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Title: Relevance of PSInSAR analyses at ITRF co-location sites

Abstract IUGG 2023:

The scientific community has recognized the need for a highly accurate terrestrial reference frame (TRF) for Earth Science applications. Current determination of the International Terrestrial Reference System is made by combining data from space geodetic techniques, namely Satellite Laser Ranging (SLR), Very Long Baseline Interferometry (VLBI), Doppler Orbitography and Radiopositioning Integrated by satellite (DORIS), Global Navigation Satellite Systems (GNSS), but also terrestrial measurements from local tie survey at co-location sites. For most of the sites, such local tie surveys are not performed on a regular basis. Thus,

The PSInSAR (Persistent Scatterer Interferometric Synthetic Aperture Radar) technique allows for determining deformation maps over large areas with various spatial resolutions as function of the satellite missions. Due to the availability of freely available SAR data for a significant period of time at many sites, it is relevant to ask if such data could supplement local tie measurements for those sites where sufficiently repeated terrestrial surveys do not exist.

This papers presents the work of the study group "SG 1.2.1: Relevance of PSInSAR analyses at ITRF co-location sites" of the international association of geodesy. Advantages and limitation of this technology will be addressed. A review of some published PSInSAR results in C- and X-band at some co-location sites will be presented. As high resolution X-band SAR images (TerraSAR-X/PAZ in "Staring SpotLight mode") show great potential for mapping

deformations at high resolution, an inventory of already available SAR images at ITRF co-location site has been established to motivate PSInSAR analyses on these data.