The IGS Multi-GNSS Experiment - Achievements, Prospects, and Challenges

Oliver Montenbruck and Peter Steigenberger

DLR, German Space Operations Center, 82234 Wessling, Germany (oliver.montenbruck@dlr.de)

The International GNSS Service (IGS) is long known as the premier source for openly available, high-precision GPS and GLONASS data and products. With its Multi-GNSS Experiment (MGEX), the IGS has established a platform for early familiarization with new signals and and constellations. Over the past 3 years, a global network of multi-GNSS stations has been established, which provides a stable access to observations of BeiDou, Galileo, and QZSS, as well as new signals of GPS (L2C, L5) and GLONASS (L3 CDMA). Besides offline data archives hosted by three data centers, real-time data streams are also made available to interested users. Building on the IGS multi-GNSS network infrastructure, various MGEX analysis centers are now generating orbit, clock, and bias products for the new constellations, thus enabling early trials in multi-GNSS precise point positioning and other applications. Within the presentation an overview of the MGEX data and products will be given and the potential of multi-GNSS processing for Earth sciences and precise navigation will be highlighted. Despite substantial progress, further effort will be required to achieve a product quality competitive with that of GPS and GLONASS. This includes an improved characterization of the space segment (antennas, attitude, solar radiation pressure, biases, etc.) and the user equipment (antennas, biases) but also the establishment of multi-GNSS processing standards and the harmonization of products generated by the MGEX analysis centers.