EGU2020-12838
https://doi.org/10.5194/egusphere-egu2020-12838
EGU General Assembly 2020

Multi-temporal Spaceborne InSAR technique to compensate Vertical Land Motion in Sea Level Change records: A case study of Tide gauges in Korean Peninsula

Suresh Krishnan Palanisamy Vadivel[1], Duk-jin Kim[1], Jungkyo Jung[2], and Yang-Ki Cho[1]
[1]School of Earth and Environmental Sciences, Seoul National University, Seoul 08826, Korea, Republic of (krishnan92@snu.ac.kr)
[2]Jet Propulsion Laboratory, California Institute of Technology, Pasadena, 91101, United States

Relative sea-level changes observed by tide gauges are commonly corrected for several components including crustal displacement, ocean dynamics, and vertical land motion. Vertical Land Motion (VLM) due to local land hydrology is a crucial component that observed as localized ground motion and varies with each tide gauges. Permanent GNSS stations are used to measure the VLM trend at tide gauges, however, only few tide gauges are equipped with collocated GNSS stations. Multi-temporal InSAR analysis provides ground displacements in both the spatial and temporal domains. Therefore, in our study, we applied the spaceborne Interferometric SAR technique to measure the local ground motion using Sentinel-1 SAR data. The Korean peninsula is surrounded by the East Sea/Sea of Japan, the Yellow Sea and the East China Sea have continuously monitoring tide gauges with a record length of more than 30 years. We acquire C-band Sentinel-1 SAR data (both ascending and descending mode) over the Korean Peninsula during 2014/11 and 2019/04. We estimate the high-resolution (~ 10 m) land motion at tide gauges (mm-level accuracy) over these 21 tide gauges and, compared with available collocated GNSS observations. 2D displacements (vertical and horizontal) are derived from ascending and descending mode InSAR displacements. The linear trend of VLM observed from our InSAR estimates is used to compensate for the relative velocity of sea-level changes observed from tide gauges.

How to cite: Palanisamy Vadivel, S. K., Kim, D., Jung, J., and Cho, Y.-K.: Multi-temporal Spaceborne InSAR technique to compensate Vertical Land Motion in Sea Level Change records: A case study of Tide gauges in Korean Peninsula, EGU General Assembly 2020, Online, 4–8 May 2020, EGU2020-12838, https://doi.org/10.5194/egusphere-egu2020-12838, 2020