

Report of the 19th meeting of the NSHC-TWG to the 31st NSHC Conference

1. Meetings and attendance

The 19th NSHC-TWG meeting was held at the Norwegian Hydrographic Service in Stavanger 4th-5th June 2013. Representatives from United Kingdom, Netherlands, Belgium, Germany, Denmark, Sweden and Norway attended the meeting.

2. Current actions

There are several ongoing actions within the NSHC-TWG:

- Developments in modern tide gauges
- Developments in digital tide tables and website predictions
- Tidal reduction methods

The main discussion was on establishing a common North Sea reference surface. Several countries have their own reference surface related to the ellipsoid, but there are discontinuities at the borders. Two solutions were discussed:

1. Develop a reference surface based on a common hydrodynamic model for the whole North Sea.
2. Combining existing national models.

The group found alternative no 2 to be the most realistic at the moment, and actions A19/01-05 (see Appendix B) will investigate this possibility further.

3. List of deliverables and timing

- Compare LAT surfaces. NLHO will send a copy of the LAT surface from TU Delft to the TWG to be compared to the national models.
- A paper “Establishment and maintenance of vertical reference frameworks for high resolution bathymetric surfaces” was sent from IHB and NSHC Chair to the 5th IHO-TWLWG meeting in May 2013. UKHO was responsible for composing an answer to this letter, and the matter was discussed at the TWG meeting (many of the delegates to the NSHC-TWG also attend the IHO_TWLWG).
- Make an overview of existing models, including metadata. Each member state sends the information to UKHO.
- Investigate implications of eventual smoothing at the open sea boundaries between countries. Depends on the differences observed in the reference levels at the boundaries.
- Maintenance of the common reference surfaces. Investigate what is required to update the existing LAT surface.

4. Recommendations to the 31st NSHC Conference

The 31st NSHC Conference is invited to approve and amend, if necessary:

- This report

- The work plan for NSHC-TWG, Annex A
- The actions items, Annex B

5. Next meeting of the group.

Under rotating chairmanship the 20th NSHC TWG is to be held in Netherlands.

ANNEX A: WORK PLAN NSHC-TWG to be approved by NSHC

| Work plan NSHC Tidal Working Group: ([Feb 2012] - to be confirmed by NSHC) | | | | |
|---|--|--|------------------------|-----------------------------|
| Item number (TWG/item) | objective (WHY/priority) | task description (WHAT/HOW) | HO involved | Status |
| WP 16 / 01 | Better accommodate the different needs of both navigational purpose and coastal management | Common MSL in reference to the GRS80 ellipsoid | All, coordination NLHO | Closed, see WP18/01 |
| WP 16 / 02 | | Common LAT in reference to the GRS80 ellipsoid | All, coordination NLHO | Closed, see WP18/01 |
| WP 16 / 03 | | Common chart datum in reference to the GRS80 ellipsoid | All, coordination NLHO | Closed, see WP18/01 |
| WP 16 / 04 | Enable GNSS-based tidal reduction and the connection with the vertical datum on land | Follow developments on geoid, MSL and LAT computations for the North Sea area | All | Permanent, see also WP18/01 |
| WP18/01 | Improve North Sea wide realization of reference surfaces | Explain and reduce differences in reference surfaces at the international boundaries | All | Permanent |
| WP 18/02 | | Exchange between HO's on operational methodologies for GNSS based surveys | All | Permanent |

ANNEX B: Action items for internal coordination within NSHC-TWG

Action items NSHC Tidal Working Group

| Item number (TWG/item) | objective (WHY/priority) | task description (WHAT/HOW) | HO involved | status |
|------------------------|---|---|-------------------------|-------------|
| A18/01 | Explain differences in realizations of LAT | Exchange on bilateral basis between involved HO's to investigate further the origin of observed differences at the boundaries between national reference surfaces | All | Permanent |
| A18/02 | Be a stakeholder of the BLAST WP3 project | Get feedback from BLAST project team and study the outputs of BLAST WP3 | All, Coordinati on NLHO | Closed |
| A18/03 | Be a stakeholder of the BLAST WP3 project | Examine the feasibility for MS of the NSHC to join the BLAST follow up | All, Coordinati on NLHO | Closed |
| A18/03 | Better capitalize the work done by the NSHC TWG | Study the feasibility for setting up a web portal for NSHC TWG on the IHO website | UKHO | Autumn 2013 |
| A18/04 | Facilitate exchanges of tide data by developing a standard XML format for tide data exchanges | Publish harmonic constituents and tide prediction for use within IHO community; UKHO acts as coordinator and links with TWLWG | All, UKHO | Permanent |
| Action 18/05 | Towards a common language both for tide constituents and tide predictions. | Automation of tide table production | All TWLWG | Closed |
| Action 19/01 | Compare LAT surfaces | NLHO send a copy of the LAT surface from TU Delft to the TWG to be compared to the national models | NLHO, All | Summer 2013 |
| Action 19/02 | Prepare an answer to IHO | UKHO distributes an answer to the letter from IHO for comments | UKHO, All | Summer 2013 |
| Action 19/03 | Make an overview over existing models, including metadata | Each member state sends the information to UKHO | All, UKHO | Autumn 2013 |
| Action 19/04 | Investigate implications of eventual smoothing at the open sea boundaries between countries | Depends on the differences observed in the reference levels at the boundary layers. | All | Autumn 2013 |
| Action 19/05 | Maintenance of the common reference surfaces | Investigate what is required to update the existing LAT surface | NLHO | Autumn 2013 |