0.04	90.63	96.16	95.91	0.06	78.67	72.77	72.28	0.10	45.52	38.22	37.71
2013	2	24	13	30	0	24/02/2013 13:30	0.11	97.52	51.13	46.92	0.01	238.10	232.76	232.54	0.01	205.68	200.77	200.68	0.02	162.45	163.50	163.38	0.02	123.97	130.44	130.19	0.04	97.72	99.91	99.77	0.05	84.67	74.97	74.43	0.09	35.38	39.16	38.51
2013	2	24	15	0	0	24/02/2013 15:00	0.10	60.24	46.90	43.95	0.01	212.77	226.80	226.49	0.01	183.09	192.23	192.09	0.02	162.45	162.22	162.05	0.01	123.97	130.21	129.96	0.02	99.67	104.40	104.18	0.05	60.20	67.09	66.72	0.08	60.00	38.64	37.94
2013	2	24	16	30	0	24/02/2013 16:30	0.11	30.12	46.84	43.53	0.00	250.00	238.99	238.66	0.01	183.09	191.78	191.62	0.02	176.82	168.69	168.29	0.02	150.00	133.46	133.20	0.03	93.17	98.11	97.85	0.04	75.69	73.66	73.38	0.09	30.15	38.62	38.00
2013	2	24	18	0	0	24/02/2013 18:00	0.11	35.31	45.15	42.64	0.01	227.27	229.56	229.45	0.01	183.09	187.53	187.49	0.02	180.00	164.46	164.20	0.02	137.61	134.17	134.00	0.02	99.67	102.25	102.00	0.04	77.45	74.49	73.98	0.10	35.25	39.11	38.48

							Total Long Wave Spectrum (>30 seconds)				Band 1 (210 -250 seconds)				Band 2 (180 -210 seconds)				Band 3 (150 -180 seconds)				Band 4 (120 -150 seconds)				Band 5 (90 -120 seconds)				Band 6 (60 -90 seconds)				Band 7 (30 -60 seconds)			
yyyy	mm	dd	HH	MM	SS	Date+Time	Hm0 (m)	Tp (Sec)	Tm01 (sec)	Tm02 (sec)	Hm0 (m)	Tp (Sec)	Tm01 (sec)	Tm02 (sec)	Hm0 (m)	Tp (Sec)	Tm01 (sec)	Tm02 (sec)	Hm0 (m)	Tp (Sec)	Tm01 (sec)	Tm02 (sec)	Hm0 (m)	Tp (Sec)	Tm01 (sec)	Tm02 (sec)	Hm0 (m)	Tp (Sec)	Tm01 (sec)	Tm02 (sec)	Hm0 (m)	Tp (Sec)	Tm01 (sec)	Tm02 (sec)	Hm0 (m)	Tp (Sec)	Tm01 (sec)	Tm02 (sec)
2013	4	17	13	30	0	17/04/2013 13:30	0.09	62.06	56.04	51.48	0.01	243.90	238.35	238.22	0.01	193.73	195.32	195.20	0.01	170.78	165.73	165.61	0.01	120.97	135.85	135.41	0.03	97.72	102.73	102.47	0.04	62.07	69.91	69.49	0.06	47.02	42.32	41.51
2013	4	17	15	0	0	17/04/2013 15:00	0.08	38.64	55.13	50.51	0.01	238.10	233.59	233.36	0.01	186.50	193.59	193.43	0.01	162.45	161.70	161.53	0.02	127.12	128.63	128.49	0.02	102.74	103.58	103.32	0.04	68.44	70.77	70.56	0.06	38.66	41.70	40.89
2013	4	17	16	30	0	17/04/2013 16:30	0.08	65.02	57.52	52.36	0.01	238.10	233.85	233.69	0.01	186.50	188.22	188.17	0.01	165.14	163.99	163.78	0.01	123.97	134.42	134.06	0.03	94.94	102.53	102.09	0.04	64.89	71.36	70.93	0.05	52.45	39.80	39.14
2013	4	17	18	0	0	17/04/2013 18:00	0.06	71.86	57.11	52.16	0.01	217.39	221.45	221.26	0.01	210.00	201.46	201.23	0.01	157.34	162.11	161.96	0.01	141.51	135.78	135.62	0.02	107.14	101.87	101.58	0.03	71.89	71.58	71.16	0.04	56.93	41.14	40.31
2013	4	17	19	30	0	17/04/2013 19:30	0.07	80.31	55.12	49.96	0.01	227.27	230.46	230.28	0.01	193.73	193.41	193.34	0.01	162.45	162.59	162.43	0.01	128.76	132.45	132.22	0.02	114.50	105.09	104.59	0.03	80.57	74.97	74.47	0.05	48.15	40.01	39.30
2013	4	17	21	0	0	17/04/2013 21:00	0.07	73.14	57.83	52.02	0.01	217.39	225.94	225.64	0.01	183.09	196.54	196.26	0.01	152.54	161.30	160.93	0.02	130.43	130.57	130.39	0.02	99.67	100.49	100.24	0.03	72.93	73.06	72.59	0.05	47.02	40.20	39.56
2013	4	17	22	30	0	17/04/2013 22:30	0.06	70.62	53.58	48.88	0.01	250.00	230.88	230.63	0.01	193.73	194.03	193.96	0.01	176.82	166.82	166.53	0.01	120.97	133.65	133.34	0.02	94.94	103.46	103.04	0.03	70.87	70.65	70.29	0.05	43.17	39.86	39.25
2013	4	18	0	0	0	18/04/2013 00:00	0.07	39.77	51.26	46.95	0.01	212.77	225.34	225.13	0.01	197.55	198.39	198.29	0.01	152.54	162.04	161.80	0.01	120.97	132.99	132.52	0.02	102.74	105.89	105.68	0.03	67.06	70.55	70.17	0.05	39.74	39.83	39.15
2013	4	18	1	30	0	18/04/2013 01:30	0.06	33.30	45.43	42.49	0.00	243.90	238.31	238.19	0.00	193.73	194.01	193.94	0.01	165.14	162.45	162.38	0.01	123.97	126.29	126.17	0.01	101.69	100.84	100.62	0.03	85.39	72.67	72.16	0.05	33.26	37.76	37.18
2013	4	18	3	0	0	18/04/2013 03:00	0.06	33.57	49.89	46.52	0.01	250.00	228.93	228.63	0.01	205.68	196.52	196.33	0.01	180.00	165.39	165.06	0.01	128.76	132.03	131.84	0.02	97.72	102.44	102.04	0.03	69.39	70.21	69.88	0.05	33.60	40.61	39.95
2013	4	18	4	30	0	18/04/2013 04:30	0.05	78.77	51.24	47.10	0.01	243.90	239.98	239.91	0.00	183.09	190.11	190.03	0.01	157.34	165.27	165.08	0.01	120.97	132.49	132.19	0.02	93.17	101.35	100.87	0.03	78.67	73.73	73.21	0.04	32.50	39.14	38.51
2013	4	18	6	0	0	18/04/2013 06:00	0.06	33.57	48.79	45.47	0.01	217.39	219.75	219.66	0.01	210.00	195.11	194.84	0.01	157.34	162.01	161.81	0.01	128.76	130.05	129.94	0.02	113.21	105.43	105.09	0.03	64.06	72.20	71.65	0.05	33.60	39.79	39.05
2013	4	18	7	30	0	18/04/2013 07:30	0.06	34.71	50.53	46.23	0.01	212.77	226.77	226.45	0.01	210.00	196.56	196.37	0.01	165.14	165.79	165.67	0.01	123.97	133.60	133.33	0.01	104.90	103.60	103.33	0.02	60.20	71.29	70.76	0.04	34.76	39.16	38.47
2013	4	18	9	0	0	18/04/2013 09:00	0.05	49.35	54.35	49.73	0.01	238.10	234.73	234.53	0.00	183.09	197.88	197.72	0.01	176.82	170.97	170.84	0.01	132.16	129.80	129.62	0.01	104.90	108.00	107.66	0.02	69.39	73.57	73.11	0.04	49.34	42.13	41.42
2013	4	18	10	30	0	18/04/2013 10:30	0.05	48.76	56.11	51.29	0.00	212.77	226.29	225.94	0.01	186.50	191.95	191.81	0.01	180.00	168.24	168.00	0.01	127.12	128.31	128.23	0.02	94.94	103.57	103.23	0.03	66.18	71.85	71.49	0.04	48.86	40.42	39.74
2013	4	18	12	0	0	18/04/2013 12:00	0.05	31.03	48.31	44.76	0.00	212.77	223.02	222.90	0.01	193.73	197.37	197.30	0.00	157.34	159.08	158.98	0.01	123.97	127.44	127.27	0.01	97.72	103.34	102.97	0.02	67.06	72.28	71.82	0.04	55.35	39.11	38.33
2013	4	18	13	30	0	18/04/2013 13:30	0.05	80.31	47.31	44.24	0.00	227.27	227.24	227.11	0.01	205.68	197.71	197.55	0.01	157.34	165.05	164.80	0.01	145.63	134.79	134.52	0.01	113.21	105.97	105.63	0.02	80.57	73.69	73.24	0.04	30.80	39.24	38.52
2013	4	18	15	0	0	18/04/2013 15:00	0.04	37.93	45.44	42.45	0.01	217.39	221.40	221.30	0.00	183.09	196.80	196.51	0.01	176.82	169.82	169.52	0.01	128.76	134.16	133.95	0.01	90.63	101.87	101.62	0.02	78.67	74.07	73.73	0.04	37.93	37.69	37.19
2013	4	18	16	30	0	18/04/2013 16:30	0.05	99.90	51.43	47.67	0.00	217.39	219.92	219.76	0.00	210.00	200.04	199.86	0.01	170.78	170.18	170.08	0.01	128.76	130.89	130.75	0.01	99.67	105.80	105.56	0.02	64.89	70.66	70.25	0.04	33.04	40.37	39.78
2013	4	18	18	0	0	18/04/2013 18:00	0.05	39.01	50.15	46.81	0.01	212.77	220.93	220.75	0.01	210.00	203.35	203.27	0.01	152.54	162.91	162.68	0.01	150.00	131.38	131.10	0.01	113.21	105.25	104.85	0.02	60.20	70.99	70.62	0.04	38.96	41.21	40.49
2013	4	18	19	30	0	18/04/2013 19:30	0.04	66.07	50.08	46.46	0.00	238.10	239.77	239.69	0.00	186.50	188.66	188.60	0.01	165.14	163.53	163.36	0.01	141.51	139.45	139.27	0.01	117.19	105.11	104.83	0.02	66.18	71.50	71.02	0.03	50.59	40.09	39.46
2013	4	18	21	0	0	18/04/2013 21:00	0.05	97.52	50.96	46.98	0.00	227.27	230.80	230.64	0.00	193.73	195.52	195.44	0.01	150.25	159.85	159.66	0.01	141.51	139.06	138.78	0.02	97.72	100.51	100.31	0.02	71.89	70.14	69.78	0.04	36.28	39.63	38.94
2013	4	18	22	30	0	18/04/2013 22:30	0.05	44.52	51.06	46.90	0.00	250.00	235.14	234.90	0.00	183.09	193.44	193.23	0.01	170.78	170.45	170.35	0.01	128.76	131.79	131.59	0.01	114.50	107.07	106.81	0.02	71.89	72.17	71.81	0.03	44.51	39.21	38.54
2013	4	19	0	0	0	19/04/2013 00:00	0.05	33.85	49.58	45.40	0.01	227.27	226.42	226.31	0.00	205.68	202.69	202.58	0.01	170.78	170.17	170.08	0.01	132.16	132.34	132.20	0.02	113.21	104.41	104.11	0.02	69.39	71.45	71.12	0.04	33.82	38.54	37.90
2013	4	19	1	30	0	19/04/2013 01:30	0.04	80.31	50.60	46.87	0.00	217.39	228.51	228.24	0.00	186.50	190.18	190.03	0.01	157.34	158.06	158.02	0.01	123.97	128.92	128.72	0.01	102.74	101.73	101.44	0.02	80.57	74.45	74.14	0.03	36.95	40.69	39.87
2013	4	19	3	0	0	19/04/2013 03:00	0.04	56.11	51.09	47.45	0.01	238.10	230.09	229.87	0.00	193.73	195.58	195.43	0.00	176.82	169.54	169.34	0.01	132.16	130.59	130.44	0.01	117.19	109.56	109.11	0.02	74.57	71.99	71.63	0.03	56.29	41.53	40.58
2013	4	19	4	30	0	19/04/2013 04:30	0.04	65.02	51.77	47.71	0.01	217.39	222.39	222.25	0.01	210.00	194.59	194.38	0.01	165.14	165.24	165.12	0.01	141.51	137.74	137.53	0.01	104.90	105.12	104.86	0.02	64.89	69.10	68.81	0.04	46.58	41.33	40.54
2013	4	19	6	0	0	19/04/2013 06:00	0.05	97.52	53.16	49.03	0.01	238.10	232.28	232.05	0.01	186.50	191.22	191.14	0.01	157.34	159.33	159.24	0.01	132.16	133.36	133.15	0.02	97.72	102.54	102.27	0.02	80.57	72.32	71.82	0.04	54.45	41.75	41.03
2013	4	19	7	30	0	19/04/2013 07:30	0.05	32.77	51.69	47.06	0.01	217.39	219.90	219.76	0.01	210.00	197.99	197.77	0.01	176.82	168.99	168.78	0.01	141.51	133.89	133.70	0.02	102.74	101.23	101.00	0.02	78.67	71.63	71.19	0.04	32.82	40.27	39.46
2013	4	19	9	0	0	19/04/2013 09:00	0.05	33.85	53.25	48.72	0.00	250.00	240.12	239.98	0.00	183.09	194.35	194.18	0.01	150.25	163.62	163.39	0.01	120.97	136.28	135.89	0.01	120.00	106.25	105.75	0.03	85.39	75.42	74.97	0.04	33.82	40.34	39.66
2013	4	19	10	30	0	19/04/2013 10:30	0.06	120.47	59.58	53.07	0.01	227.27	228.81	228.62	0.01	197.55	197.75	197.63	0.01	170.78	166.61	166.42	0.02	120.97	129.77	129.57	0.02	120.00	105.68	105.32	0.03	77.45	72.16	71.68	0.04	40.05	40.54	39.78
2013	4	19	12	0	0	19/04/2013 12:00	0.07	75.85	57.84	52.00	0.01	227.27	230.47	230.28	0.01	186.50	195.42	195.26	0.01	165.14	163.48	163.33	0.02	120.97	131.89	131.65	0.02	120.00	106.17	105.82	0.03	75.69	71.95	71.60	0.05	56.93	40.58	39.82
2013	4	19	13	30	0	19/04/2013 13:30	0.13	99.90	68.45	59.23	0.02	250.00	232.70	232.45	0.02	205.68	202.36	202.29	0.02	170.78	164.11	163.87	0.04	123.97	129.76	129.55	0.06	99.67	102.24	101.95	0.06	75.69	73.69	73.31	0.07	39.74	40.12	39.34
2013	4	19	15	0	0	19/04/2013 15:00	0.20	273.07	65.24	57.93	0.03	238.10	232.33	232.08	0.03	205.68	199.04	198.85	0.04	176.82	171.03	170.84	0.04	137.61	134.32	134.11	0.08	107.14	103.27	103.00	0.08	69.39	71.16	70.77	0.13	59.29	43.82	42.98
2013	4	19	16	30	0	19/04/2013 16:30	0.25	73.14	72.44	63.39	0.05	212.77	228.31	228.07	0.07	193.73	195.85	195.71	0.05	152.54	161.48	161.22	0.05	150.00	136.11	135.74	0.10	93.17	101.96	101.61	0.12	72.93	71.54	71.11	0.14	43.17	42.90	42.12
2013	4	19	18	0	0	19/04/2013 18:00	0.25	204.80	72.79	62.21	0.04	212.77	225.01	224.81	0.07	205.68	201.36	201.24	0.06	176.82	168.73	168.44	0.07	141.51	135.15	134.86	0.09	102.74	102.70	102.34	0.11	75.69	72.42	71.96	0.14	42.61	41.82	41.09
2013	4	19	19	30	0	19/04/2013 19:30	0.26	95.26	76.72	66.09	0.06	243.90	231.73	231.47	0.05	186.50	194.07	193.91	0.08	157.34	163.29	163.11	0.05	120.97	127.12	127.03	0.10	94.94	98.73	98.46	0.13	77.45	71.98	71.53	0.13	59.29	42.61	41.64
2013	4	19	21	0	0	19/04/2013 21:00	0.25	204.80	71.57	61.05	0.05	212.77	227.18	226.97	0.08	205.68	196.92	196.74	0.04	152.54	159.59	159.31	0.06	128.76	131.94	131.74	0.09	94.94	100.88	100.67	0.11	66.18	72.07	71.65	0.15	38.66	41.34	40.66
2013	4	19	22	30	0	19/04/2013 22:30	0.21	215.58	80.35	67.38	0.08	217.39	226.62	226.41	0.04	210.00	201.68	201.55	0.06	170.78	165.11	164.91	0.07	141.51	136.49	136.23	0.08	99.67	103.62	103.34	0.07	64.06	71.48	71.01	0.12	55.35	43.03	42.28
2013	4	20	0	0	0	20/04/2013 00:00	0.18	74.47	70.84	61.19	0.04	212.77	222.80	222.59	0.04	210.00	198.92	198.72	0.06	170.78	163.84	163.68	0.04	128.76	129.56	129.38	0.07	93.17	103.31	102.94	0.09	74.57	72.91	72.55	0.10	30.15	41.33	40.49
2013	4	20	1	30	0	20/04/2013 01:30	0.15	215.58	65.59	57.97	0.03	217.39	224.02	223.80	0.02	210.00	197.16	196.97	0.03	165.14	162.40	162.20	0.04	123.97	129.60	129.32	0.06	99.67	101.35	101.08	0.06	66.18	72.16	71.64	0.10	55.35	42.44	41.70
2013	4	20	3	0	0	20/04/2013 03:00	0.12	195.05	61.53	54.16	0.02	238.10	232.86	232.65	0.03	193.73	194.23	194.15	0.03	180.00	165.03	164.77	0.03	123.97	127.40	127.25	0.04	104.90	101.93	101.72	0.05	62.85	70.70	70.26	0.08	44.91	40.61	39.87
2013	4	20	4	30	0	20/04/2013 04:30	0.11	99.90	75.83	64.69	0.03	217.39	223.29	223.13	0.03	186.50	193.00	192.82	0.03	180.00	168.37	168.18	0.04	127.12	129.43	129.28	0.05	99.67	102.21	101.90	0.04	78.67	72.17	71.68	0.06	43.17	41.71	41.01
2013	4	20	6	0	0	20/04/2013 06:00	0.11	54.61	58.71	53.48	0.01	217.39	221.12	220.94	0.01	210.00	197.84	197.73	0.02	152.54	157.69	157.58	0.02	141.51	136.11	135.79	0.04	102.74	106.05	105.77	0.04	74.57	70.92	70.54	0.08	54.75	43.56	42.61
2013	4	20	7	30	0	20/04/2013 07:30	0.12	215.58	62.90	55.17	0.03	217.39	222.15	221.95	0.02	210.00	199.81	199.65	0.02	152.54	155.92	155.77	0.03	150.00	135.49	135.15	0.04	108.30	105.86	105.62	0.05	75.69	73.31	72.89	0.08	44.91	41.30	40.62
2013	4	20	9	0	0	20/04/2013 09:00	0.11	186.18	63.68	56.26	0.02	227.27	227.83	227.65	0.03	186.50	192.22	192.10	0.02	180.00	164.26	164.02	0.02	123.97	131.38	131.14	0.04	94.94	101.66	101.28	0.05	68.44	72.13	71.74	0.07	58.59	42.22	41.29
2013	4	20	10	30	0	20/04/2013 10:30	0.13	102.40	61.17	54.93	0.02	250.00	229.60	229.24	0.02	205.68	201.49	201.36	0.03	170.78	164.70	164.49	0.03	123.97	133.26	132.98	0.05	102.74	101.64	101.42	0.05	71.89	73.78	73.48	0.09	45.52	42.57	41.97
2013	4	20	12	0	0	20/04/2013 12:00	0.14	38.64	60.60	52.33	0.04	243.90	233.39	233.14	0.03	205.68	202.14	202.03	0.03	176.82	168.41	168.26	0.03	120.97	131.27	131.05	0.05	120.00	105.83	105.51	0.06	66.18	71.33	70.96	0.09	38.66	38.29	37.72
2013	4	20	13	30	0	20/04/2013 13:30	0.16	75.85	61.71	54.85	0.04	212.77	225.53	225.33	0.03	205.68	202.64	202.54	0.02	176.82	166.99	166.75	0.04	120.97	133.81	133.57	0.04	120.00	105.93	105.52	0.08	75.69	69.73	69.39	0.10	35.01	41.75	40.94
2013	4	20	15	0	0	20/04/2013 15:00	0.14	58.51	56.72	51.53	0.02	217.39	220.91	220.77	0.03	210.00	195.85	195.65	0.03	176.82	171.51	171.30	0.03	141.51	132.84	132.62	0.03	120.00	106.04	105.61	0.06	64.89	70.58	70.13	0.11	56.29	42.66	41.76
2013	4	20	16	30	0	20/04/2013 16:30	0.14	74.47	59.30	53.82	0.02	250.00	232.17	231.82	0.02	186.50	191.49	191.37	0.03	157.34	162.44	162.20	0.02	150.00	133.94	133.72	0.05	102.74	102.20	101.89	0.07	74.57	71.79	71.34	0.10	59.29	42.30	41.50
2013	4	20	18	0	0	20/04/2013 18:00	0.14	47.08	62.13	55.58	0.02	217.39	226.71	226.48	0.02	183.09	196.25	196.07	0.03	176.82	166.79	166.57	0.03	127.12	128.01	127.92	0.06	110.70	103.92	103.57	0.05	72.93	71.87	71.47	0.09	47.02	42.60	41.95
2013	4	20	19	30	0	20/04/2013 19:30	0.14	75.85	60.00	54.00	0.02	243.90	233.89	233.59	0.02	183.09	197.05	196.91	0.03	176.82	168.36	168.10	0.02	123.97	134.94	134.58	0.04	93.17	99.60	99.35	0.07	75.69	72.41	72.09	0.09	47.02	42.11	41.29

							Total Long Wave Spectrum (>30 seconds)				Band 1 (210 -250 seconds)				Band 2 (180 -210 seconds)				Band 3 (150 -180 seconds)				Band 4 (120 -150 seconds)				Band 5 (90 -120 seconds)				Band 6 (60 -90 seconds)				Band 7 (30 -60 seconds)			
yyyy	mm	dd	HH	MM	SS	Date+Time	Hm0 (m)	Tp (Sec)	Tm01 (sec)	Tm02 (sec)

2013	6	26	15	0	0	26/06/2013 15:00	0.13	70.62	58.54	52.34	0.01	212.77	222.56	222.27	0.02	183.09	190.88	190.72	0.04	157.34	163.66	163.46	0.03	132.16	130.99	130.83	0.04	117.19	105.11	104.76	0.06	70.37	69.42	69.11	0.09	43.17	40.57	39.79
2013	6	26	16	30	0	26/06/2013 16:30	0.16	46.55	61.51	56.01	0.01	212.77	228.70	228.33	0.03	193.73	194.52	194.40	0.03	176.82	169.42	169.15	0.04	145.63	137.43	137.11	0.06	90.63	99.84	99.49	0.08	61.31	70.77	70.20	0.10	46.37	43.40	42.71
2013	6	26	18	0	0	26/06/2013 18:00	0.14	53.90	57.49	51.78	0.02	227.27	227.90	227.76	0.02	186.50	190.04	189.93	0.04	157.34	161.53	161.33	0.03	120.97	131.69	131.39	0.04	120.00	101.93	101.50	0.06	68.44	70.22	69.86	0.10	53.86	41.52	40.59
2013	6	26	19	30	0	26/06/2013 19:30	0.15	70.62	57.28	51.88	0.01	238.10	231.24	231.00	0.01	183.09	189.62	189.48	0.03	176.82	165.69	165.48	0.03	128.76	130.05	129.96	0.04	90.63	100.50	100.11	0.08	89.20	73.51	73.02	0.10	48.86	40.67	39.91
2013	6	26	21	0	0	26/06/2013 21:00	0.14	128.00	55.69	50.50	0.01	250.00	236.16	235.95	0.01	201.54	198.86	198.76	0.02	162.45	162.79	162.70	0.05	128.76	132.14	131.95	0.03	107.14	106.85	106.67	0.07	86.87	73.58	73.04	0.10	34.40	40.25	39.48
2013	6	26	22	30	0	26/06/2013 22:30	0.14	45.51	53.76	49.24	0.01	212.77	227.06	226.74	0.01	210.00	199.99	199.78	0.03	152.54	162.03	161.83	0.03	120.97	136.56	136.24	0.04	120.00	108.86	108.64	0.07	64.06	70.30	69.88	0.10	45.52	40.83	40.01
2013	6	27	0	0	0	27/06/2013 00:00	0.14	57.69	56.41	52.35	0.01	212.77	228.24	227.92	0.02	186.50	192.08	191.93	0.03	170.78	165.47	165.34	0.02	135.75	133.19	133.01	0.03	120.00	102.58	102.14	0.07	78.67	73.35	72.84	0.10	57.58	44.04	42.91
2013	6	27	1	30	0	27/06/2013 01:30	0.13	57.69	56.51	51.82	0.02	212.77	224.34	224.14	0.02	210.00	198.08	197.87	0.02	152.54	163.18	162.85	0.03	132.16	132.95	132.80	0.04	117.19	103.31	102.89	0.06	75.69	70.35	70.06	0.09	57.58	42.05	41.18
2013	6	27	3	0	0	27/06/2013 03:00	0.12	81.92	61.51	55.86	0.02	227.27	228.70	228.57	0.01	201.54	195.92	195.79	0.03	170.78	164.75	164.58	0.03	141.51	135.64	135.36	0.03	90.63	99.63	99.29	0.06	81.89	76.62	76.16	0.08	55.35	43.57	42.69
2013	6	27	4	30	0	27/06/2013 04:30	0.10	186.18	59.11	53.07	0.02	227.27	231.35	231.20	0.02	186.50	188.35	188.30	0.02	180.00	164.74	164.52	0.03	123.97	130.59	130.29	0.02	110.70	105.01	104.79	0.05	60.20	69.37	68.97	0.07	58.59	41.67	40.74
2013	6	27	6	0	0	27/06/2013 06:00	0.11	64.00	59.53	54.54	0.01	217.39	219.54	219.45	0.02	186.50	191.69	191.56	0.03	157.34	159.15	159.03	0.03	141.51	135.53	135.30	0.02	97.72	100.95	100.77	0.06	64.06	71.48	71.08	0.07	45.52	42.96	42.35
2013	6	27	7	30	0	27/06/2013 07:30	0.12	73.14	61.78	55.45	0.01	243.90	240.51	240.45	0.01	186.50	188.71	188.67	0.02	157.34	159.66	159.59	0.03	123.97	127.49	127.38	0.04	104.90	103.77	103.40	0.06	72.93	77.21	76.83	0.08	55.35	41.84	40.92
2013	6	27	9	0	0	27/06/2013 09:00	0.13	204.80	59.54	53.86	0.02	212.77	228.76	228.56	0.03	205.68	200.77	200.66	0.03	152.54	157.86	157.73	0.03	150.00	131.98	131.74	0.04	104.90	100.99	100.72	0.06	62.85	69.58	69.19	0.09	55.97	43.29	42.19
2013	6	27	10	30	0	27/06/2013 10:30	0.14	89.04	57.39	52.34	0.02	227.27	231.40	231.24	0.01	183.09	185.33	185.30	0.04	176.82	166.58	166.36	0.03	128.76	133.82	133.68	0.03	94.94	99.02	98.87	0.07	89.20	74.14	73.59	0.10	54.45	42.02	41.17
2013	6	27	12	0	0	27/06/2013 12:00	0.14	31.27	55.99	50.96	0.01	227.27	230.75	230.62	0.01	205.68	198.47	198.28	0.03	165.14	162.61	162.50	0.03	123.97	130.20	129.99	0.04	97.72	102.93	102.67	0.07	68.44	73.17	72.73	0.10	31.28	41.07	40.14
2013	6	27	13	30	0	27/06/2013 13:30	0.13	89.04	54.18	49.87	0.01	243.90	238.71	238.55	0.02	205.68	196.30	196.10	0.02	170.78	166.45	166.30	0.02	123.97	131.89	131.48	0.04	96.77	100.61	100.32	0.06	89.20	75.93	75.31	0.09	51.11	41.20	40.31
2013	6	27	15	0	0	27/06/2013 15:00	0.11	58.51	55.82	50.34	0.01	212.77	218.73	218.63	0.01	210.00	197.84	197.61	0.03	170.78	166.99	166.82	0.04	145.63	135.25	134.98	0.02	108.30	106.08	105.78	0.04	71.37	71.48	71.21	0.08	58.59	41.84	40.87
2013	6	27	16	30	0	27/06/2013 16:30	0.10	66.07	53.66	48.63	0.01	250.00	232.09	231.86	0.01	205.68	203.78	203.75	0.01	150.25	158.72	158.53	0.03	145.63	138.02	137.66	0.03	104.90	102.26	101.99	0.05	66.18	68.96	68.53	0.08	59.29	39.71	38.82
2013	6	27	18	0	0	27/06/2013 18:00	0.12	81.92	57.17	52.28	0.02	217.39	224.34	224.13	0.02	186.50	193.11	192.93	0.02	170.78	167.73	167.60	0.03	132.16	132.91	132.75	0.03	90.63	102.62	102.25	0.06	81.89	75.30	74.83	0.09	53.86	42.57	41.61
2013	6	27	19	30	0	27/06/2013 19:30	0.12	69.42	58.33	53.62	0.01	227.27	230.29	230.12	0.01	183.09	191.61	191.34	0.03	176.82	173.26	173.10	0.02	145.63	136.82	136.55	0.04	91.46	96.65	96.48	0.07	69.39	70.76	70.40	0.08	35.63	41.79	41.15
2013	6	27	21	0	0	27/06/2013 21:00	0.14	58.51	56.30	51.03	0.02	238.10	231.80	231.53	0.02	193.73	193.99	193.88	0.03	170.78	164.46	164.19	0.03	123.97	131.07	130.72	0.04	90.63	98.37	98.20	0.07	69.39	72.34	71.89	0.10	58.59	40.49	39.71
2013	6	27	22	30	0	27/06/2013 22:30	0.13	74.47	55.96	51.50	0.01	227.27	226.16	226.07	0.02	186.50	192.71	192.53	0.02	170.78	169.23	169.10	0.02	120.97	131.00	130.73	0.04	120.00	103.28	102.86	0.07	74.57	71.68	71.35	0.10	51.90	41.74	40.90
2013	6	28	0	0	0	28/06/2013 00:00	0.16	178.09	56.07	51.82	0.01	212.77	232.29	231.96	0.02	183.09	197.29	197.04	0.04	176.82	172.59	172.37	0.02	128.76	130.92	130.68	0.03	90.63	98.31	98.04	0.08	67.06	72.71	72.24	0.12	58.59	43.77	42.74
2013	6	28	1	30	0	28/06/2013 01:30	0.14	51.85	54.81	50.25	0.01	212.77	222.70	222.50	0.01	205.68	200.20	200.10	0.03	157.34	160.11	160.01	0.03	128.76	132.72	132.53	0.04	102.74	103.11	102.82	0.07	69.39	74.69	74.39	0.11	48.15	41.38	40.47
2013	6	28	3	0	0	28/06/2013 03:00	0.15	77.28	58.34	53.52	0.01	250.00	234.15	233.84	0.01	193.73	196.15	196.04	0.02	170.78	167.56	167.34	0.04	132.16	132.67	132.57	0.04	117.19	102.54	102.09	0.08	77.45	73.00	72.60	0.10	54.75	42.14	41.17
2013	6	28	4	30	0	28/06/2013 04:30	0.12	204.80	61.57	54.66	0.02	212.77	221.32	221.21	0.03	205.68	200.92	200.78	0.03	176.82	171.71	171.62	0.03	127.12	132.91	132.63	0.03	104.90	102.85	102.54	0.06	61.31	71.93	71.36	0.09	55.35	42.03	41.12
2013	6	28	6	0	0	28/06/2013 06:00	0.14	186.18	57.73	52.35	0.02	217.39	227.33	227.12	0.03	186.50	189.38	189.28	0.03	157.34	162.78	162.57	0.03	145.63	135.22	134.89	0.05	107.14	101.35	101.04	0.05	60.20	70.85	70.30	0.10	40.54	42.42	41.71
2013	6	28	7	30	0	28/06/2013 07:30	0.12	61.13	59.11	54.02	0.01	227.27	228.73	228.59	0.02	193.73	194.28	194.17	0.02	157.34	161.71	161.53	0.02	132.16	133.82	133.61	0.05	99.67	100.02	99.89	0.07	60.93	71.40	70.70	0.08	43.54	41.78	40.99
2013	6	28	9	0	0	28/06/2013 09:00	0.13	53.20	56.05	50.54	0.03	238.10	230.47	230.24	0.02	205.68	196.70	196.53	0.03	157.34	157.00	156.93	0.03	150.00	133.10	132.82	0.03	104.90	105.69	105.35	0.05	68.44	69.14	68.93	0.10	50.59	42.04	41.08
2013	6	28	10	30	0	28/06/2013 10:30	0.14	61.13	54.25	49.96	0.01	212.77	221.06	220.83	0.03	205.68	197.67	197.52	0.02	157.34	162.13	161.98	0.02	135.75	133.80	133.59	0.03	108.30	100.78	100.47	0.08	61.31	67.58	67.21	0.10	53.86	40.86	40.07
2013	6	28	12	0	0	28/06/2013 12:00	0.11	51.85	51.47	47.76	0.01	227.27	228.56	228.40	0.01	183.09	188.09	187.99	0.02	170.78	170.92	170.84	0.02	135.75	135.96	135.91	0.03	99.67	103.98	103.82	0.04	60.20	72.03	71.57	0.09	51.90	41.66	40.86
2013	6	28	13	30	0	28/06/2013 13:30	0.11	77.28	54.28	49.95	0.01	227.27	227.25	227.18	0.02	186.50	190.94	190.84	0.02	157.34	160.72	160.60	0.01	145.63	137.43	137.16	0.03	93.17	100.93	100.49	0.05	77.45	72.18	71.80	0.08	30.61	41.87	40.99
2013	6	28	15	0	0	28/06/2013 15:00	0.10	51.20	59.40	53.63	0.01	238.10	237.03	236.81	0.01	205.68	197.83	197.69	0.03	165.14	162.11	161.95	0.03	132.16	136.43	136.24	0.02	90.63	100.37	99.93	0.04	73.47	70.49	69.99	0.07	51.11	43.61	42.47
2013	6	28	16	30	0	28/06/2013 16:30	0.10	34.42	50.22	46.07	0.00	212.77	212.77	212.77	0.01	205.68	200.25	200.11	0.01	157.34	160.08	159.90	0.02	123.97	136.17	135.79	0.02	104.90	104.22	103.96	0.04	60.93	69.01	68.54	0.08	34.40	39.10	38.50
2013	6	28	18	0	0	28/06/2013 18:00	0.10	186.18	64.58	57.54	0.01	227.27	224.77	224.61	0.02	186.50	188.63	188.56	0.02	180.00	166.83	166.59	0.03	128.76	135.92	135.70	0.03	96.77	100.18	100.00	0.05	62.07	71.99	71.42	0.06	57.58	43.54	42.51
2013	6	28	19	30	0	28/06/2013 19:30	0.08	61.13	49.39	45.40	0.01	243.90	233.77	233.48	0.01	193.73	196.32	196.24	0.01	157.34	163.78	163.58	0.01	141.51	137.97	137.82	0.02	93.17	102.46	101.91	0.04	61.31	69.77	69.19	0.06	44.51	38.12	37.53
2013	6	28	21	0	0	28/06/2013 21:00	0.08	87.15	53.39	49.06	0.00	250.00	247.52	247.50	0.01	193.73	193.37	193.30	0.01	176.82	170.89	170.72	0.01	132.16	135.80	135.71	0.02	100.67	102.20	102.04	0.03	87.63	78.28	77.75	0.06	41.73	41.08	40.31
2013	6	28	22	30	0	28/06/2013 22:30	0.10	48.76	48.45	45.69	0.01	212.77	229.24	228.96	0.01	210.00	204.55	204.52	0.01	170.78	168.57	168.44	0.01	132.16	131.81	131.66	0.02	108.30	107.09	106.84	0.04	75.69	68.78	68.44	0.09	51.90	42.13	41.29
2013	6	29	0	0	0	29/06/2013 00:00	0.09	47.63	49.99	46.69	0.01	243.90	239.98	239.89	0.00	186.50	187.43	187.41	0.01	162.45	162.11	162.05	0.02	137.61	134.63	134.44	0.02	107.14	105.31	105.08	0.04	75.69	71.83	71.62	0.07	47.70	40.72	40.05
2013	6	29	1	30	0	29/06/2013 01:30	0.10	163.84	52.26	48.78	0.00	#N/A	#N/A	#N/A	0.01	186.50	187.33	187.31	0.02	165.14	164.42	164.38	0.02	132.16	130.91	130.89	0.02	90.63	101.54	101.07	0.05	78.67	72.34	71.89	0.07	53.86	42.12	41.27
2013	6	29	3	0	0	29/06/2013 03:00	0.07	71.86	56.01	50.34	0.01	250.00	241.88	241.79	0.00	205.68	201.89	201.76	0.01	157.34	158.04	157.94	0.02	145.63	140.36	140.05	0.02	94.94	101.80	101.54	0.03	71.89	67.33	67.09	0.05	51.11	40.56	39.75
2013	6	29	4	30	0	29/06/2013 04:30	0.07	227.56	55.30	49.71	0.02	227.27	227.43	227.36	0.01	183.09	193.61	193.39	0.01	176.82	171.76	171.54	0.01	135.75	134.93	134.79	0.01	93.17	94.85	94.76	0.02	76.27	73.24	72.95	0.05	36.28	42.21	41.42
2013	6	29	6	0	0	29/06/2013 06:00	0.07	51.20	52.93	48.39	0.01	227.27	229.98	229.86	0.01	193.73	193.01	192.95	0.01	170.78	168.38	168.26	0.01	145.63	140.08	139.91	0.03	90.63	100.64	100.30	0.03	89.20	75.17	74.66	0.05	51.11	40.11	39.32
2013	6	29	7	30	0	29/06/2013 07:30	0.06	32.77	54.45	49.21	0.01	250.00	240.88	240.78	0.01	186.50	191.56	191.45	0.01	180.00	175.06	174.93	0.01	135.75	132.61	132.46	0.01	117.19	106.47	105.99	0.03	61.31	71.89	71.23	0.04	32.72	40.68	39.85
2013	6	29	9	0	0	29/06/2013 09:00	0.07	30.12	50.17	45.92	0.00	227.27	227.62	227.56	0.01	193.73	195.08	195.04	0.01	170.78	168.04	167.96	0.01	128.76	131.33	131.23	0.01	94.94	96.30	96.25	0.03	89.20	77.56	76.75	0.05	30.15	40.59	39.63
2013	6	29	10	30	0	29/06/2013 10:30	0.07	30.34	50.84	46.36	0.00	250.00	235.87	235.26	0.01	186.50	192.73	192.60	0.02	170.78	168.61	168.51	0.03	137.61	134.19	133.96	0.02	90.63	98.79	98.50	0.02	60.20	69.12	68.53	0.06	30.33	39.76	39.03
2013	6	29	12	0	0	29/06/2013 12:00	0.06	56.89	48.57	45.15	0.00	250.00	247.52	247.50	0.01	186.50	189.53	189.48	0.01	157.34	162.71	162.47	0.01	132.16	135.63	135.44	0.01	93.17	102.77	102.40	0.03	80.57	73.02	72.42	0.05	56.93	40.11	39.27
2013	6	29	13	30	0	29/06/2013 13:30	0.06	39.39	50.44	46.56	0.01	243.90	241.39	241.32	0.01	193.73	192.77	192.70	0.01	165.14	168.78	168.66	0.01	120.97	135.39	135.03	0.02	117.19	117.12	117.10	0.02	70.87	72.84	72.56	0.05	39.42	40.01	39.43
2013	6	29	15	0	0	29/06/2013 15:00	0.06	31.75	47.60	44.04	0.01	238.10	232.60	232.30	0.01	186.50	191.51	191.35	0.00	180.00	172.14	171.60	0.01	145.63	137.42	137.18	0.01	94.94	95.69	95.67	0.02	86.87	75.54	74.83	0.05	31.78	39.12	38.35
2013	6	29	16	30	0	29/06/2013 16:30	0.06	31.51	48.18	44.54	0.00	#N/A	#N/A	#N/A	0.00	#N/A	#N/A	#N/A	0.01	170.78	169.98	169.91	0.02	145.63	136.45	136.23	0.01	94.94	97.44	97.27	0.02	89.20	70.64	70.06	0.05	31.48	39.12	38.45
2013	6	29	18	0	0	29/06/2013 18:00	0.05	53.20	50.36	46.14	0.01	227.27	227.55	227.49	0.00	193.73	195.08	195.04	0.01	152.54	156.02	155.93	0.01	123.97	129.15	128.93	0.01	93.17	99.76	99.49	0.02	69.39	73.12	72.67	0.04	53.29	40.93	39.81
2013	6	29	19	30	0	29/06/2013 19:30	0.05	32.25	51.67	45.61	0.01	243.90	240.81	240.75	0.01	193.73	195.16	195.12	0.01	152.54	158.30	158.13	0.01	123.97	128.92	128.59	0.01	93.17	96.00	95.86	0.01	78.67	75.33	75.00	0.04	32.29	37.89	37.12
2013	6	29	21	0	0	29/06/2013 21:00	0.05	32.00	47.82	44.29	0.00	#N/A	#N/A	#N/A	0.00	193.73	195.08	195.04	0.01	165.14	163.28	163.24	0.01	132.16	138.56	138.42	0.01	110.70	110.37	110.26	0.02	81.89	70.67	70.30	0.04	31.98	38.22	37.50
2013	6	29	22	30	0	29/06/2013 22:30	0.06	33.30	45.38	42.57	0.01	227.27	228.44	228.35	0.01	186.50	187.43	187.41	0.00	180.00	174.63	174.21	0.01	141.51	139.94	139.80	0.01	113.21	107.73	107.36	0.02	66.18	69.69	69.43	0.05	33.37	39.04	38.36
2013	6	30	0	0	0	30/06/2013 00:00	0.07	58.51	50.66	47.41	0.01	238.10	236.47	236.26	0.00	210.00	201.79	201.44	0.00	176.82	173.94	173.84	0.02	120.97	133.59	133.38	0.01	120.00	108.63	108.24	0.03	62.07	66.00	65.70	0.05	58.59	42.33	41.22
2013	6	30	1	30	0	30/06/2013 01:30	0.07	57.69	52.27	49.13	0.00	238.10	234.53	234.38	0.00	#N/A	#N/A	#N/A	0.00	157.34	157.41	157.39	0.01	120.97	129.81	129.56	0.02	97.72	101.28	101.00	0.03	86.87	73.07	72.61	0.05	57.58	43.23	42.35
2013	6	30	3	0	0	30/06/2013 03:00	0.07	47.63	53.29	48.67	0.01	217.39	222.01	221.91	0.01	210.00	198.33	197.96	0.01	176.82	165.32	164.98	0.01	150.00	138.76	138.54	0.02	102.74	107.10	107.00	0.03	60.93	70.30	69.80	0.05	47.70	41.01	40.42

