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Updating the IGS processing standard: new GLONASS satellite antenna corrections for igs08.atx

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In view of the forthcoming introduction of a new terrestrial reference frame ("IGS08") and a new consistent antenna phase centre model ("igs08.atx") into the processing standards of the International GNSS Service (IGS), the IGS analysis centres (ACs) at the European Space Agency's Operations Centre (ESA/ESOC) and the Centre for Orbit Determination in Europe (CODE) have recently reprocessed several years of multi-GNSS tracking data in order to provide an up-to-date set of consistent satellite-specific antenna phase centre offsets (PCOs) and variations (PCVs) for the GLONASS space segment. Both AC solutions were generated according to a rigorously combined multi-GNSS processing scheme ensuring full consistency between the GPS and the GLONASS system. Thereby, the PCOs and PCVs for all receiving antennas as well as for the transmitting antennas of all GPS satellites were fixed to their igs08.atx values. Frequency-specific GLONASS receiving antenna corrections were applied to the extent they were available. The reference frame was aligned to ITRF2008/IGS08.
Determining new GLONASS satellite antenna corrections for igs08.atx is crucial for four reasons: (1) Individual z-offsets for the majority of GLONASS-M satellite antennas are missing in the current model ("igs05.atx") due to the comprehensive modernization of the GLONASS space segment in recent years, (2) the increased global availability of GLONASS-capable ground stations and GLONASS-specific receiver antenna corrections ensures higher accuracy and promises better consistency between GPS and GLONASS, (3) the difference between ITRF2005 and ITRF2008, in particular the 1-ppb scale discrepancy, has an impact on the satellite antenna parameters, especially on the PCO component toward the Earth ("z-offset") and (4) the fact that two, rather than only one, ACs are involved in the reprocessing provides enhanced redundancy.
The contribution will summarize the processing strategies and key results of the aforementioned GLONASS satellite antenna reprocessing campaign. The agreement between the two AC solutions estimated with independent multi-GNSS software packages using different analysis strategies will be assessed. Moreover, the differences occurring between the new correction values and previous igs05.atx model values will be addressed.