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Tectonic and volcanic monitoring using Sentinel-1: Current status and future plans of the COMET InSAR portal

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The advantages of the Sentinel-1 constellation for InSAR applications over previous radar missions are numerous, and include small baselines, a planned operation time of 20 years, continuous and systematic acquisition of data over tectonic and volcanic areas, near-global coverage of the earth and free data availability. In order to take advantage of these properties, we at the Centre for the Observation and Modelling of Earthquakes, Volcanoes, and Tectonics (COMET) are developing a system that routinely processes and freely distributes interferometric products and time series over tectonic and volcanic regions. This project, and similar efforts at other institutions, will be a game changer for the monitoring and studying of tectonic and volcanic activity using InSAR.

Since December 2016, the COMET-LiCS InSAR portal (http://comet.nerc.ac.uk/COMET-LiCS-portal/) has been live, delivering interferograms and coherence estimates over the entire Alpine-Himalayan belt. The portal already contains tens of thousands of products, which can be browsed in a user-friendly portal, and downloaded for free by the general public.

For our processing, we use the Climate and Environmental Monitoring from Space (CEMS) facility, where we have large storage and processing facilities to our disposal and a complete duplicate of the Sentinel-1 archive is maintained. This greatly simplifies the infrastructure we have had to develop for automated processing of large areas.

Here we will give an overview of the current status of the processing system, as well as discuss future plans. We will cover the infrastructure we developed to automatically produce interferograms and its challenges, and the processing strategy for time series analysis. We will outline the objectives of the system in the near and distant future, and a roadmap for its continued development. Finally, we will highlight some of the scientific results and projects linked to the system.