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A continuous GPS based velocity field for Norway, using Kriging

Halfdan Pascal Kierulf (1,2), Mohammed Ouassou (1), Oddgeir Kristiansen (1,3), and Oddvar Tangen (1)

(1) Geodetic institute, Norwegian Mapping Authority, Hønefoss, Norway (halfdan.kierulf@statkart.no), (2) Department of Geosciences, University of Oslo, Norway, (3) Department of Mathematical Sciences and Technology, University of Environmental and Life Sciences, Norway

In Norway, as in rest of Fenoscandia, the glacial isostatic adjustment is the dominant source of crustal deformation. Both the vertical and horizontal component can be measured using GPS. The Norwegian GPS network (SATREF) has gradually been established since the early 90's and contains today more than 120 stations. The stations are established both for navigation and for studies of geophysical phenomena. Until now only station velocities for a few stations have been published.

We will present new velocity results for the Norwegian GPS network for all stations with sufficient data. The three GPS geodetic processing softwares GIPSY, GAMIT and Berneese will be used and compared. To establish a continuous velocity field for Norway, the spatial linear interpolation algorithms (kriging) will be employed both on the daily GPS coordinates as well as the derived station velocities.

Velocity estimates on time-series shorter than 2.5 years are very uncertain. In this study, we show improvements in the estimation of reliable velocity estimates on short time-series when we include predictions based on kriging from the rest of the network. Statistical properties of the velocity field will also be investigated.