							Total Long Wave Spectrum (>30 seconds)				Band 1 (210 -250 seconds)				Band 2 (180 -210 seconds)				Band 3 (150 -180 seconds)				Band 4 (120 -150 seconds)				Band 5 (90 -120 seconds)				Band 6 (60 -90 seconds)				Band 7 (30 -60 seconds)			
yyyy	mm	dd	HH	MM	SS	Date+Time	Hm0 (m)	Tp (Sec)	Tm01 (sec)	Tm02 (sec)

2013	11	14	3	0	0	14/11/2013 03:00	0.04	67.15	56.42	50.59	0.01	227.27	227.44	227.30	0.01	205.68	203.22	203.17	0.00	176.82	167.22	167.00	0.01	141.51	142.33	142.30	0.01	110.70	104.87	104.45	0.02	67.06	66.85	66.67	0.03	44.12	40.94	40.12
2013	11	14	4	30	0	14/11/2013 04:30	0.05	55.35	51.13	46.58	0.01	250.00	241.68	241.61	0.00	186.50	187.43	187.41	0.00	165.14	163.84	163.79	0.01	141.51	135.10	134.93	0.01	117.19	107.75	107.35	0.02	60.20	72.29	71.91	0.04	55.35	40.71	39.78
2013	11	14	6	0	0	14/11/2013 06:00	0.05	43.57	48.36	45.15	0.01	250.00	231.97	231.71	0.01	186.50	188.76	188.67	0.00	180.00	178.54	178.52	0.01	120.97	127.37	127.24	0.01	120.00	106.03	105.55	0.02	60.20	69.95	69.57	0.04	43.54	40.51	39.93
2013	11	14	7	30	0	14/11/2013 07:30	0.05	52.51	49.28	45.98	0.01	217.39	217.68	217.65	0.00	210.00	196.66	196.47	0.01	157.34	157.43	157.40	0.01	128.76	133.03	132.83	0.00	97.72	97.52	97.52	0.02	60.20	76.37	75.82	0.04	52.45	41.26	40.32
2013	11	14	9	0	0	14/11/2013 09:00	0.05	46.55	46.09	43.39	0.01	238.10	232.00	231.69	0.00	210.00	201.82	201.72	0.01	170.78	170.98	170.95	0.00	135.75	136.56	136.55	0.00	90.63	101.72	101.40	0.02	81.89	73.27	72.72	0.04	46.58	39.88	39.19
2013	11	14	10	30	0	14/11/2013 10:30	0.04	31.27	53.55	48.37	0.00	227.27	224.91	224.81	0.01	193.73	195.44	195.34	0.00	176.82	173.87	173.66	0.01	132.16	131.90	131.88	0.01	104.90	106.35	106.09	0.02	67.06	71.87	71.47	0.03	31.28	37.98	37.41
2013	11	14	12	0	0	14/11/2013 12:00	0.04	33.03	46.83	43.96	0.00	212.77	212.77	212.77	0.00	205.68	203.78	203.75	0.00	152.54	152.73	152.72	0.01	123.97	124.35	124.33	0.01	104.90	105.15	105.07	0.01	75.69	71.90	71.59	0.04	33.04	40.38	39.54
2013	11	14	13	30	0	14/11/2013 13:30	0.04	341.33	61.38	53.04	0.00	250.00	244.41	244.35	0.00	193.73	195.08	195.04	0.01	165.14	163.58	163.55	0.00	145.63	142.58	142.38	0.02	93.17	99.92	99.67	0.01	61.31	68.26	67.68	0.03	31.98	39.64	38.83
2013	11	14	15	0	0	14/11/2013 15:00	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
2013	11	14	16	30	0	14/11/2013 16:30	0.04	36.90	52.19	47.13	0.00	227.27	227.55	227.49	0.01	193.73	194.70	194.66	0.00	176.82	176.71	176.70	0.00	120.97	121.82	121.82	0.01	110.70	101.57	101.22	0.01	86.87	77.97	77.54	0.03	36.95	39.60	38.53
2013	11	14	18	0	0	14/11/2013 18:00	0.05	34.71	49.36	46.15	0.00	212.77	217.15	217.12	0.01	183.09	194.97	194.75	0.00	180.00	176.90	176.89	0.01	132.16	130.50	130.40	0.01	110.70	111.70	111.63	0.02	67.06	71.75	71.47	0.04	34.76	40.41	39.68
2013	11	14	19	30	0	14/11/2013 19:30	0.04	136.53	52.27	46.54	0.00	#N/A	#N/A	#N/A	0.00	193.73	192.33	192.27	0.01	165.14	163.09	163.03	0.02	135.75	134.20	134.04	0.01	120.00	107.85	107.49	0.02	60.20	68.38	67.76	0.03	34.17	36.53	36.01
2013	11	14	21	0	0	14/11/2013 21:00	0.04	34.42	42.67	40.68	0.00	227.27	225.10	224.98	0.00	205.68	203.78	203.75	0.01	157.34	157.53	157.51	0.01	123.97	127.22	127.06	0.01	93.17	97.28	96.98	0.01	61.31	63.70	63.59	0.04	34.40	38.11	37.60

							Total Long Wave Spectrum (>30 seconds)				Band 1 (210 -250 seconds)				Band 2 (180 -210 seconds)				Band 3 (150 -180 seconds)				Band 4 (120 -150 seconds)				Band 5 (90 -120 seconds)				Band 6 (60 -90 seconds)				Band 7 (30 -60 seconds)			
yyyy	mm	dd	HH	MM	SS	Date+Time	Hm0 (m)	Tp (Sec)	Tm01 (sec)	Tm02 (sec)

2014	10	16	21	0	0	16/10/2014 21:00	0.05	128.00	57.86	51.26	0.01	238.10	235.33	235.12	0.01	205.68	197.55	197.35	0.01	176.82	167.57	167.41	0.01	128.76	129.69	129.57	0.02	117.19	107.11	106.66	0.02	71.89	68.93	68.68	0.04	40.54	39.53	38.97
2014	10	16	22	30	0	16/10/2014 22:30	0.05	54.61	50.64	46.74	0.01	227.27	230.27	230.08	0.01	205.68	203.86	203.82	0.00	170.78	165.57	165.41	0.01	120.97	134.70	134.29	0.01	120.00	102.35	101.98	0.02	64.06	69.60	69.13	0.04	54.75	40.58	39.88
2014	10	17	0	0	0	17/10/2014 00:00	0.06	38.64	55.04	50.65	0.00	212.77	217.12	217.06	0.01	205.68	198.38	198.25	0.01	152.54	161.88	161.66	0.01	120.97	131.36	131.04	0.02	104.90	102.56	102.33	0.03	69.39	72.60	72.23	0.05	38.66	41.52	40.83
2014	10	17	1	30	0	17/10/2014 01:30	0.05	43.12	55.69	51.26	0.01	217.39	227.83	227.53	0.01	186.50	188.90	188.83	0.01	180.00	169.38	169.12	0.01	123.97	132.24	131.95	0.01	104.90	103.94	103.71	0.03	79.93	73.22	72.82	0.04	43.17	41.94	41.27
2014	10	17	3	0	0	17/10/2014 03:00	0.05	117.03	58.68	52.24	0.01	243.90	232.57	232.25	0.01	186.50	195.14	194.98	0.01	180.00	172.91	172.82	0.01	132.16	130.17	129.99	0.02	117.19	105.86	105.41	0.02	85.39	72.37	71.91	0.03	37.64	39.62	38.93
2014	10	17	4	30	0	17/10/2014 04:30	0.04	35.31	53.05	48.71	0.01	227.27	227.51	227.35	0.00	183.09	187.64	187.50	0.01	176.82	175.37	175.27	0.01	132.16	129.85	129.72	0.01	108.30	106.43	106.14	0.02	66.18	68.47	68.11	0.03	35.25	40.78	40.04
2014	10	17	6	0	0	17/10/2014 06:00	0.04	40.55	52.15	48.01	0.01	217.39	220.71	220.62	0.00	210.00	197.83	197.52	0.01	152.54	156.28	156.12	0.01	132.16	132.73	132.52	0.01	102.74	100.44	100.09	0.02	81.89	74.34	73.94	0.03	40.54	39.13	38.70
2014	10	17	7	30	0	17/10/2014 07:30	0.05	46.55	57.48	50.09	0.01	238.10	237.33	237.19	0.00	183.09	193.57	193.43	0.01	162.45	164.27	164.09	0.01	137.61	137.17	136.99	0.01	104.90	106.24	106.05	0.02	60.93	68.66	68.27	0.04	46.58	39.07	38.45
2014	10	17	9	0	0	17/10/2014 09:00	0.04	39.01	55.96	50.27	0.00	212.77	223.79	223.41	0.01	205.68	202.24	202.16	0.01	170.78	168.81	168.61	0.01	141.51	135.95	135.66	0.01	97.72	101.97	101.72	0.02	77.45	69.33	68.92	0.03	38.96	39.46	38.83
2014	10	17	10	30	0	17/10/2014 10:30	0.05	30.12	50.34	46.29	0.00	212.77	225.14	224.96	0.01	183.09	196.60	196.34	0.01	176.82	173.51	173.38	0.01	132.16	132.14	131.95	0.02	91.46	100.73	100.44	0.02	66.18	74.18	73.73	0.04	30.15	39.81	39.18
2014	10	17	12	0	0	17/10/2014 12:00	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
2014	10	17	13	30	0	17/10/2014 13:30	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
2014	10	17	15	0	0	17/10/2014 15:00	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
2014	10	17	16	30	0	17/10/2014 16:30	0.04	105.03	55.97	50.92	0.01	238.10	234.88	234.68	0.00	193.73	195.69	195.64	0.00	150.25	160.22	160.10	0.01	132.16	134.93	134.72	0.01	104.90	101.58	101.44	0.02	70.87	76.06	75.59	0.03	48.15	41.36	40.63
2014	10	17	18	0	0	17/10/2014 18:00	0.04	39.77	52.61	47.80	0.00	250.00	238.58	238.06	0.00	205.68	197.49	197.28	0.00	150.25	167.42	166.97	0.01	145.63	140.82	140.68	0.01	93.17	102.38	101.94	0.01	80.57	72.39	71.68	0.03	39.74	40.17	39.63
2014	10	17	19	30	0	17/10/2014 19:30	0.04	31.03	56.92	49.54	0.01	212.77	219.18	219.06	0.01	197.55	198.40	198.28	0.01	176.82	169.92	169.61	0.01	150.00	129.98	129.69	0.01	102.74	103.16	102.96	0.02	85.39	72.62	72.17	0.03	30.99	38.27	37.59
2014	10	17	21	0	0	17/10/2014 21:00	0.04	36.25	56.47	49.93	0.01	243.90	232.98	232.67	0.01	197.55	197.44	197.33	0.01	152.54	157.53	157.35	0.01	120.97	127.58	127.37	0.01	120.00	105.11	104.65	0.02	75.69	71.02	70.52	0.03	36.28	39.03	38.40
2014	10	17	22	30	0	17/10/2014 22:30	0.03	215.58	61.33	53.85	0.01	217.39	225.05	224.88	0.01	210.00	196.96	196.81	0.01	157.34	162.23	162.03	0.01	135.75	135.68	135.59	0.01	107.14	105.51	105.28	0.01	65.74	71.28	70.74	0.02	37.22	40.09	39.31
2014	10	18	0	0	0	18/10/2014 00:00	0.04	117.03	58.64	51.98	0.01	217.39	224.65	224.46	0.01	210.00	194.03	193.79	0.01	152.54	154.53	154.45	0.01	120.97	131.10	130.80	0.01	117.19	112.65	112.43	0.02	70.87	71.81	71.42	0.03	45.52	40.24	39.54
2014	10	18	1	30	0	18/10/2014 01:30	0.04	53.90	50.18	46.87	0.00	217.39	226.86	226.53	0.00	210.00	200.38	199.99	0.00	150.25	162.88	162.41	0.01	123.97	130.42	130.08	0.01	108.30	104.94	104.61	0.02	71.89	73.31	72.90	0.03	53.86	40.96	40.29
2014	10	18	3	0	0	18/10/2014 03:00	0.04	33.03	54.88	49.14	0.01	238.10	236.51	236.32	0.01	186.50	190.95	190.81	0.01	152.54	159.20	158.92	0.01	150.00	131.70	131.42	0.01	99.67	102.02	101.78	0.02	83.26	74.52	74.11	0.03	33.04	39.87	39.18
2014	10	18	4	30	0	18/10/2014 04:30	0.04	99.90	62.30	55.09	0.01	212.77	221.28	221.18	0.01	210.00	196.22	196.01	0.00	180.00	173.28	173.17	0.01	128.76	130.43	130.26	0.01	99.67	102.49	102.18	0.02	61.31	67.85	67.54	0.02	38.36	40.28	39.54
2014	10	18	6	0	0	18/10/2014 06:00	0.04	44.04	60.30	53.45	0.00	217.39	219.75	219.60	0.01	183.09	192.37	192.26	0.01	170.78	171.89	171.81	0.01	132.16	132.30	132.15	0.01	97.72	103.66	103.49	0.02	62.85	70.63	70.23	0.03	44.12	39.83	39.17
2014	10	18	7	30	0	18/10/2014 07:30	0.04	41.37	60.12	52.89	0.01	212.77	223.19	223.06	0.01	205.68	198.33	198.18	0.01	170.78	164.71	164.54	0.01	132.16	131.57	131.35	0.01	93.17	100.04	99.78	0.02	67.06	69.55	69.21	0.03	41.38	39.68	39.12
2014	10	18	9	0	0	18/10/2014 09:00	0.04	186.18	61.43	54.87	0.01	212.77	219.21	219.09	0.01	186.50	191.41	191.28	0.01	180.00	163.19	162.79	0.01	145.63	142.97	142.85	0.02	117.19	107.14	106.78	0.02	74.01	72.37	72.03	0.03	44.12	41.26	40.76
2014	10	18	10	30	0	18/10/2014 10:30	0.04	33.30	48.32	43.96	0.00	227.27	223.89	223.79	0.00	186.50	195.93	195.71	0.01	170.78	166.20	166.09	0.01	120.97	127.57	127.28	0.01	120.00	107.22	106.72	0.01	90.00	73.11	72.42	0.03	33.26	37.56	37.04
2014	10	18	12	0	0	18/10/2014 12:00	0.04	38.64	55.14	48.95	0.01	217.39	225.13	224.97	0.01	186.50	189.62	189.52	0.01	180.00	166.30	166.09	0.01	135.75	135.86	135.79	0.01	100.67	100.72	100.50	0.01	64.89	67.52	67.29	0.03	38.66	38.76	38.28
2014	10	18	13	30	0	18/10/2014 13:30	0.04	215.58	52.77	47.77	0.01	217.39	220.39	220.31	0.01	210.00	196.93	196.68	0.00	170.78	168.00	167.86	0.01	141.51	136.30	135.98	0.01	97.72	98.93	98.85	0.02	74.57	74.57	74.18	0.03	38.96	39.40	38.78
2014	10	18	15	0	0	18/10/2014 15:00	0.05	30.12	50.76	46.00	0.01	227.27	233.08	232.92	0.00	186.50	192.48	192.37	0.01	170.78	170.02	169.94	0.01	132.16	131.01	130.85	0.01	104.90	102.04	101.83	0.01	83.26	77.06	76.59	0.04	30.15	39.78	38.98
2014	10	18	16	30	0	18/10/2014 16:30	0.04	58.51	55.05	49.74	0.01	227.27	227.24	227.08	0.00	210.00	195.81	195.61	0.01	157.34	159.15	159.09	0.01	127.12	133.56	133.28	0.01	94.94	97.56	97.35	0.01	71.89	74.79	74.43	0.03	58.59	40.78	40.08
2014	10	18	18	0	0	18/10/2014 18:00	0.04	178.09	62.25	54.09	0.01	238.10	233.06	232.91	0.01	183.09	193.73	193.55	0.01	176.82	173.30	173.23	0.01	123.97	129.51	129.39	0.01	97.72	101.79	101.56	0.01	67.06	70.90	70.49	0.03	35.63	40.52	40.03
2014	10	18	19	30	0	18/10/2014 19:30	0.04	117.03	61.86	53.79	0.01	212.77	223.91	223.78	0.01	205.68	202.49	202.41	0.01	152.54	157.20	157.10	0.01	128.76	130.13	129.99	0.02	117.19	110.35	110.10	0.01	79.93	76.31	75.88	0.03	33.26	39.76	39.16
2014	10	18	21	0	0	18/10/2014 21:00	0.04	32.25	55.22	49.78	0.00	250.00	235.07	234.83	0.01	193.73	193.68	193.63	0.01	165.14	165.95	165.84	0.01	123.97	130.79	130.48	0.01	110.70	105.59	105.41	0.02	86.87	76.38	75.90	0.03	35.01	39.03	38.42
2014	10	18	22	30	0	18/10/2014 22:30	0.04	40.55	53.60	47.98	0.01	250.00	233.74	233.52	0.00	205.68	203.80	203.77	0.00	170.78	168.73	168.60	0.01	128.76	128.88	128.82	0.01	108.30	105.19	105.10	0.01	77.45	76.28	75.93	0.03	40.54	39.35	38.72
2014	10	19	0	0	0	19/10/2014 00:00	0.04	35.62	62.07	54.31	0.01	238.10	230.40	230.12	0.01	193.73	193.65	193.55	0.01	180.00	166.10	165.77	0.01	128.76	131.00	130.78	0.01	110.70	108.13	107.75	0.02	77.45	72.57	72.27	0.02	35.63	40.42	39.61
2014	10	19	1	30	0	19/10/2014 01:30	0.04	31.75	61.15	53.17	0.01	227.27	231.04	230.90	0.01	186.50	187.17	187.15	0.00	180.00	173.74	173.58	0.00	132.16	132.13	132.12	0.01	107.14	108.76	108.62	0.02	60.93	71.32	70.87	0.02	31.78	39.55	38.83
2014	10	19	3	0	0	19/10/2014 03:00	0.04	55.35	54.54	50.54	0.00	250.00	238.91	238.61	0.01	186.50	191.56	191.41	0.00	170.78	169.02	168.93	0.01	132.16	131.63	131.53	0.01	93.17	100.97	100.58	0.02	80.57	72.17	71.78	0.03	55.35	42.41	41.55
2014	10	19	4	30	0	19/10/2014 04:30	0.04	35.31	55.30	48.48	0.01	212.77	231.56	231.24	0.01	205.68	202.02	201.91	0.01	176.82	174.36	174.21	0.01	123.97	131.27	130.95	0.01	95.85	100.94	100.74	0.01	87.63	76.53	75.78	0.03	35.25	38.77	38.10
2014	10	19	6	0	0	19/10/2014 06:00	0.03	30.34	54.64	48.66	0.00	212.77	217.30	217.27	0.01	186.50	195.69	195.48	0.00	152.54	155.07	154.89	0.01	150.00	140.18	140.09	0.01	113.21	107.14	106.93	0.01	78.67	74.93	74.61	0.02	30.33	39.85	39.08

							Total Long Wave Spectrum (>30 seconds)				Band 1 (210 -250 seconds)				Band 2 (180 -210 seconds)				Band 3 (150 -180 seconds)				Band 4 (120 -150 seconds)				Band 5 (90 -120 seconds)				Band 6 (60 -90 seconds)				Band 7 (30 -60 seconds)			
yyyy	mm	dd	HH	MM	SS	Date+Time	Hm0 (m)	Tp (Sec)	Tm01 (sec)	Tm02 (sec)

2015	2	2	13	30	0	02/02/2015 13:30	0.05	68.27	67.57	59.02	0.01	227.27	230.89	230.67	0.01	183.09	193.29	193.13	0.01	180.00	168.65	168.40	0.01	123.97	130.56	130.32	0.01	97.72	99.19	99.05	0.02	68.44	72.23	71.94	0.03	49.83	42.10	41.38
2015	2	2	15	0	0	02/02/2015 15:00	0.04	44.04	56.04	49.79	0.01	227.27	227.52	227.46	0.00	186.50	188.31	188.26	0.01	170.78	170.77	170.75	0.00	141.51	137.15	136.99	0.01	108.30	101.74	101.46	0.02	72.93	73.99	73.80	0.03	44.12	38.79	38.43

							Total Long Wave Spectrum (>30 seconds)				Band 1 (210 -250 seconds)				Band 2 (180 -210 seconds)				Band 3 (150 -180 seconds)				Band 4 (120 -150 seconds)				Band 5 (90 -120 seconds)				Band 6 (60 -90 seconds)				Band 7 (30 -60 seconds)			
yyyy	mm	dd	HH	MM	SS	Date+Time	Hm0 (m)	Tp (Sec)	Tm01 (sec)	Tm02 (sec)

							Total Long Wave Spectrum (>30 seconds)				Band 1 (210 -250 seconds)				Band 2 (180 -210 seconds)				Band 3 (150 -180 seconds)				Band 4 (120 -150 seconds)				Band 5 (90 -120 seconds)				Band 6 (60 -90 seconds)				Band 7 (30 -60 seconds)			
yyyy	mm	dd	HH	MM	SS	Date+Time	Hm0 (m)	Tp (Sec)	Tm01 (sec)	Tm02 (sec)

							Total Long Wave Spectrum (>30 seconds)				Band 1 (210 -250 seconds)				Band 2 (180 -210 seconds)				Band 3 (150 -180 seconds)				Band 4 (120 -150 seconds)				Band 5 (90 -120 seconds)				Band 6 (60 -90 seconds)				Band 7 (30 -60 seconds)			
yyyy	mm	dd	HH	MM	SS	Date+Time	Hm0 (m)	Tp (Sec)	Tm01 (sec)	Tm02 (sec)

2016	5	23	16	30	0	23/05/2016 16:30	0.05	151.70	64.80	55.71	0.01	227.27	227.11	227.02	0.01	205.68	203.06	203.00	0.02	152.54	159.24	159.06	0.01	150.00	132.92	132.44	0.02	102.74	100.57	100.30	0.02	64.89	67.73	67.30	0.03	58.59	41.99	41.06
2016	5	23	18	0	0	23/05/2016 18:00	0.06	128.00	62.57	53.71	0.01	227.27	230.88	230.74	0.00	183.09	183.09	183.09	0.02	176.82	169.28	168.99	0.02	128.76	132.61	132.47	0.01	104.90	105.17	105.09	0.02	75.69	73.88	73.40	0.04	43.54	39.27	38.66
2016	5	23	19	30	0	23/05/2016 19:30	0.07	178.09	73.12	61.06	0.01	212.77	221.00	220.91	0.02	183.09	194.50	194.26	0.02	176.82	173.62	173.46	0.02	128.76	131.32	131.12	0.02	93.17	95.72	95.52	0.03	86.87	75.35	74.82	0.04	31.78	39.56	38.58
2016	5	23	21	0	0	23/05/2016 21:00	0.05	57.69	63.33	55.95	0.00	212.77	212.77	212.77	0.01	205.68	197.28	197.12	0.01	180.00	172.30	171.99	0.02	123.97	133.85	133.54	0.02	94.94	100.27	100.00	0.02	86.87	80.60	80.07	0.04	57.58	44.17	43.01
2016	5	23	22	30	0	23/05/2016 22:30	0.05	91.02	72.35	61.10	0.00	227.27	227.46	227.40	0.01	183.09	186.63	186.58	0.02	176.82	168.18	167.99	0.01	147.78	137.74	137.39	0.02	90.63	99.77	99.38	0.02	90.00	70.24	69.79	0.03	43.54	41.19	40.51
2016	5	24	0	0	0	24/05/2016 00:00	0.06	56.11	64.27	56.19	0.01	250.00	240.40	240.24	0.01	205.68	201.68	201.56	0.02	162.45	161.53	161.35	0.02	135.75	136.36	136.19	0.02	117.19	103.23	102.81	0.02	74.57	75.39	74.98	0.04	55.97	42.46	41.42
2016	5	24	1	30	0	24/05/2016 01:30	0.05	91.02	61.22	52.37	0.01	217.39	221.28	221.19	0.01	183.09	192.37	192.22	0.02	176.82	167.80	167.62	0.01	128.76	132.40	132.17	0.02	91.46	100.23	99.75	0.01	90.00	72.21	71.57	0.04	55.97	39.83	38.95
2016	5	24	3	0	0	24/05/2016 03:00	0.06	48.76	68.65	58.81	0.01	217.39	220.25	220.11	0.01	210.00	196.49	196.26	0.02	152.54	164.16	163.86	0.02	150.00	137.80	137.58	0.02	113.21	104.92	104.62	0.02	72.93	75.88	75.71	0.04	48.62	42.39	41.81
2016	5	24	4	30	0	24/05/2016 04:30	0.05	83.59	69.15	59.80	0.01	217.39	227.60	227.24	0.01	183.09	192.19	191.88	0.01	176.82	175.22	175.14	0.01	123.97	130.74	130.61	0.01	107.14	108.57	108.49	0.03	83.26	72.80	72.31	0.03	34.17	41.80	41.01
2016	5	24	6	0	0	24/05/2016 06:00	0.06	58.51	60.13	54.01	0.01	217.39	217.84	217.79	0.01	210.00	195.85	195.68	0.01	157.34	159.72	159.65	0.02	132.16	133.68	133.63	0.02	93.17	100.48	100.25	0.02	61.31	68.12	67.70	0.05	58.59	43.12	42.41
2016	5	24	7	30	0	24/05/2016 07:30	0.07	37.93	54.15	49.70	0.00	212.77	217.95	217.82	0.01	183.09	195.75	195.53	0.02	176.82	166.23	165.96	0.01	127.12	129.23	129.09	0.02	101.69	99.21	99.10	0.03	78.67	76.41	75.96	0.05	37.93	41.95	41.18
2016	5	24	9	0	0	24/05/2016 09:00	0.08	46.02	55.29	50.17	0.02	238.10	234.91	234.76	0.01	193.73	196.74	196.67	0.01	150.25	157.32	157.21	0.02	123.97	134.55	134.15	0.02	93.17	98.43	98.16	0.03	77.45	72.04	71.71	0.06	45.94	40.93	40.17
2016	5	24	10	30	0	24/05/2016 10:30	0.09	65.02	57.34	51.81	0.01	212.77	227.05	226.82	0.01	205.68	199.95	199.83	0.02	157.34	164.75	164.60	0.02	132.16	135.61	135.52	0.02	117.19	105.75	105.36	0.05	64.89	70.87	70.58	0.06	48.86	40.72	39.98
2016	5	24	12	0	0	24/05/2016 12:00	0.08	80.31	65.67	58.31	0.00	#N/A	#N/A	#N/A	0.01	193.73	193.63	193.57	0.01	157.34	158.88	158.74	0.03	123.97	131.33	131.07	0.03	117.19	103.57	103.04	0.04	80.57	76.21	75.93	0.05	34.17	41.79	40.82
2016	5	24	13	30	0	24/05/2016 13:30	0.08	47.08	56.58	51.61	0.00	212.77	226.37	226.03	0.01	183.09	196.01	195.86	0.01	176.82	168.21	168.03	0.02	120.97	131.79	131.44	0.02	120.00	99.94	99.50	0.03	71.89	73.55	72.97	0.06	47.02	43.12	42.34
2016	5	24	15	0	0	24/05/2016 15:00	0.08	54.61	58.59	53.62	0.00	238.10	239.54	239.45	0.01	183.09	190.18	190.06	0.02	165.14	167.82	167.68	0.01	132.16	134.53	134.42	0.03	94.94	99.54	99.30	0.04	77.45	74.30	73.86	0.06	54.45	43.70	42.77
2016	5	24	16	30	0	24/05/2016 16:30	0.07	124.12	59.70	53.04	0.01	217.39	223.45	223.21	0.01	186.50	190.43	190.34	0.01	180.00	171.64	171.55	0.02	123.97	128.37	128.21	0.02	120.00	101.50	101.05	0.03	71.89	71.47	71.13	0.05	30.15	42.27	40.95
2016	5	24	18	0	0	24/05/2016 18:00	0.07	151.70	66.03	58.30	0.01	217.39	225.74	225.43	0.01	183.09	195.60	195.42	0.03	152.54	157.56	157.39	0.02	150.00	144.10	143.90	0.02	94.94	96.83	96.77	0.03	67.06	70.99	70.53	0.05	58.59	44.16	43.32
2016	5	24	19	30	0	24/05/2016 19:30	0.09	163.84	63.16	54.86	0.01	227.27	228.42	228.31	0.01	183.09	194.77	194.63	0.04	162.45	162.80	162.72	0.02	123.97	126.15	126.04	0.02	93.17	101.27	100.77	0.04	71.89	73.21	72.86	0.06	35.01	40.39	39.48
2016	5	24	21	0	0	24/05/2016 21:00	0.07	80.31	65.41	56.88	0.01	212.77	217.34	217.31	0.01	210.00	202.79	202.72	0.02	170.78	162.72	162.51	0.02	147.78	136.32	135.99	0.02	117.19	108.07	107.46	0.03	80.57	77.07	76.75	0.05	54.75	41.86	40.92
2016	5	24	22	30	0	24/05/2016 22:30	0.08	56.11	57.08	52.71	0.00	250.00	247.52	247.50	0.00	186.50	187.25	187.22	0.01	150.25	158.84	158.58	0.02	145.63	139.67	139.43	0.02	107.14	105.74	105.65	0.04	86.87	76.39	75.94	0.06	55.97	45.14	44.11
2016	5	25	0	0	0	25/05/2016 00:00	0.09	56.11	51.87	48.55	0.01	217.39	223.45	223.24	0.01	193.73	194.28	194.20	0.01	170.78	168.59	168.53	0.02	123.97	126.17	126.11	0.02	108.30	107.82	107.54	0.04	83.26	73.88	73.42	0.07	55.97	42.37	41.42
2016	5	25	1	30	0	25/05/2016 01:30	0.10	151.70	63.48	57.31	0.02	217.39	220.42	220.28	0.02	186.50	193.03	192.89	0.03	152.54	159.75	159.52	0.02	150.00	141.17	140.96	0.02	117.19	107.60	107.13	0.05	68.44	70.57	70.27	0.07	50.59	44.88	44.08
2016	5	25	3	0	0	25/05/2016 03:00	0.13	53.20	56.42	51.06	0.02	217.39	223.86	223.69	0.02	186.50	192.05	191.93	0.02	150.25	157.70	157.45	0.03	120.97	131.35	130.96	0.04	120.00	108.21	107.64	0.06	85.39	73.73	73.16	0.10	36.54	41.43	40.65
2016	5	25	4	30	0	25/05/2016 04:30	0.13	151.70	56.08	50.42	0.02	243.90	230.65	230.33	0.02	193.73	194.12	194.00	0.03	152.54	156.57	156.41	0.04	150.00	133.52	133.21	0.03	93.17	99.85	99.54	0.06	70.87	70.01	69.63	0.10	36.54	40.24	39.50
2016	5	25	6	0	0	25/05/2016 06:00	0.13	78.77	62.78	54.96	0.01	250.00	241.21	240.96	0.02	183.09	193.24	193.08	0.03	180.00	165.10	164.86	0.03	132.16	133.16	132.98	0.04	93.17	98.87	98.51	0.06	78.67	73.27	72.82	0.08	30.33	39.60	38.85
2016	5	25	7	30	0	25/05/2016 07:30	0.18	163.84	71.62	62.34	0.03	217.39	226.22	225.95	0.04	193.73	195.31	195.24	0.07	165.14	163.48	163.36	0.05	120.97	135.09	134.72	0.04	120.00	109.52	109.18	0.08	70.87	74.38	74.02	0.11	50.59	43.84	42.97
2016	5	25	9	0	0	25/05/2016 09:00	0.22	151.70	70.91	61.48	0.03	212.77	230.38	230.07	0.06	205.68	195.84	195.66	0.09	152.54	161.58	161.32	0.04	150.00	138.63	138.21	0.07	113.21	104.01	103.67	0.10	68.44	73.84	73.52	0.14	56.93	43.46	42.48
2016	5	25	10	30	0	25/05/2016 10:30	0.24	120.47	73.00	63.61	0.03	227.27	230.94	230.72	0.07	193.73	196.24	196.15	0.07	157.34	157.85	157.73	0.09	145.63	136.41	136.04	0.08	120.00	106.57	106.12	0.09	69.39	72.49	71.94	0.14	57.92	44.92	43.87
2016	5	25	12	0	0	25/05/2016 12:00	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
2016	5	25	13	30	0	25/05/2016 13:30	0.20	178.09	74.59	64.70	0.05	227.27	230.08	229.85	0.04	205.68	200.19	200.03	0.06	176.82	170.37	170.23	0.06	120.97	131.16	130.99	0.07	120.00	103.72	103.32	0.09	78.67	75.82	75.40	0.12	46.58	44.01	43.29
2016	5	25	15	0	0	25/05/2016 15:00	0.22	170.67	71.86	61.93	0.03	238.10	230.90	230.65	0.05	193.73	195.13	195.05	0.09	170.78	165.18	164.93	0.07	150.00	135.73	135.42	0.08	110.70	104.16	103.77	0.08	72.93	72.35	71.87	0.14	59.29	43.13	42.28
2016	5	25	16	30	0	25/05/2016 16:30	0.18	186.18	72.99	63.05	0.02	227.27	228.02	227.82	0.06	186.50	189.90	189.81	0.05	180.00	173.31	173.12	0.06	145.63	134.12	133.85	0.05	99.67	102.61	102.40	0.08	74.57	76.36	75.90	0.11	44.12	43.92	43.07
2016	5	25	18	0	0	25/05/2016 18:00	0.19	151.70	73.59	64.83	0.03	238.10	230.54	230.28	0.04	193.73	194.26	194.15	0.07	152.54	163.10	162.82	0.06	150.00	135.36	134.97	0.07	117.19	103.52	103.10	0.08	62.07	73.24	72.69	0.12	57.58	46.55	45.50
2016	5	25	19	30	0	25/05/2016 19:30	0.17	151.70	74.95	64.35	0.04	227.27	230.22	230.02	0.02	210.00	194.77	194.59	0.06	152.54	161.93	161.72	0.05	150.00	135.59	135.28	0.06	97.72	102.40	102.04	0.07	81.89	75.34	74.95	0.10	56.29	43.10	42.22
2016	5	25	21	0	0	25/05/2016 21:00	0.16	151.70	71.23	61.79	0.03	212.77	229.52	229.23	0.03	205.68	200.83	200.69	0.06	152.54	164.12	163.81	0.04	150.00	138.61	138.36	0.05	117.19	107.44	107.07	0.07	74.57	71.17	70.64	0.10	53.29	44.08	43.03
2016	5	25	22	30	0	25/05/2016 22:30	0.14	93.09	66.68	58.34	0.01	250.00	235.84	235.57	0.03	193.73	193.48	193.40	0.04	165.14	163.29	163.15	0.04	123.97	129.29	129.08	0.04	93.17	98.16	97.74	0.06	72.93	72.95	72.49	0.09	48.15	42.78	41.70
2016	5	26	0	0	0	26/05/2016 00:00	0.14	80.31	65.18	58.17	0.01	212.77	231.47	231.13	0.03	186.50	190.48	190.36	0.04	170.78	164.27	164.04	0.04	135.75	137.94	137.80	0.04	94.94	102.61	102.27	0.07	79.93	72.19	71.76	0.09	54.75	44.15	43.19
2016	5	26	1	30	0	26/05/2016 01:30	0.13	151.70	69.44	59.41	0.02	243.90	235.87	235.61	0.02	183.09	190.77	190.66	0.05	152.54	164.93	164.62	0.03	150.00	140.13	139.88	0.04	113.21	106.91	106.57	0.06	89.20	74.83	74.24	0.08	33.60	40.97	40.01
2016	5	26	3	0	0	26/05/2016 03:00	0.13	157.54	73.90	64.75	0.02	243.90	236.93	236.76	0.02	193.73	195.42	195.30	0.04	157.34	160.14	159.98	0.05	128.76	130.74	130.60	0.04	91.46	97.94	97.64	0.06	76.86	71.14	70.73	0.07	60.00	43.61	42.71
2016	5	26	4	30	0	26/05/2016 04:30	0.12	33.85	63.88	56.17	0.01	212.77	225.17	224.94	0.02	186.50	192.39	192.21	0.04	157.34	161.84	161.65	0.03	150.00	135.43	135.07	0.03	93.17	101.94	101.59	0.05	68.44	72.99	72.63	0.08	33.82	41.85	40.99
2016	5	26	6	0	0	26/05/2016 06:00	0.10	59.36	68.32	61.79	0.01	217.39	217.66	217.63	0.01	210.00	196.56	196.37	0.03	170.78	164.95	164.80	0.02	127.12	128.72	128.62	0.03	93.17	101.41	100.90	0.05	86.87	73.82	73.24	0.07	59.29	47.06	46.31
2016	5	26	7	30	0	26/05/2016 07:30	0.10	178.09	62.44	54.81	0.02	227.27	232.62	232.46	0.01	183.09	192.60	192.32	0.03	176.82	167.29	166.99	0.03	132.16	132.60	132.41	0.02	93.17	96.48	96.28	0.05	70.87	73.19	72.82	0.06	54.75	40.15	39.48
2016	5	26	9	0	0	26/05/2016 09:00	0.10	89.04	64.90	57.86	0.00	212.77	212.77	212.77	0.02	186.50	189.00	188.93	0.02	170.78	170.29	170.21	0.02	141.51	134.71	134.35	0.04	94.94	99.99	99.65	0.05	89.20	75.94	75.30	0.06	58.59	42.96	41.86
2016	5	26	10	30	0	26/05/2016 10:30	0.09	60.24	64.28	56.81	0.01	227.27	228.79	228.62	0.01	205.68	203.79	203.76	0.01	170.78	163.13	162.87	0.03	120.97	130.26	130.08	0.03	120.00	103.78	103.34	0.04	60.20	73.19	72.69	0.06	60.00	41.38	40.47
2016	5	26	12	0	0	26/05/2016 12:00	0.09	64.00	63.45	56.50	0.00	250.00	247.52	247.50	0.01	186.50	189.70	189.64	0.03	170.78	167.14	166.96	0.02	147.78	136.43	136.05	0.03	117.19	106.59	105.95	0.03	64.06	66.82	66.63	0.06	58.59	44.84	43.80
2016	5	26	13	30	0	26/05/2016 13:30	0.08	117.03	59.51	54.04	0.01	227.27	231.71	231.52	0.00	210.00	192.36	192.14	0.02	170.78	166.16	166.04	0.02	145.63	138.11	137.83	0.03	117.19	108.21	107.78	0.03	74.57	73.61	73.29	0.06	58.59	44.91	43.79
2016	5	26	15	0	0	26/05/2016 15:00	0.08	33.57	52.61	47.28	0.01	250.00	242.96	242.89	0.02	193.73	193.78	193.72	0.02	170.78	164.75	164.54	0.01	150.00	137.24	136.83	0.02	110.70	101.88	101.55	0.03	89.20	73.86	73.22	0.06	33.60	39.03	38.41
2016	5	26	16	30	0	26/05/2016 16:30	0.07	68.27	60.51	53.87	0.00	#N/A	#N/A	#N/A	0.01	193.73	195.03	194.99	0.01	165.14	163.09	163.05	0.02	132.16	137.42	137.26	0.02	117.19	107.51	107.13	0.03	67.98	73.54	72.99	0.05	56.93	40.79	40.01
2016	5	26	18	0	0	26/05/2016 18:00	0.06	41.80	54.75	51.27	0.00	212.77	230.42	230.15	0.01	205.68	203.78	203.75	0.01	157.34	159.32	159.20	0.01	145.63	141.28	140.96	0.01	110.70	108.15	107.97	0.03	61.31	67.10	66.74	0.04	41.73	44.04	43.39
2016	5	26	19	30	0	26/05/2016 19:30	0.06	61.13	54.47	50.00	0.01	227.27	228.97	228.88	0.01	193.73	191.44	191.37	0.02	162.45	161.27	161.17	0.01	120.97	128.39	128.03	0.01	120.00	105.56	105.05	0.03	61.31	71.41	70.90	0.05	43.17	41.77	40.92
2016	5	26	21	0	0	26/05/2016 21:00	0.07	273.07	63.80	55.50	0.01	238.10	237.25	237.06	0.01	205.68	197.96	197.77	0.01	176.82	168.76	168.54	0.00	141.51	141.24	141.23	0.02	94.94	98.20	98.03	0.03	67.52	69.73	69.53	0.05	35.25	42.84	41.90
2016	5	26	22	30	0	26/05/2016 22:30	0.06	40.16	60.34	53.94	0.01	217.39	224.47	224.21	0.01	183.09	193.34	193.09	0.01	176.82	165.29	164.96	0.01	128.76	135.87	135.61	0.01	94.94	98.52	98.37	0.02	64.06	66.29	66.09	0.04	40.21	44.34	43.29
2016	5	27	0	0	0	27/05/2016 00:00	0.05	60.24	57.05	52.01	0.00	212.77	226.56	225.93	0.00	205.68	203.78	203.75	0.01	170.78	162.86	162.61	0.01	150.00	137.05	136.80	0.02	110.70	107.15	106.82	0.02	60.20	70.06	69.48	0.04	60.00	43.45	42.22
2016	5	27	1	30	0	27/05/2016 01:30	0.05	170.67	55.03	49.18	0.00	227.27	227.55	227.49	0.00	183.09	188.51	188.41	0.02	170.78	167.74	167.60	0.01	141.51	138.09	137.96	0.02	93.17	95.28	95.11	0.02	74.57	74.62	74.20	0.04	43.54	40.12	39.40
2016	5	27	3	0	0	27/05/2016 03:00	0.06	35.31	48.01	44.64	0.01	217.39	224.35	224.09	0.01	210.00	198.50	198.28	0.01	152.54	155.76	155.69	0.00	150.00	145.35	145.17	0.01	114.50	101.55	101.13	0.02	71.89	73.75	73.54	0.05	35.38	39.38	38.78
2016	5	27	4	30	0	27/05/2016 04:30	0.06	59.36	52.19	47.52	0.01	227.27	229.08	228.97	0.01	186.50	189.41	189.36	0.01	157.34	159.93	159.85	0.00	120.97	127.65	127.22	0.01	99.67	100.07	99.88	0.02	74.57	70.96	70.68	0.05	59.29	41.05	40.17
2016	5	27	6	0	0	27/05/2016 06:00	0.06	53.20	56.95	50.84	0.01	238.10	235.45	235.31	0.01	186.50	187.39	187.37	0.02	170.78	166.54	166.35	0.01	150.00	133.87	133.65	0.02	93.17	100.96	100.68	0.02	72.93	72.38	72.06	0.04	53.29	41.09	40.29
2016	5	27	7	30	0	27/05/2016 07:30	0.05	80.31	70.85	62.47	0.01	250.00	242.16	241.93	0.01	193.73	194.73	194.65	0.02	157.34	165.80	165.59	0.01	135.75	134.85	134.56	0.01	97.72	98.00	97.84	0.03	80.57	71.36	70.90	0.03	45.94	44.50	43.49
2016	5	27	9	0	0	27/05/2016 09:00	0.04	35.31	57.90	52.32	0.00	217.39	217.68	217.65	0.01	193.73	194.94	194.83	0.01	170.78	168.26	168.12	0.01	141.51	138.23	138.06	0.01	104.90	100.38	100.14	0.02	77.45	73.78	73.29	0.03	35.25	41.74	40.92
2016	5	27	10	30	0	27/05/2016 10:30	0.05	34.71	54.88	49.27	0.01	227.27	227.17	227.10	0.01	205.68	203.78	203.75	0.02	165.14	164.29	164.18	0.01	135.75	135.82	135.60	0.01	99.67	102.82	102.58	0.02	78.67	75.10	74.62	0.04	34.76	41.25	40.46
2016	5	27	12	0	0	27/05/2016 12:00	0.05	35.93	51.78	47.14	0.00	#N/A	#N/A	#N/A	0.01	186.50	187.43	187.41	0.01	165.14	162.41	162.32	0.01	135.75	136.05	135.95	0.01	94.94	98.58	98.45	0.02	64.89	67.86	67.65	0.04	35.89	39.67	39.02
2016	5	27	13	30	0	27/05/2016 13:30	0.06	40.16	55.02	50.09	0.00	238.10	240.18	240.13	0.00	#N/A	#N/A	#N/A	0.01	170.78	164.52	164.28	0.01	141.51	141.53	141.42	0.02	104.90	107.15	107.04	0.02	85.39	75.34	74.77	0.05	40.21	41.09	40.44
2016	5	27	15	0	0	27/05/2016 15:00	0.07	41.80	58.34	52.77	0.01	243.90	240.33	240.26	0.01	186.50	191.81	191.71	0.01	180.00	163.04	162.77	0.01	120.97	130.91	130.55	0.01	120.00	109.06	108.66	0.03	67.06	71.24	70.76	0.05	41.73	43.60	42.79
2016	5	27	16	30	0	27/05/2016 16:30	0.06	87.15	52.30	48.58	0.00	#N/A	#N/A	#N/A	0.01	186.50	187.43	187.41	0.01	157.34	158.37	158.24	0.01	120.97	127.75	127.49	0.01	120.00	103.16	102.72	0.04	86.87	74.78	74.26	0.05	47.02	39.86	39.30
2016	5	27	18	0	0	27/05/2016 18:00	0.07	32.51	52.75	47.69	0.01	212.77	233.92	233.56	0.02	186.50	195.56	195.37	0.01	180.00	158.05	157.82	0.01	128.76	129.76	129.60	0.02	93.17	101.74	101.27	0.03	75.69	71.25	70.83	0.05	32.50	38.95	38.32
2016	5	27	19	30	0	27/05/2016 19:30	0.06	33.85	51.38	47.09	0.00	212.77	235.29	235.00	0.01	205.68	202.97	202.90	0.01	150.25	160.51	160.21	0.02	150.00	142.56	142.45	0.01	99.67	100.76	100.61	0.02	85.39	72.79	72.08	0.05	33.82	41.06	40.24
2016	5	27	21	0	0	27/05/2016 21:00	0.07	53.90	62.84	56.18	0.02	227.27	226.58	226.50	0.01	183.09	194.68	194.45	0.01	176.82	170.15	169.92	0.02	128.76	128.60	128.51	0.02	120.00	103.43	103.01	0.03	70.87	67.71	67.49	0.05	53.86	45.01	44.07
2016	5	27	22	30	0	27/05/2016 22:30	0.07	43.57	54.71	50.72	0.01	243.90	236.08	235.83

