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Latest GNSS orbit modelling improvement at CODE

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Since May 2003, the Center for Orbit Determination in Europe (CODE), acting as an Analysis Centers of the International GNSS Service (IGS), has been generating consistent GPS and GLONASS satellite orbits from a combined analysis. The solar radiation pressure model developed by T. Springer (Springer, 1999) was recently updated for all active GPS satellites. Furthermore, it was extended to the GLONASS satellite constellation.

GNSS orbit prediction is very sensitive to radiation pressure modeling. We compare long-term GPS/GLONASS orbit predictions (predicted over two weeks) using the new and the previously used orbit model with corresponding CODE final orbit solutions. Another independent validation of the updated orbit model is the comparison with satellite laser ranging data.