



Real Time Integrity Monitoring of the IGU Satellite Orbits by Means of the RTIGS Network

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Since the boom in mobile telecommunications allows Internet access for anyone anywhere at any time, this medium has also become an alternative method for transmitting GNSS data streams. Since 3 years the IGS (International GNSS Service) Real-Time Working Group exploits the options offered by the World Wide Web to disseminate raw observation data of a subset of stations of the IGS network as well as ephemeris and surface meteorological data. This observation data can be used for a real time integrity monitoring of the GNSS-Broadcast orbits as well as for the IGS predicted orbits (Ultra Rapid Orbits). These satellite ephemeris demonstrate significantly higher accuracy (~ 10 cm) than the broadcast orbits (~ 2 m), but carry the risk of individual, recurring outliers. This presentation highlights the functionality of a software-tool for integrity monitoring. The program "RTR- Control" has been developed at the Institute of Geodesy and Geophysics, TU-Vienna, supported by the IGS Real-Time Working Group. It allows for the comparison of pseudoranges measured at any permanent station in a global or regional network with theoretical pseudoranges calculated on the basis of precise, predicted satellite orbits. Thus, the programme can diagnose incorrectly predicted satellite- orbits and clocks as well as detect multi-path distorted pseudoranges in real- time. Operated in processing facilities of RTK station networks "RTR- Control" prevents that observation data of mismodeled satellites is further used for the calculation of range-corrections which are passed to the RTK users within the network. Thus the user group interested in a rigorous integrity monitoring comprises on the one hand IGS itself to qualify the issued orbital data and on the other hand authorities and companies operating such Real Time GNSS station networks.