Second Session of the Expert Team on Marine Climatology

Geneva, Switzerland, 26-27 March 2007

Existing and proposed interactions between the ETWS and the ETMC

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Cooperation between ETWS and ETMC

- *CLIMAR-III*
- *Extremes Wave Data Base*
- *Wave Climate Summaries in ICOADS*
- *Expert Team on Climate Change Detection and Indices (ETCCDI)*
- *Storm Surge Statistics*
- *Climate Change and Design*

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CLIMAR-III

The ETWS should certainly play a continuing role in the Workshop on Advances in Marine Climatology (CLIMAR) meetings, ensuring that waves and surges are well represented within the marine climatology envelope.

At the ETWS-II (Geneva, Switzerland, 20-24 March 2007), the Team agreed with developing a definite role at CLIMAR-III

The ETWS chairperson is on the Organizing Committee for CLIMAR-III

Extreme Wave Data Base

Motivation:
JCOMM Expert Team on Wind Waves and Storm Surges noted the need for high quality measured wave data sets in areas of open ocean away from continental margins for use in model validation, forecast verification, satellite calibration and validation as well as climatology

Proposal:
JCOMM supported the development of a JCOMM-label data base of wave measurements in "extreme storm seas", SWH ≥ 14 m

Catalyst:
Rockall Trough storm of February 8, 2000 measured 18.5 m SWH (!!), the largest known reliably measured wave height, off Scotland

Holliday, N. P., M. J. Yelland, R. Pascal, V. R. Swail, P. K. Taylor, C. R. Griffiths, and E. Kent, 2006: Were extreme waves in the Rockall Trough the largest ever recorded?, Geophys. Res. Lett., 33, L05613, doi:10.1029/2005GL025238.

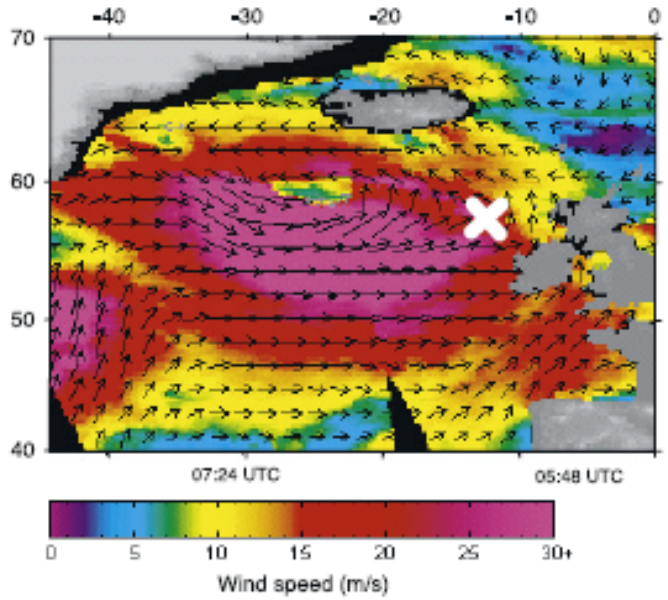

Figure 1. The location of RRS *Discovery* on 8 February 2000 (white cross), overlying the satellite-derived wind speeds for that day (QuikScat morning pass wind vectors). QuikScat data are produced by Remote Sensing Systems and sponsored by the NASA Ocean Vector Winds Science Team. Data are available at http://www.remss.com (2005). Grey shading is land; black shading represents no data.

Holliday et al., 2006. Were extreme waves in the Rockall Trough the largest ever recorded?, *Geophys. Res. Lett.*, 33, L05613

