

WP3 Workshop: 28-29/1 2004:

Agenda:

Welcome and general information (Luciana)

- 1) Status of WP3 (Per)
- 2) Task 3.1- General overview (Mikis)
- 3) Detail of Task 3.1 Tide Gauge analyses (Mikis & Andrew)
 - 3.1) Main results - dominant frequencies.
- 4) Detail of Task 3.1 altimetry (Niels & Luciana)
 - 4.1) Comparisons with tide gauge data
 - 4.2) Main results - dominant frequencies.
- 5) First experience in T3.2 (Niels and/or Luciana)
 - 5.1) Actions, planning, etc. for T3.2
- 6) First experience in T3.3 (Niels)
 - 6.1) Analysis of MICOM topography time series (Helge Drange)
 - 6.2) Actions, planning, etc. for T3.3
- 7) Publications
 - 7.1) Results from Task 3.1 (Mikis)
- 8) Actions, planning, summary
- 9) End of meeting

Summary and action items:

- 1) Status of WP3
Per Knudsen introduced the workshop by describing the tasks and time plan of the workpackage.
- 2) Task 3.1- General overview.

Mikis Tsimplis summarized the results of the analyses carried out on tide gauge data following the guidelines and procedures agreed upon at the previous workshop held in March 2003 at NERC.POL. The general results were that

- No significant dominating frequencies could be identified and that
- Regionally, the temporal sea level variations are consistent

3) Detail of Task 3.1 - Tide Gauge analyses

Andrew Shaw presented the details of their tide gauge data analysis. He had developed a MATLAB program for handling data and various analyses, such as extraction of data from a regional subset of stations, interpolation of data for gap filling, EOF analysis, and computation of power spectra. Furthermore, he had defined a series of (40) regions based on temporal similarities. Analysis of the tide gauge data in those regions underlined

- The frequency content varying in time and
- The regional consistency.

Furthermore, he found that the probabilistic PCA method were not well suited for the analysis of time series with gaps.

ACTIONS:

Action WP3.2.1. Each of the partners who have carried out regional analyses of the tide gauge data should report on the regional characteristics of the sea level variations, that is, to identify if any dominating frequencies have been identified and over which periods they are seen. Short descriptions should be send to Mikis before 2004-02-21.

Action WP3.2.2. Mikis should compile the tide gauge part of the deliverable report D3.1 based on the summary report he handed out at the meeting and the inputs from the partners on the regional characteristics mentioned above before 2004-02-28.

4) Detail of Task 3.1 – Altimetry

Lucianna Fenoglio-Marc and Niels Kjær presented a condensed summary of the work done on altimetry within T3.1, with a brief description of the methodology.

An EOF analysis which were applied to both regional areas and smaller sub-basins indicated the spatial patterns, and as expected the first EOF explained a much larger part of the total variance in the smaller enclosed basins as opposed to for example the North East Atlantic ocean.

4.1) Comparisons with tide gauge data

Comparisons of tide gauge records with nearby altimetry time series had been performed for the control stations used in the tide gauge analysis in T3.1 and similar frequency contents were found. Also the autocorrelation functions were comparable, revealing that at most of the control stations the signal became uncorrelated after around one month.

4.2) Main results - dominant frequencies.

The dominant frequencies were determined and showed substantial spatial variability, while large areas had no dominant frequency above the 95% confidence level, however.

ACTIONS:

Action WP3.2.3. Luciana should evaluate the detected dominant frequencies using histograms and insert the results in her report on her contribution to the altimetry work of T3.1 before 2004-02-21.

Action WP3.2.4. Luciana and Niels will merge their reports on altimetry in T3.1 into one with a few additional analyses, and it will then be included as a chapter in the D3.1 report before 2004-02-28.

Action WP3.2.5. Mikis, Luciana, and Niels will merge the updated reports on the tide gauge and the altimetry analyses of T3.1, respectively, into one D3.1 report before 2004-04-01.

5) First experience in T3.2 & T3.3

Presented by Lucianna Fenoglio-Marc and Niels Kjær.

