Vienna TRF solution VieTRF16a

• SAES observing sessions provided by the IVS
• 1979.0 – 2016.5
• VieVS Software 3.0
• Non-tidal atmospheric loading applied a priori (TU Wien, Wijaya et al., 2013)
• Session-wise parameters
  • Clock, zenith wet delay, troposphere gradients, EOP
• Coordinates of special handling sources
  • 5825 observing sessions provided by the IVS
  • CRF – position (4097 sources)
  • TRF – position + linear velocity (102 stations)
  • Global parameters
    • TRF – position + linear velocity (362 stations)
    • CRF – position (362 stations)
    • Non-tidal atmosphere loading applied a priori (TU Wien, Wijaya et al., 2013)
    • Global parameters
      • TRF – position + linear velocity (362 stations)
      • CRF – position (362 stations)
      • Non-tidal atmosphere loading applied a priori (TU Wien, Wijaya et al., 2013)

Vienna VLBI terrestrial reference frame VieTRF16a

The VieTRF16a is determined in the form of the conventional model (station position and its linear velocity) simultaneously with annual and semi-annual harmonic station variations as global parameters together with the celestial reference frame and Earth orientation parameters. In this work, we concentrate on the seasonal station variations and compare our TRF with the three combined TRF solutions ITRF2014, DTRF2014 and JTRF2014.

Conclusions

• The current version of the Vienna terrestrial reference frame VieTRF16a is introduced with the focus on the harmonic station displacement.
• In the VieTRF16a the non-tidal atmospheric loading is reduced a priori. Therefore the estimated annual and semi-annual signal within the global adjustment contains mainly the unmodelled contribution from the hydrology loading with the amplitude in the height component reaching several millimetres.
• High correlation between the VieTRF16a and DTRF2014, and between the VieTRF16a and JTRF2014 is found especially in the height component at stations with a high amplitude of the hydrology loading signal.
• Comparison of the VieTRF16a at the epoch 2010.0 in terms of the 14 parameters Helmert transformations to the ITRF2014 shows a scale offset of 0.72 ± 0.09 ppb, while comparison to the DTRF2014 only 0.01 ± 0.31 ppb.

References

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