



## Contribution of TIGA reprocessing to the ITRF densification

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Analysis of tide gauge measurements with the purpose of sea level change investigations requires a well defined reference frame. Such reference frame can be realized through precise positions of GPS stations located at or near tide gauges (TIGA stations) and analyzed within the IGS GPS Tide Gauge Benchmark Monitoring Pilot Project (TIGA). To tie this reference frame to the International Terrestrial Reference Frame (ITRF), one should process simultaneously GPS data from TIGA and IGS stations included in the ITRF. A time series of GPS station positions has been recently derived by reprocessing GPS data from about 400 GPS stations globally distributed covering totally time span from 1998 till 2008 using EPOS-Potsdam software developed at GFZ and improved in the recent years. The analysis is based on the use of IERS Conventions 2003, ITRF2005 as a priori reference frame, FES2004 ocean tide loading model, absolute phase centre variations for GPS satellite transmit and ground receive antennae and other models. About 220 stations of the solution are IGS ones and about 180 are TIGA GPS stations that are not IGS ones. The solution includes weekly coordinates of GPS stations, daily values of the Earth rotation parameters and their rates, as well as satellite antenna offsets. On the other hand, our new solution can contribute to the ITRF densification by providing positions of about 200 stations being not present in ITRF2005. The solution can be also used for the integration of regional frames. The paper presents the results of the analysis and the comparison of our solution with ITRF2005 and the solutions of other TIGA and IGS Analysis Centres.