



Sinchomap project: land-cover and vegetation mapping using very dense multi-temporal insar data

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The Sentinel-1 (S-1) mission defines a whole new playground where to explore the limits and potentialities of diverse technologies to generate updated and precise land-cover maps all around the globe. The availability of frequent and global data favors the emergence of alternative approaches to the mapping scene where mostly the optical, but also the radiometric, data have established their predominance.

In this regard, the ESA SEOM SInCohMap project is aimed to develop, analyse and validate novel methodologies for land cover and vegetation mapping by using time series of Sentinel-1 (S-1) data and by exploiting the temporal evolution of the interferometric coherence. Since the Sentinel-1 constellation is operational, we are now in the fortunate position of having 6-day observation repeat intervals and hence can compute interferometric measures on this time scale. Additionally, S-1 data is available in two different polarizations, increasing the possible feature space that can be derived. Further, the project aims at quantifying the impact and possible benefit of using Sentinel-1 InSAR (Interferometric Synthetic Aperture Radar) data relative to traditional land cover and vegetation mapping using optical data (especially Sentinel-2) and traditional intensity-based SAR (Synthetic Aperture Radar) approaches. In general, interferometric coherence is affected by a combination of terms derived from the system, the observation geometry or the observed scene. In previous studies, this parameter has proven to be a good feature for deriving the particular land cover on ground.

Within the framework of the project a Round Robin consultation has been devised with the objective of performing a valuable comparison between classification strategies. A pre-processed dataset consisting in two-year InSAR data covering three study areas with a wide variety of land-covers and vegetation has been offered to external and internal participants of the project consortium. The main goal of this consultation to evaluate classical and state-of-the-art classification strategies to assess the full potentiality of the interferometric data focused in the generation of land-cover and mapping information. Along with an overview and status of the project, in this paper the specifics abouts the consultation process are also discussed.