

Royal Netherlands Navy
Hydrographic Service

Vertical reference unification

A contribution to axis 3:
"Vertical references & Chart datum"
of the Roadmap

Leendert Dorst
4th EU/IHO talks, 24 October 2013

Progress on different levels:

- National:
 - government (NHI=Rijkswaterstaat+NLHO);
 - academia (DUT, NCG, STW);
 - institutes (Deltares).
- North Sea wide:
 - NSHC Tidal WG;
 - Interreg IVb BLAST, Work Package 3;
 - Hydro2010(DE), REFAG2011(FR), Hydro12(NL).
- European:
 - INSPIRE CRS/GGS;
 - EMODNET Bathymetry;
 - Green paper Marine Strategy.

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Theory

MSL geoid
LAT
CD (Chart Datum)
Ellipsoid

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NSHC Tidal Working Group work of 2010

MSL geoid
LAT
CD (Chart Datum)
Ellipsoid (WGS84 / GRS80 / ITRS / ETS89)

BE, NL, DK, NO**
NO**
BE (via MSL)
DE*
FR*
NL (via MSL)
UK
FR*
UK

* = data partially covers North Sea area
** = data available at specific locations

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NSHC Tidal Working Group work of 2010

MSL vs ellipsoid: diff. <0.5 m.
LAT vs ellipsoid: diff. <0.5 m.
CD vs ellipsoid: diff. <0.8 m.

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NSHC Tidal Working Group work of 2010

CD vs LAT: diff. <0.8 m.

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Source: BLAST WP3 (2012)

Interreg IVb BLAST WP3: DTU

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Source: Forsberg, Strykowski, Andersen (2011)

Interreg IVb BLAST WP3: DTU

MSL vs ellipsoid
(DTU10-MSS)

LAT vs MSL
(DTU10-FES04)

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Source: Forsberg, Strykowski, Andersen (2011)

Interreg IVb BLAST WP3: DTU

LAT vs MSL
(smoothed TWG2010)

LAT vs MSL
(DTU10-FES04)

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Source: Slobbe, Klees, Verlaan, Dorst, Gerritsen (2012)

Interreg IVb BLAST WP3: DUT

geoid vs ellipsoid
(NLGEO2013)

LAT vs geoid
(DCSM v5)

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Source: Slobbe, Klees, Verlaan, Dorst, Gerritsen (2012)

Interreg IVb BLAST WP3: DUT

1/18.6 yr

1/yr

New Chart Datum always below LAT!

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Conclusion:

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