GOP reprocessing status report

Petr Štěpánek

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GOP Reprocessing status

• Data 1995.0 – 2014.0 processed

• Error found in Alcatel Antenna phase law application – data before 2005 need to be processed again
  • Error remained undetected in initial tests
  • Source of the problem was the error in original Alcatel antex (elevation step 10 deg. Instead of 5 deg.)
  • New version of Alcatel antex from late October 2013 is corrected (unfortunately reprocessing started before)
  • The error in the Antex file was evidently corrected by somebody, but no warning was sent to ACs…???

• Plan to re-deliver the solutions
  • DORIS data processing in parallel on additional machine (technically more difficult than expected)
  • Goal was to deliver sinexes until end of March, but more realistic is the middle of April
Satellite selection

• HY-2A both solutions with and without delivered for later decision

• Jason-1 not included
  • which probably leads to Scale decrement in period between T/P and Jason-2.
  • Therefore also two solutions with and without Jason-1 are planned, if possible
Orbit parameters

• Dynamical orbit (contrary to older GOP wd3X series, where empirical-stochastic approach was applied)

• Strategy optimized according to testing results summarized in Stepanek, P.; Rodriguez-Solano, C.J.; Hugentobler, U.; Filler, V., 2014. Impact of orbit modeling on DORIS station position and Earth rotation estimates, ADVANCES IN SPACE RESEARCH, 53(7):1058-1070, DOI: 10.1016/j.asr.2014.01.00 http://dx.doi.org/10.1016/j.asr.2014.01.007

• Contrary to other ACs, SRP is not fixed on pre-defined values

• Data processed in iterative process
  • first iteration: 1 SRP/day, 1drag/day, no 1-rev parameters
  • second iteration: 1 SRP/day, 6 drag/day (T/P, Jason) or 48 drag/day („low“ satellites), 1-rev parameters
    ➢ SRP and drag estimates from 1st run taken in second iteration as a priori with constraints
    ➢ SRP in second iteration strongly constrained (nearly fixed) 0.0001
    ➢ Drag softly constrained in second iteration (constraint =1).

• Solutions created in two version, with employment of cross track harmonics (wd42) and without (wd43)
  • Analysis from Guilhem confirmed, that adjustment of cross track harmonics degrades the ERP estimation, while does not improve station parameters.
Scale increment in 2012

Ocurren again in new series - the attached slide from Toulouse 2013 presentation, data from operational solutions („old“ standards)

- From August 2011 to August 2012 the scale of GOP solution w.r.t. ITRF 2008 increased about 17 mm
- For the other ACs the increment is not so strong (7-14 mm, 10 mm in average)
  ➢ only visual check of combination center plots (created by Guilhem Moreaux)
- Hy-2A single addition in the solution explaines only less than half of the scale increment in the multi-satellite solution
- Some minor scale increment could be present due to the Envisat data termination
- In GOP single-satellite solutions were found about 20 mm scale „jumps“ for Cryosat-2 and Jason-2
- Cryosat -2 week 1672/1673 (January/February 2012), Jason-2 week 1694/1695 (June/July 2012)