



## **Using sequential GPS ZTD time series combination on operation datastreams for quality control**

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Unlike the EUREF time series analysis strategy working in post-processed mode, the method considered here is capable of combining troposphere solutions sequentially, as a new batch of data becomes available. The method provides combined troposphere estimates along with their standard deviations. Besides time series biases, the method determines time series weights to maintain the consistency of combined solutions applying the principles of variance component estimation. Time series weights determination allows one to take into account possible regional and analysis center dependencies, thus providing homogeneous estimates of Zenith Total Delay (ZTD) and their standard deviations in near real-time. Both the time series biases and the weights are determined using a Kalman filter. In this case, estimates obtained at the previous step of time series combination are used as the apriori information for the next step.

The method is applied to the routinely datastream set up in the projects TOUGH and EGVAP. In this way a quality control system purely based on the GPS observations can be implemented. This will increase the confidence in quality of GPS ZTD observations.