							Total Long Wave Spectrum (>30 seconds)				Band 1 (210 -250 seconds)				Band 2 (180 -210 seconds)				Band 3 (150 -180 seconds)				Band 4 (120 -150 seconds)				Band 5 (90 -120 seconds)				Band 6 (60 -90 seconds)				Band 7 (30 -60 seconds)			
yyyy	mm	dd	HH	MM	SS	Date+Time	Hm0 (m)	Tp (Sec)	Tm01 (sec)	Tm02 (sec)

2016	6	7	7	30	0	07/06/2016 07:30	0.13	120.47	62.78	56.83	0.01	250.00	229.78	229.30	0.02	186.50	187.68	187.64	0.03	159.86	160.93	160.81	0.04	120.97	126.72	126.60	0.04	120.00	107.35	106.96	0.06	62.85	70.58	70.14	0.09	48.15	44.41	43.43
2016	6	7	9	0	0	07/06/2016 09:00	0.17	128.00	70.14	61.32	0.02	212.77	228.62	228.30	0.03	186.50	191.69	191.54	0.04	150.25	162.69	162.39	0.08	128.76	133.85	133.58	0.04	120.00	105.12	104.73	0.06	75.69	72.06	71.66	0.11	51.90	44.17	43.17
2016	6	7	10	30	0	07/06/2016 10:30	0.17	58.51	61.39	55.43	0.01	250.00	234.15	233.86	0.03	193.73	193.13	193.05	0.05	170.78	166.14	166.00	0.04	135.75	132.95	132.75	0.05	120.00	105.42	104.99	0.08	60.20	69.15	68.81	0.12	58.59	44.63	43.28
2016	6	7	12	0	0	07/06/2016 12:00	0.16	186.18	66.15	58.87	0.01	227.27	226.88	226.80	0.04	186.50	187.99	187.94	0.04	180.00	169.60	169.36	0.05	123.97	127.53	127.40	0.05	120.00	103.13	102.79	0.08	70.87	74.69	74.23	0.10	57.58	42.95	41.98
2016	6	7	13	30	0	07/06/2016 13:30	0.17	97.52	62.59	56.51	0.03	238.10	237.97	237.85	0.03	186.50	188.62	188.57	0.05	165.14	162.65	162.46	0.04	150.00	134.99	134.68	0.07	97.72	102.72	102.39	0.08	72.93	73.28	72.84	0.12	55.35	43.84	42.91
2016	6	7	15	0	0	07/06/2016 15:00	0.17	146.29	66.86	59.45	0.03	227.27	226.24	226.10	0.03	205.68	198.77	198.59	0.05	170.78	165.87	165.66	0.05	145.63	138.42	138.03	0.05	120.00	104.10	103.63	0.07	77.45	73.85	73.57	0.12	47.70	45.26	44.32
2016	6	7	16	30	0	07/06/2016 16:30	0.16	157.54	68.03	61.49	0.02	217.39	228.45	228.21	0.03	193.73	196.20	196.11	0.06	157.34	161.43	161.28	0.03	120.97	130.80	130.53	0.06	120.00	103.23	102.84	0.08	61.31	70.39	69.83	0.10	45.94	45.44	44.62
2016	6	7	18	0	0	07/06/2016 18:00	0.17	186.18	72.03	63.57	0.02	250.00	231.82	231.57	0.05	186.50	189.69	189.61	0.04	157.34	161.10	160.89	0.05	141.51	140.43	140.32	0.07	97.72	100.16	99.94	0.08	90.00	75.50	74.98	0.10	58.59	44.35	43.39
2016	6	7	19	30	0	07/06/2016 19:30	0.17	95.26	66.34	59.33	0.03	217.39	225.49	225.20	0.03	210.00	199.25	199.10	0.04	165.14	164.14	163.97	0.05	137.61	138.43	138.31	0.07	94.94	97.80	97.66	0.08	89.20	70.52	69.95	0.11	56.29	44.42	43.21
2016	6	7	21	0	0	07/06/2016 21:00	0.18	120.47	62.75	55.81	0.03	217.39	229.58	229.22	0.02	210.00	194.21	194.06	0.04	170.78	168.09	167.88	0.06	120.97	129.70	129.37	0.06	120.00	110.20	109.76	0.08	60.20	72.38	71.87	0.12	55.97	42.02	41.07
2016	6	7	22	30	0	07/06/2016 22:30	0.16	57.69	60.96	56.07	0.02	217.39	217.83	217.79	0.02	183.09	193.23	193.07	0.04	176.82	166.21	165.84	0.04	128.76	134.59	134.37	0.03	110.70	106.01	105.70	0.08	67.06	70.66	70.27	0.11	57.58	46.26	45.10
2016	6	8	0	0	0	08/06/2016 00:00	0.15	61.13	58.31	53.70	0.01	238.10	235.86	235.70	0.02	193.73	196.00	195.95	0.02	162.45	161.81	161.74	0.03	120.97	128.45	128.29	0.05	113.21	105.56	105.17	0.08	61.31	70.30	69.87	0.10	45.94	42.67	41.86
2016	6	8	1	30	0	08/06/2016 01:30	0.13	178.09	59.54	53.32	0.02	217.39	224.63	224.44	0.02	193.73	194.31	194.21	0.03	176.82	166.67	166.37	0.03	123.97	128.99	128.78	0.05	99.67	99.32	99.14	0.06	74.57	71.85	71.46	0.09	53.86	41.19	40.33
2016	6	8	3	0	0	08/06/2016 03:00	0.14	157.54	66.39	59.20	0.02	227.27	227.75	227.50	0.02	205.68	201.91	201.80	0.04	157.34	159.40	159.23	0.04	145.63	136.30	135.94	0.04	93.17	104.36	103.81	0.08	64.89	71.75	71.22	0.08	59.29	42.82	41.81
2016	6	8	4	30	0	08/06/2016 04:30	0.13	151.70	62.27	54.67	0.02	212.77	225.14	224.96	0.03	186.50	193.92	193.77	0.03	152.54	157.59	157.38	0.04	132.16	135.06	134.87	0.03	94.94	101.80	101.43	0.06	80.57	73.39	72.86	0.08	35.38	40.27	39.52
2016	6	8	6	0	0	08/06/2016 06:00	0.13	163.84	75.56	65.88	0.01	250.00	242.45	242.29	0.03	186.50	190.10	190.04	0.05	162.45	163.20	163.06	0.05	145.63	137.59	137.29	0.04	104.90	102.56	102.40	0.07	78.67	73.94	73.29	0.07	45.11	43.00	42.23
2016	6	8	7	30	0	08/06/2016 07:30	0.13	157.54	69.92	60.34	0.03	217.39	224.56	224.40	0.02	210.00	195.14	194.90	0.04	157.34	160.19	160.00	0.04	123.97	133.68	133.32	0.04	102.74	106.66	106.45	0.05	70.87	71.76	71.42	0.08	45.94	43.34	42.67
2016	6	8	9	0	0	08/06/2016 09:00	0.15	95.26	66.08	58.72	0.02	250.00	234.23	233.93	0.02	205.68	201.26	201.13	0.04	152.54	161.02	160.76	0.04	150.00	133.84	133.48	0.05	94.94	100.90	100.54	0.08	69.39	73.23	72.92	0.09	51.11	42.78	41.89
2016	6	8	10	30	0	08/06/2016 10:30	0.15	85.33	65.19	58.79	0.01	250.00	236.93	236.62	0.02	183.09	194.34	194.16	0.05	176.82	169.77	169.60	0.04	123.97	132.25	131.94	0.05	110.70	104.38	104.16	0.08	85.39	74.61	74.16	0.10	50.59	45.23	44.37
2016	6	8	12	0	0	08/06/2016 12:00	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
2016	6	8	13	30	0	08/06/2016 13:30	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
2016	6	8	15	0	0	08/06/2016 15:00	0.13	71.86	58.42	53.30	0.01	217.39	220.83	220.72	0.01	183.09	187.60	187.52	0.03	176.82	164.50	164.17	0.02	150.00	134.03	133.69	0.04	90.63	98.82	98.56	0.08	71.89	70.04	69.73	0.08	49.34	41.13	40.15
2016	6	8	16	30	0	08/06/2016 16:30	0.13	215.58	68.31	58.81	0.03	212.77	221.41	221.23	0.03	210.00	199.80	199.62	0.04	170.78	166.22	166.03	0.04	123.97	131.09	130.84	0.04	99.67	102.28	102.07	0.06	89.20	74.23	73.73	0.08	49.34	40.09	39.32
2016	6	8	18	0	0	08/06/2016 18:00	0.13	132.13	64.18	57.56	0.02	212.77	226.04	225.85	0.02	205.68	196.71	196.53	0.03	170.78	165.97	165.85	0.04	132.16	131.48	131.38	0.05	99.67	99.74	99.51	0.06	68.44	73.07	72.55	0.08	48.86	43.80	42.80
2016	6	8	19	30	0	08/06/2016 19:30	0.11	120.47	71.74	61.65	0.02	243.90	235.74	235.49	0.02	183.09	192.01	191.91	0.04	157.34	162.45	162.19	0.03	120.97	129.99	129.78	0.04	120.00	102.41	101.95	0.05	61.31	71.29	70.81	0.06	39.74	41.34	40.54
2016	6	8	21	0	0	08/06/2016 21:00	0.13	91.02	61.01	54.51	0.01	250.00	228.45	228.15	0.03	183.09	189.46	189.38	0.04	180.00	169.81	169.68	0.03	132.16	134.20	134.11	0.04	90.63	98.80	98.41	0.05	64.06	69.19	68.72	0.09	53.86	42.60	41.76
2016	6	8	22	30	0	08/06/2016 22:30	0.12	55.35	54.68	50.48	0.02	212.77	223.85	223.66	0.02	205.68	200.66	200.53	0.01	157.34	161.43	161.26	0.02	145.63	138.13	137.83	0.03	117.19	108.33	107.78	0.06	65.74	70.44	70.03	0.09	55.35	42.87	41.83
2016	6	9	0	0	0	09/06/2016 00:00	0.11	87.15	56.69	51.84	0.00	250.00	235.71	235.14	0.01	201.54	198.05	197.93	0.01	150.25	161.58	161.25	0.02	150.00	135.46	135.17	0.03	93.17	99.49	99.11	0.06	86.87	74.13	73.56	0.08	51.90	42.01	41.06
2016	6	9	1	30	0	09/06/2016 01:30	0.11	53.90	61.50	56.56	0.01	212.77	219.46	219.30	0.02	186.50	194.80	194.59	0.03	152.54	161.09	160.79	0.02	150.00	137.99	137.68	0.02	120.00	100.22	99.91	0.06	75.69	71.93	71.48	0.08	53.86	46.18	45.11
2016	6	9	3	0	0	09/06/2016 03:00	0.11	120.47	59.41	53.78	0.00	243.90	238.11	237.86	0.01	183.09	194.63	194.44	0.02	150.25	163.05	162.81	0.04	120.97	132.17	131.89	0.04	120.00	105.63	105.14	0.03	78.67	74.10	73.49	0.08	48.15	43.71	43.01
2016	6	9	4	30	0	09/06/2016 04:30	0.11	60.24	61.58	54.73	0.02	227.27	228.33	228.23	0.02	205.68	200.13	199.96	0.03	152.54	159.15	158.89	0.04	150.00	132.53	132.30	0.02	108.30	107.48	107.15	0.05	60.20	68.69	68.38	0.08	60.00	42.80	41.81
2016	6	9	6	0	0	09/06/2016 06:00	0.10	59.36	66.92	58.94	0.01	212.77	227.11	226.79	0.02	197.55	197.99	197.89	0.02	157.34	162.13	161.93	0.02	123.97	131.09	130.78	0.03	99.67	101.66	101.37	0.04	78.67	70.51	70.09	0.06	59.29	44.12	43.13
2016	6	9	7	30	0	09/06/2016 07:30	0.08	163.84	58.64	51.87	0.01	227.27	230.12	229.92	0.01	205.68	201.35	201.23	0.02	165.14	163.83	163.73	0.02	132.16	129.30	129.17	0.02	117.19	103.57	103.11	0.04	61.31	72.18	71.58	0.06	31.48	39.62	38.90
2016	6	9	9	0	0	09/06/2016 09:00	0.09	81.92	66.05	59.65	0.01	227.27	226.45	226.36	0.01	205.68	202.44	202.34	0.02	157.34	160.23	160.09	0.02	141.51	137.10	136.98	0.03	99.67	101.70	101.46	0.05	81.89	75.02	74.65	0.05	47.24	43.04	42.38
2016	6	9	10	30	0	09/06/2016 10:30	0.08	34.13	55.05	49.75	0.00	217.39	218.15	218.11	0.01	193.73	196.15	196.08	0.01	152.54	160.30	160.10	0.02	120.97	129.54	129.34	0.02	104.90	105.42	105.13	0.04	72.93	71.93	71.55	0.06	34.17	40.16	39.46
2016	6	9	12	0	0	09/06/2016 12:00	0.10	57.69	64.51	56.36	0.02	243.90	237.64	237.46	0.02	186.50	192.24	192.15	0.02	180.00	164.17	163.87	0.03	137.61	136.89	136.71	0.03	117.19	104.10	103.49	0.04	75.69	72.22	71.78	0.07	57.58	43.59	42.49
2016	6	9	13	30	0	09/06/2016 13:30	0.08	57.69	59.01	52.65	0.01	250.00	234.68	234.46	0.01	183.09	193.89	193.70	0.01	150.25	163.77	163.52	0.03	120.97	130.36	130.18	0.02	120.00	109.80	109.32	0.04	71.89	73.57	73.13	0.06	57.58	42.33	41.39
2016	6	9	15	0	0	09/06/2016 15:00	0.09	178.09	62.00	54.26	0.01	212.77	224.81	224.50	0.01	205.68	201.42	201.27	0.02	176.82	171.98	171.88	0.02	127.12	132.66	132.40	0.03	93.17	98.06	97.84	0.04	75.69	73.19	72.70	0.06	40.87	40.07	39.24
2016	6	9	16	30	0	09/06/2016 16:30	0.07	186.18	62.36	55.18	0.01	227.27	229.63	229.48	0.02	186.50	189.49	189.39	0.02	170.78	166.37	166.10	0.01	120.97	132.49	131.99	0.02	120.00	102.53	102.05	0.03	81.89	73.13	72.70	0.05	42.61	42.31	41.45
2016	6	9	18	0	0	09/06/2016 18:00	0.07	55.35	58.42	52.60	0.01	250.00	236.64	236.41	0.01	186.50	189.43	189.33	0.01	165.14	165.11	164.98	0.02	120.97	131.46	131.20	0.02	120.00	104.95	104.44	0.03	71.89	70.59	70.31	0.05	55.35	42.02	41.23
2016	6	9	19	30	0	09/06/2016 19:30	0.07	57.69	63.21	57.02	0.01	227.27	227.03	226.96	0.00	205.68	201.83	201.68	0.02	165.14	162.99	162.89	0.02	145.63	140.27	140.01	0.02	94.94	98.52	98.26	0.04	62.07	72.16	71.62	0.05	57.58	44.76	43.67
2016	6	9	21	0	0	09/06/2016 21:00	0.07	91.02	58.99	52.68	0.01	217.39	225.63	225.33	0.01	210.00	201.23	201.11	0.01	157.34	159.05	159.00	0.02	141.51	131.81	131.58	0.03	90.63	100.29	99.83	0.03	62.07	70.21	69.70	0.05	36.95	40.93	40.21
2016	6	9	22	30	0	09/06/2016 22:30	0.07	54.61	62.04	56.05	0.00	238.10	239.71	239.63	0.01	186.50	191.08	191.00	0.01	152.54	155.52	155.35	0.02	137.61	138.41	138.27	0.02	90.63	99.06	98.72	0.03	68.44	72.52	72.00	0.05	54.45	44.58	43.76
2016	6	10	0	0	0	10/06/2016 00:00	0.06	42.23	58.67	52.98	0.01	227.27	229.25	229.10	0.01	186.50	194.01	193.84	0.01	157.34	161.54	161.26	0.02	128.76	130.87	130.71	0.02	90.63	99.21	98.89	0.03	68.44	73.94	73.53	0.05	42.25	42.40	41.47
2016	6	10	1	30	0	10/06/2016 01:30	0.05	52.51	56.25	50.71	0.01	238.10	237.35	237.15	0.01	205.68	199.48	199.32	0.00	150.25	159.69	159.43	0.01	123.97	132.40	131.97	0.01	120.00	105.94	105.12	0.03	66.18	73.19	72.65	0.04	52.45	40.97	40.05
2016	6	10	3	0	0	10/06/2016 03:00	0.07	44.52	61.86	55.96	0.01	238.10	234.47	234.20	0.01	205.68	196.92	196.71	0.01	152.54	154.04	153.97	0.02	150.00	138.42	138.21	0.02	90.63	101.12	100.68	0.03	90.00	73.68	73.15	0.05	44.51	44.59	43.92
2016	6	10	4	30	0	10/06/2016 04:30	0.07	128.00	63.44	56.31	0.01	238.10	229.00	228.76	0.01	183.09	192.18	191.97	0.02	176.82	167.27	167.01	0.02	127.12	127.52	127.47	0.02	93.17	99.69	99.41	0.03	81.89	73.36	72.94	0.04	38.66	41.31	40.56

							Total Long Wave Spectrum (>30 seconds)				Band 1 (210 -250 seconds)				Band 2 (180 -210 seconds)				Band 3 (150 -180 seconds)				Band 4 (120 -150 seconds)				Band 5 (90 -120 seconds)				Band 6 (60 -90 seconds)				Band 7 (30 -60 seconds)			
yyyy	mm	dd	HH	MM	SS	Date+Time	Hm0 (m)	Tp (Sec)	Tm01 (sec)	Tm02 (sec)

2016	7	9	21	0	0	09/07/2016 21:00	0.13	63.02	59.51	54.21	0.02	217.39	227.51	227.24	0.01	210.00	199.59	199.40	0.03	150.25	158.21	158.03	0.04	150.00	135.82	135.50	0.04	97.72	99.97	99.64	0.07	62.85	68.63	68.22	0.09	53.86	43.14	42.09
2016	7	9	22	30	0	09/07/2016 22:30	0.12	71.86	55.90	51.00	0.01	217.39	227.76	227.45	0.01	210.00	199.50	199.37	0.01	165.14	163.08	162.95	0.03	135.75	133.31	133.06	0.04	102.74	104.87	104.55	0.07	71.89	75.42	74.98	0.09	36.28	40.76	39.96
2016	7	10	0	0	0	10/07/2016 00:00	0.12	47.63	53.58	49.05	0.01	227.27	229.33	229.20	0.01	183.09	194.26	194.04	0.02	176.82	167.30	167.08	0.02	145.63	138.90	138.70	0.04	94.94	104.82	104.48	0.06	69.39	70.12	69.69	0.09	47.70	40.55	39.79
2016	7	10	1	30	0	10/07/2016 01:30	0.12	31.51	55.61	50.31	0.01	212.77	232.58	232.25	0.02	197.55	198.69	198.61	0.02	157.34	160.11	160.02	0.03	120.97	133.55	133.19	0.03	120.00	103.73	103.27	0.06	75.69	70.95	70.51	0.09	31.48	40.70	39.86
2016	7	10	3	0	0	10/07/2016 03:00	0.13	75.85	59.58	53.65	0.01	212.77	220.81	220.65	0.02	183.09	192.64	192.53	0.03	176.82	168.59	168.36	0.03	128.76	131.54	131.32	0.03	120.00	104.32	103.89	0.06	75.69	75.90	75.43	0.09	45.52	42.24	41.36
2016	7	10	4	30	0	10/07/2016 04:30	0.12	48.19	59.12	53.39	0.01	212.77	223.38	223.10	0.03	205.68	200.45	200.34	0.03	170.78	165.25	165.08	0.03	132.16	130.53	130.37	0.03	94.94	99.07	98.74	0.05	71.89	71.36	70.98	0.09	48.15	43.33	42.33
2016	7	10	6	0	0	10/07/2016 06:00	0.13	63.02	59.37	54.37	0.01	212.77	229.63	229.30	0.02	210.00	195.62	195.44	0.03	170.78	164.88	164.71	0.02	150.00	133.43	133.16	0.04	97.72	102.86	102.63	0.08	71.89	70.66	70.37	0.09	57.58	41.71	40.81
2016	7	10	7	30	0	10/07/2016 07:30	0.12	80.31	57.03	51.99	0.01	212.77	218.73	218.59	0.02	201.54	197.27	197.13	0.02	157.34	160.91	160.73	0.02	132.16	132.33	132.12	0.04	104.90	99.30	99.10	0.07	79.93	74.09	73.70	0.09	32.29	40.86	40.13
2016	7	10	9	0	0	10/07/2016 09:00	0.12	36.25	54.78	50.18	0.01	212.77	228.88	228.53	0.01	205.68	201.60	201.49	0.02	152.54	162.70	162.44	0.03	135.75	135.53	135.35	0.04	97.72	101.49	101.20	0.06	68.44	71.51	71.03	0.09	36.28	40.56	39.89
2016	7	10	10	30	0	10/07/2016 10:30	0.13	39.77	50.83	47.08	0.02	227.27	225.21	225.08	0.01	193.73	194.98	194.86	0.02	176.82	169.36	169.16	0.02	120.97	134.27	133.95	0.03	102.74	103.66	103.43	0.06	77.45	73.49	73.09	0.11	39.74	40.94	40.06
2016	7	10	12	0	0	10/07/2016 12:00	0.15	50.57	52.49	48.47	0.02	217.39	222.18	222.06	0.02	193.73	195.53	195.40	0.02	150.25	160.59	160.32	0.03	150.00	138.75	138.55	0.04	94.94	99.66	99.46	0.06	85.39	72.58	72.01	0.12	50.59	41.79	41.00
2016	7	10	13	30	0	10/07/2016 13:30	0.15	67.15	56.99	52.59	0.02	243.90	233.15	232.84	0.01	193.73	193.39	193.27	0.03	170.78	167.37	167.23	0.03	132.16	132.98	132.83	0.05	97.72	101.84	101.57	0.08	67.06	70.19	69.73	0.11	56.93	43.10	42.22
2016	7	10	15	0	0	10/07/2016 15:00	0.16	33.03	56.96	52.01	0.01	238.10	239.86	239.79	0.02	193.73	193.51	193.42	0.03	150.25	163.45	163.10	0.04	132.16	132.62	132.43	0.05	94.94	99.99	99.74	0.08	72.93	73.23	72.67	0.12	33.04	42.17	41.16
2016	7	10	16	30	0	10/07/2016 16:30	0.17	53.20	61.51	56.06	0.02	227.27	228.07	227.85	0.03	186.50	191.85	191.71	0.04	170.78	165.42	165.23	0.04	120.97	130.12	129.89	0.05	94.94	98.77	98.47	0.09	71.89	70.91	70.52	0.12	53.29	43.84	42.91
2016	7	10	18	0	0	10/07/2016 18:00	0.16	97.52	60.49	54.72	0.01	217.39	227.49	227.16	0.01	183.09	189.49	189.34	0.04	157.34	162.66	162.41	0.05	127.12	133.78	133.53	0.06	97.72	99.53	99.36	0.07	60.93	69.50	69.14	0.11	49.83	42.47	41.68
2016	7	10	19	30	0	10/07/2016 19:30	0.16	128.00	61.80	55.50	0.02	217.39	227.23	226.95	0.02	193.73	194.59	194.51	0.04	157.34	162.19	162.00	0.06	128.76	129.57	129.50	0.05	97.72	101.39	101.15	0.08	80.57	71.29	70.73	0.11	50.08	42.33	41.41
2016	7	10	21	0	0	10/07/2016 21:00	0.15	146.29	62.28	55.47	0.02	227.27	225.98	225.84	0.03	183.09	191.70	191.59	0.03	180.00	169.05	168.81	0.05	145.63	136.60	136.35	0.05	93.17	99.18	98.89	0.07	68.44	71.14	70.66	0.10	55.35	41.69	40.87
2016	7	10	22	30	0	10/07/2016 22:30	0.16	70.62	58.66	52.98	0.02	243.90	233.90	233.62	0.03	205.68	201.38	201.26	0.03	162.45	164.84	164.67	0.05	132.16	131.91	131.72	0.04	93.17	101.03	100.68	0.08	70.37	71.86	71.52	0.11	34.40	41.37	40.51
2016	7	11	0	0	0	11/07/2016 00:00	0.15	55.35	58.13	53.38	0.03	227.27	227.92	227.84	0.02	205.68	199.21	199.11	0.03	170.78	168.48	168.40	0.03	128.76	132.34	132.18	0.04	94.94	103.01	102.70	0.08	69.39	72.74	72.36	0.11	55.35	43.54	42.69
2016	7	11	1	30	0	11/07/2016 01:30	0.15	59.36	61.14	54.08	0.02	238.10	233.19	232.97	0.03	183.09	191.88	191.78	0.04	165.14	165.87	165.72	0.03	123.97	133.30	132.92	0.04	90.63	99.49	99.18	0.06	75.69	75.70	75.32	0.10	59.29	41.88	40.89
2016	7	11	3	0	0	11/07/2016 03:00	0.15	178.09	61.80	55.45	0.02	212.77	221.64	221.48	0.03	183.09	197.98	197.80	0.04	176.82	169.90	169.63	0.03	141.51	136.56	136.41	0.04	93.17	101.21	100.95	0.07	86.87	73.01	72.54	0.10	55.35	42.86	41.99
2016	7	11	4	30	0	11/07/2016 04:30	0.13	113.78	59.29	54.09	0.01	243.90	231.65	231.35	0.02	183.09	187.90	187.83	0.03	180.00	163.92	163.65	0.02	150.00	132.80	132.48	0.05	114.50	104.42	104.00	0.06	77.45	72.65	72.31	0.09	36.54	43.17	42.42
2016	7	11	6	0	0	11/07/2016 06:00	0.10	46.02	55.15	50.25	0.02	212.77	221.79	221.57	0.02	210.00	198.32	198.14	0.01	180.00	172.47	172.31	0.03	128.76	130.47	130.34	0.02	93.17	98.61	98.41	0.04	71.89	70.24	69.88	0.08	45.94	42.63	41.80
2016	7	11	7	30	0	11/07/2016 07:30	0.10	80.31	58.57	52.88	0.01	238.10	231.69	231.42	0.01	193.73	192.45	192.36	0.03	165.14	162.95	162.81	0.02	145.63	139.33	138.96	0.03	94.94	99.79	99.52	0.05	80.57	72.98	72.59	0.07	57.58	42.07	41.10
2016	7	11	9	0	0	11/07/2016 09:00	0.10	93.09	64.42	56.57	0.02	243.90	235.20	234.99	0.02	183.09	194.50	194.29	0.03	170.78	167.74	167.51	0.03	132.16	130.12	130.02	0.04	92.31	96.79	96.61	0.05	66.18	72.32	71.90	0.06	32.29	40.01	39.30
2016	7	11	10	30	0	11/07/2016 10:30	0.08	128.00	54.16	48.64	0.01	217.39	227.61	227.35	0.01	210.00	194.21	194.07	0.01	152.54	156.97	156.80	0.02	128.76	132.07	131.87	0.02	113.21	103.61	103.21	0.03	69.39	71.60	71.12	0.06	40.87	39.69	38.97
2016	7	11	12	0	0	11/07/2016 12:00	0.09	56.89	60.33	54.68	0.01	238.10	232.72	232.52	0.01	205.68	197.86	197.70	0.02	157.34	160.22	160.08	0.02	123.97	128.45	128.26	0.02	120.00	104.31	103.89	0.04	64.06	68.88	68.53	0.06	56.93	43.84	42.68
2016	7	11	13	30	0	11/07/2016 13:30	0.07	56.11	54.60	49.74	0.01	212.77	226.99	226.69	0.01	193.73	196.24	196.17	0.02	157.34	160.32	160.15	0.02	123.97	128.63	128.49	0.02	114.50	108.08	107.79	0.03	64.06	72.18	71.69	0.06	55.97	41.70	40.78
2016	7	11	15	0	0	11/07/2016 15:00	0.07	45.01	58.39	51.99	0.01	243.90	237.37	237.22	0.01	183.09	190.53	190.39	0.01	165.14	166.17	166.00	0.02	135.75	133.67	133.45	0.02	113.21	102.03	101.65	0.02	69.39	72.55	72.09	0.05	45.11	41.28	40.51
2016	7	11	16	30	0	11/07/2016 16:30	0.07	52.51	60.20	54.49	0.00	212.77	234.45	234.14	0.01	205.68	200.02	199.92	0.01	150.25	163.58	163.36	0.02	123.97	130.35	130.09	0.02	120.00	100.01	99.67	0.03	71.89	71.20	70.83	0.05	52.45	44.35	43.48
2016	7	11	18	0	0	11/07/2016 18:00	0.06	56.89	56.61	51.03	0.00	250.00	229.33	228.80	0.01	186.50	193.71	193.59	0.01	170.78	163.86	163.71	0.01	128.76	130.69	130.53	0.01	93.17	100.23	99.94	0.02	60.93	74.01	73.42	0.05	56.93	43.03	42.02
2016	7	11	19	30	0	11/07/2016 19:30	0.05	170.67	57.03	50.80	0.01	250.00	234.60	234.30	0.01	193.73	194.50	194.44	0.01	170.78	170.18	170.11	0.01	123.97	129.61	129.43	0.02	99.67	100.77	100.51	0.02	78.67	72.61	71.97	0.04	33.82	39.33	38.78
2016	7	11	21	0	0	11/07/2016 21:00	0.05	315.08	56.37	50.53	0.00	250.00	243.72	243.65	0.01	186.50	187.62	187.59	0.01	165.14	164.31	164.11	0.01	123.97	126.26	126.14	0.01	120.00	98.97	98.61	0.02	78.67	75.33	74.95	0.04	33.60	41.93	41.18
2016	7	11	22	30	0	11/07/2016 22:30	0.05	315.08	61.32	53.17	0.01	238.10	235.91	235.68	0.01	197.55	198.49	198.39	0.01	162.45	163.19	163.09	0.01	123.97	127.48	127.38	0.01	102.74	99.64	99.47	0.02	69.39	73.32	72.85	0.03	45.52	40.57	39.86
2016	7	12	0	0	0	12/07/2016 00:00	0.05	57.69	53.46	49.99	0.00	217.39	217.68	217.65	0.01	193.73	195.69	195.63	0.01	170.78	169.61	169.52	0.01	123.97	132.49	132.20	0.01	94.94	99.93	99.68	0.02	60.20	66.22	65.80	0.04	57.58	43.91	43.03
2016	7	12	1	30	0	12/07/2016 01:30	0.05	195.05	53.78	48.54	0.00	212.77	224.42	223.99	0.01	193.73	196.78	196.71	0.01	150.25	157.16	156.98	0.01	150.00	142.88	142.75	0.01	104.90	102.43	102.36	0.02	86.87	72.70	72.11	0.04	53.86	40.87	39.88
2016	7	12	3	0	0	12/07/2016 03:00	0.04	315.08	54.27	49.04	0.01	243.90	237.89	237.76	0.01	193.73	194.11	194.06	0.00	180.00	173.45	173.40	0.01	137.61	135.89	135.80	0.01	110.70	109.37	109.04	0.02	75.69	70.28	69.98	0.03	41.38	40.65	40.06
2016	7	12	4	30	0	12/07/2016 04:30	0.04	60.24	54.37	48.09	0.00	238.10	239.06	238.98	0.00	186.50	187.34	187.31	0.01	157.34	158.23	158.17	0.01	141.51	132.81	132.58	0.01	90.63	98.72	98.35	0.02	60.20	69.21	68.54	0.03	60.00	38.97	38.26
2016	7	12	6	0	0	12/07/2016 06:00	0.05	315.08	53.99	48.43	0.00	250.00	231.49	230.94	0.01	205.68	196.52	196.35	0.01	180.00	170.79	170.63	0.01	123.97	129.46	129.22	0.01	102.74	103.04	102.71	0.02	66.18	70.55	70.05	0.04	31.98	39.22	38.57
2016	7	12	7	30	0	12/07/2016 07:30	0.04	57.69	50.65	46.10	0.00	250.00	236.75	236.38	0.00	186.50	187.86	187.81	0.01	157.34	164.18	164.00	0.01	123.97	131.52	131.23	0.01	102.74	106.40	106.13	0.02	78.67	72.55	72.19	0.04	57.58	39.49	38.72
2016	7	12	9	0	0	12/07/2016 09:00	0.05	60.24	54.87	48.84	0.00	250.00	228.59	228.18	0.01	186.50	189.14	189.05	0.01	152.54	159.32	159.09	0.01	135.75	137.74	137.67	0.01	102.74	103.89	103.67	0.02	60.20	69.60	68.92	0.04	36.28	40.44	39.66
2016	7	12	10	30	0	12/07/2016 10:30	0.04	163.84	51.59	46.50	0.01	227.27	226.21	226.08	0.01	193.73	192.76	192.66	0.01	165.14	163.11	163.05	0.01	132.16	135.61	135.45	0.01	104.90	105.83	105.73	0.01	68.44	70.82	70.46	0.03	34.05	38.86	38.36
2016	7	12	12	0	0	12/07/2016 12:00	0.04	55.35	48.83	44.91	0.00	238.10	239.57	239.48	0.01	183.09	192.60	192.49	0.01	176.82	169.75	169.46	0.01	150.00	136.77	136.52	0.01	104.90	104.37	104.32	0.02	67.06	69.78	69.26	0.04	55.35	39.46	38.66

