An online GPS time-series analysis provider at GEODAC

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The analysis of time-series of GPS positions for plate tectonic research is an essential step to determine the observed velocities of the GPS stations. During the last decade, it has become common practise to include the temporal correlations of the noise inside these time-series to estimate not only a correct value of the velocity, but also to estimate a correct value of the uncertainty associated with this velocity. Nowadays, the Maximum Likelihood Estimation (MLE) method is the most commonly used method by researchers and has been implemented in the popular CATS software of Williams (2008).

At the WEGENER Geodynamic Data and Analysis Center (GEODAC), which can be accessed at www.geodac.net, we have developed an automatic time-series analysis provider that can process GPS time-series in the GIPSY/Oasis format. The user can, after free registration, upload his or her GPS solutions unto the website. Our own time-series analysis software (Bos et al., 2008) will then estimate, using MLE, the velocities of the North, East and Up component and the associated errors under the assumption that the noise is well described by a white plus power-law noise model. It must be noted that the data will be preprocessed to eliminate outliers by deleting all data points that fall outside the 3 times the interquartile range (Nikolaidis, 2002). During this estimation we include a seasonal cycle if the data-span is longer than 1000 days. After the computation has finished, plots of the data with the estimated trend and a table with the estimated velocities and uncertainties will be available on the GEODAC website.

Since not all users may want their results to be available to the public, we have organized the GEODAC website into 3 access levels. Data from level-3 sites can be accessed by any (anonymous) user; data from level-2 sites can be accessed only by registered users. Data from level-1 sites is only visible to registered users and can only be accessed upon request by these users.