AH2923

Atmospheric corrections of GNSS observations

Compute ionospheric and tropospheric correction for the pseudoranges used in Lab 2. For the ionospheric correction use the Klobuchar model. The parameters for day 2004-02-02 are given in file CGIM0330.04N. Matlab function *Klobuchar.m* for computation of ionospheric correction is available via BILDA, see explanation in the m-file.
For the tropospheric correction, choose a model yourself – see the textbook or search on internet.

The report should include:

- the receiver coordinates and their standard uncertainties (deviations) computed using the corrected pseudoranges
- comparison of the results obtained with and without atmospheric corrections . Discuss the effect of the atmosphere: which coordinates are affected more (horizontal or vertical)? For this purpose you must convert ECEF Cartesian coordinates to the geodetic (latitude, longitude, height) or to some other coordinate system, where the horizontal and vertical coordinates are separated.
- Discussion about the ionospheric and atmospheric corrections: what do they depend on? (temperature, time, horizontal and vertical position of the receiver etc.) How do they affect relative GNSS observations? Plot the dependency of the tropospheric correction on the satellite's elevation angle and on the height of the receiver. Plot the dependency of the ionospheric and tropospheric correction on the elevation angle of the satellite.

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