The initial phase of these tasks has been used both for comparing the methodologies used by P2, P5 and P14, and to gain insight in the possible usage of various climatic indices further on, along with calculations of the spatial correlation values and patterns at different locations, both with regards to such indices and tide gauge data. One point being that the correlation with distance between a tide gauge and altimetry data is highly variable in different places.

5.1) Actions, planning, etc. for T3.2

Considering that interannual to decadal variations should be analysed, the involved partners have agreed upon guidelines for the work, and how to proceed initially. It is, however, an iterative process where different approaches for interpolating the tide gauge data to a global grid shall be investigated. **Action WP3.2.6.** The task leader (Luciana) together with Maria and Niels should redo their analyses using annually low-pass filtered data. Deadline 2004-03-15.

6) First experience in T3.3

See 5) above.

6.1) Analysis of MICOM topography time series

Helgre Drange of the NERSC presented some preliminary results from running their OGCM for deriving sea level heights. The model has a resolution of 40km horizontally, consists of 26 layers and was run for the North Atlantic with time steps of 20-30 min. for this purpose. The output goes back to 1948, as the atmospheric fields are available from then on. No tides are included but river run-off and other processes are. In summary their findings for the Atlantic Ocean were that:

- Temperature can be used as a proxy for Sea Level Height (SLH), while salinity is not well suited.
- The integrated heat content from 0-300m depth has some correlation with SLH, with a lag of up to five years.
- The stream function correlates relatively well with SLH, but best for the first PC.
- At least on these spatial scales, annual mean values are sufficient; there is no need to discern between seasonal values.
- It looks like the first EOF contains interannual to decadal signals, whereas EOF#2 is somewhat shorter variations.

6.2) Actions, planning, etc. for T3.3

Action WP3.2.7. Per will ask the task leader (Ole) to plan the work of T3.3 considering the results from T3.2 and that sea level variation associated with decadal to inter-decadal time scales should be described and modelled. Deadline 2004-04-01.

7) Publications

It was agreed that the results from Task 3.1 should be published and to follow the recommendation made by Mikis that the accomplished results should go out in a suitable journal such as Journal of Coastal Engineering as a Shaw et al paper.

8) Actions, planning, summary

Action item WP3.2.1. Each of the partners who have carried out regional analyses of the tide gauge data should report on the regional characteristics of the sea level variations, that is, to identify if any dominating frequencies have been identified and over which periods they are seen. Short descriptions should be send to Mikis before 2004-02-21.

Responsible: Partners P1, P2, P5, P10, P13, P16, P18, P19, and P21. **Deadline:** 2004-02-21.

Action item WP3.2.2. Mikis should compile the tide gauge part of the deliverable report D3.1 based on the summary report he handed out at the meeting and the inputs from the partners on the regional characteristics mentioned above before 2004-02-28.

Responsible: Mikis Tsimplis. **Deadline:** 2004-02-28.

Action item WP3.2.3. Luciana should evaluate the detected dominant frequencies using histograms and insert the results in her report on her contribution to the altimetry work of T3.1 before 2004-02-21.

Responsible: Luciana Fenoglio-Marc. **Deadline:** 2004-02-21.

Action item WP3.2.4. Luciana and Niels will merge their reports on altimetry in T3.1 into one with a few additional analyses, and it will then be included as a chapter in the D3.1 report before 2004-02-28.

Responsible: Luciana Fenoglio-Marc. **Deadline:** 2004-02-28.

Action item WP3.2.5. Mikis, Luciana, and Niels will merge the updated reports on the tide gauge and the altimetry analyses of T3.1, respectively, into one D3.1 report before 2004-04-01.

Responsible: Mikis Tsimplis. Deadline: 2004-04-01.

Action Item WP3.2.6. The task leader (Luciana) together with Maria and Niels should redo their analyses using annually low-pass filtered data.

Responsible: Luciana Fenoglio-Marc. Deadline: 2004-03-15.

Action item WP3.2.7. Per will ask the task leader (Ole) to plan the work of T3.3 considering the results from T3.2 and that sea level variation associated with decadal to inter-decadal time scales should be described and modelled.

Responsible: Per Knudsen. Deadline: 2004-04-01.

Everybody that have made presentations at this Workshop should send their presentations to the ESEAS-CB.

9) End of meeting