



Ionospheric errors compensation for ground deformation estimation with new generation SAR

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Synthetic aperture radar (SAR) and interferometric SAR (InSAR) measurements are disturbed by the propagation velocity changes of microwaves that are caused by the high density of free electrons in the ionosphere. Most affected are low-frequency (L- or P-band) radars, as the recently launched ALOS-2 and the future Tandem-L and NISAR, although higher frequency (C- or X-band) systems, as the recently launched Sentinel-1, are not immune. Since the ionosphere is an obstacle to increasing the precision of new generation SAR systems needed to remotely measure the Earth's dynamic processes as for example ground deformation, it is necessary to estimate and compensate ionospheric propagation delays in SAR signals. In this work we discuss about the influence of the ionosphere on interferograms and the possible correction methods with relative accuracies. Consequently, the effect of ionospheric induced errors on ground deformation measurements prior and after ionosphere compensation will be analyzed. Examples will be presented of corrupted measurements of earthquakes and fault motion along with the corrected results using different methods.