							Total Long Wave Spectrum (>30 seconds)				Band 1 (210 -250 seconds)				Band 2 (180 -210 seconds)				Band 3 (150 -180 seconds)				Band 4 (120 -150 seconds)				Band 5 (90 -120 seconds)				Band 6 (60 -90 seconds)				Band 7 (30 -60 seconds)			
yyyy	mm	dd	HH	MM	SS	Date+Time	Hm0 (m)	Tp (Sec)	Tm01 (sec)	Tm02 (sec)

							Total Long Wave Spectrum (>30 seconds)				Band 1 (210 -250 seconds)				Band 2 (180 -210 seconds)				Band 3 (150 -180 seconds)				Band 4 (120 -150 seconds)				Band 5 (90 -120 seconds)				Band 6 (60 -90 seconds)				Band 7 (30 -60 seconds)			
yyyy	mm	dd	HH	MM	SS	Date+Time	Hm0 (m)	Tp (Sec)	Tm01 (sec)	Tm02 (sec)

							Total Long Wave Spectrum (>30 seconds)				Band 1 (210 -250 seconds)				Band 2 (180 -210 seconds)				Band 3 (150 -180 seconds)				Band 4 (120 -150 seconds)				Band 5 (90 -120 seconds)				Band 6 (60 -90 seconds)				Band 7 (30 -60 seconds)			
yyyy	mm	dd	HH	MM	SS	Date+Time	Hm0 (m)	Tp (Sec)	Tm01 (sec)	Tm02 (sec)

							Total Long Wave Spectrum (>30 seconds)				Band 1 (210 -250 seconds)				Band 2 (180 -210 seconds)				Band 3 (150 -180 seconds)				Band 4 (120 -150 seconds)				Band 5 (90 -120 seconds)				Band 6 (60 -90 seconds)				Band 7 (30 -60 seconds)			
yyyy	mm	dd	HH	MM	SS	Date+Time	Hm0 (m)	Tp (Sec)	Tm01 (sec)	Tm02 (sec)

2017	8	22	0	0	0	22/08/2017 00:00	0.07	45.01	51.58	47.93	0.01	238.10	238.41	238.32	0.00	183.09	187.08	187.06	0.01	157.34	159.59	159.36	0.01	123.97	128.89	128.66	0.02	94.94	101.73	101.33	0.03	67.06	73.12	72.64	0.05	45.11	40.73	40.00
2017	8	22	1	30	0	22/08/2017 01:30	0.07	91.02	56.16	50.96	0.01	227.27	228.63	228.45	0.01	186.50	193.57	193.40	0.01	157.34	160.30	160.11	0.01	123.97	132.20	131.74	0.02	90.63	98.14	97.79	0.03	62.07	71.42	70.87	0.05	57.58	42.28	41.41
2017	8	22	3	0	0	22/08/2017 03:00	0.06	46.55	58.20	52.42	0.01	250.00	235.20	234.84	0.01	186.50	192.85	192.71	0.01	180.00	165.49	165.21	0.01	132.16	130.86	130.76	0.02	93.17	97.72	97.45	0.03	71.89	73.78	73.42	0.04	46.58	40.71	39.93
2017	8	22	4	30	0	22/08/2017 04:30	0.06	102.40	59.80	54.53	0.01	217.39	220.93	220.84	0.00	210.00	193.87	193.59	0.01	152.54	161.04	160.80	0.02	137.61	135.87	135.69	0.02	101.69	102.46	102.26	0.03	87.63	74.78	74.11	0.04	56.93	43.01	42.23
2017	8	22	6	0	0	22/08/2017 06:00	0.06	60.24	61.44	55.52	0.01	217.39	222.76	222.62	0.01	210.00	197.91	197.79	0.01	170.78	165.39	165.14	0.02	128.76	130.08	130.01	0.02	102.74	100.25	99.97	0.03	60.20	70.18	69.75	0.04	60.00	42.38	41.51
2017	8	22	7	30	0	22/08/2017 07:30	0.06	77.28	49.90	46.05	0.01	217.39	225.25	224.97	0.00	210.00	200.81	200.67	0.01	150.25	155.90	155.81	0.02	145.63	139.26	139.01	0.01	94.94	100.07	99.87	0.02	77.45	73.94	73.61	0.04	37.22	39.64	38.90
2017	8	22	9	0	0	22/08/2017 09:00	0.06	35.62	51.50	47.30	0.01	217.39	225.15	224.98	0.01	183.09	192.32	192.09	0.01	180.00	166.56	166.21	0.01	141.51	138.84	138.62	0.01	120.00	101.52	100.99	0.02	75.69	72.58	72.34	0.05	35.63	41.55	40.68
2017	8	22	10	30	0	22/08/2017 10:30	0.06	55.35	45.95	43.07	0.00	212.77	229.80	229.37	0.00	183.09	198.04	197.79	0.01	157.34	162.62	162.46	0.01	123.97	129.26	129.07	0.01	90.63	98.40	98.08	0.02	90.00	74.11	73.56	0.05	55.35	39.35	38.58
2017	8	22	12	0	0	22/08/2017 12:00	0.06	60.24	52.91	49.32	0.00	217.39	217.68	217.65	0.00	183.09	194.08	193.94	0.01	176.82	168.05	167.73	0.02	123.97	130.59	130.33	0.01	94.94	99.41	99.21	0.03	60.20	71.61	70.84	0.04	60.00	42.13	41.20
2017	8	22	13	30	0	22/08/2017 13:30	0.05	93.09	57.16	52.24	0.00	250.00	229.64	229.24	0.00	193.73	197.45	197.34	0.01	157.34	158.68	158.57	0.01	128.76	133.77	133.53	0.02	93.17	95.18	95.05	0.02	86.87	75.29	74.54	0.04	59.29	42.54	41.65
2017	8	22	15	0	0	22/08/2017 15:00	0.04	70.62	58.76	51.84	0.00	238.10	235.68	235.43	0.01	183.09	191.11	190.96	0.01	165.14	167.43	167.29	0.01	120.97	134.43	134.16	0.01	120.00	104.34	103.81	0.02	70.87	73.04	72.86	0.03	39.74	39.09	38.46
2017	8	22	16	30	0	22/08/2017 16:30	0.05	60.24	60.11	54.49	0.01	217.39	223.77	223.51	0.01	186.50	190.02	189.89	0.01	180.00	172.92	172.75	0.01	135.75	136.03	135.91	0.02	97.72	100.09	99.80	0.02	60.20	70.12	69.56	0.03	54.75	42.68	41.72
2017	8	22	18	0	0	22/08/2017 18:00	0.05	55.35	54.39	50.26	0.01	238.10	234.12	233.85	0.01	205.68	199.35	199.17	0.01	170.78	167.14	166.98	0.01	132.16	133.02	132.98	0.01	117.19	104.43	103.91	0.02	61.31	72.23	71.55	0.04	55.35	42.63	41.69

							Total Long Wave Spectrum (>30 seconds)				Band 1 (210 -250 seconds)				Band 2 (180 -210 seconds)				Band 3 (150 -180 seconds)				Band 4 (120 -150 seconds)				Band 5 (90 -120 seconds)				Band 6 (60 -90 seconds)				Band 7 (30 -60 seconds)			
yyyy	mm	dd	HH	MM	SS	Date+Time	Hm0 (m)	Tp (Sec)	Tm01 (sec)	Tm02 (sec)

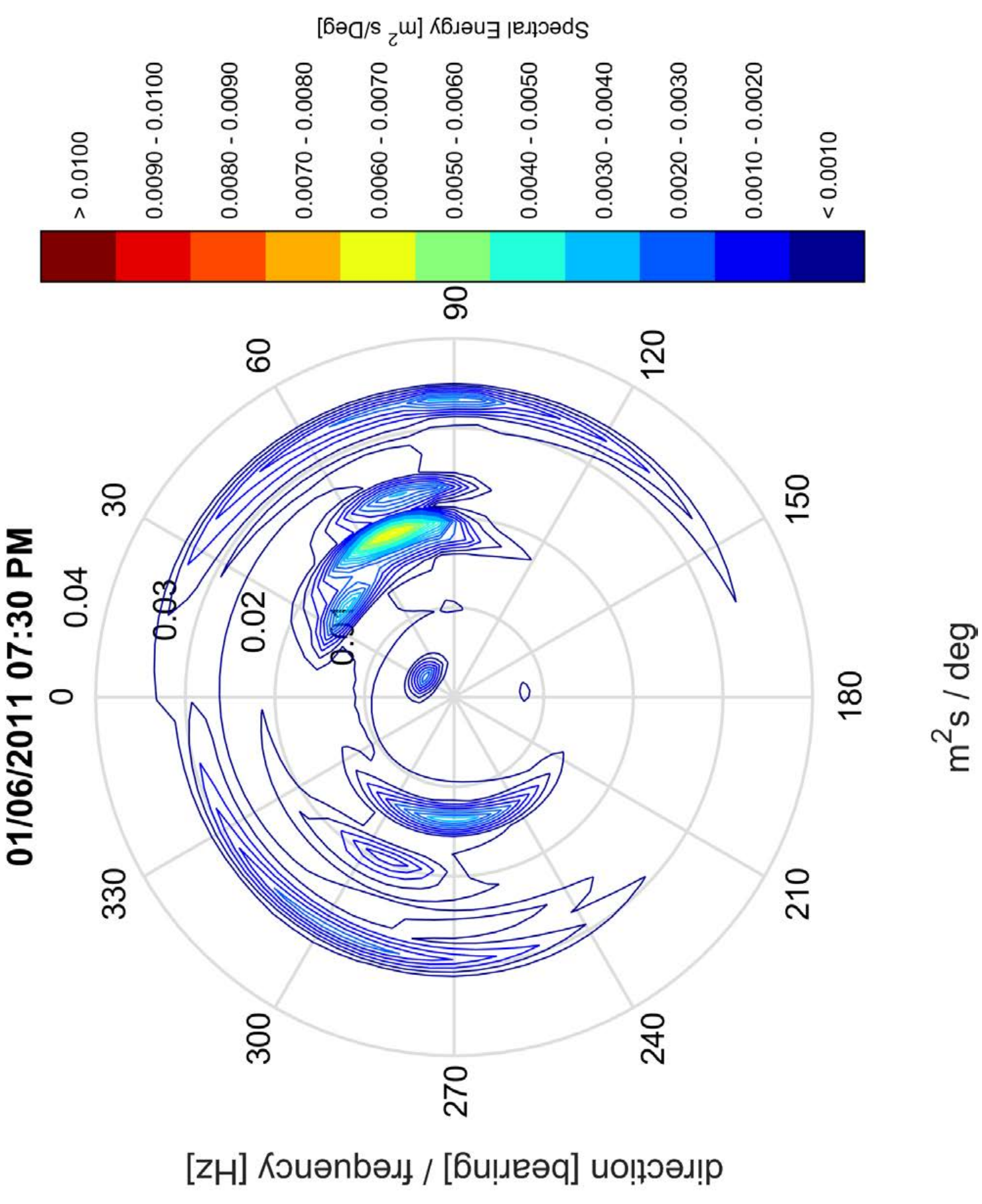
							Total Long Wave Spectrum (>30 seconds)				Band 1 (210 -250 seconds)				Band 2 (180 -210 seconds)				Band 3 (150 -180 seconds)				Band 4 (120 -150 seconds)				Band 5 (90 -120 seconds)				Band 6 (60 -90 seconds)				Band 7 (30 -60 seconds)			
yyyy	mm	dd	HH	MM	SS	Date+Time	Hm0 (m)	Tp (Sec)	Tm01 (sec)	Tm02 (sec)

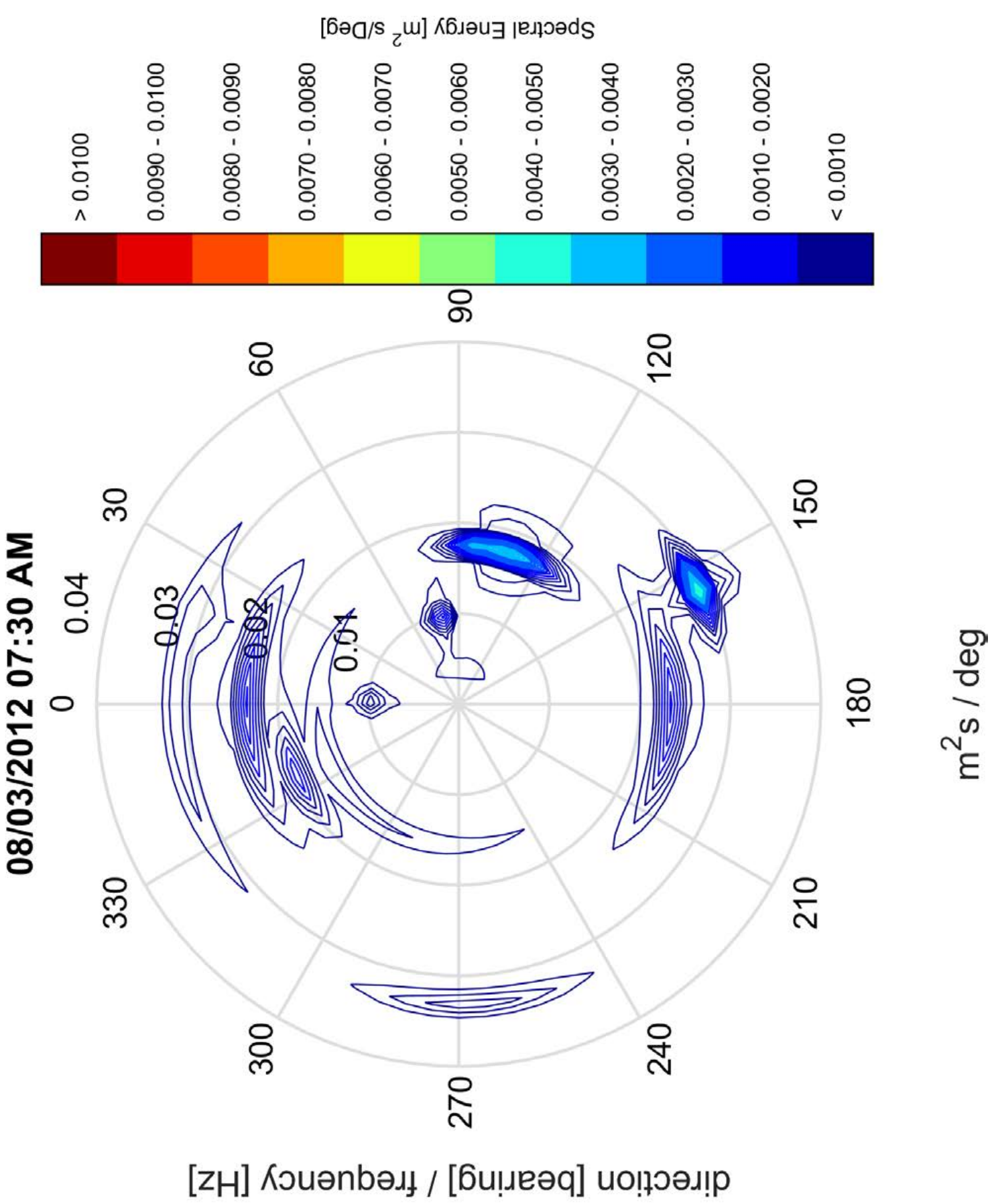
2018	1	18	1	30	0	18/01/2018 01:30	0.11	163.84	72.61	62.77	0.01	243.90	239.30	239.17	0.03	186.50	189.86	189.80	0.04	165.14	165.58	165.43	0.03	123.97	130.41	130.18	0.03	97.72	98.52	98.31	0.05	64.06	71.96	71.35	0.06	44.51	42.62	41.94
2018	1	18	3	0	0	18/01/2018 03:00	0.09	170.67	68.30	59.87	0.01	217.39	224.65	224.46	0.02	186.50	191.45	191.28	0.03	170.78	167.74	167.57	0.03	141.51	136.53	136.27	0.03	113.21	104.13	103.73	0.04	85.39	70.53	69.97	0.06	56.93	43.86	42.86
2018	1	18	4	30	0	18/01/2018 04:30	0.09	157.54	69.00	58.67	0.01	212.77	223.54	223.36	0.02	205.68	199.57	199.44	0.03	157.34	160.51	160.40	0.03	123.97	132.48	132.20	0.02	99.67	102.20	101.85	0.03	83.26	74.66	74.29	0.06	59.29	42.15	41.22
2018	1	18	6	0	0	18/01/2018 06:00	0.09	170.67	69.17	60.61	0.02	217.39	217.68	217.65	0.02	183.09	193.79	193.64	0.03	170.78	168.41	168.17	0.03	132.16	133.81	133.63	0.02	94.94	99.37	99.10	0.04	77.45	75.25	74.65	0.05	53.29	43.60	42.82
2018	1	18	7	30	0	18/01/2018 07:30	0.08	163.84	69.31	59.06	0.01	227.27	230.01	229.78	0.01	205.68	199.03	198.88	0.04	162.45	163.06	162.98	0.02	135.75	133.91	133.76	0.02	90.63	97.34	96.98	0.03	90.00	73.95	73.39	0.05	53.86	41.62	40.64
2018	1	18	9	0	0	18/01/2018 09:00	0.09	85.33	59.95	52.73	0.01	212.77	225.22	225.06	0.02	186.50	194.25	194.08	0.03	162.45	163.27	163.18	0.03	141.51	140.06	139.89	0.02	117.19	106.12	105.59	0.04	85.39	75.59	75.08	0.07	30.61	40.73	39.79
2018	1	18	10	30	0	18/01/2018 10:30	0.10	58.51	61.70	54.18	0.01	227.27	227.12	226.94	0.02	197.55	197.28	197.19	0.03	157.34	161.61	161.45	0.03	127.12	130.16	129.94	0.03	117.19	109.30	108.87	0.03	78.67	72.95	72.45	0.07	58.59	42.58	41.64
2018	1	18	12	0	0	18/01/2018 12:00	0.10	124.12	66.00	58.04	0.01	243.90	234.93	234.63	0.01	205.68	200.01	199.87	0.02	176.82	165.65	165.46	0.04	123.97	129.41	129.19	0.03	120.00	102.68	102.14	0.04	77.45	73.91	73.44	0.06	34.40	42.14	41.07
2018	1	18	13	30	0	18/01/2018 13:30	0.08	89.04	70.20	61.97	0.01	217.39	225.31	225.12	0.02	186.50	191.34	191.26	0.02	157.34	161.13	160.95	0.02	145.63	141.13	140.87	0.02	90.63	101.04	100.68	0.04	89.20	75.89	75.39	0.05	58.59	44.48	43.51
2018	1	18	15	0	0	18/01/2018 15:00	0.07	83.59	69.02	60.56	0.01	212.77	226.72	226.31	0.02	205.68	196.46	196.29	0.02	162.45	161.85	161.66	0.02	135.75	134.18	133.92	0.02	93.17	98.19	97.91	0.04	83.26	76.60	75.93	0.04	55.97	42.42	41.48
2018	1	18	16	30	0	18/01/2018 16:30	0.06	315.08	67.62	58.29	0.01	212.77	223.10	222.95	0.01	186.50	191.36	191.22	0.01	180.00	164.76	164.48	0.02	135.75	133.49	133.39	0.02	93.17	103.30	102.96	0.03	86.87	77.88	77.53	0.04	35.63	41.51	40.74
2018	1	18	18	0	0	18/01/2018 18:00	0.07	151.70	69.31	58.84	0.01	217.39	222.17	222.01	0.01	210.00	197.41	197.22	0.02	152.54	158.54	158.39	0.02	132.16	136.22	135.97	0.02	93.17	98.47	98.16	0.03	77.45	74.37	73.79	0.04	45.52	39.33	38.58
2018	1	18	19	30	0	18/01/2018 19:30	0.06	75.85	65.36	55.68	0.01	227.27	225.46	225.30	0.01	186.50	191.31	191.16	0.02	152.54	162.37	162.14	0.02	150.00	133.34	132.98	0.02	120.00	101.03	100.65	0.03	75.69	74.23	73.80	0.04	34.64	38.37	37.63

APPENDIX

B

POLAR SPECTRAL PLOTS


01/06/2011 07:30 PM
0
30
60
90
120
150
180
210
240
270
300
330
0.04
0.03
0.02
0.01
direction [bearing] / frequency [Hz]
m2s / deg
Spectral Energy [m2 s/Deg]
> 0.0100
0.0090 - 0.0100
0.0080 - 0.0090
0.0070 - 0.0080
0.0060 - 0.0070
0.0050 - 0.0060
0.0040 - 0.0050
0.0030 - 0.0040
0.0020 - 0.0030
0.0010 - 0.0020
< 0.0010



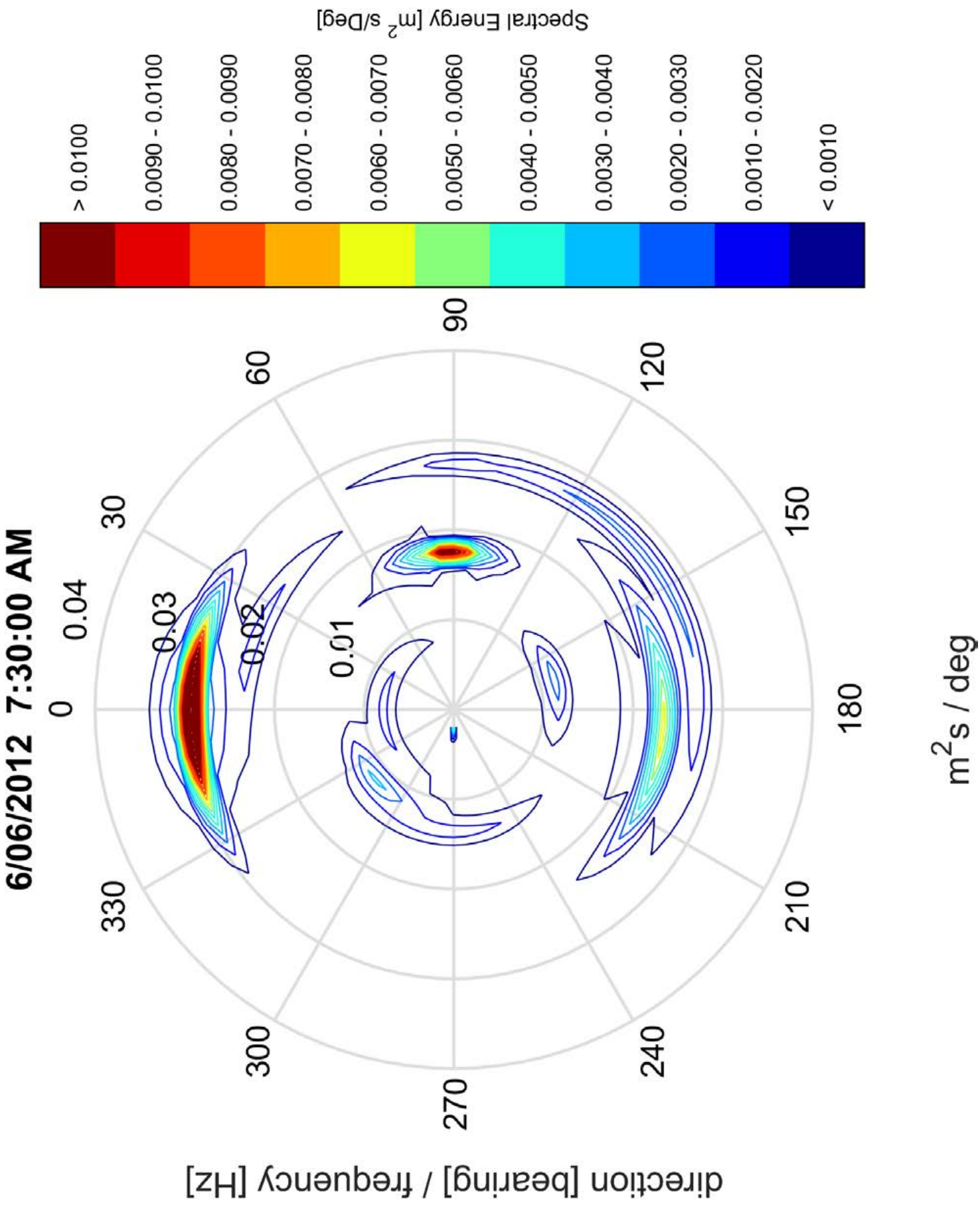
Port Kembla Long Waves, Sediment and Thermal Modelling

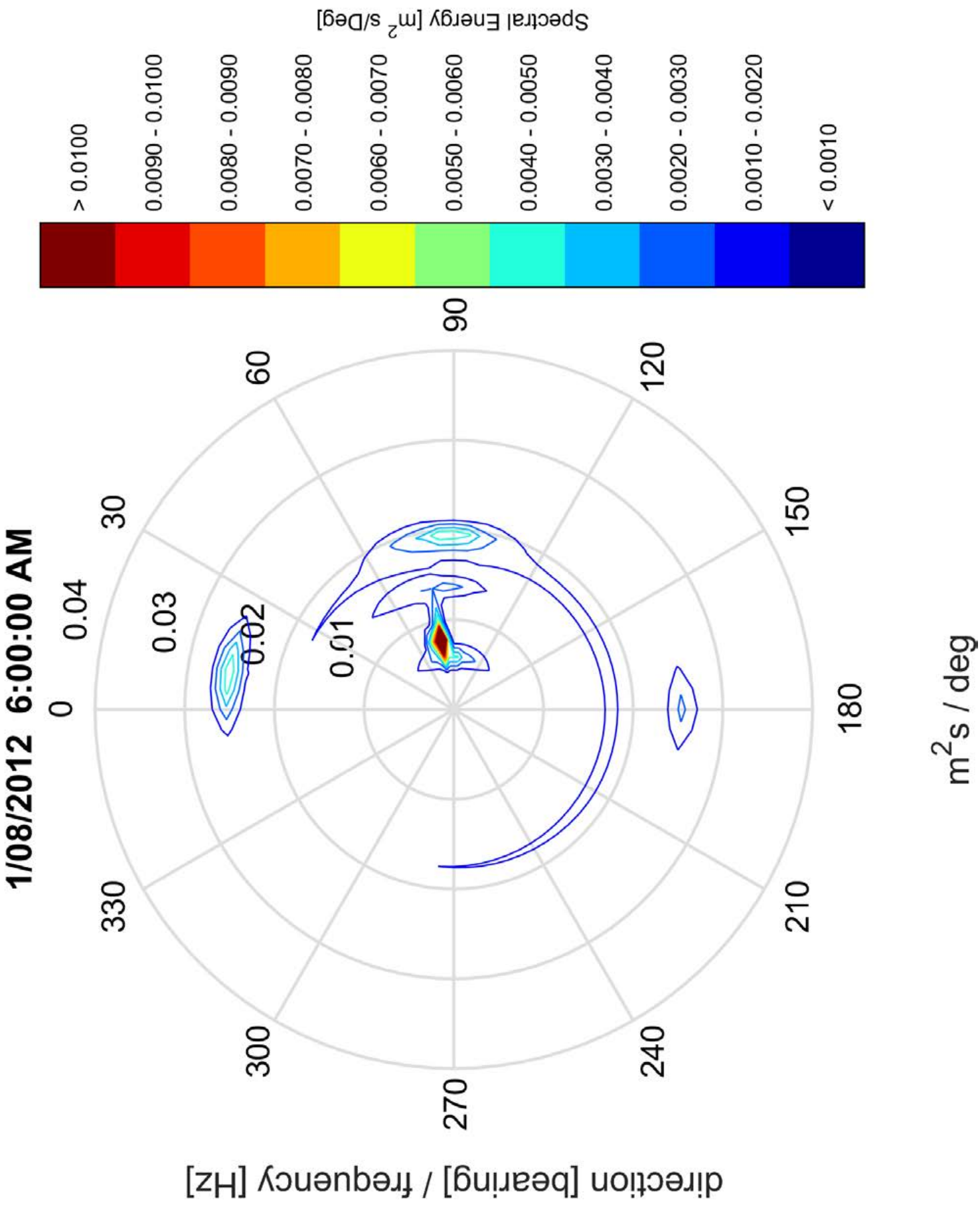
Polar Spectral Plot
Storm 11

Appendix B2

59919002 Oct 2018

N:\Projects\599\FY19\002_N:\Projects\599\FY19\002_Port Kembla Long Waves\


6/06/2012 7:30:00 AM
0
30
60
90
120
150
180
210
240
270
300
330
0.01
0.02
0.03
0.04
direction [bearing] / frequency [Hz]
m2s / deg
Spectral Energy [m2 s/Deg]
> 0.0100
0.0090 - 0.0100
0.0080 - 0.0090
0.0070 - 0.0080
0.0060 - 0.0070
0.0050 - 0.0060
0.0040 - 0.0050
0.0030 - 0.0040
0.0020 - 0.0030
0.0010 - 0.0020
< 0.0010



Cardno

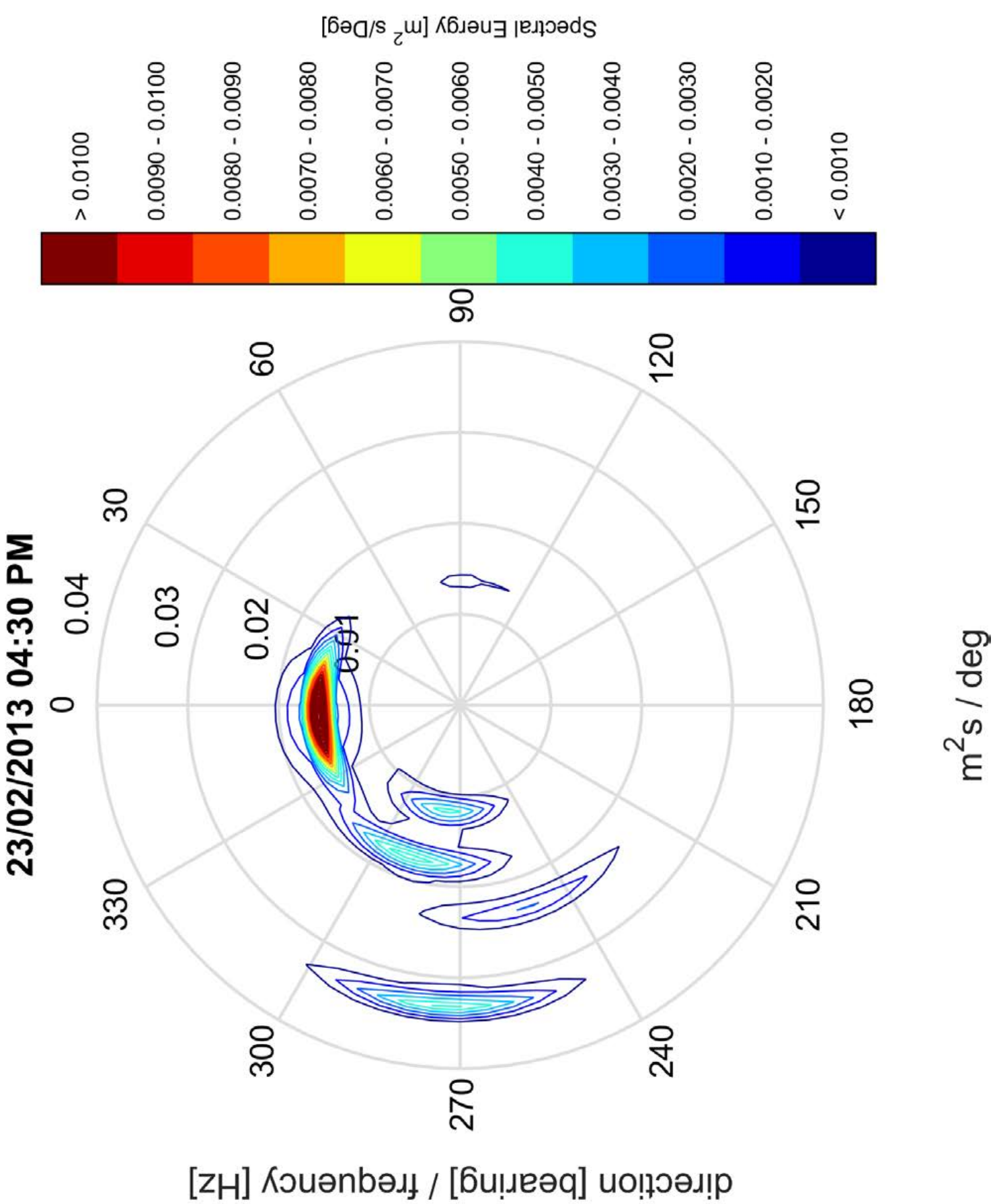
Port Kembla Long Waves, Sediment and Thermal Modelling