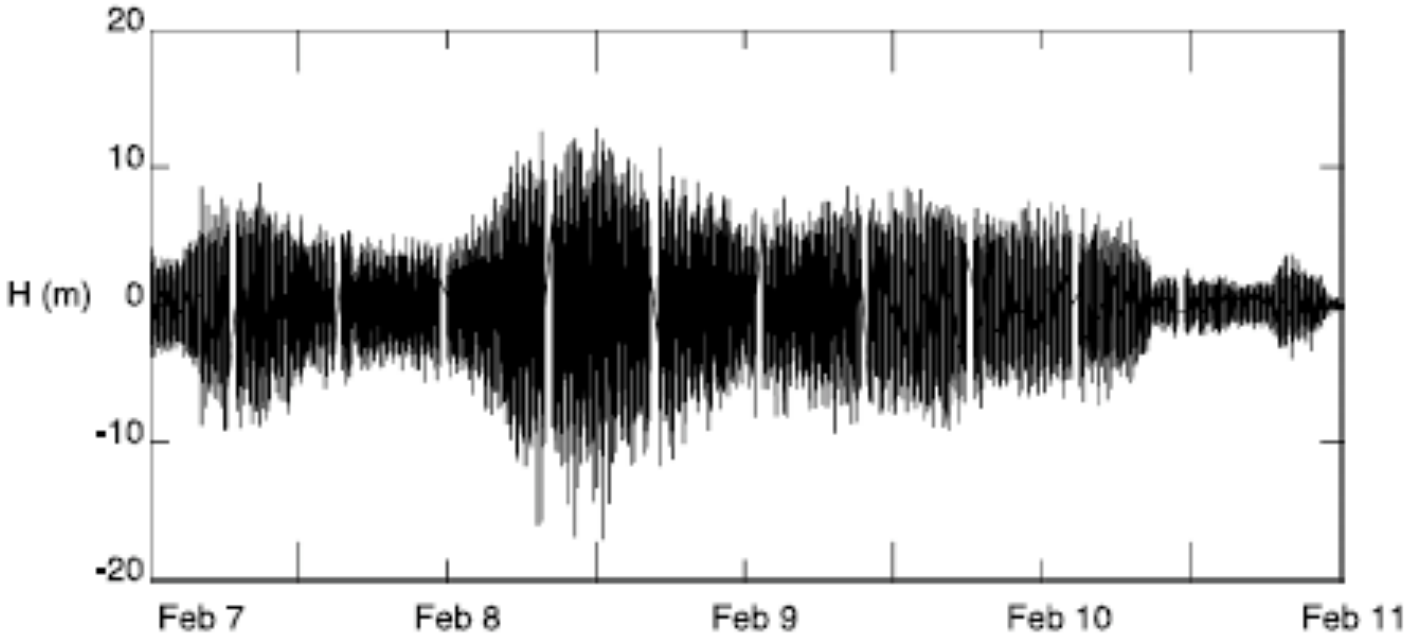

Figure 3. The individual wave record for 7–11 February 2000. Data recorded at 1 second intervals with 10-minute breaks every 8 hours while data were saved.

Holliday et al., 2006. Were extreme waves in the Rockall Trough the largest ever recorded?, *Geophys. Res. Lett.*, 33, L05613

