

Combining GNSS data and a global atmospheric model for atmosphere INSAR phase correction

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This work deals with the tropospheric phase screen (APS) estimation using GNSS measurements and global atmospheric models (such as ERA-Interim).

After the assessment of the atmosphere parameters from the GNSS measurements at several ground receivers, the modelling of the atmospheric phase for INSAR is well known, including the directional effects and interpolation matter. However, several factors influence this estimation and we are interested in assessing the reliability of this approach.

A first work has shown that the APS estimation is influenced by the GNSS receiver network over the study area and the delays map interpolation method.

Here, we propose the troposphere mitigating combining the ZHD from a global atmospheric model and the ZWD from GNSS processing and consider the interpolation matter.

Experiments are performed using TSX and CSK SAR data and GNSS measurements acquired over the Piton de la Fournaise in France during 2014 and 2015. We use several software (DORIS, TRAIN, ...), GMT and Matlab scripts.

InSAR deformation measurements before and after the correction are confronted to the GNSS displacement measurements.