Polar Spectral Plot
Storm 13

Appendix B4

59919002 Oct 2018

N:\Projects\599\FY19\002_N:\Projects\599\FY19\002_Port Kembla Long Waves\



Cardno

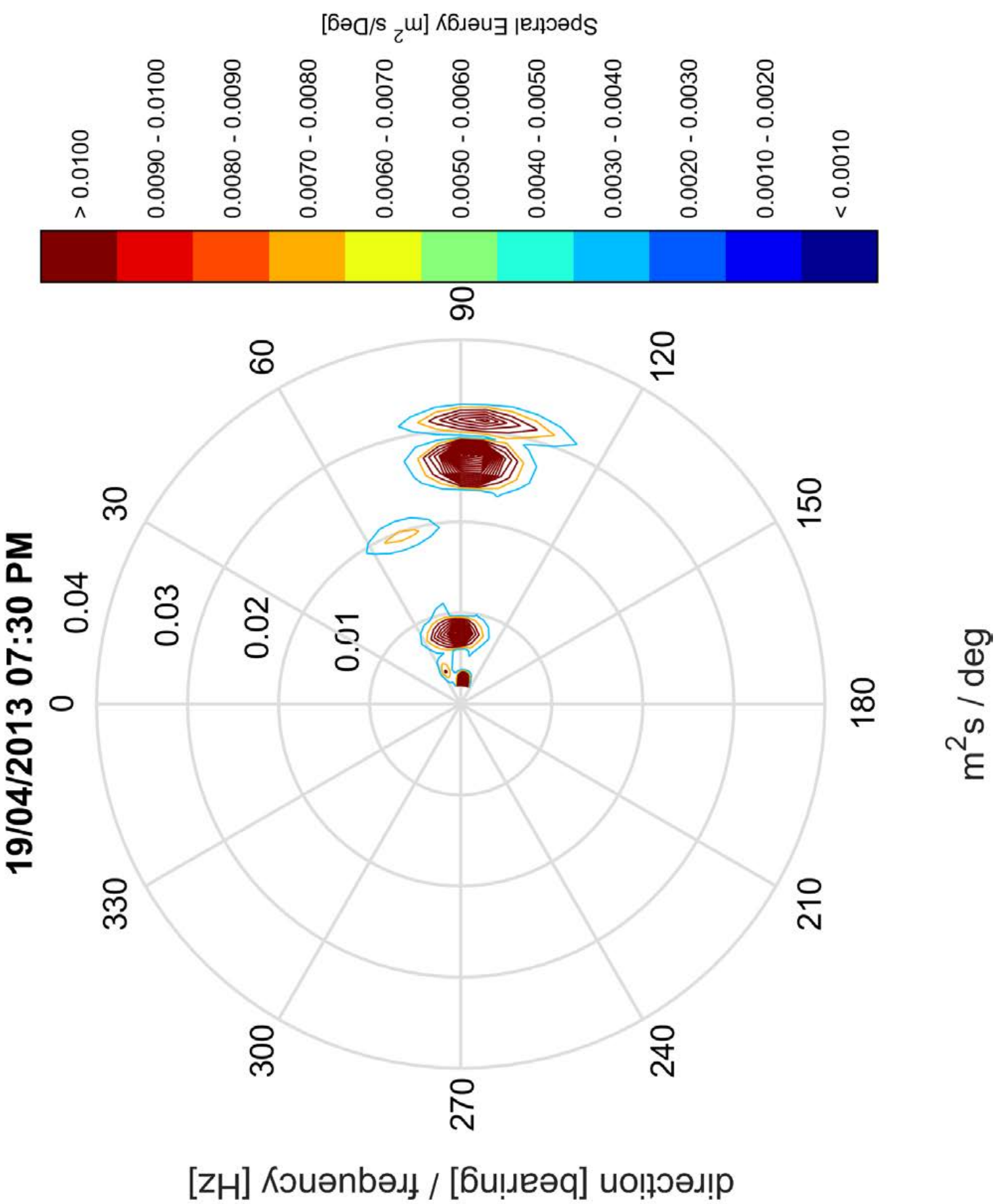
Port Kembla Long Waves, Sediment and Thermal Modelling

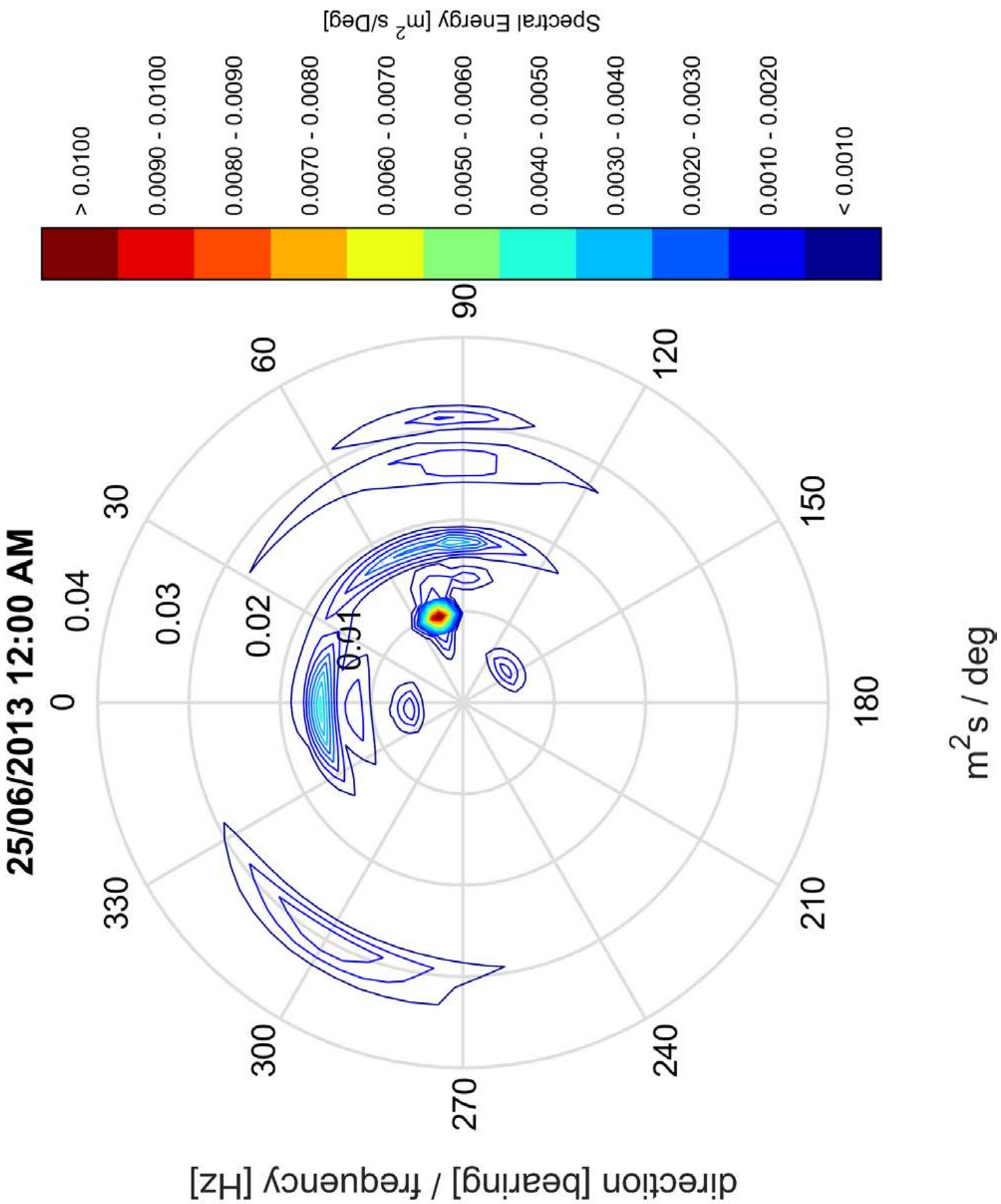
Polar Spectral Plot
Storm 14

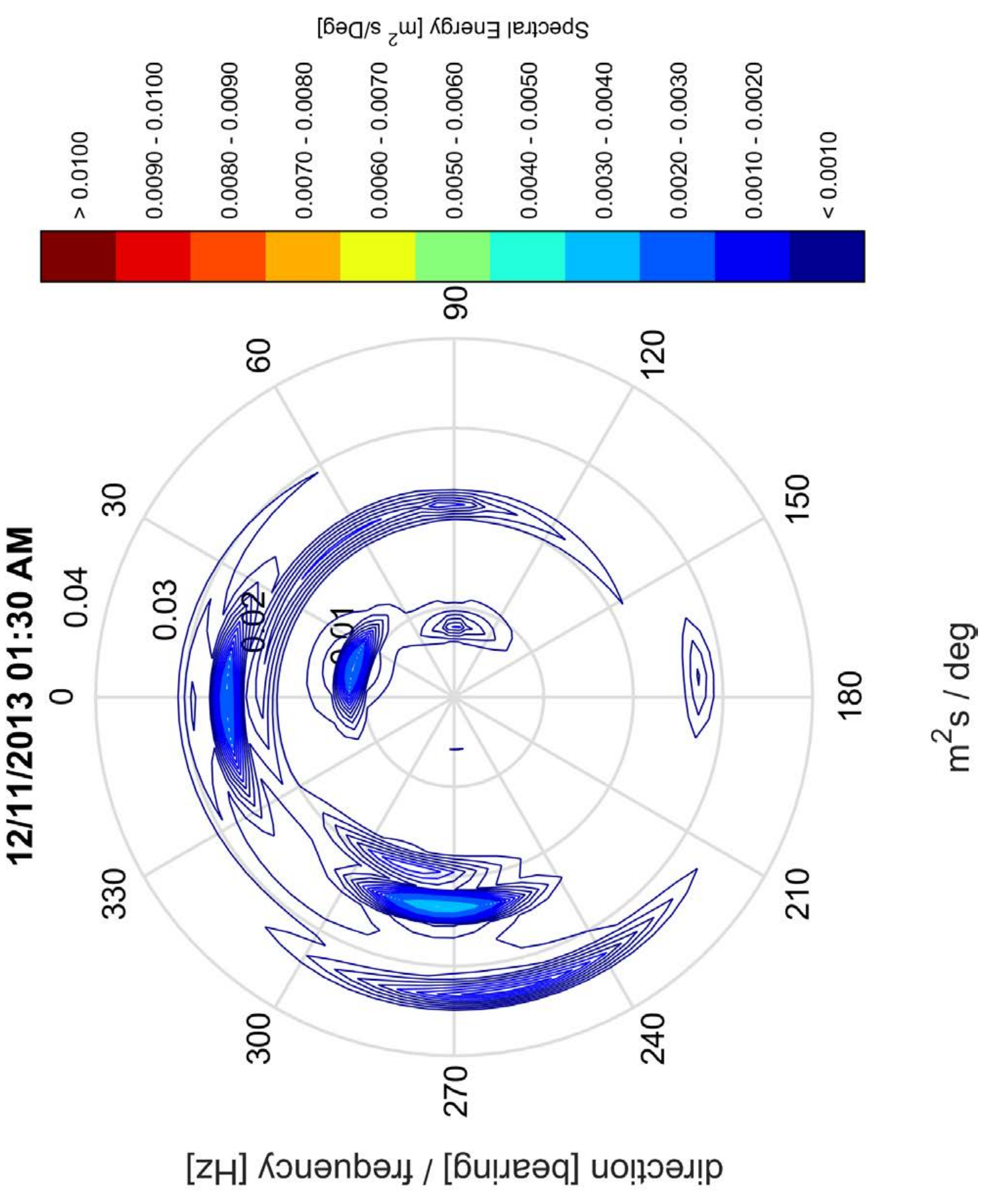
Appendix B5

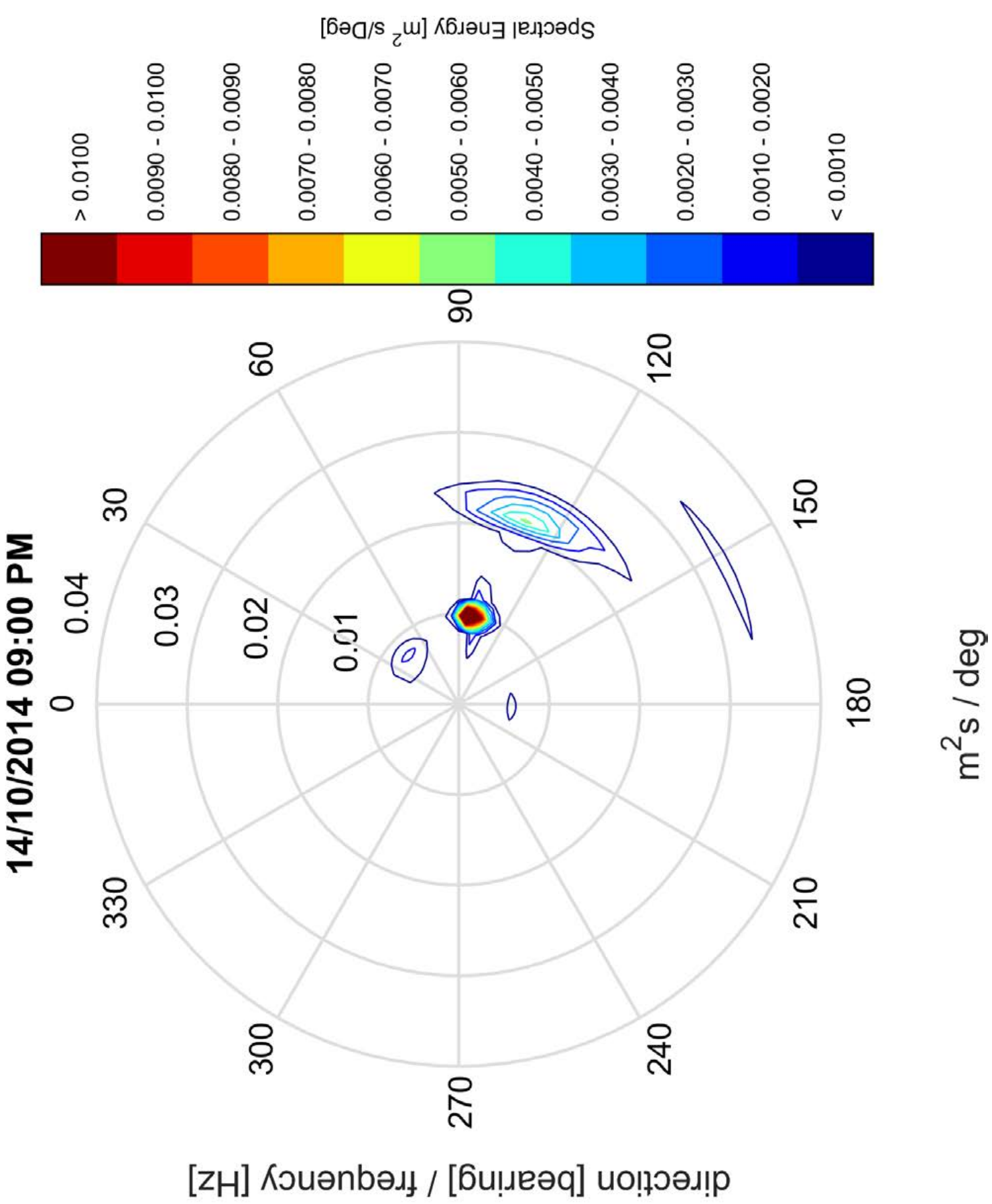
59919002 Oct 2018

N:\Projects\599\FY19\002_N:\Projects\599\FY19\002_Port Kembla Long Waves\


19/04/2013 07:30 PM
0
30
60
90
120
150
180
210
240
270
300
330
0.01
0.02
0.03
0.04
direction [bearing] / frequency [Hz]
m2s / deg
> 0.0100
0.0090 - 0.0100
0.0080 - 0.0090
0.0070 - 0.0080
0.0060 - 0.0070
0.0050 - 0.0060
0.0040 - 0.0050
0.0030 - 0.0040
0.0020 - 0.0030
0.0010 - 0.0020
< 0.0010
Spectral Energy [m2 s/Deg]


25/06/2013 12:00 AM
0
30
60
90
120
150
180
210
240
270
300
330
0.01
0.02
0.03
0.04
direction [bearing] / frequency [Hz]
> 0.0100
0.0090 - 0.0100
0.0080 - 0.0090
0.0070 - 0.0080
0.0060 - 0.0070
0.0050 - 0.0060
0.0040 - 0.0050
0.0030 - 0.0040
0.0020 - 0.0030
0.0010 - 0.0020
< 0.0010
Spectral Energy [m2 s/Deg]
m2s / deg


12/11/2013 01:30 AM
0
0.04
0.03
0.02
0.01
30
60
90
120
150
180
210
240
270
300
330
> 0.0100
0.0090 - 0.0100
0.0080 - 0.0090
0.0070 - 0.0080
0.0060 - 0.0070
0.0050 - 0.0060
0.0040 - 0.0050
0.0030 - 0.0040
0.0020 - 0.0030
0.0010 - 0.0020
< 0.0010
Spectral Energy [m2 s/Deg]
direction [bearing] / frequency [Hz]
m2s / deg


14/10/2014 09:00 PM
0
30
60
90
120
150
180
210
240
270
300
330
0.01
0.02
0.03
0.04
direction [bearing] / frequency [Hz]
m2s / deg
Spectral Energy [m2 s/Deg]
> 0.0100
0.0090 - 0.0100
0.0080 - 0.0090
0.0070 - 0.0080
0.0060 - 0.0070
0.0050 - 0.0060
0.0040 - 0.0050
0.0030 - 0.0040
0.0020 - 0.0030
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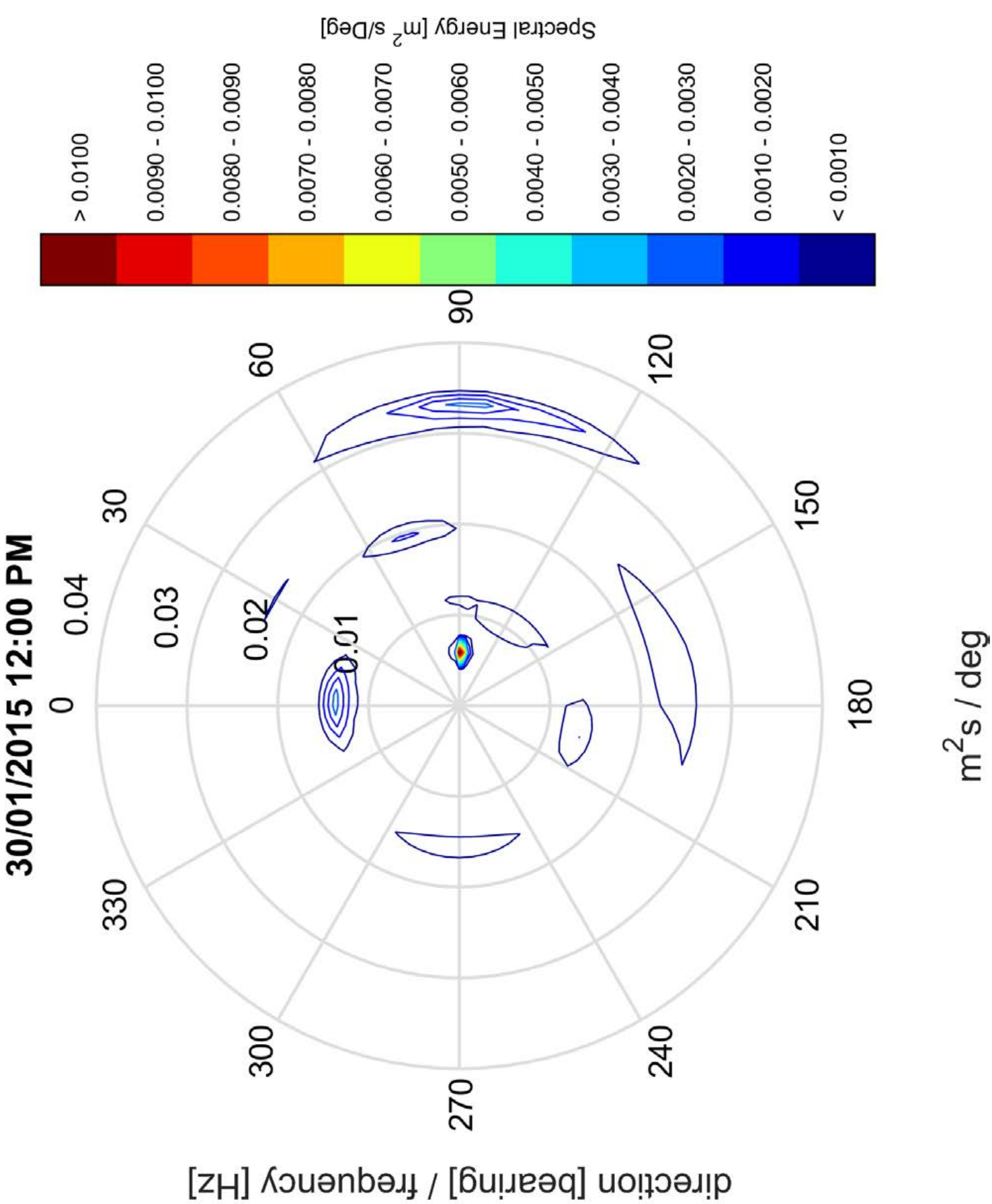
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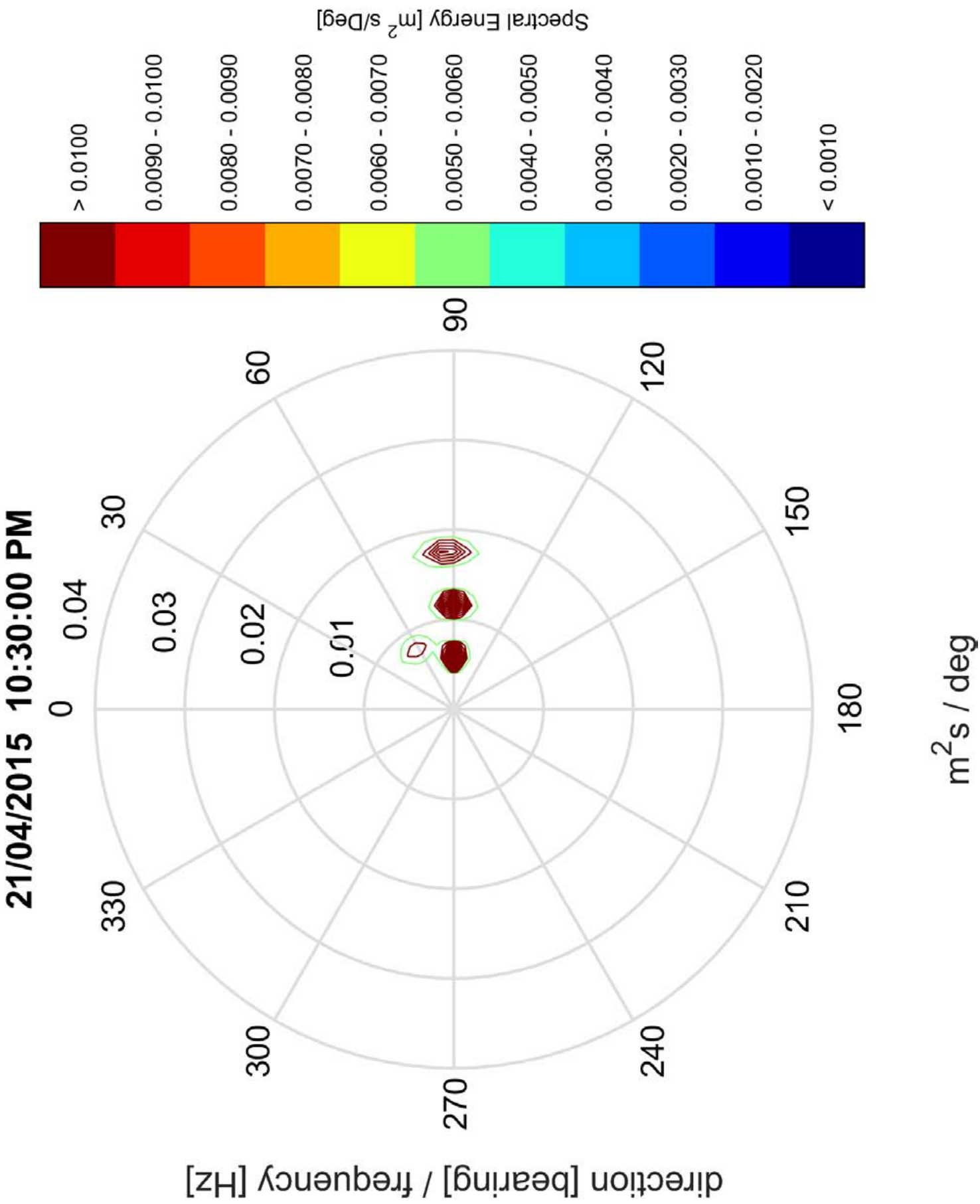
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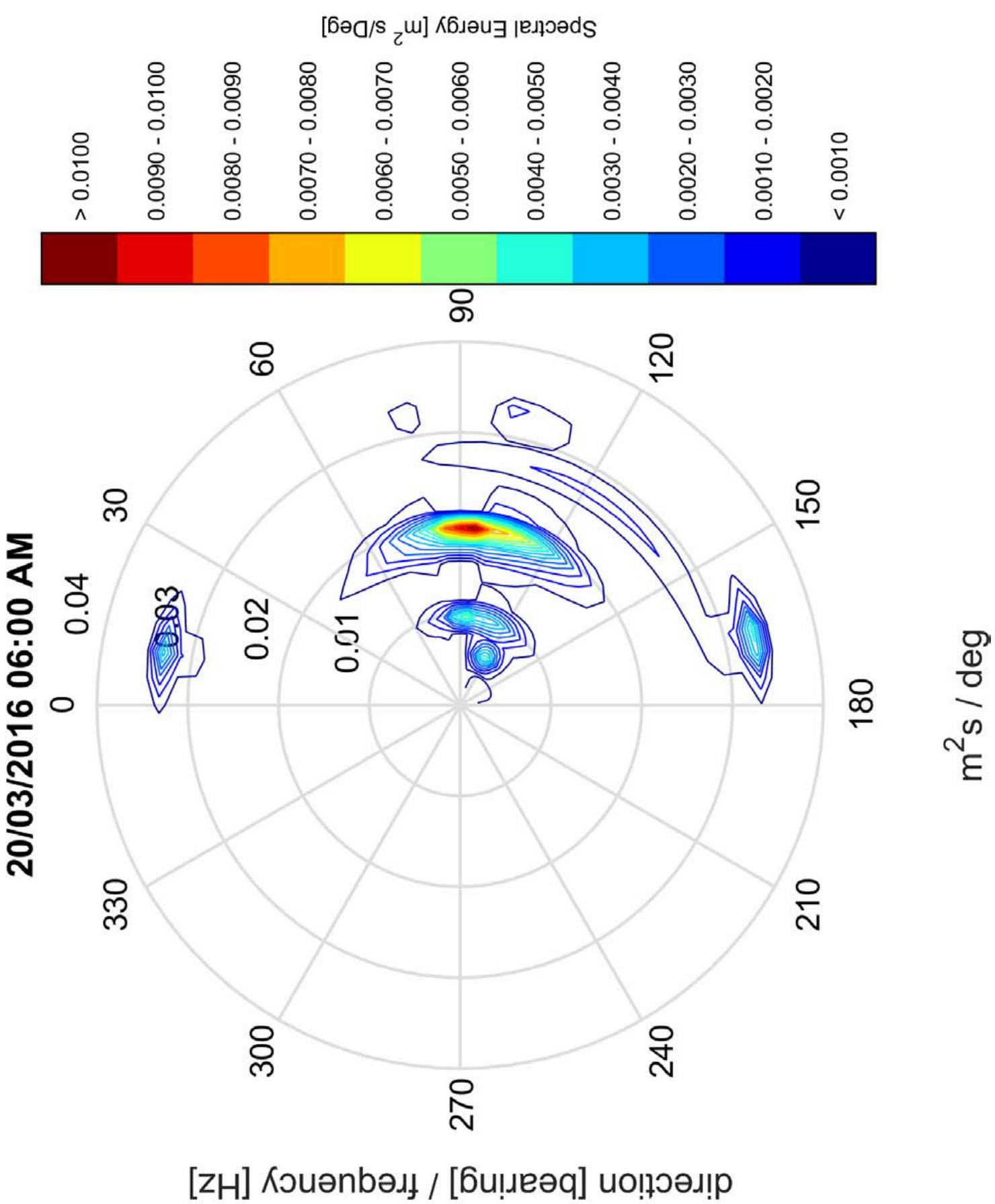
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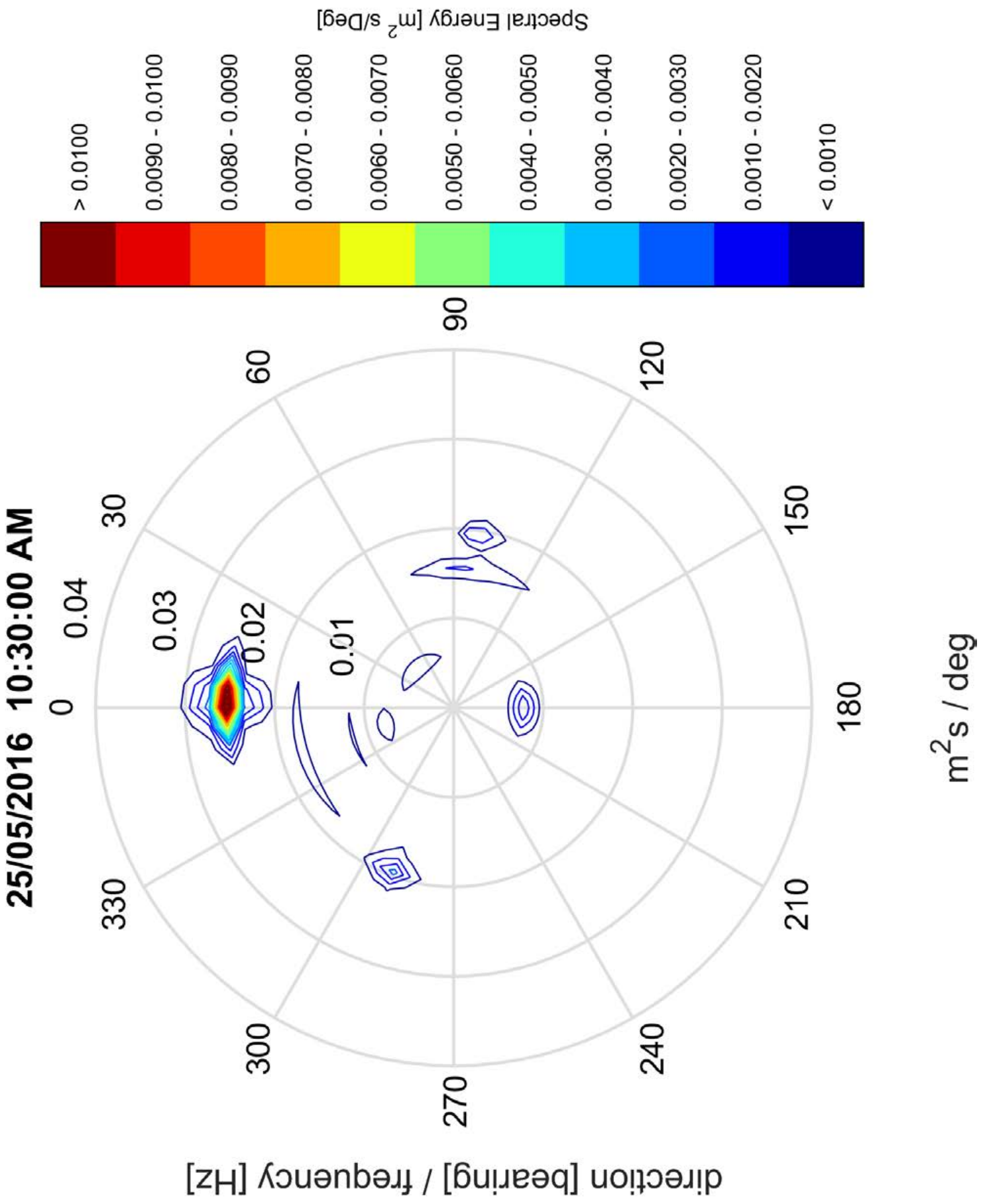
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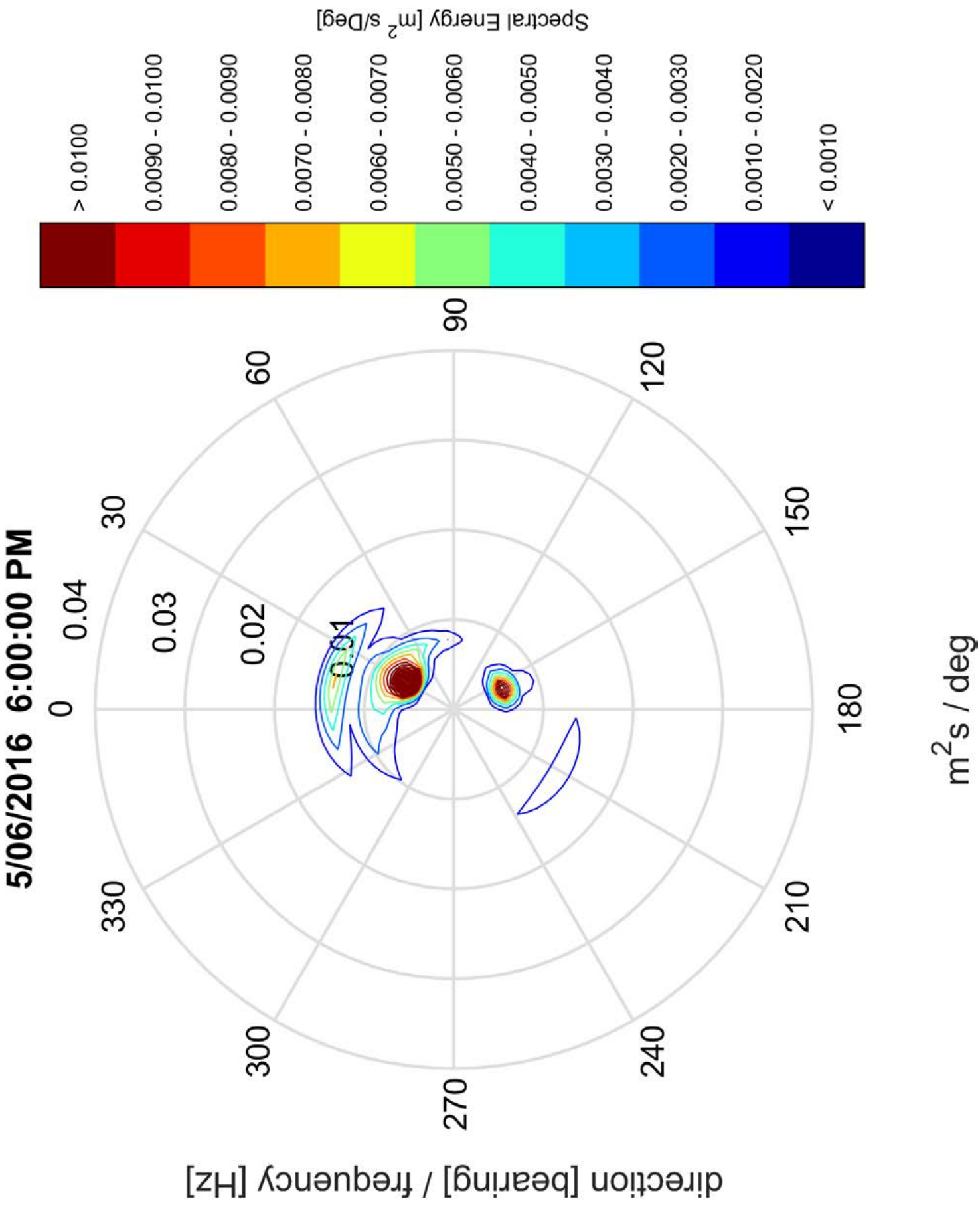
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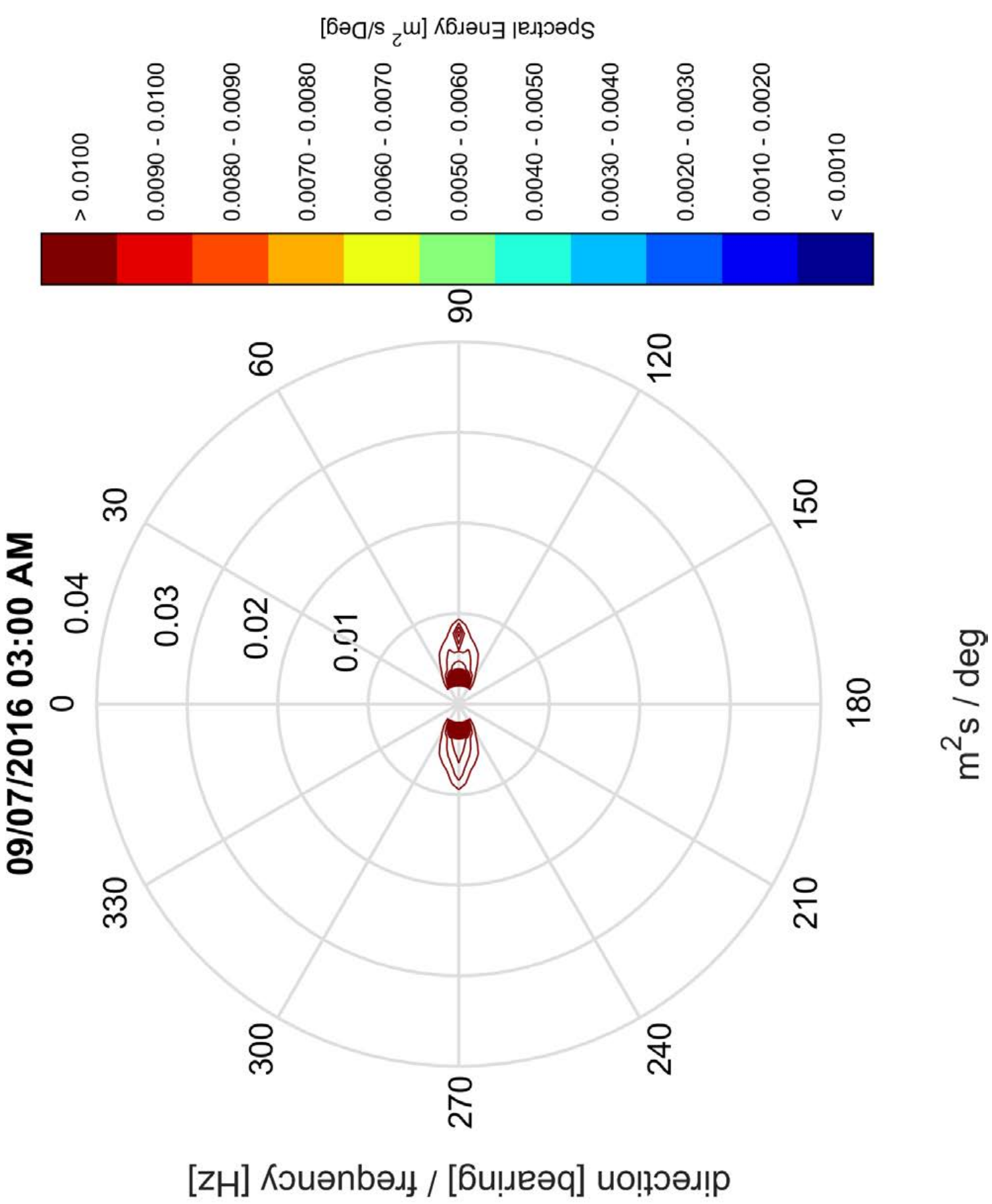
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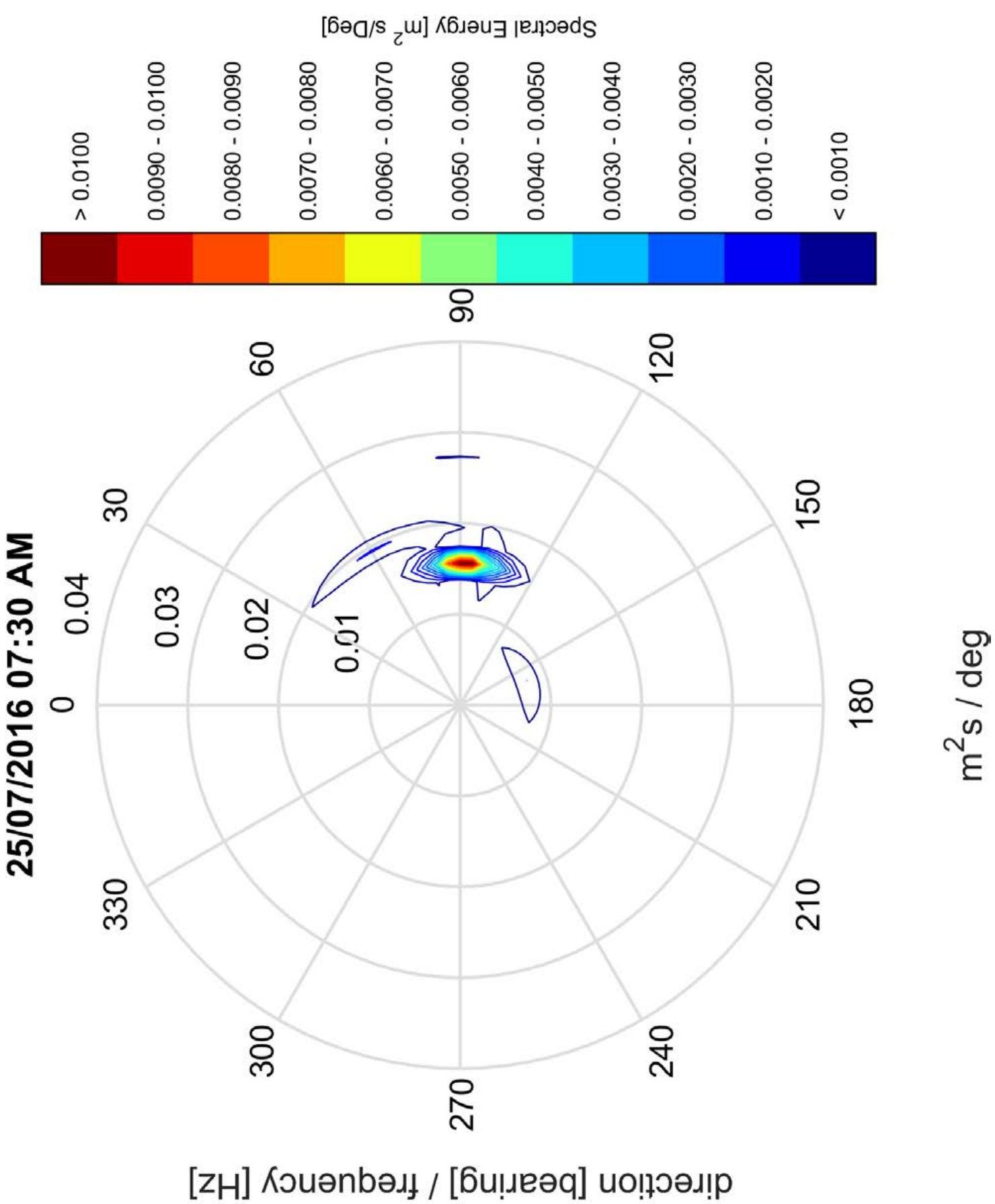
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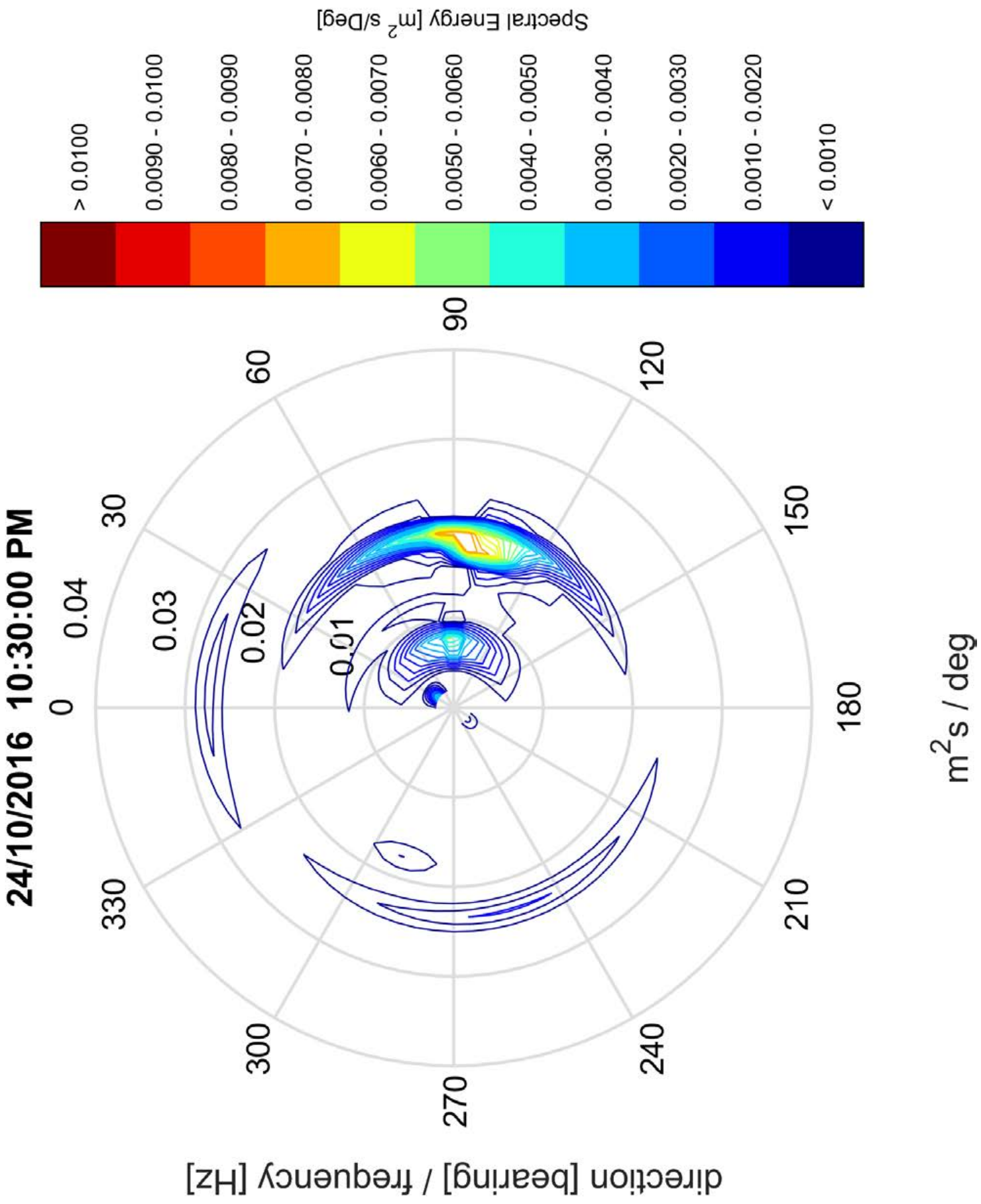
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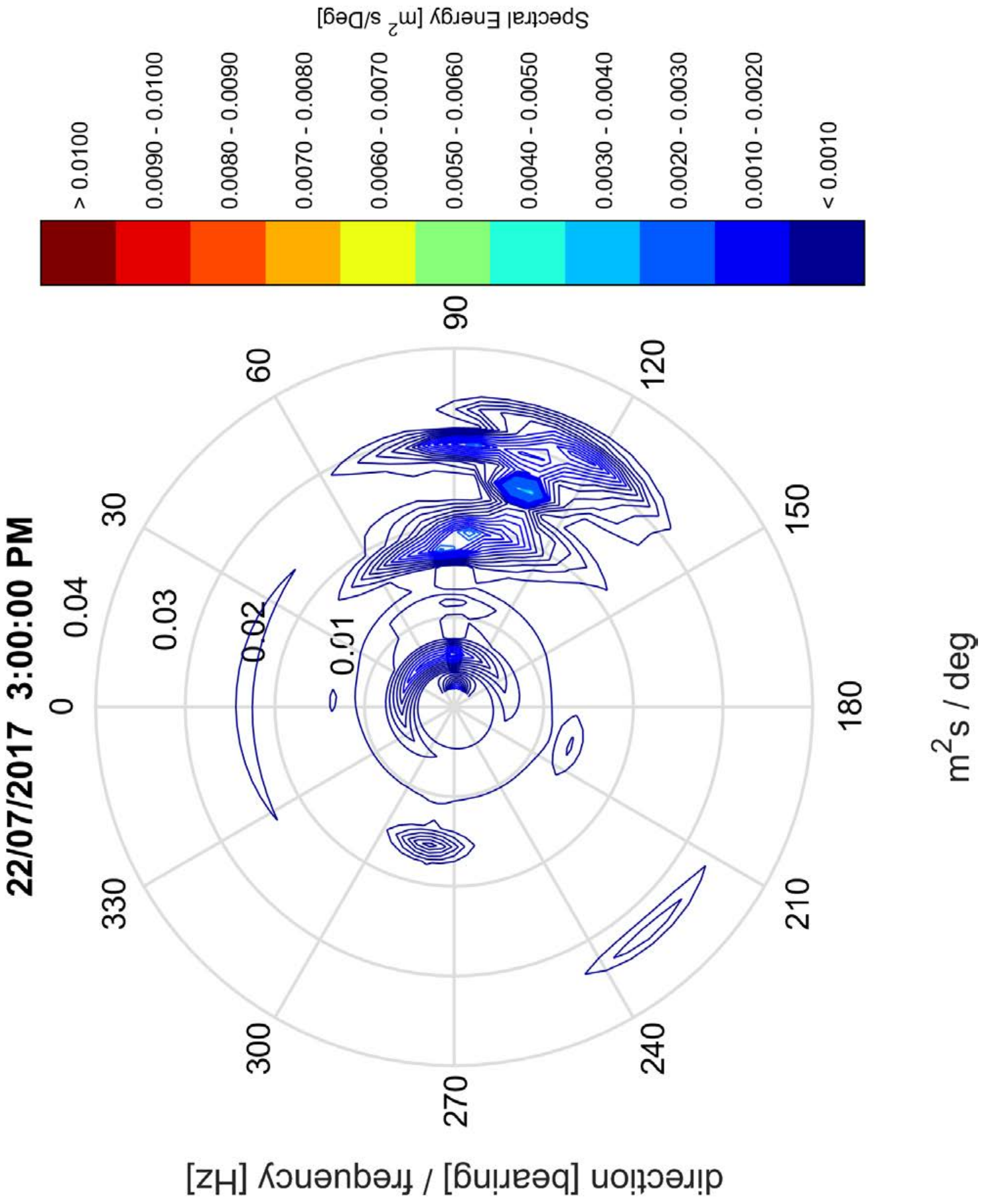
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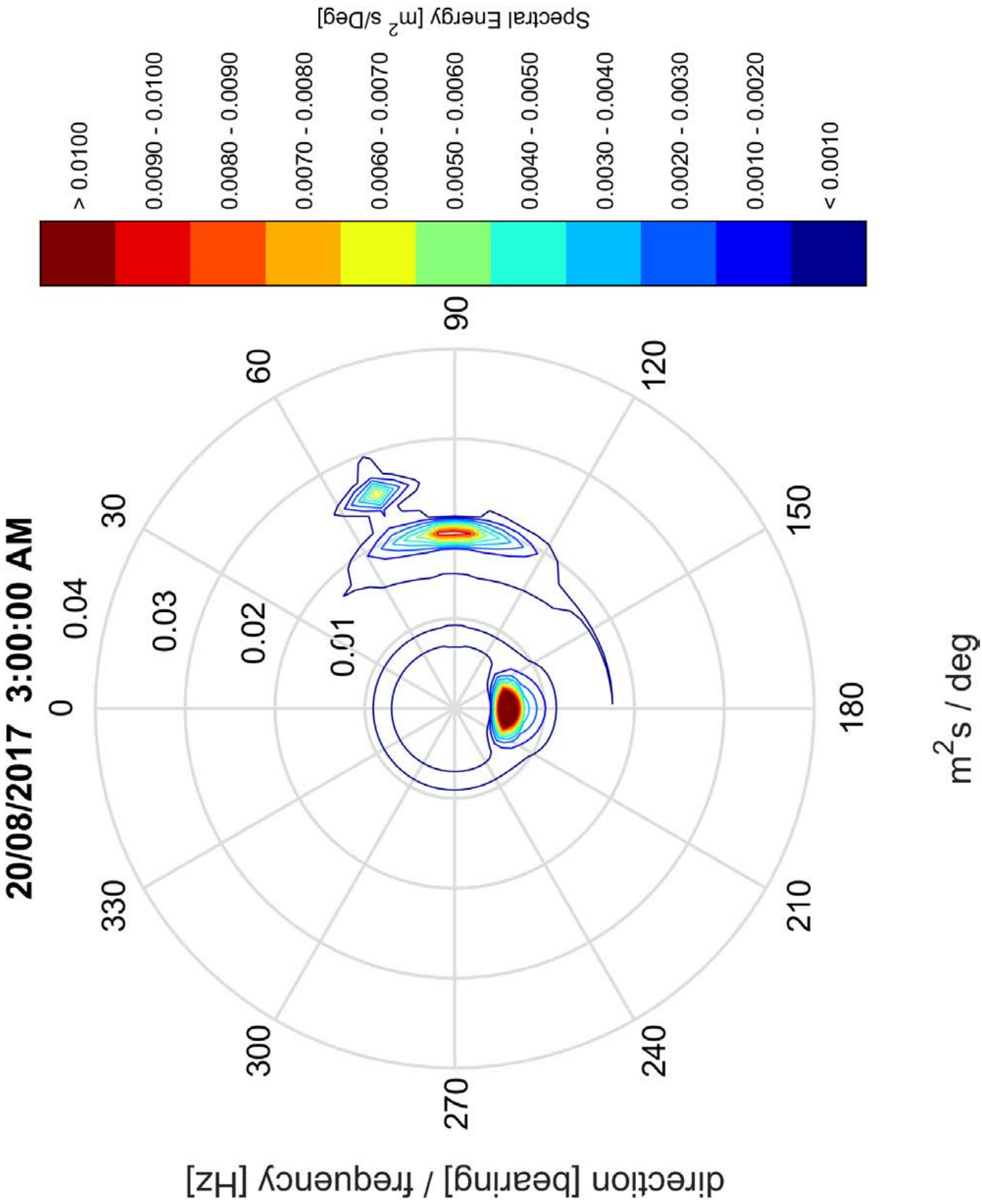
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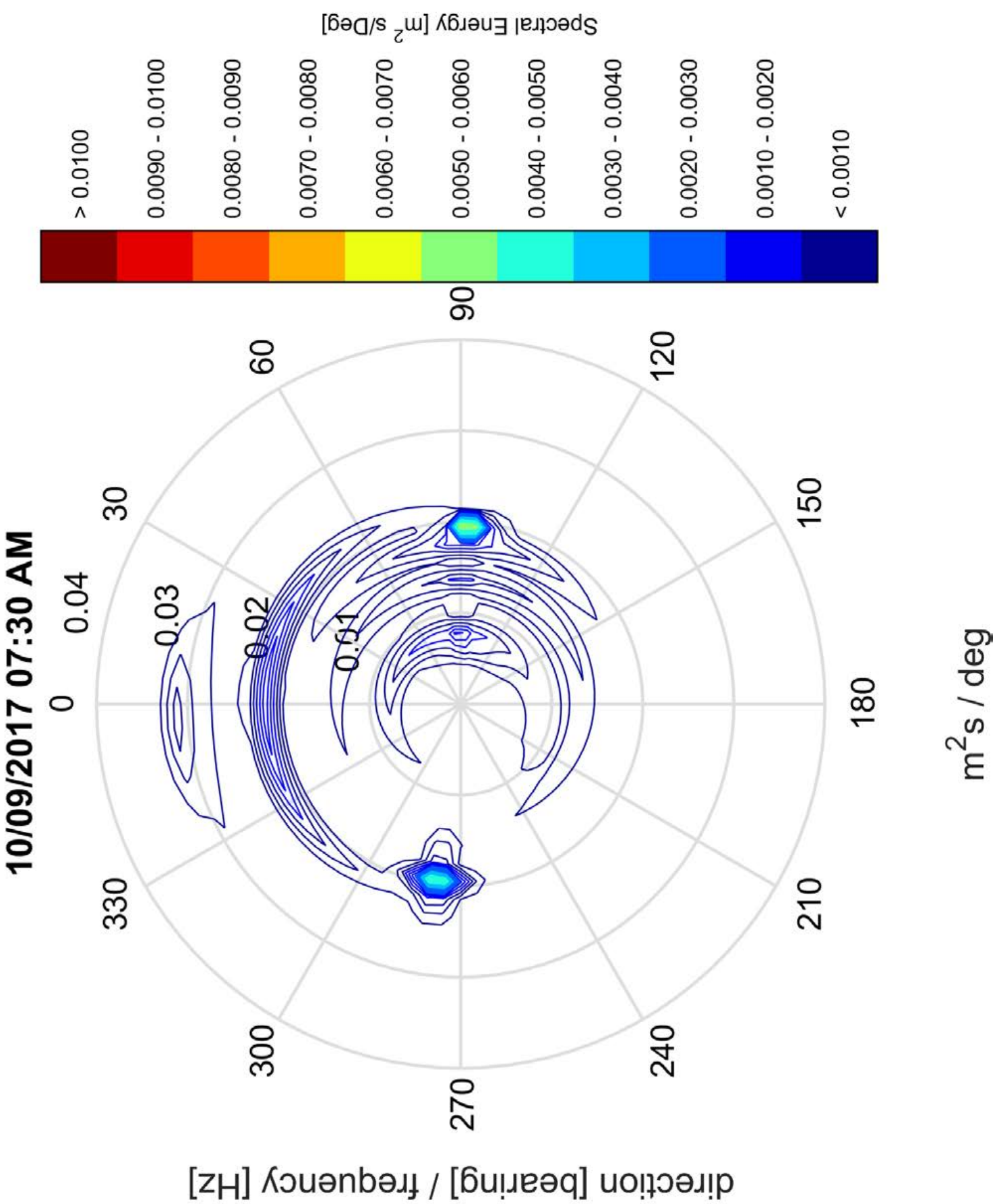

