Abstract

Among the international GNSS service (IGS) Real-time Kinematic (RTK) Working Group (RWG) has completed their initial report on accuracy assessment for the UT2014 (Strand et al., 2017). This report demonstrates that the IGS RTK solution performs the same as the IGS solution, and that the solution quality is comparable to other GNSS users. In this report, the authors evaluate the performance of the UT2014 solution in terms of a few key metrics, including the mean, standard deviation, and root mean square (RMS) of the differences between the UT2014 solution and the IGS solution. The results show that the UT2014 solution performs at least as well as the IGS solution for a wide range of users.

Introduction

The analysis of GNSS data from different campaigns (repro2) in the IGS (Wöppelmann and Marcos, 2016) has been shown to be an effective way to assess the performance of the IGS and its various components. In this paper, we focus on the quality control of GNSS data from the UT2014 solution.

Quality Control of Reprocessing at BT

In order to ensure the accuracy of the UT2014 solution, we use both the raw GRACE data and the UT2014 solution as input. The results show that the UT2014 solution performs better than the IGS solution in terms of the weighted root mean square (WRMS) of the differences between the UT2014 solution and the IGS solution.

Preliminary Solution Using ITRF2014

Before the final ITRF-09 solution becomes available, the UT2014 solution is used as input for the GRACE data. The results show that the UT2014 solution performs better than the IGS solution in terms of the weighted root mean square (WRMS) of the differences between the UT2014 solution and the IGS solution.

Spectral Analysis

We have estimated the spectral content of the two rerun solutions using the same approach as before. The results show that the UT2014 solution performs better than the IGS solution in terms of the weighted root mean square (WRMS) of the differences between the UT2014 solution and the IGS solution.

Weighted Root Mean Square

The weighted root mean square (WRMS) values of the UT2014 solution are lower than those of the IGS solution for a wide range of users. This suggests that the UT2014 solution is more accurate than the IGS solution for a wide range of users.

Conclusions

In summary, the UT2014 solution is a significant improvement over the IGS solution in terms of accuracy. The UT2014 solution performs better than the IGS solution in terms of the weighted root mean square (WRMS) of the differences between the UT2014 solution and the IGS solution.

Combination of Tide Gauge Benchmark Monitoring (TIGA) Analysis Center from repro2 solutions

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TIGA campaigns (repro2) of the IGS (See Table 1). Wöppelmann and Marcos, 2016).

Analysis Centres (TACs) have processed the observations recorded by GPS stations at or close to tide gauges, which are available from the TIGA Data Center (TAC) (BLT), UK and the University of La Rochelle (ULR), France.

The cumulative weighted RMS (WRMS) of the TACs and of their contributed networks is noteworthy that all four campaigns (repro2) of the IGS (See Table 1). Wöppelmann and Marcos, 2016).

The preliminary vertical velocity is shown in Table 5. The results show that the UT2014 solution is more accurate than the IGS solution in terms of the weighted root mean square (WRMS) of the differences between the UT2014 solution and the IGS solution.

Figure 5. The cumulative weighted RMS (WRMS) of the four TACs and of their contributed networks.