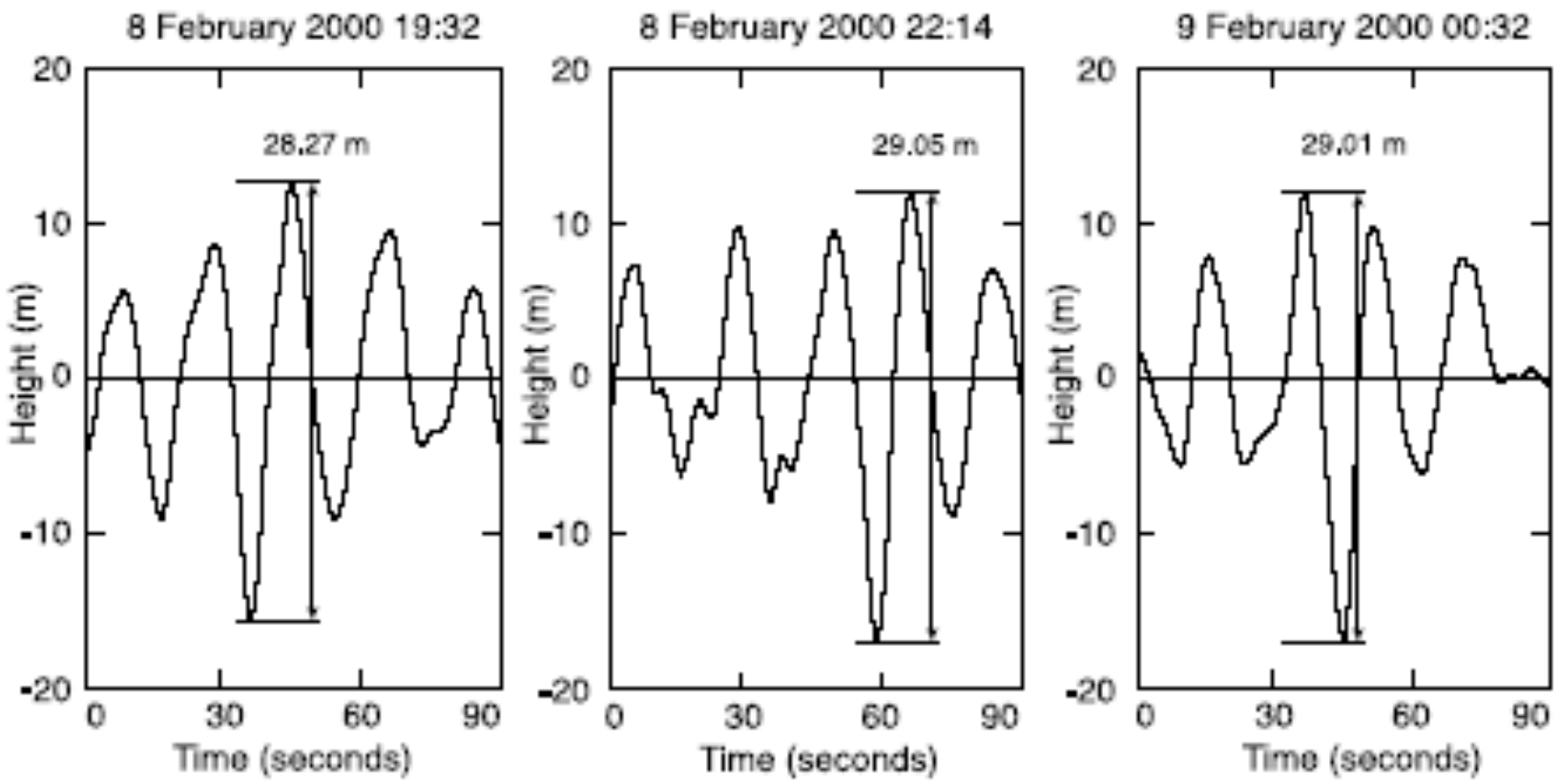

Figure 4. The wave records for the three largest measured individual waves.

Holliday et al., 2006. Were extreme waves in the Rockall Trough the largest ever recorded?, *Geophys. Res. Lett.*, 33, L05613

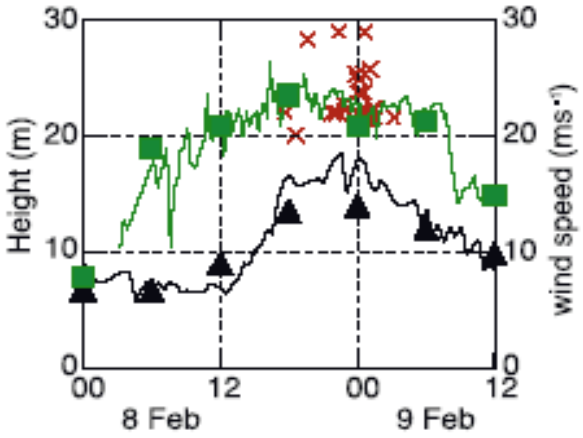

Figure 2. Extreme wind and waves recorded by RRS *Discovery* on 8–9 February 2000 at 57.5°N 12.7°W. Black line is significant wave height (defined as four times the standard deviation of sea surface elevation). Green line is wind speed when the wind direction was within ±30° of the bow (10 minute averages of true wind corrected for stability and at a height of 10 m). Red crosses are individual wave heights that exceeded 20 m. AES40 hindcast data for the same period at 57.5°N 12.5°W are given as black triangles (significant wave height) and green squares (neutral wind speed at 10 m).

Holliday et al., 2006. Were extreme waves in the Rockall Trough the largest ever recorded?, *Geophys. Res. Lett.*, 33, L05613

Extreme Wave Data Base

Requirement:
Contributions of high quality wave measurements of extreme storm seas with appropriate documentation and metadata to the Extreme Wave Data Base

- At the ETWS-II, the Team:

Agreed on the need to associate adequate disclaimers with the planned database, since the extracted *in situ* data would necessarily be very sparse and incomplete

Suggested that altimeter data be included as an integrated component of the system

Agreed to establish this database through the solicitation of additional contributions of *in situ* data, with the likelihood that some complications would also need to be sorted out on open redistribution and other national or organizational data policies

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Wave Climate Summaries in ICOADS

A considerable amount of wave data from ships and buoys is available in the International Comprehensive Atmosphere-Ocean Data Set (ICOADS). Recommendations from the CLIMAR and MARCDAT meetings have supported the development of wave climate statistics and summaries using these data.

At the ETWS-II, the Team:

- agreed to joint work towards the development of wave climate summaries for ICOADS based on the historical *in situ* record

- noted the need to support ICOADS and the inclusion of waves by developing new international ICOADS staff at different institutions coordinated by the ETMC and ETWS chairpersons

Expert Team on Climate Change Detection and Indices (ETCCDI)

The ETWS would provide input to the ETCCDI with respect to wind waves and storm surges in cooperation with the ETMC

There are a range of marine datasets, both *in situ* and model-derived, that could be used in the development of indices. Examples include: reanalyzed wind and wave datasets, ICOADS surface marine reports and summaries, sea level from tide gauges and satellites

The proposed modernization of the Marine Climatological Summaries Scheme (MCSS) Summaries (MCS) provides an opportunity to develop appropriate wind and wave indices

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Storm Surge Statistics

There is a need for enhanced global and regional storm surges statistics, this would involve guidelines for storm surge historical databases and statistical techniques to enable members to carry out statistical analysis in their countries.

It was also recommended to explore how risk areas of storm surge inundation zones and maximum envelope of water can be identified and mapped.

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Climate Change and Design

The International Association of Oil and Gas Producers (OGP) has expressed interest in a joint workshop on the potential impacts of climate change on future design criteria, which relates to the planned ETWS Technical Report on the subject

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