Port Kembla Long Waves, Sediment and Thermal Modelling

Polar Spectral Plot
Storm 36

Appendix B20

59919002 Oct 2018

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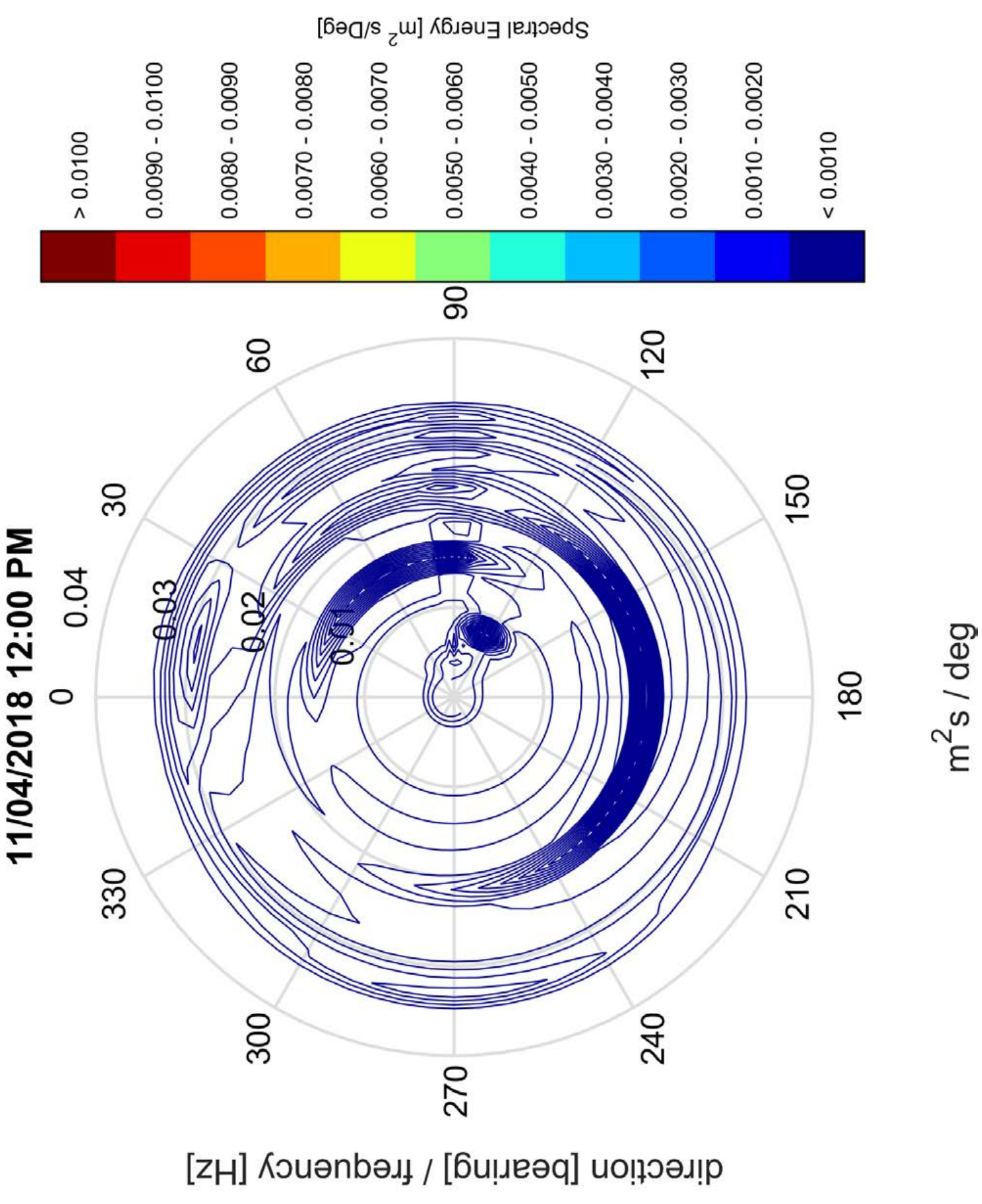
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APPENDIX

C

PROPOSED DREDGING STRATEGY

1 Introduction

Australian Industrial Energy (AIE) is planning to develop a LNG terminal at Port Kembla, NSW and has engaged WorleyParsons to undertake front end engineering design (FEED) for the proposed floating storage regasification unit (FSRU), wharf and top side facilities and gas pipeline.

The development of the wharf requires dredging and excavation to create a berth pocket capable of accommodating the FSRU and gas import vessels. During the Concept Phase a site was identified for disposal of the spoil material on the south side of the Outer Harbour.

This technical note outlines the dredge and disposal strategies that will be available to the Contractor. Its intended use is to inform documentation for Project Approval. It will be the Contractor's responsibility to select final methodologies and disposal configurations that meet the requirements of the Project Approval.

This technical note does not discuss the evolution of the strategy or other dredge and disposal options considered.

2 Dredging and Excavation

2.1 Volumes

The proposed dredging and excavation footprint is shown below.

Figure 1: Proposed Dredge and Excavation Footprint

Surface modelling using 12D software has been used to undertake volume calculations based on the 2018 Bathymetric Survey. The modelling demonstrates that around 600,000m^3 of material will need to be dredged and excavated. Allowing for typical bulking factors, this equates to approximately 720,000m^3 of material that requires disposal. Subsurface geotechnical strata has been included in the model based on historical borehole information and indicative quantities of each type of material calculated as follows:

Disposal Volumes

	UNIT	Rounded Bulk Vol (m3)
	Fill	60,000
	1A (sand)	160,000
	1B (Sand/Clayey Sand)	255,000
	2 (Clay)	130,000
	3 (Clay & WR)	10,000
	HM (Harbour Mud/Silt)	30,000
	HS (Silty/Clayey Sand)	55,000
	Rock	20,000
	Total	**720,000**

2.2 Dredge & Excavation Technique

For the purpose of this document the term Dredge refers to material removed from insitu using a water based Backhoe Dredger (BHD) whilst Excavation is material removed using land based plant.

2.2.1 Dredging

A BHD will be used to dredge material and place into split hopper barges. The material will then be transported to the disposal area. This method generally requires two barges to facilitate continuous dredging. Barges will have a hopper capacity of around 1,200 m^3.

Typical plant anticipated for this dredge method includes:

- Medium BHD currently in use in the region (equivalent to approx. 200 tonne excavator and up to 10m^3 bucket capacity)
- Two appropriately sized barges either towed by tugs or self-propelled
- Appropriately sized tugs or work boats to assist with dredger positioning and movement of barges.

It is expected this plant configuration will be capable of removing all the material types including rock. The ultimate quantity of material to be dredged will depend on the Contractor's preferred methodologies and plant. However it is feasible for the majority of material to be removed by dredging.

2.2.2 Excavation

Preliminary land based activities will include the following:

- Demolish existing Berth 101
- Remove and stockpile existing rock revetment
- Excavate fill layer across site to remove existing slabs, foundations and services.

Once these enabling works are complete the excavation of the insitu material beyond the new quay wall could proceed using a Long Reach Excavator with a bucket capacity of 2.5m^3. Due to the limitation on reach of such excavators currently in use in the area, it is possible that excavation may only be possible down to RL -8m CD. If this is the case, material below this level would need to be dredged. However, the Environmental Impact Statement (EIS) documentation should allow for the Contractor to use larger plant that can reach below this level.

Material will be excavated into heavy haul trucks which will dump into an area at the rear of the Berth 101 site (current Coal Terminal East Stockyard). The area potentially available for stockpiling is around 400m long by 50m wide. Dozers will be used to form a stockpile up to 10m high ready for truck transportation. The stockpile will require sediment, erosion and dust control devices to control emissions.

3 Disposal

The maximum footprint identified for disposal has an area of approx. 16.5ha and is shown in red below. The disposal footprint previously approved for the Outer Harbour expansion project is shown in yellow. The disposal footprint has been developed through discussion with NSW Ports and accommodates its plans for future development of the Outer Harbour.

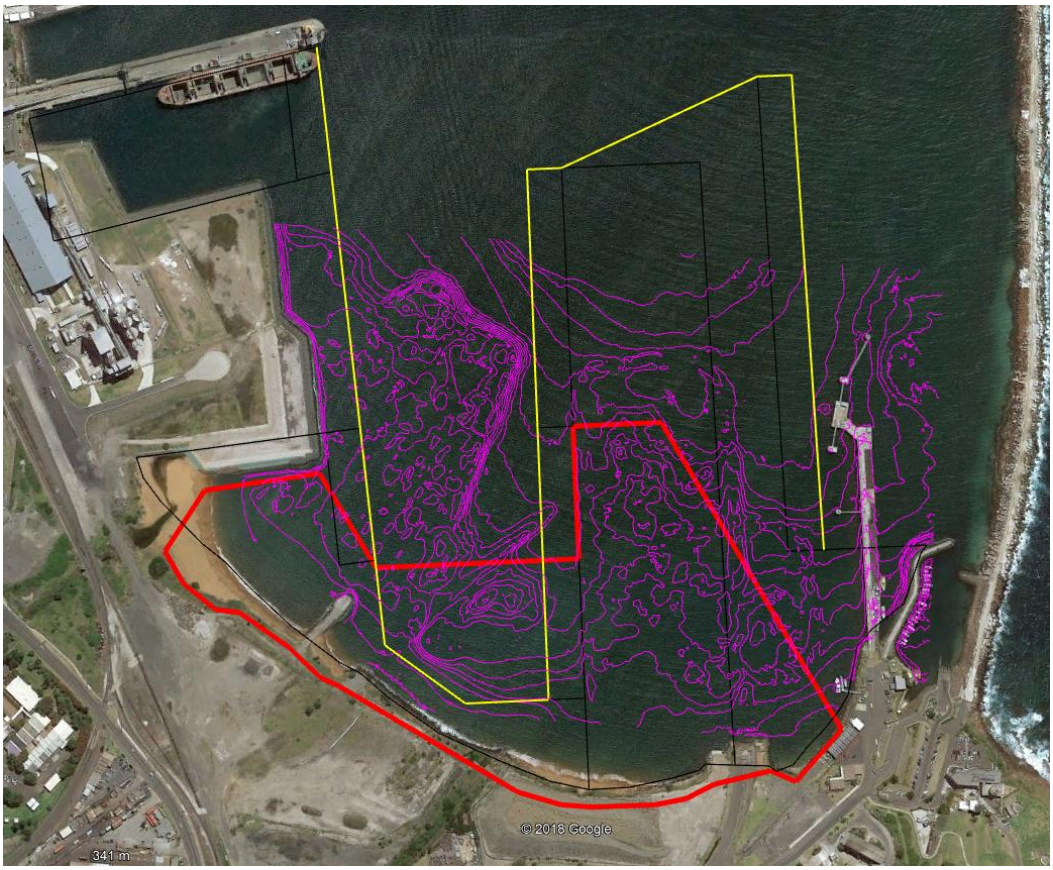


Figure 2: Proposed Disposal Footprint (red)

The footprint maintains the outlet of Salty Creek to the west. The Darcy Road Drain which currently outlets through the centre of the footprint would either need to be diverted or extended through the footprint.

The maximum allowable final level of the disposal site will be +4m CD.

3.1 Perimeter Bund

A perimeter bund will be constructed to ensure the stability of the disposal site. This bund will need to be constructed on relatively stiff material which will necessitate the removal of existing soft sediments that have previously been dumped across the disposal site. These sediments have been placed over a number of years with the most recent deposited in 2015. This material was dredged for the upgrade of Berth 103 as described in AECOM's Containment Structure and Emplacement Report[1]. Borehole information for the disposal site is contained in the Geotechnical Report for Outer Harbour Reclamation Project[2] however this is from 2010 and therefore does not include the material deposited in 2015.

The dredging of the soft sediments will involve using a BHD, which will load split hopper barges for dumping within the disposal footprint. It is anticipated that a dredge footprint approximate 35m wide x 900m long and 4m deep may be required for the bund construction. Once a stable foundation is achieved, the Unit 1a and 1b sands that are dredged from the berth site will be bottom dumped to form a bund up to RL-5m CD.

Following completion of the bund to RL -5m CD, material that has been dredged from the berth site will be transported and deposited within the bund. The perimeter bund will be raised progressively and once the bund is constructed to the final level, rock armour will be placed to provide scour protection.

The Contractor may also have areas within the disposal footprint only involving submerged placement. In this case, dredging may not be required for the construction of a containment bund.

A number of techniques are feasible for placement in the disposal area with the final selection depending on the Contractor's preferred methodologies and plant. The EIS documentation should be flexible enough to allow a blend of the following disposal methods.

3.2 Barge and Bottom Dump

Following completion of the bund to RL -5m CD, material that has been dredged from the berth site will be bottom dumped from the split hopper barges. The intention is that the soft harbour muds and silts, some of which may be contaminated, will be dumped first. This material will be placed well within the disposal footprint, away from the bund and then be overlain with layers of sandy and clay material. In addition Potential Acid Sulphate Soils (PASS) will be transported and placed without being allowed to dry out.

It is anticipated that, due to the draft of the barges, material can be bottom dumped to a maximum level of -3m CD. This may involve the use of partially loaded barges and high tides. The Contractor may propose to use flat bottom barges and push the material off with a dozer (or similar) to achieve a level higher than -3m CD and the EIS documentation should make allowances for this approach.

Before dumping above -5m CD, the perimeter bund will first be raised to RL-3m CD using bottom dumped 1a and 1b material. The area within the footprint below RL-3m CD is shown below. Assuming a top level of -3m CD, it is anticipated that approximately **230,000m^3** of material can be bottom dumped which is equivalent to around 250 barge loads. The corresponding area for this volume is approximately 7.2ha and is shown in green below.

[1] Containment Structure and Emplacement Report, Rev D, 02/04/15, AECOM (PKB103 Stage 2 Extension -Containment Structures and Emplacement Report - Final 02 April 2015.pdf)

[2] Port Kembla Outer Harbour Reclamation, Phase 2 Factual and Interpretive Report, Rev 03, 09/05/11, SMEC (Phase 2 GSIR Rev3 Final COMBINED.pdf)

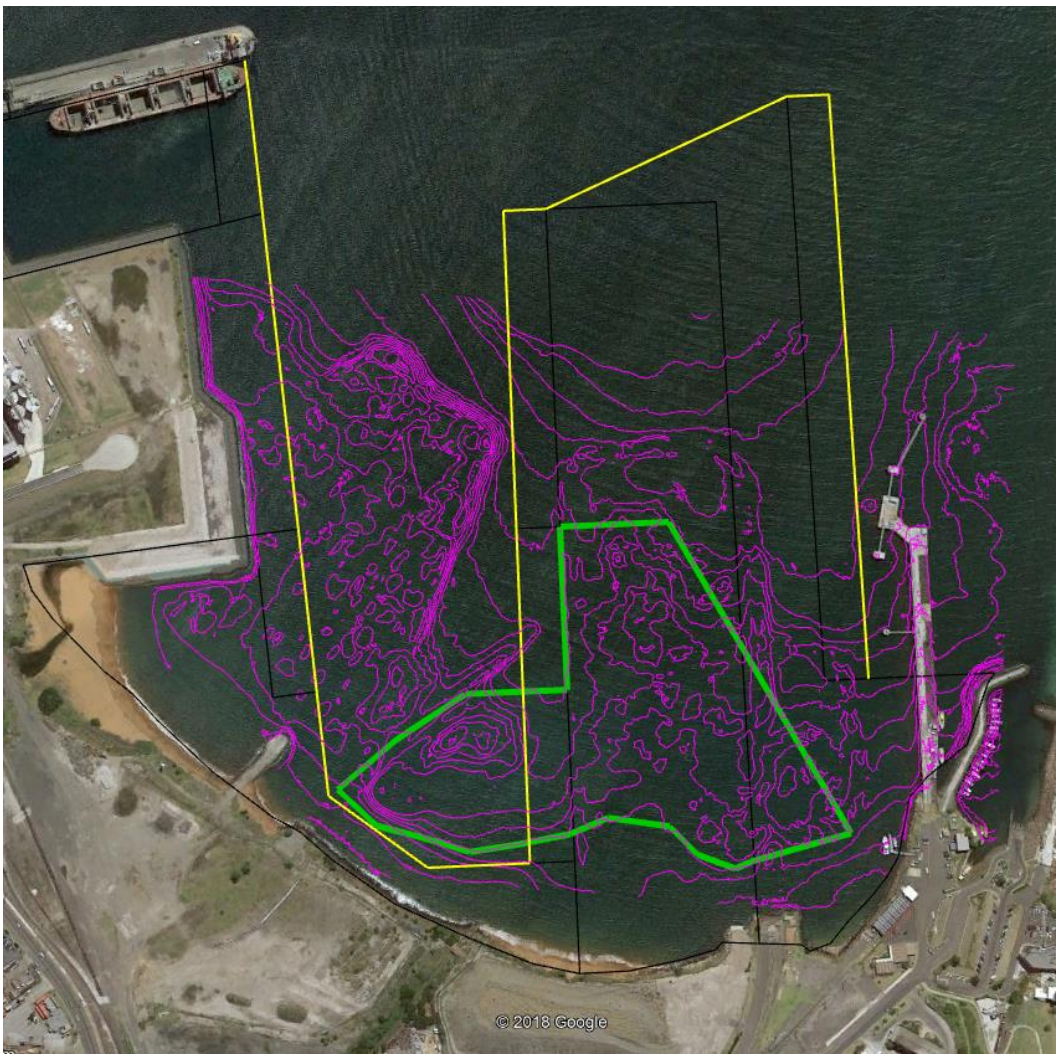


Figure 3: Proposed Bottom Dumping Disposal Footprint (green)

3.3 Trucking

As described in Section 2.2.2, excavated material will be stockpiled at the rear of the Berth 101. This stockpile will be used to load road registered trucks to transport the material around the Outer Harbour to the disposal site. Trucks with sealed tailgates will be required to ensure that, if required, wet spoil can be transported without spilling sediments. It is understood that these types of trucks are commonly used in the location. It is expected that loading and trucking activities will occur 24 hours/7 days a week.

Once at the disposal site, the material will be dumped close to the shore line and pushed out with dozers. It is likely the bund will first be widened and raised to around RL+4m CD before filling in behind.

The Contractor will need to manage the push out process and interim stability of the fill and this may include the use of light plant and a geomembrane within the fill layers.

The volume of material to be trucked is dependent on the Contractor's ability to excavate from the shore and the level to which they can reach. Typical long reach excavator plant reaches only to RL-8m CD and so approximately **350,000m^3** may be trucked. However, the EIS documentation should allow for the Contractor to select plant which can reach deeper in which case **490,000m^3** could be available for truck transportation.

3.4 Barge and Unload

A third option for disposal is to dredge material as described in Section 2.2.1 and transport across the Outer Harbour in barges. Assuming bottom dumping is already complete to RL-3m CD, it may not possible to bottom dump any additional material due to the reduced water depth. In this case the barge would be unloaded into trucks using an excavator. The spoil would then be dumped close to the shore line and pushed out using dozers as per the methodology described in Section 3.3. The unloading of the barges would require a temporary berth to be constructed. The design and location of this would be the responsibility of the Contractor however it would need to be in water around 5m deep.

This Barge and Unload method would most likely be required in the event that the Contractor cannot excavate (from land) below RL -8m CD. With this in mind, the potential volumes for Barge and Unload could range as follows:

- **0m^3** – Assuming all material bottom dumped and trucked (full excavation possible)
- **140,000m^3** – Assuming bottom dumping and partial trucking (excavation limited to RL-8m CD)
- **490,000m^3**- Assuming bottom dumping and Contractor chooses not to excavate/truck any material

3.5 Permanent Embankment

A final option for disposal that should be included in the EIS is the forming of a permanent embankment on the current Coal Terminal East Stockyard. The embankment could be constructed from a range of removed material excluding the Harbour Muds and any PASS or contaminated material. The embankment would be stabilised with landscaping and vegetation.

In addition to reducing the quantity of material requiring disposal in the Outer Harbour, a permanent embankment also provides the following potentially benefits:

- Visual screen for the gas import facility
- Blast shielding between the gas import facility and public access road and car park
- Wind break for the gas import facility

The area potentially available for the permanent embankment is shown in blue below. It is approximately 400m long and 50m wide. It could be possible to construct the embankment 8m high in this area with a volume of approximately 70,000m^3.

Figure 4: Potential Permanent Embankment Area (blue)

4 Equipment Summary

Dredge

Machiavelli Backhoe excavator and dredge machinery.

