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README file for NKG2015

The Nordic/Baltic NKG2015 (quasi)geoid model has been computed in a long term project of the Working Group of Geoid and Height Systems in the Nordic Geodetic Commission (NKG).

See the enclosed PowerPoint presentation "*NKG2015_geoid_model_release_161005.pptx*" for detailed information on the project, computation and final model.

The NKG2015 model was obtained by fitting the computed gravimetric quasigeoid model (zero tide system, land uplift epoch 2000.0) to GNSS/levelling using a 1-parameter transformation and a permanent tide correction (due to that the GNSS heights above the ellipsoid are in the non-tidal system, while the levelled heights and gravimetric model are in the zero tide system). The GNSS/levelling observations refer to the following reference frames:

GNSS: ETRF2000 epoch 2000.0, transformed from the national ETRS89 realisations.

Levelling: National EVRS realisations with epoch 2000.0 in Sweden, Norway and Finland; EVRF2007 (epoch 2000.0) in Estonia, Latvia and Lithuania; DVR 90 in Denmark.

The following observation equation is used:

$$h_{\text{ETRF2000/2000},i} - H_{\text{NatEVRS/2000},i} - N_{\text{gravimetric},i} - \Delta h_{\text{zero} \rightarrow \text{non-tidal},i} - \varepsilon_i = x_1$$

which gives the final NKG2015 model,

$$N_{\text{NKG2015}} = N_{\text{gravimetric}} + \Delta h_{\text{zero} \rightarrow \text{non-tidal}} + \hat{x}_1$$

This model can then be used for GNSS height determination according to,

$$\hat{H}_{\text{NatEVRS/2000}} = \hat{h}_{\text{ETRF2000/2000}} - N_{\text{NKG2015}}$$

The NKG2015 model is available in a simple line based format (*.dat), in Gravsoft ASCII grid format (*.gri) and in Gravsoft binary grid format (*.bin). The Gravsoft format is explained in the enclosed file '*gravsoft_grid_format.pdf*'.

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