Evaluation of atmospheric phase delays in SAR interferograms using numerical weather models

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We investigate a possibility of evaluating atmospheric phase delays in SAR interferograms using numerical weather models. We use two sets of numerical weather models, namely 1) Japan Meteorological Agency (JMA)' s meso-scale objective analysis with 10km spatial resolutions and 3h temporal resolutions, and 2) Fine-scale numerical weather models with 1 km spatial resolutions and 15s temporal resolutions that are calculated using the non-hydrostatic weather model while assimilating the JMA's meso-scale objective analysis. We estimate atmospheric phase delays in SAR interferograms by following steps: 1) calculating atmospheric phase delays with the ray-tracing method for master and slave images using the closest numerical weather models, 2) differentiating atmospheric phase delays for the master and slave images to obtain atmospheric phase delays for the interferograms.

In this paper, we will compare the estimated atmospheric phase delays from different numerical weather models with observed SAR interferograms, and discuss their potentials to reproduce the observed interferograms.