2 x Tugs 1200HP each

1 x Survey/service tug (650 HP)

2 x 1200m3 split hopper barges

Disposal:

1 x Cat 988 Loader

1 x Cat D8 Dozer

1 x Komatsu Long Reach Excavator

2 x Cat 773 Dump trucks (50T/35m3)

Road Transport

1 x Cat 988 Loader

3 x 40T Excavators (stockpiling)

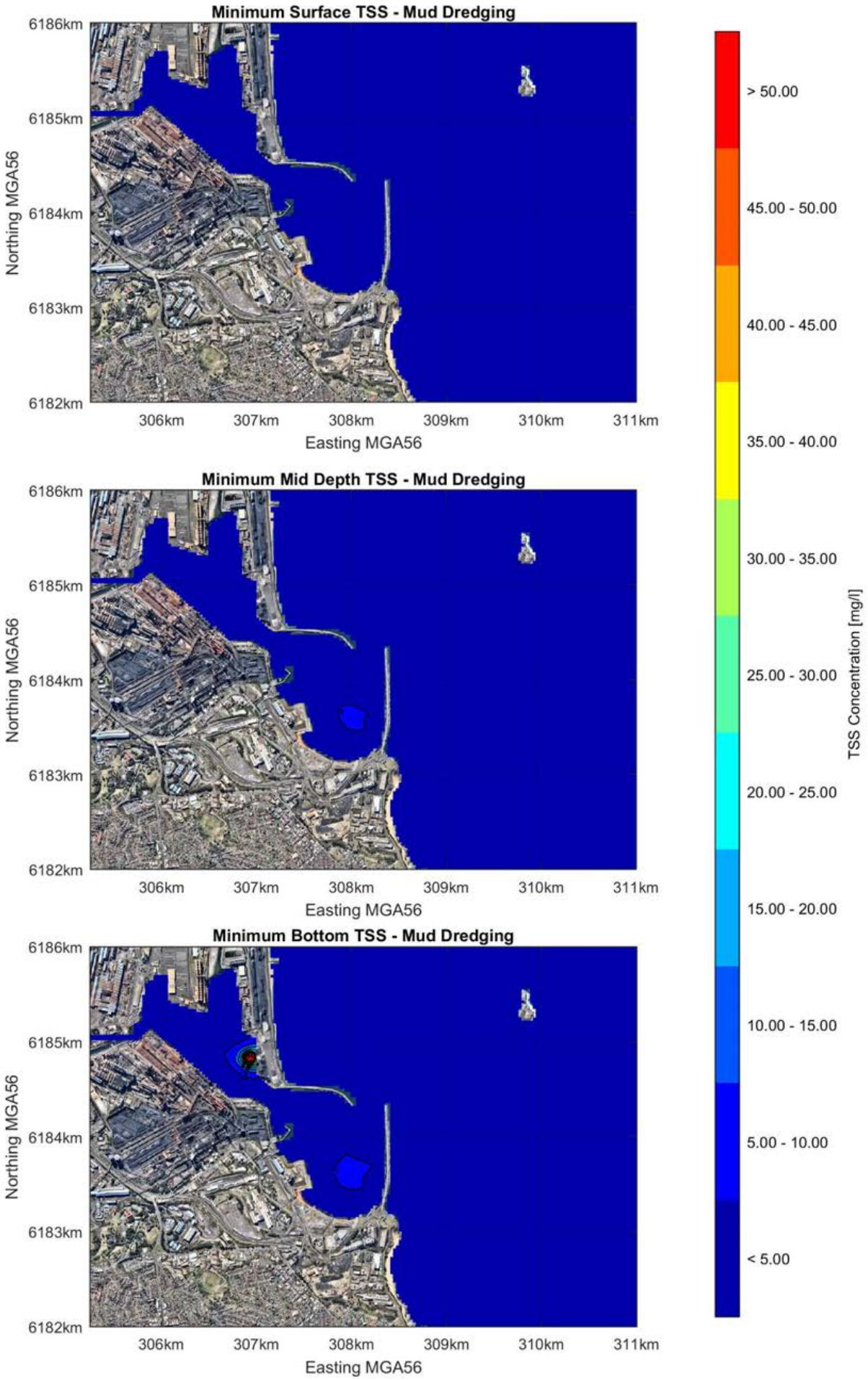
1 x Komatsu 110 Long reach Excavator

10 x Road Trucks & Trailers (32 T/18m3)

APPENDIX

D

DREDGE PLUME MODELLING RESULTS



Port Kembla Long Waves, Sediment and Thermal Modelling

Modelled Suspended Sediment Concentration Minimum

Appendix D1

59919002 Oct 2018

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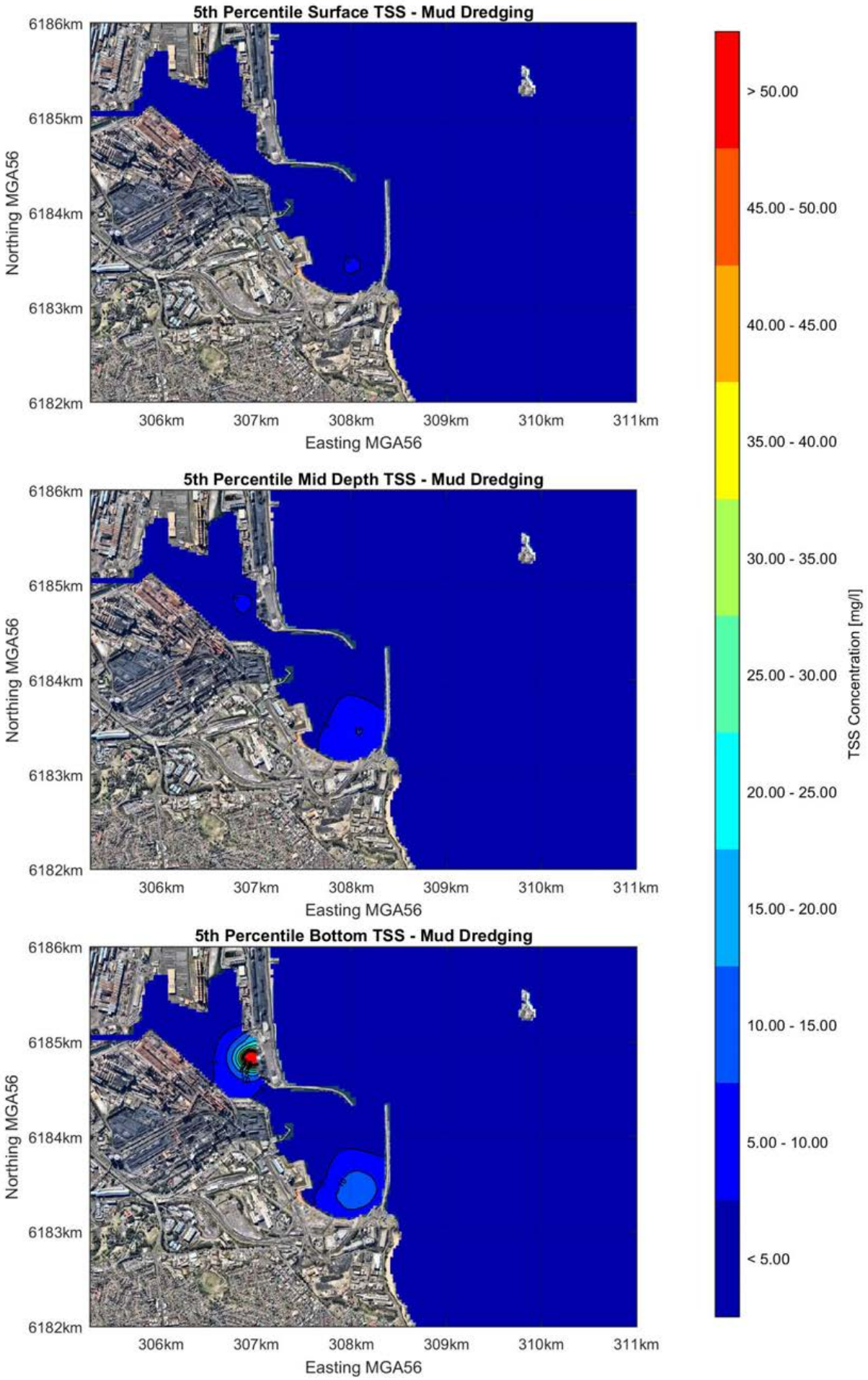

Port Kembla Long Waves, Sediment and Thermal Modelling

Modelled Suspended Sediment Concentration
5th Percentile

Appendix D2

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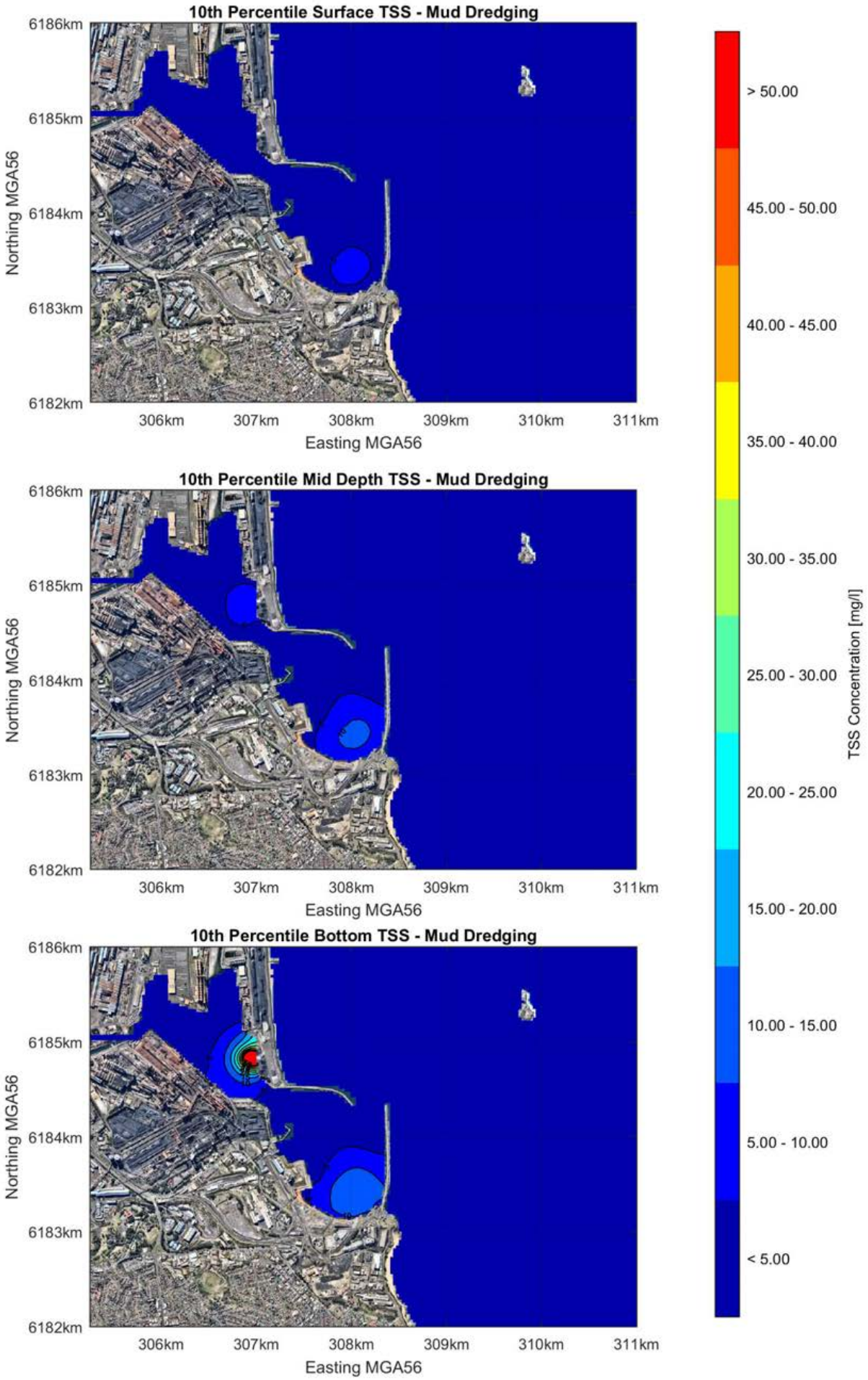

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Port Kembla Long Waves, Sediment and Thermal Modelling

Modelled Suspended Sediment Concentration
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Appendix D3

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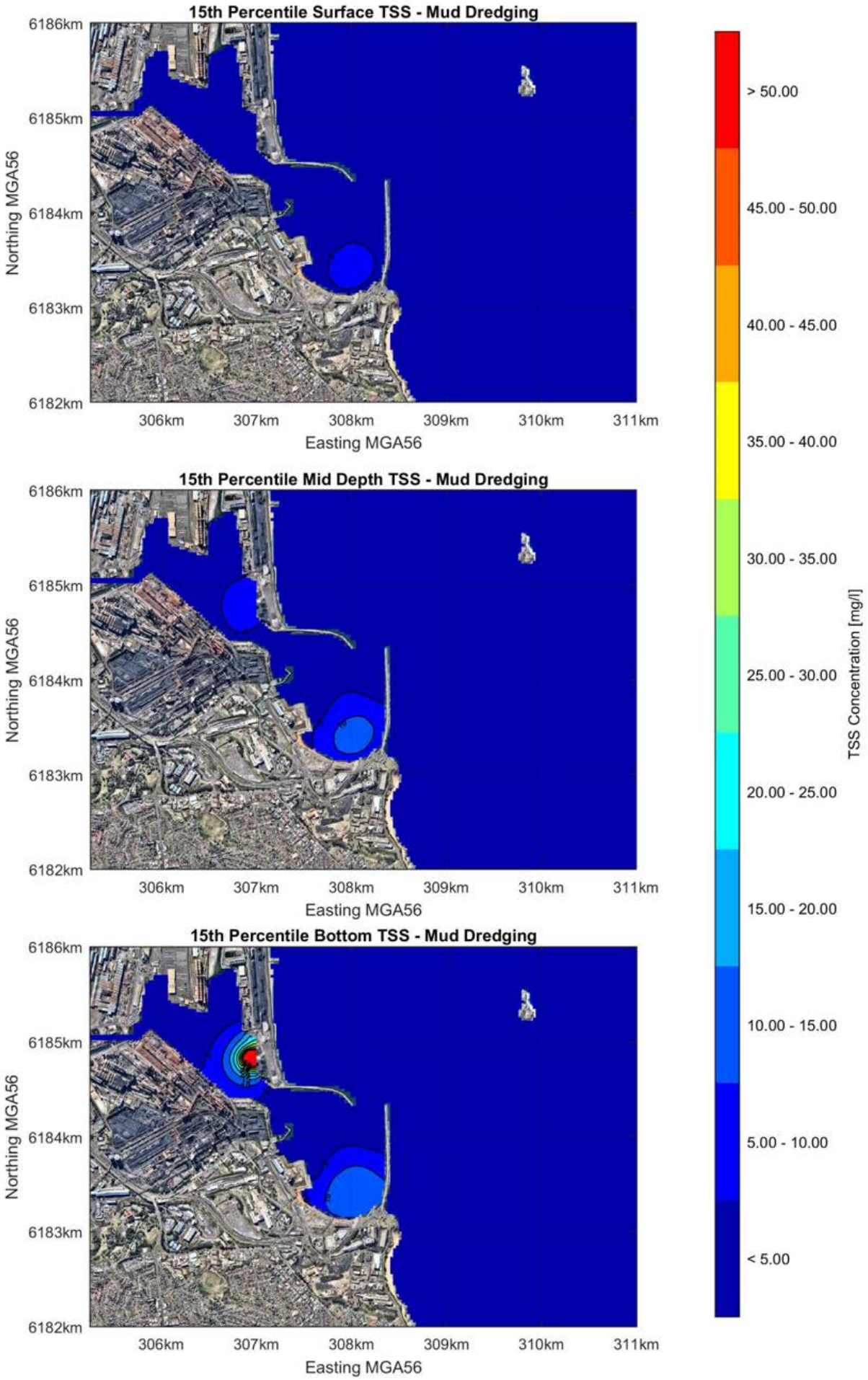

Port Kembla Long Waves, Sediment and Thermal Modelling

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59919002 Oct 2018

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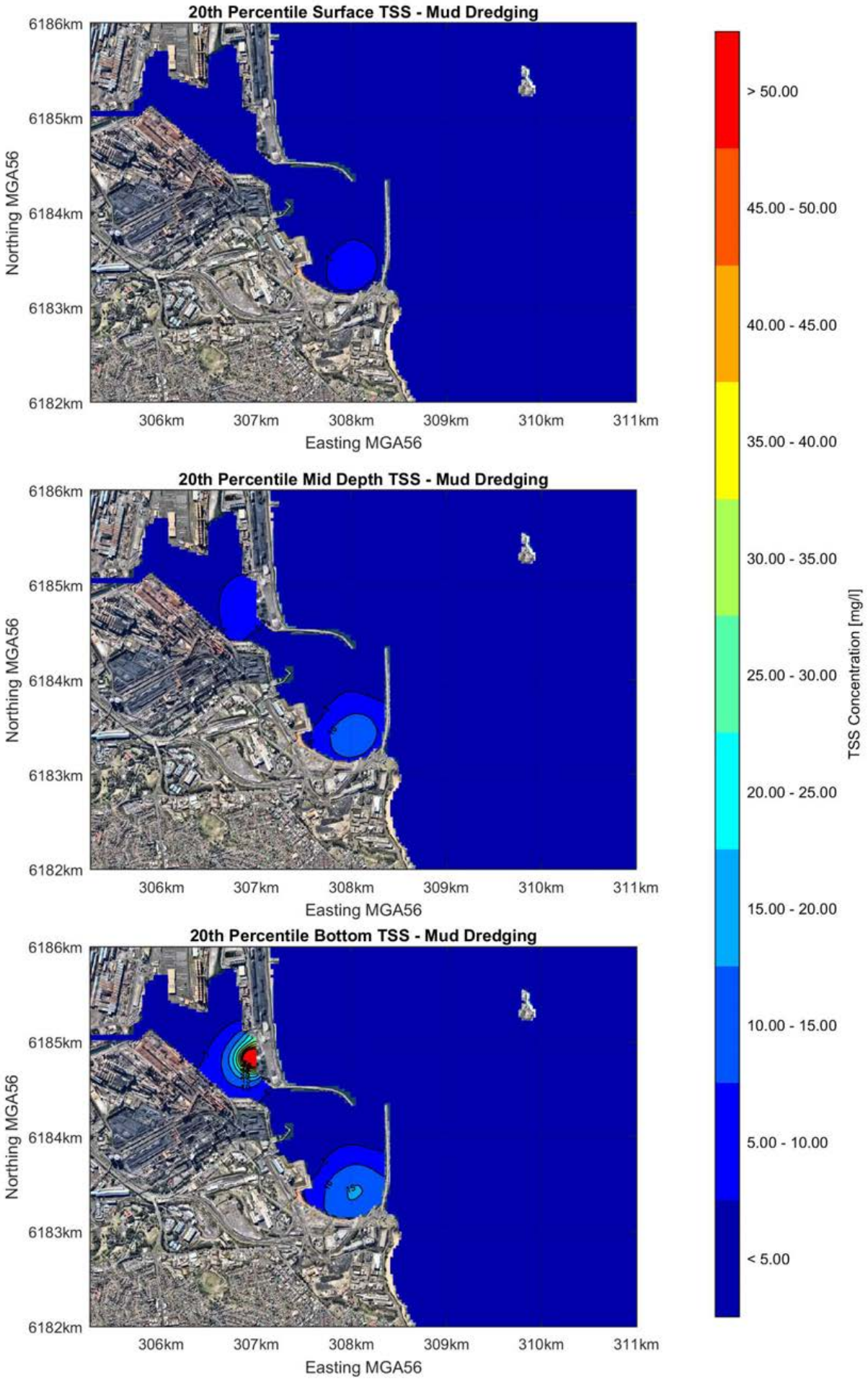

Port Kembla Long Waves, Sediment and Thermal Modelling

Modelled Suspended Sediment Concentration
20th Percentile

Appendix D5

59919002 Oct 2018

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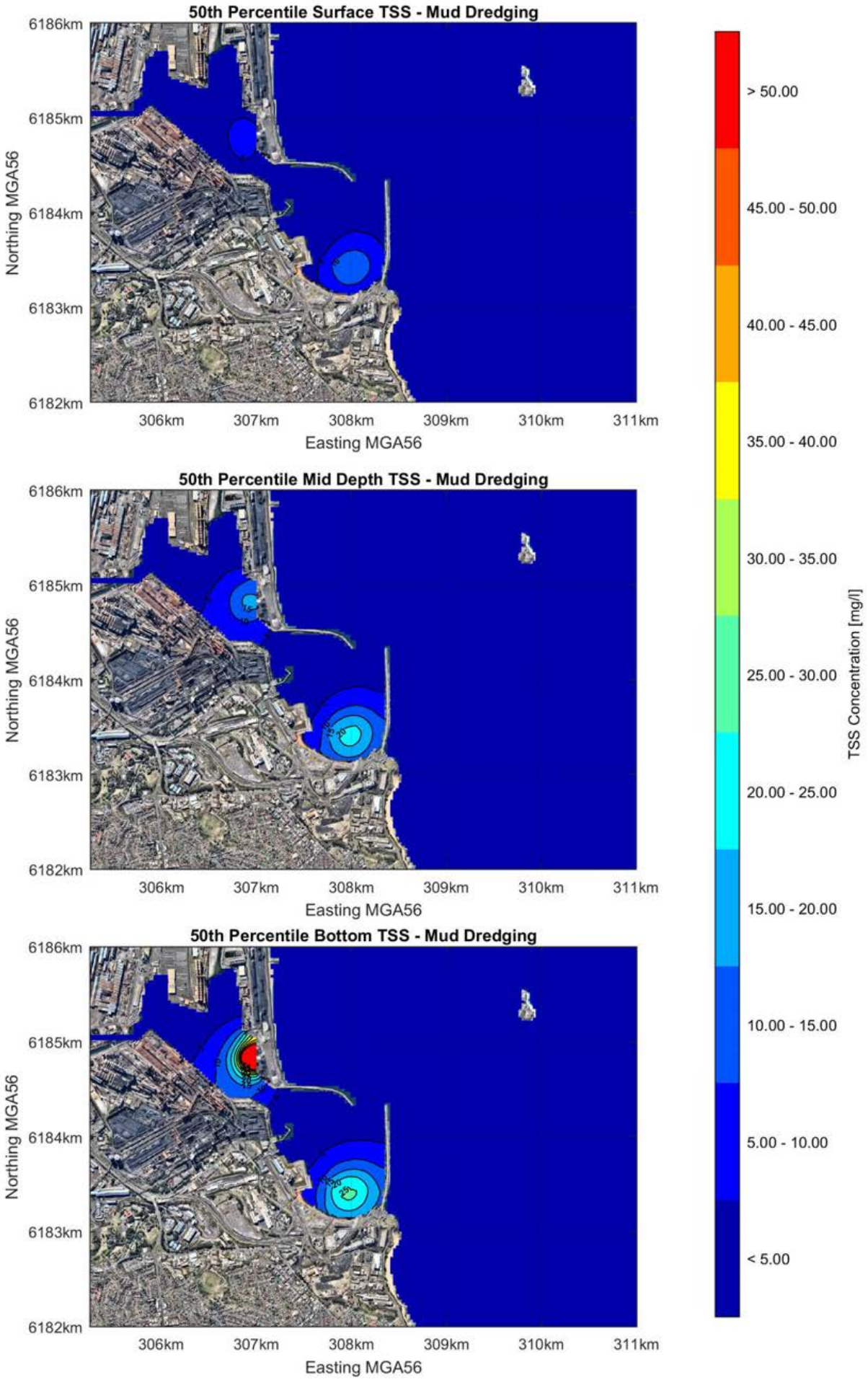


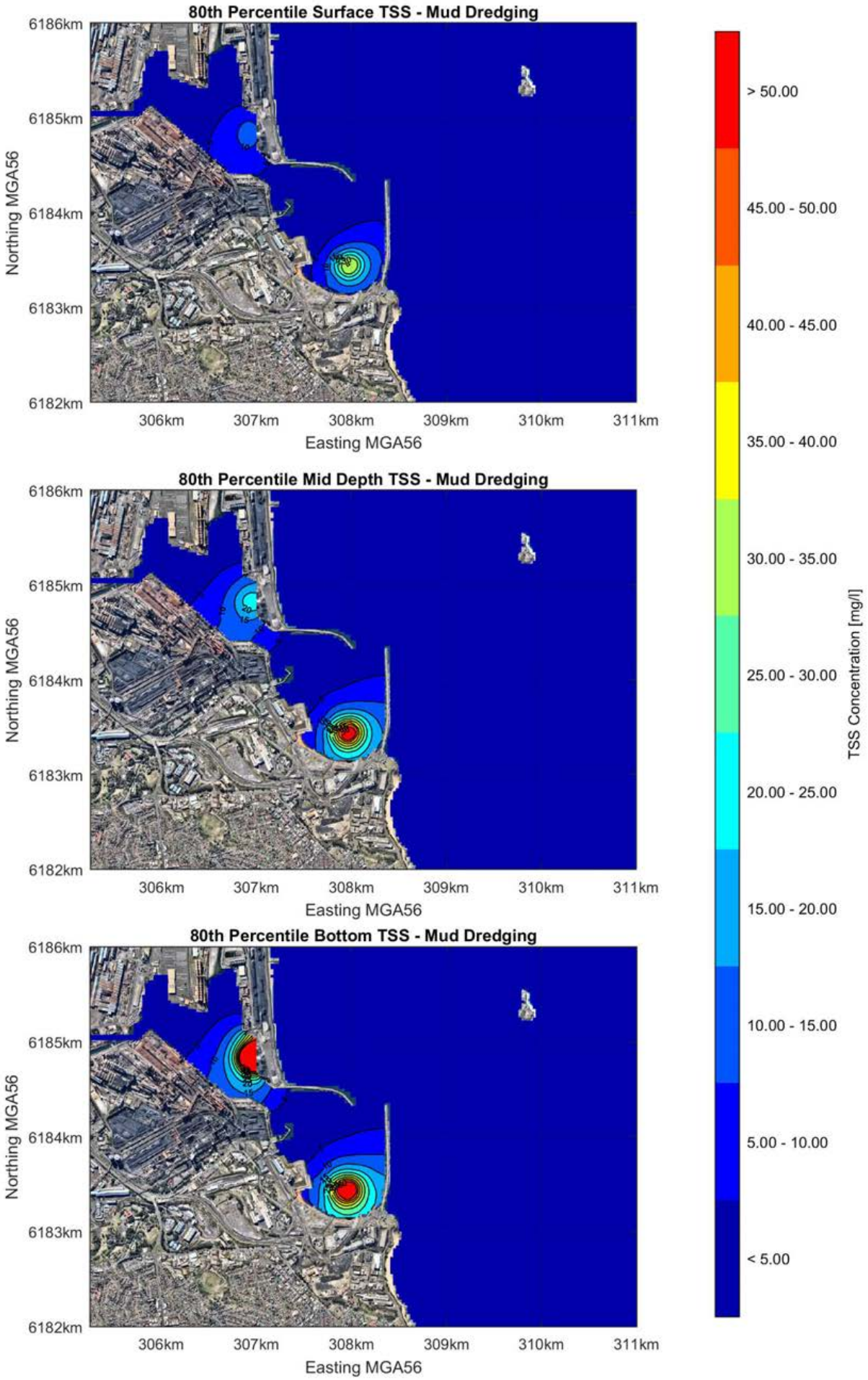
Port Kembla Long Waves, Sediment and Thermal Modelling

Modelled Suspended Sediment Concentration
50th Percentile

Appendix D6

59919002 Oct 2018

N:\Projects\599\FY19\002_N:\Projects\599\FY19\002_Port Kembla Long Waves\



Port Kembla Long Waves, Sediment and Thermal Modelling

Modelled Suspended Sediment Concentration
80th Percentile

Appendix D7

59919002 Oct 2018

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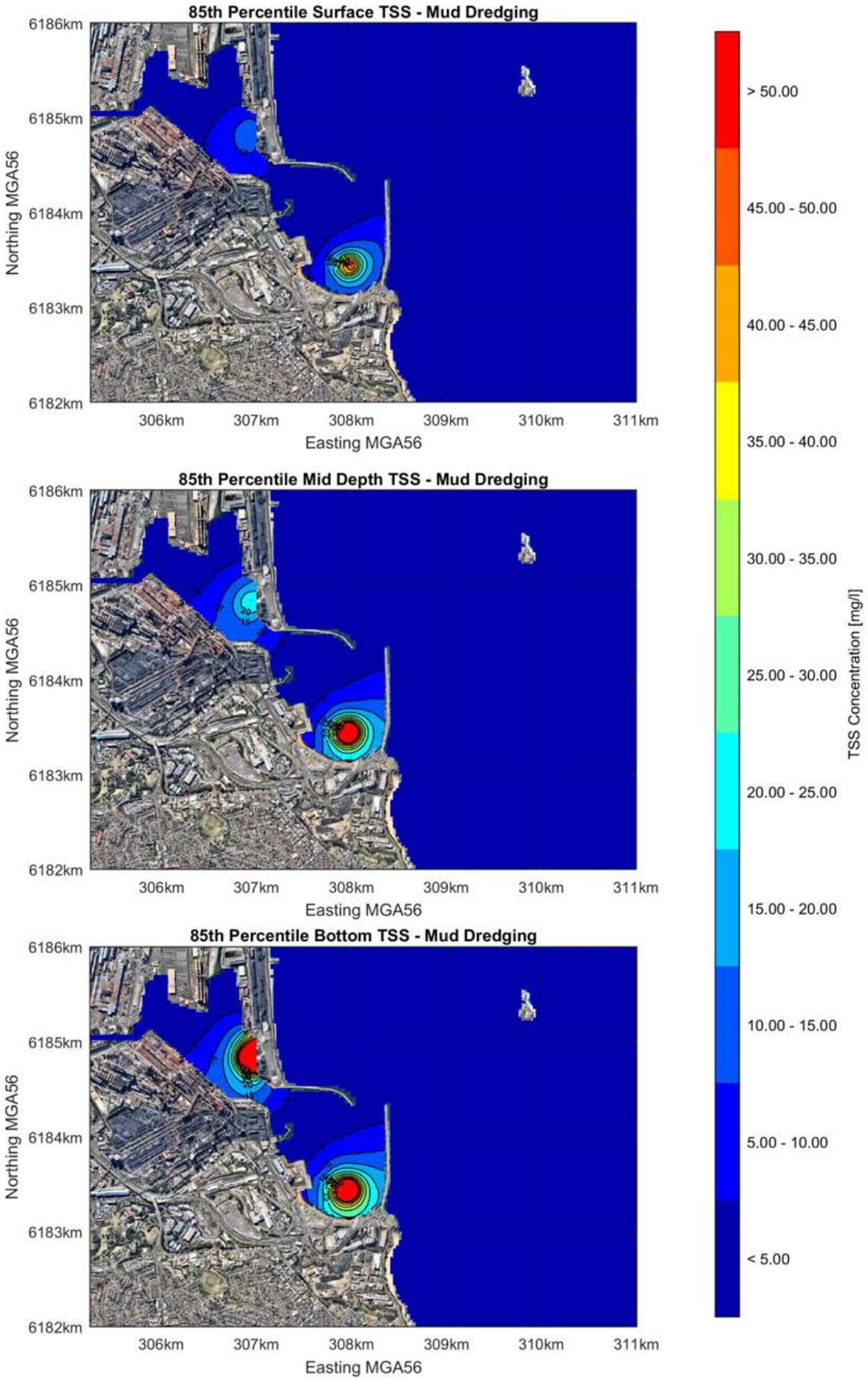


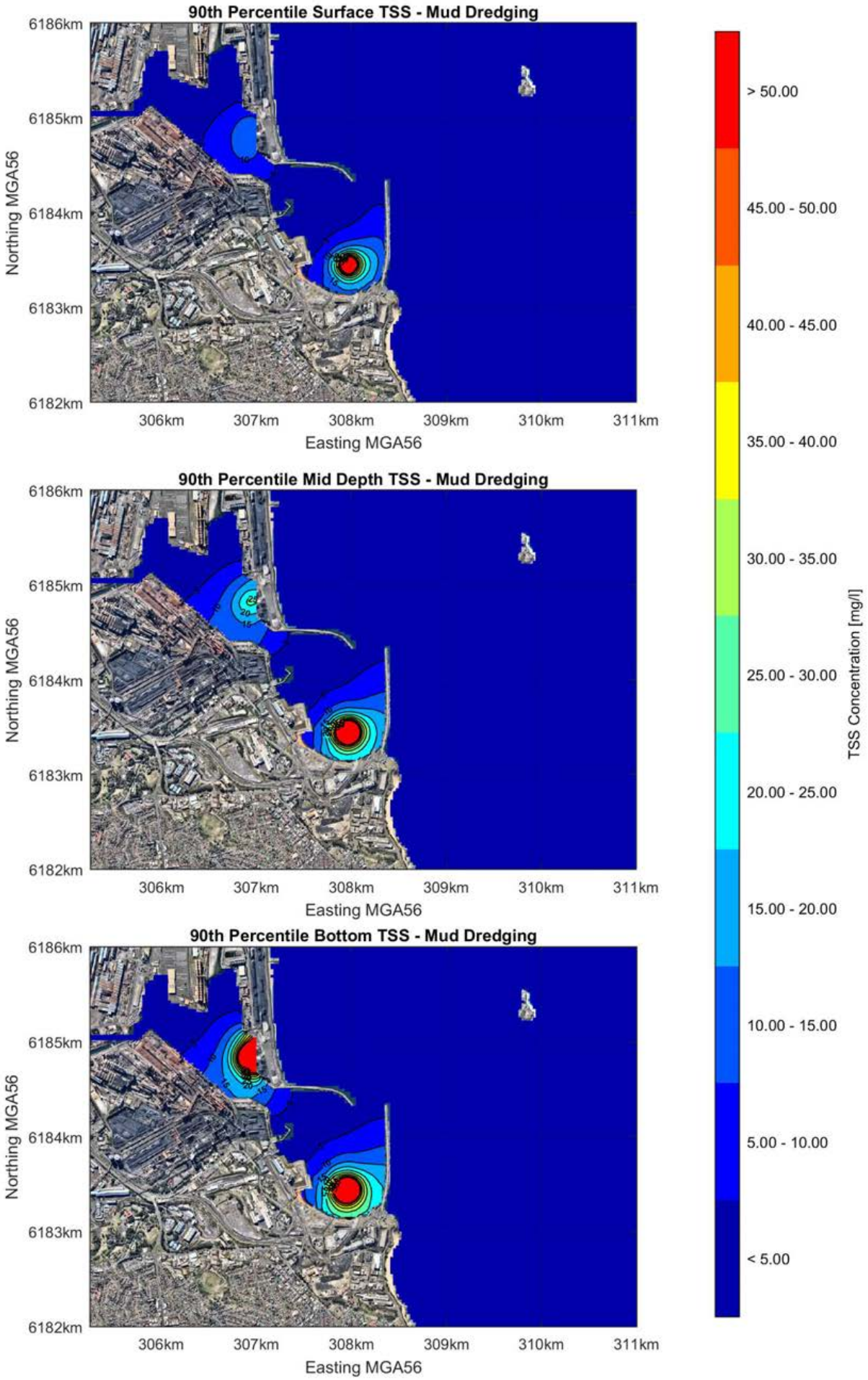
Port Kembla Long Waves, Sediment and Thermal Modelling

Modelled Suspended Sediment Concentration
85th Percentile

Appendix D8

59919002 Oct 2018

N:\Projects\599\FY19\002_N:\Projects\599\FY19\002_Port Kembla Long Waves\



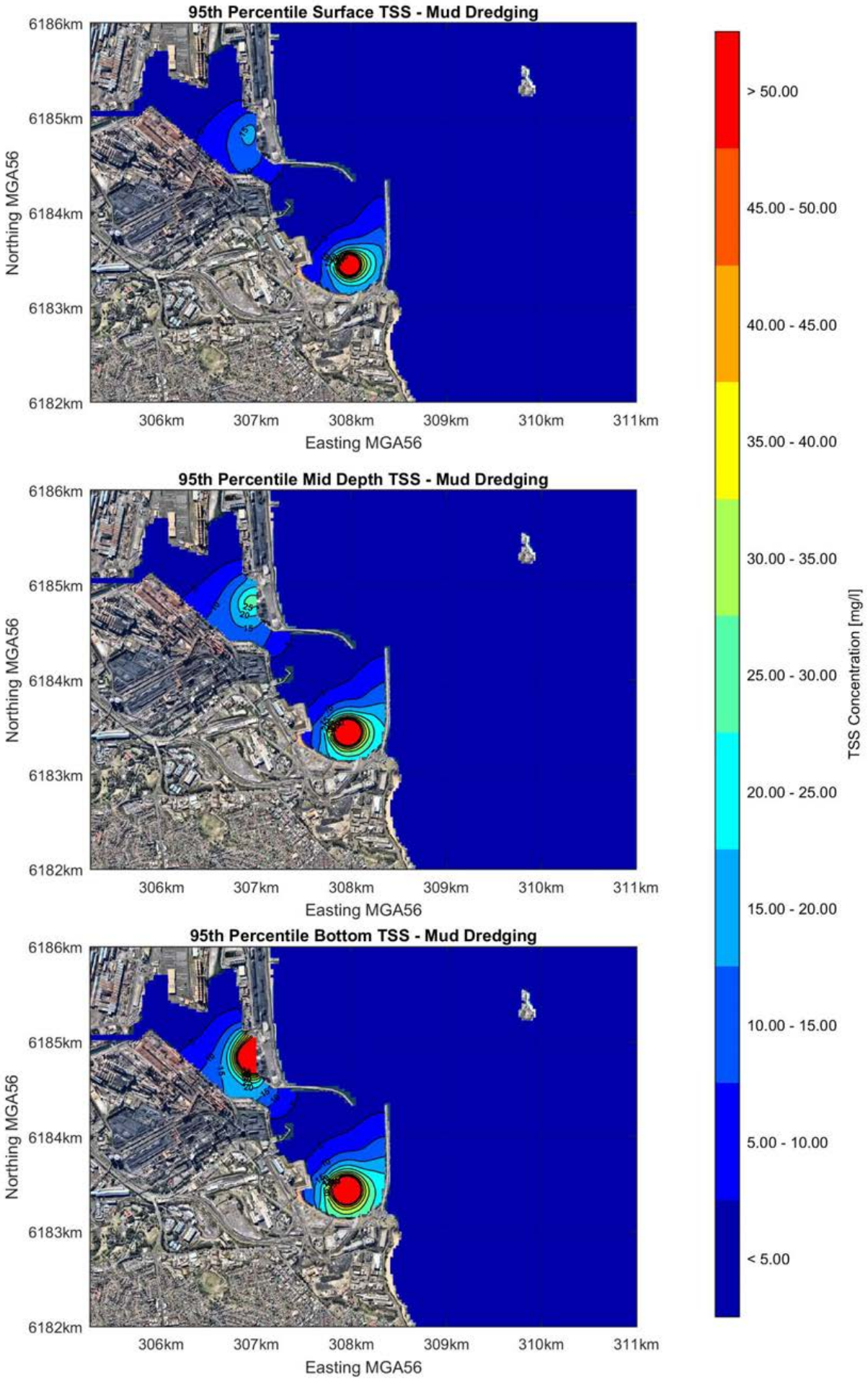
Port Kembla Long Waves, Sediment and Thermal Modelling

