



Inter-agency comparison of TerraSAR-X/TanDEM-X baseline solutions

Adrian Jaeggi (1), Heike Bock (1), Rolf Koenig (2), Yongjin Moon (2), Martin Wermuth (3), and Oliver Montenbruck (3)

(1) University of Berne, Astronomical Institute, Berne, Switzerland (adrian.jaeggi@aiub.unibe.ch), (2) German Research Centre for Geosciences, Potsdam, Germany (rolf.koenig@gfz-potsdam.de), (3) Deutsches Zentrum fuer Luft- und Raumfahrt, Germany (Martin.Wermuth@dlr.de)

TanDEM-X (TerraSAR-X add-on for Digital Elevation Measurement) is the first Synthetic Aperture Radar (SAR) mission using close formation flying for bistatic SAR interferometry. The primary goal of the mission is to generate a global digital elevation model from the configurable SAR interferometer with space baselines of a few hundred meters. As a key mission requirement for the interferometric SAR processing, the relative position, or baseline, of the two satellites must be determined with an accuracy of 1mm (1D RMS) from GPS measurements collected by the onboard receivers.

Operational baseline products for the TanDEM-X mission are routinely generated by the German Research Center for Geosciences (GFZ) and the German Space Operations Center (DLR/GSOC) using different software packages (EPOS/BERNESE, GHOST) and analysis strategies. For an independent performance assessment, TanDEM-X baseline solutions are, furthermore, generated at the Astronomical Institute of the University of Bern (AIUB) on a best effort basis using the BERNESE GPS software.

We provide an overview of the adopted analysis strategies and present inter-agency comparisons of the individual baseline solutions. Special emphasis will be given to the identification and discussion of systematic biases between the individual solutions. The TanDEM-X baseline determination performance is also compared with results of the GRACE mission to assess the impact of spacecraft separation and GPS tracking performance on the achievable baseline accuracy.