



Analysis of Tandem Configurations for Envisat SAR Interferometry

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There is much interest in using multiple spacecraft formations for interferometric imaging. These architectures can provide the advances in high resolution SAR imaging of the Earth via adequate baseline interferometry.

As a matter of fact standard single channel Envisat SAR sensor exist in space or will be launched in future and need only to be augmented by simple passive SAR receiver satellites, this paper analyses the possibility of using a passive satellite to make capable the Envisat with cross- and along- track SAR interferometric in tandem configurations for high spatial and temporal resolution SAR imaging of the Earth.

Fundamentals of developed models are described and potential space configurations are investigated, by considering both formations operating on the same orbital plane and on separated planes. The study is mainly aimed at describing achievable baselines and their time variations along the selected orbits. The effects of tuning orbital parameters, such as eccentricity or ascending node phasing, are pointed out, and simulation results show the most favorable tandem configurations in terms of achieved baseline components, percentage of the orbit adequate for interferometry, and covered latitude intervals.

Keywords: SAR interferometry, cross-track interferometry, along-track Interferometry.