Modelled Suspended Sediment Concentration
90th Percentile

Appendix D9

59919002 Oct 2018

N:\Projects\599\FY19\002_N:\Projects\599\FY19\002_Port Kembla Long Waves\



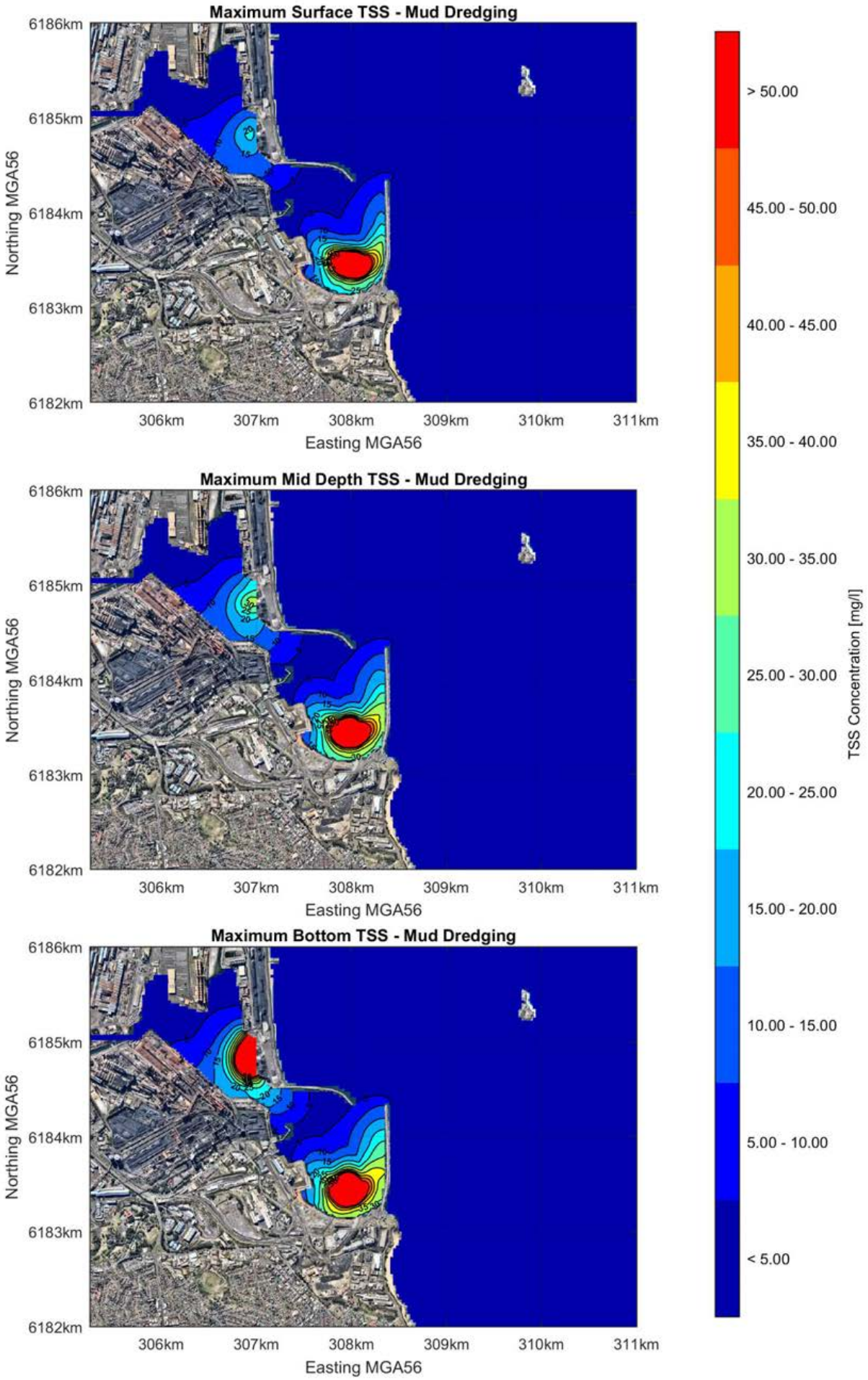
Port Kembla Long Waves, Sediment and Thermal Modelling

Modelled Suspended Sediment Concentration
95th Percentile

Appendix D10

59919002 Oct 2018

N:\Projects\599\FY19\002_N:\Projects\599\FY19\002_Port Kembla Long Waves\



Port Kembla Long Waves, Sediment and Thermal Modelling

Modelled Suspended Sediment Concentration Maximum

Appendix D11

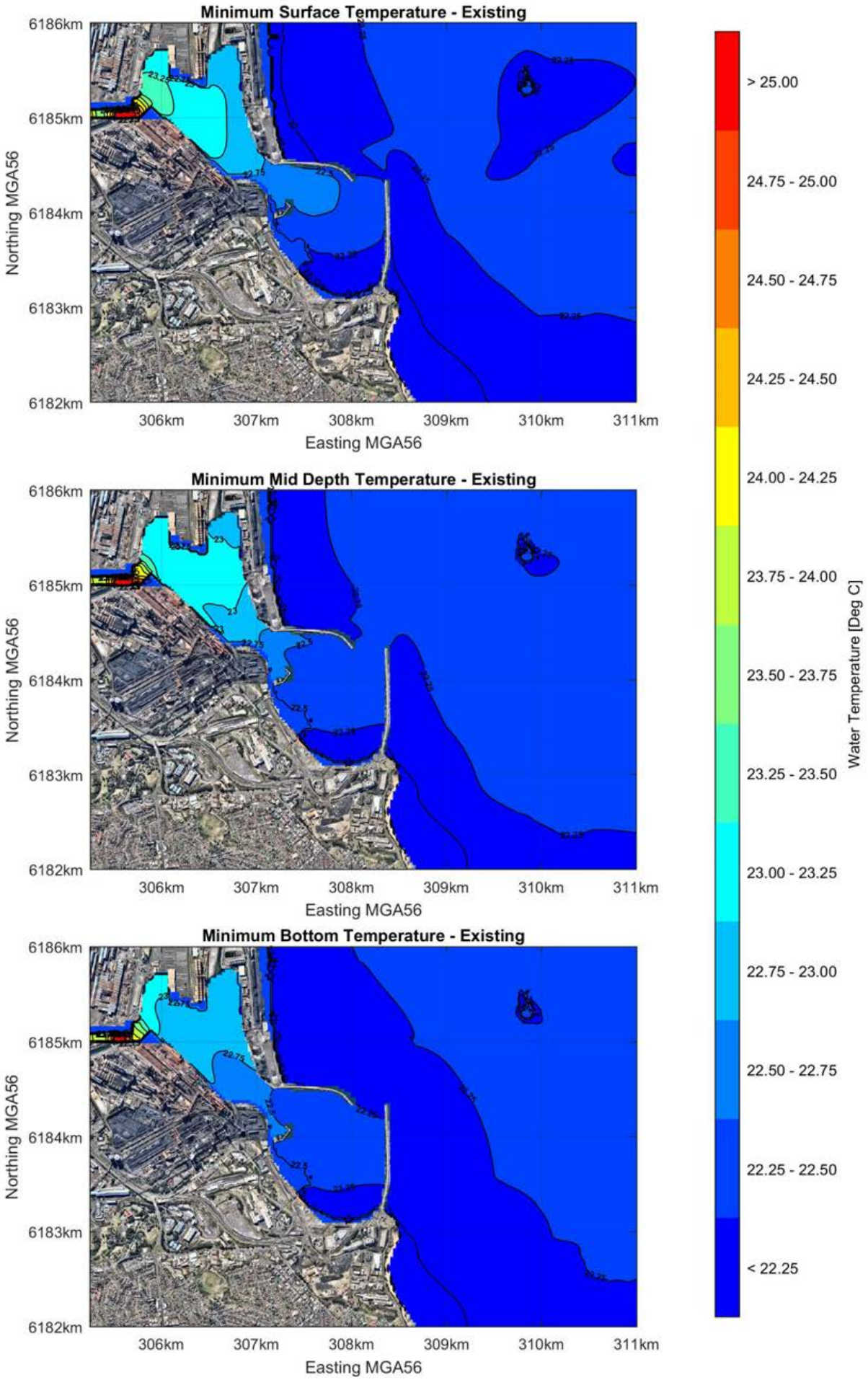
59919002 Oct 2018

N:\Projects\599\FY19\002_N:\Projects\599\FY19\002_Port Kembla Long Waves\

APPENDIX

E

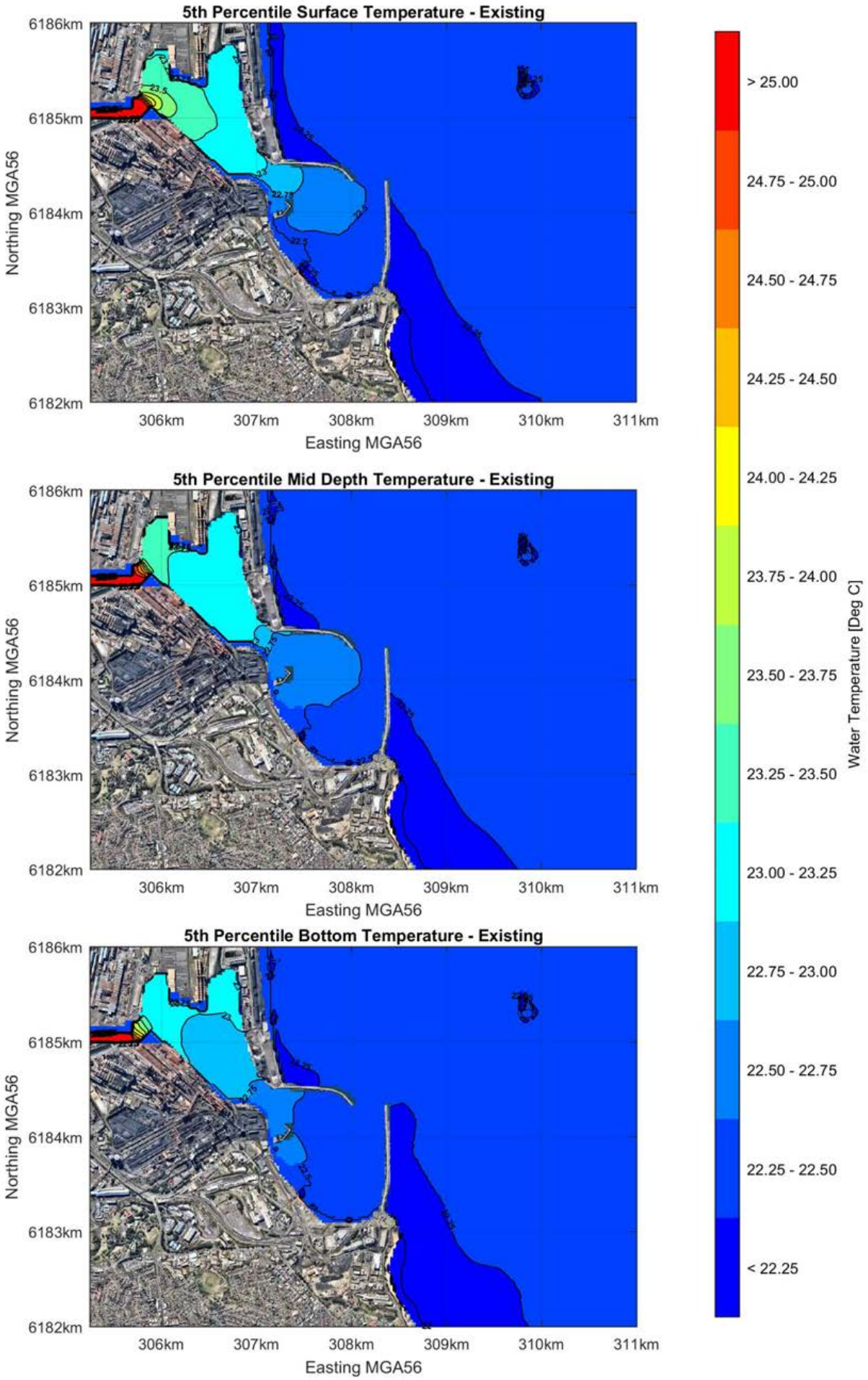
EXISTING SUMMER THERMAL PLUME RESULTS



Port Kembla Long Waves, Sediment and Thermal Modelling

Modelled Summer Seawater Temperatures − Existing Case Minimum

Appendix E1



Cardno

Port Kembla Long Waves, Sediment and Thermal Modelling

Modelled Summer Seawater Temperatures − Existing Case
5th Percentile

Appendix E2

59919002 Oct 2018

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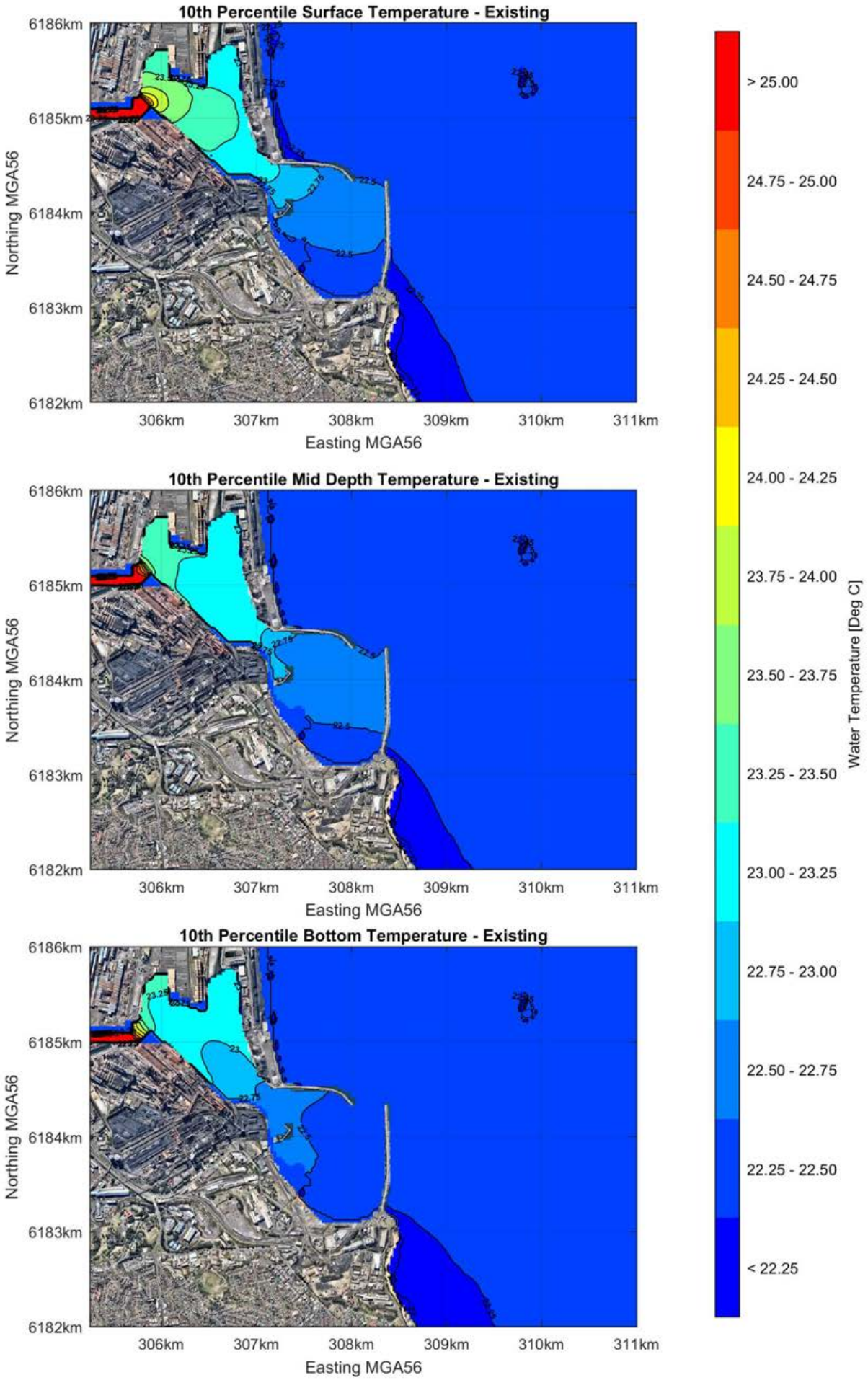

Port Kembla Long Waves, Sediment and Thermal Modelling

Modelled Summer Seawater Temperatures − Existing Case
10th Percentile

Appendix E3

59919002 Oct 2018

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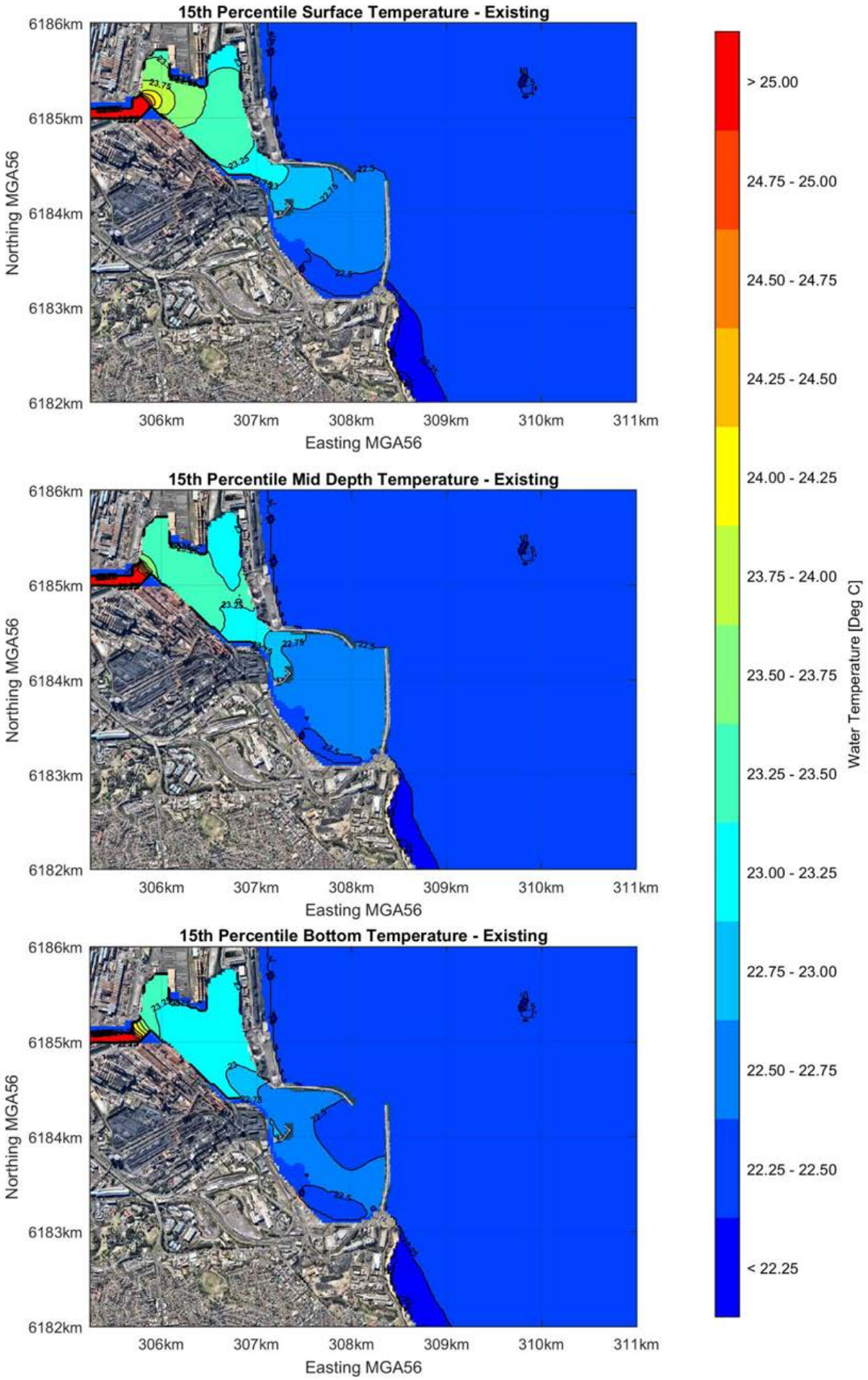

Cardno

Port Kembla Long Waves, Sediment and Thermal Modelling

Modelled Summer Seawater Temperatures − Existing Case
15th Percentile

Appendix E4

59919002 Oct 2018

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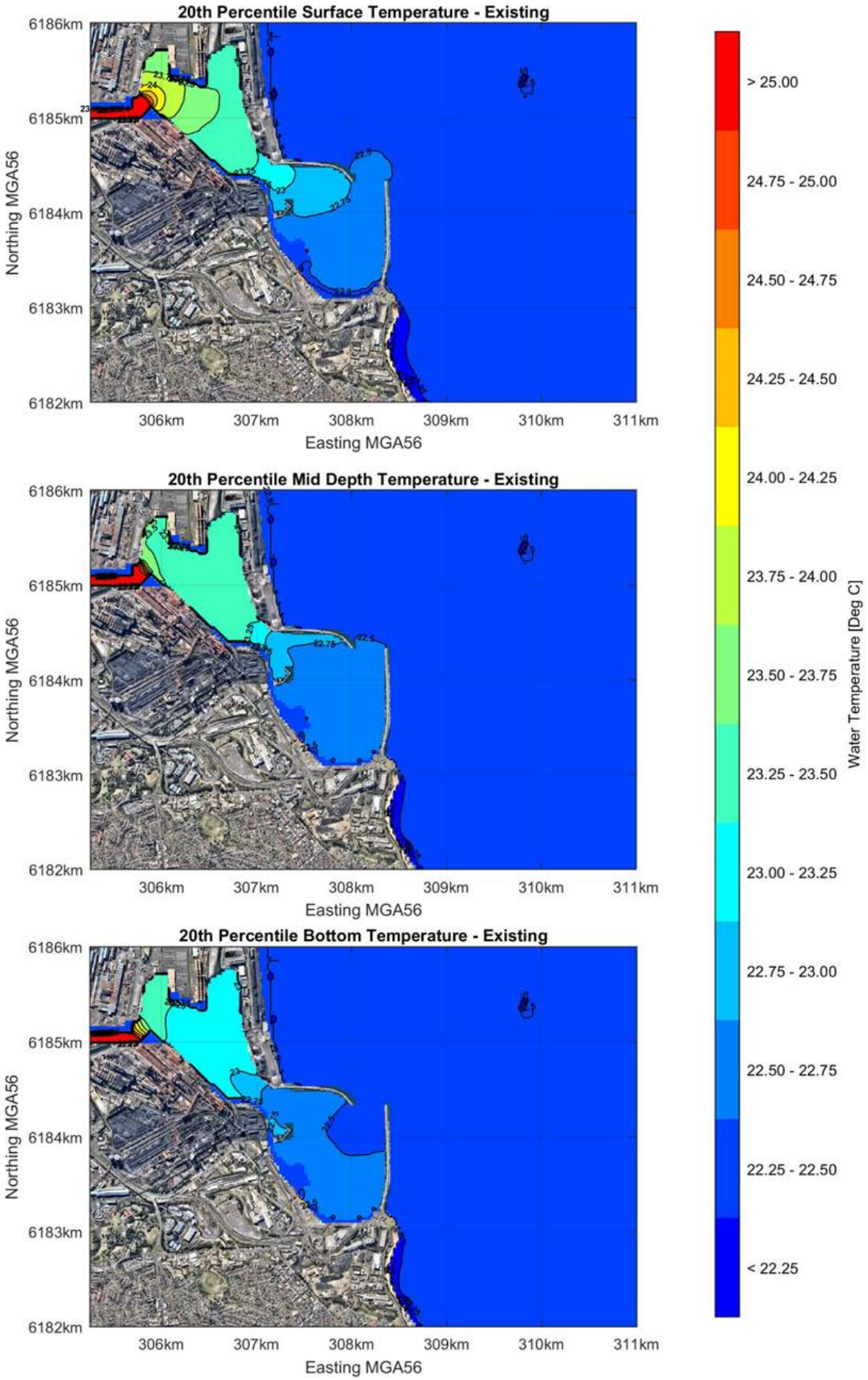


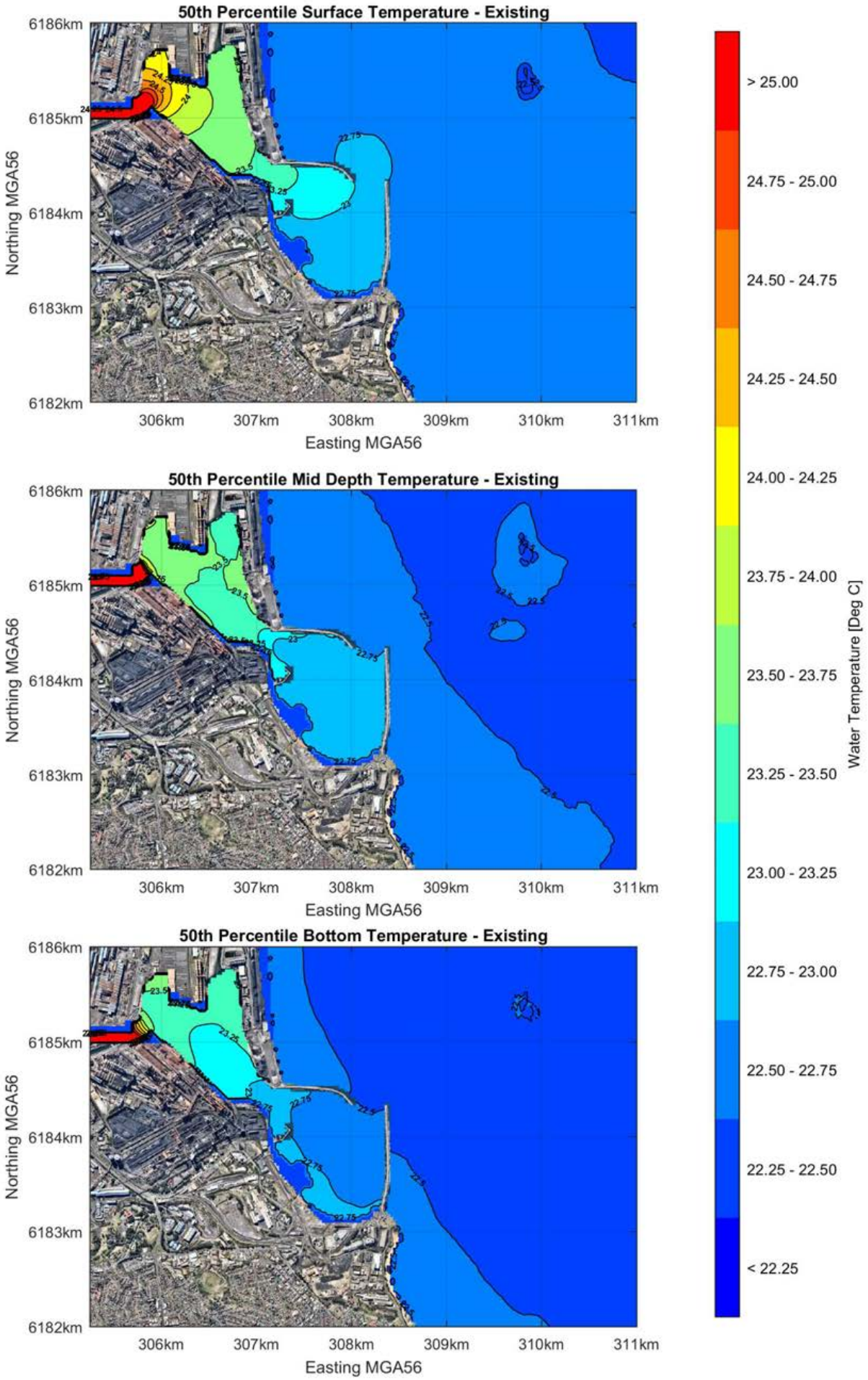
Port Kembla Long Waves, Sediment and Thermal Modelling

Modelled Summer Seawater Temperatures − Existing Case
20th Percentile

Appendix E5

59919002 Oct 2018

N:\Projects\599\FY19\002_N:\Projects\599\FY19\002_Port Kembla Long Waves\



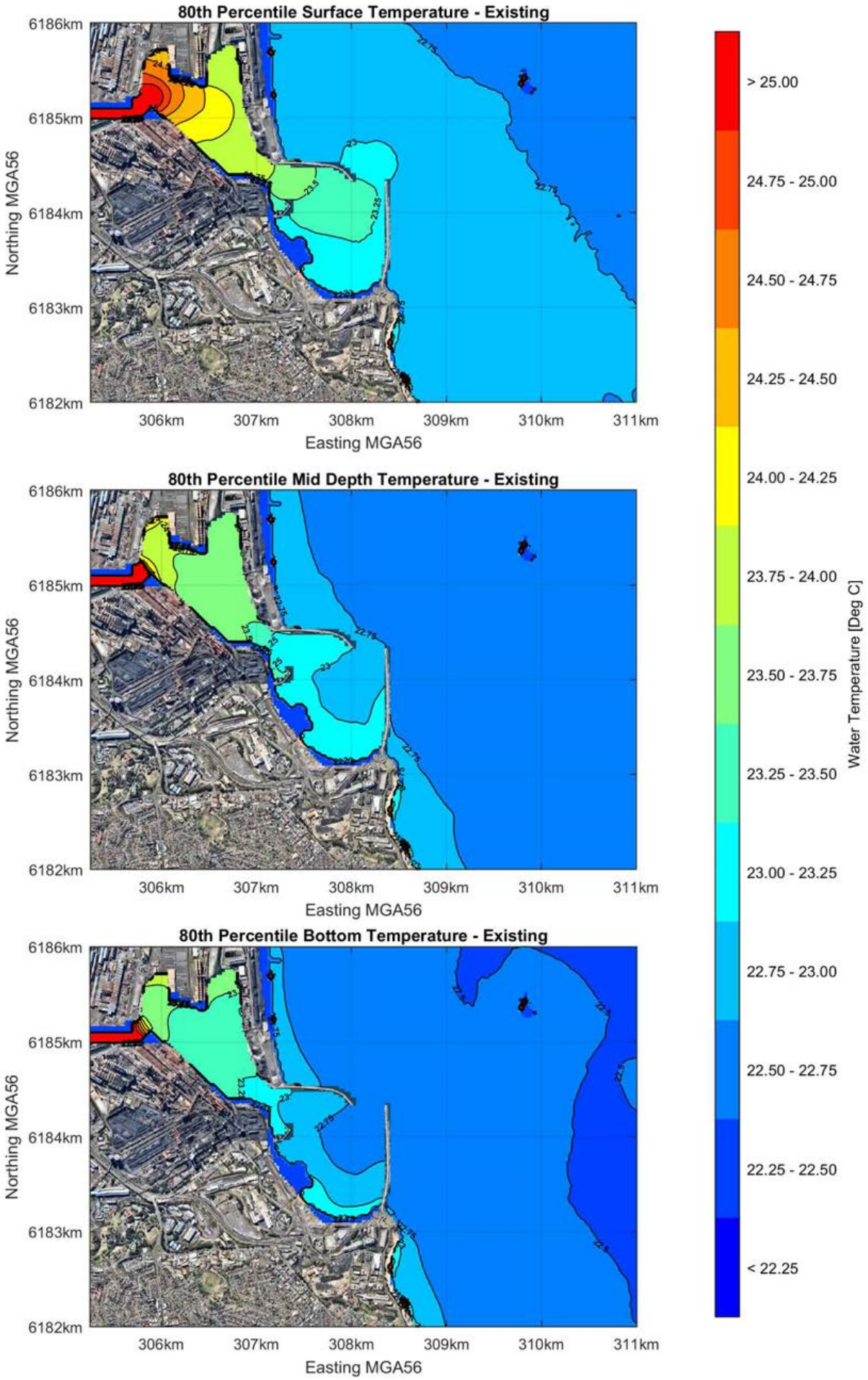
Port Kembla Long Waves, Sediment and Thermal Modelling

Modelled Summer Seawater Temperatures − Existing Case
50th Percentile

Appendix E6

59919002 Oct 2018

N:\Projects\599\FY19\002_N:\Projects\599\FY19\002_Port Kembla Long Waves\



Cardno

Port Kembla Long Waves, Sediment and Thermal Modelling

Modelled Summer Seawater Temperatures − Existing Case
80th Percentile

Appendix E7

59919002 Oct 2018

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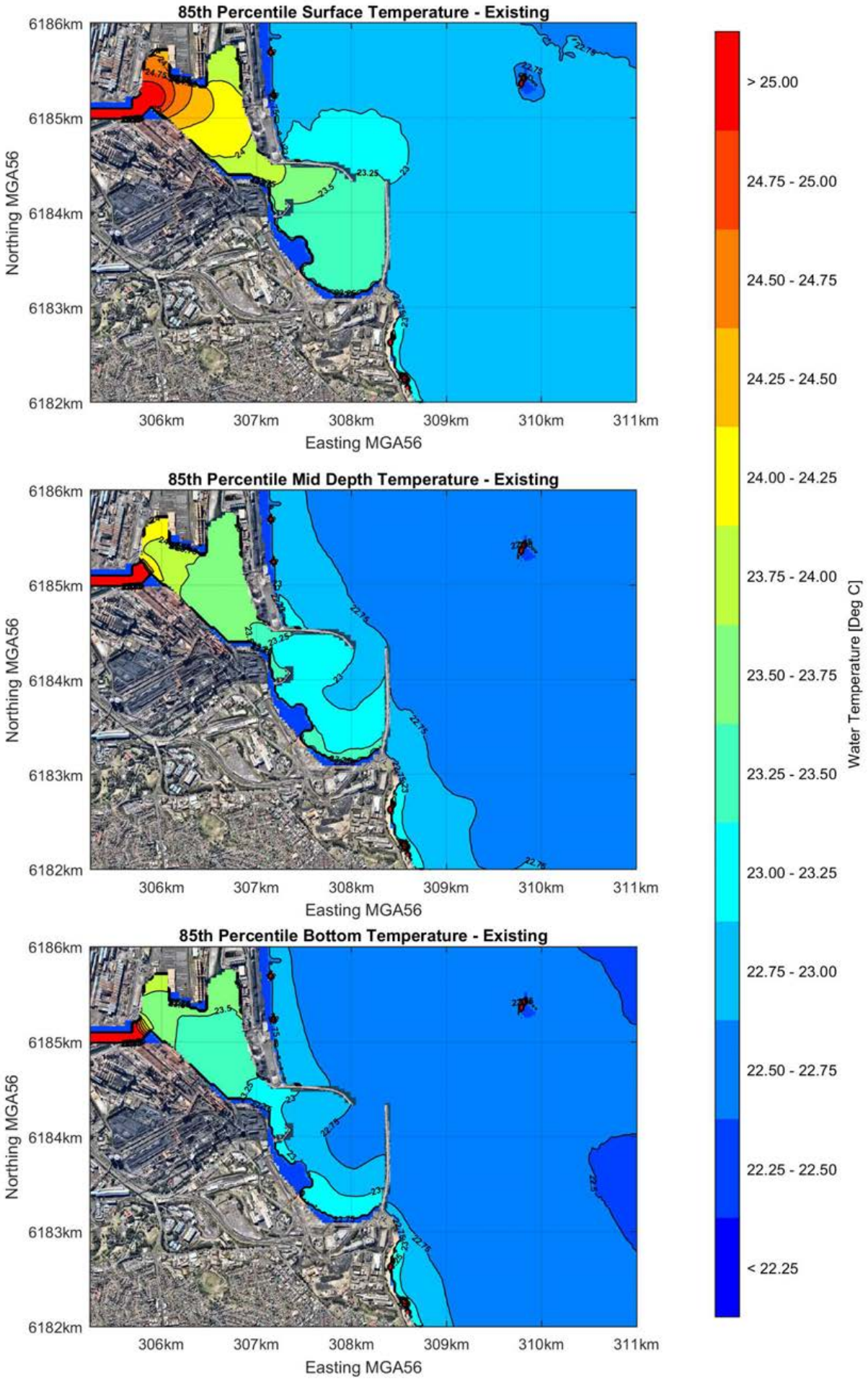

Cardno

Port Kembla Long Waves, Sediment and Thermal Modelling

Modelled Summer Seawater Temperatures − Existing Case
85th Percentile

Appendix E8

59919002 Oct 2018

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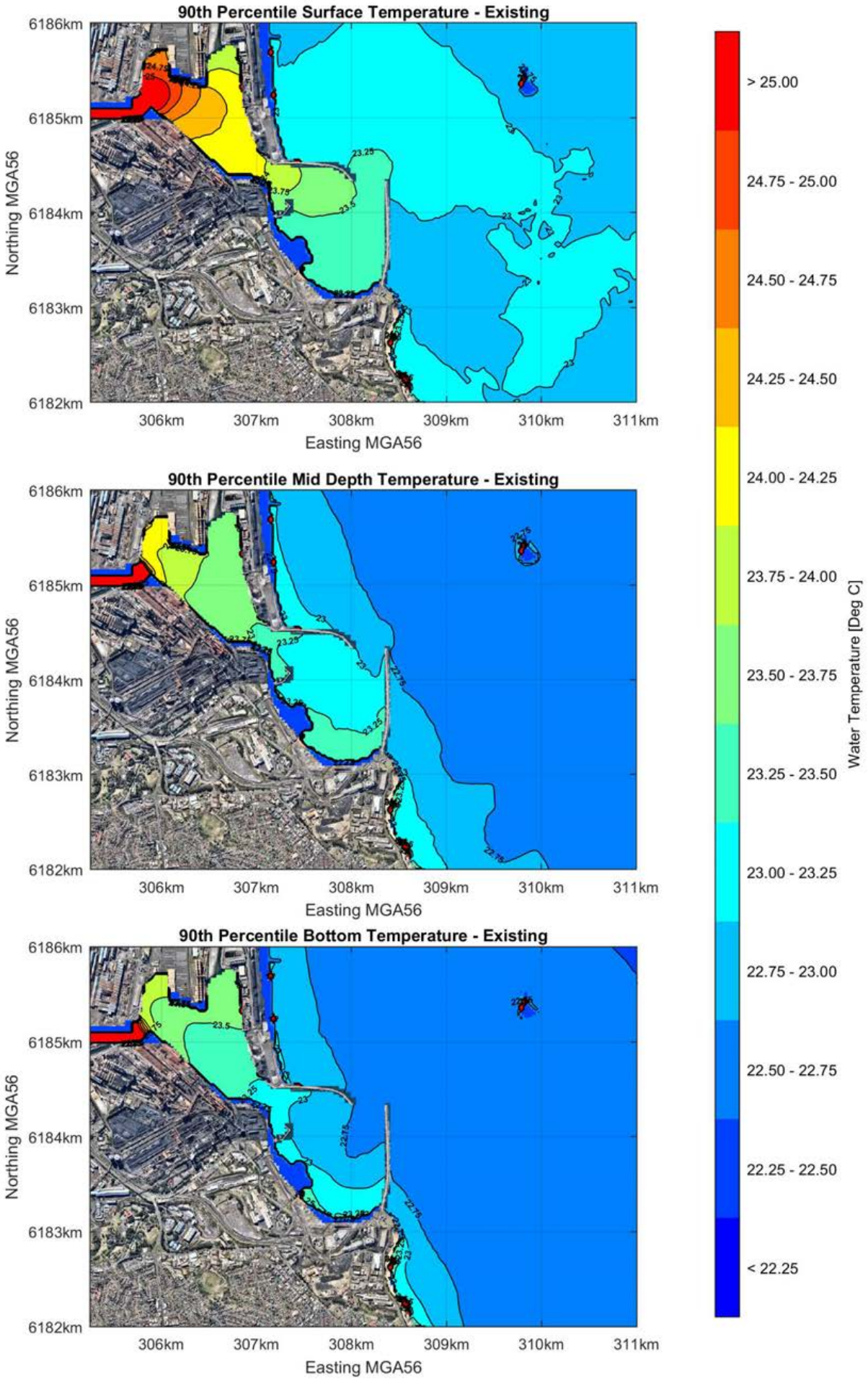

Cardno

Port Kembla Long Waves, Sediment and Thermal Modelling

Modelled Summer Seawater Temperatures − Existing Case 90th Percentile

Appendix E9

59919002 Oct 2018

N:\Projects\599\FY19\002_N:\Projects\599\FY19\002_Port Kembla Long Waves\