Progress towards a DORIS combination for the next ITRF

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The International DORIS Service (IDS), in operation since 2003, submitted three sets of solutions to ITRF2005 from the IGN/JPL, LEGOS/CLS, and INASAN analysis centers, but no DORIS technique combination. Since that time a new analysis center, Geodetic Observatory Pecny (GOP) has become operational using Bernese, a software not originally designed to process DORIS data, and other analysis centers have offered to provide SINEX solutions. A routine DORIS combination as well as a contribution for the next ITRF must resolve significant operational and technical challenges. One of these challenges includes whether or not to consider Jason-1 in the next DORIS combination even with the South Atlantic Anomaly (SAA) correction model (for the ulta-stable oscillator behaviour) of J.M. Lemoine and Capdeville (2006). Other challenges including updating the modelling standards, and assuring that all the disparate software packages (Gipsy, GINS, Bernese, GEODYN) can accommodate the new modelling requirements.

In this paper we describe a preliminary combination consisting of SINEX submissions by four analysis centers (IGN/JPL, LEGOS/CLS, GOP and INASAN) using DORIS data from 2005 to 2007, a period when the DORIS on-orbit constellation included

four satellites (in addition to Jason-1), and where the submissions use ITRF2005 as a priori. The SINEX submissions are processed using the CATREF software, and we describe the results in comparison with the analysis center inputs to ITRF2005, where preliminary results show a dramatic improvement in the scale agreement with the LE-GOS/CLS and IGN/JPL analysis centers. We show the results of tests by the analysis centers on the impact of including Jason-1 data with the SAA correction in the SINEX solutions. We also describe the results of detailed intercenter orbit comparisons using DORIS satellite orbits in 2005, which allow us to diagnose potential anomalies in the processing and implement improvements in the future DORIS/IDS ITRF submission.