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TOMOGRAPHIC SAR INVERSION FROM MIXED REPEAT- AND SINGLE-PASS DATA STACKS – THE TERRASAR-X/TANDEM-X CASE

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Abstract. This paper presents the first demonstration of high precision very high resolution tomographic SAR inversion with the assistance of TanDEM-X data. The data quality of TerraSAR-X and TanDEM-X is investigated. TomoSAR algorithms such as SVD-Wiener, Nonlinear Least Squares and SL1MMER are extended for mixed repeat- and single-pass data stacks. A systematic approach is proposed for the fusion of TerraSAR-X and TanDEM-X data in which the different data quality provided by the TerraSAR-X and TanDEM-X data are taken into account by introducing a weighting according to the noise covariance matrix. The proposed approach is evaluated with simulated data. The simulation result shows that the reconstruction accuracy of tomographic SAR inversion can be improved significantly by using jointly fused TerraSAR-X and TanDEM-X data.

[Conference Paper](#) (PDF, 2839 KB)

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