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The contribution of the European Volcanology community to the implementation of the European Plate Observing System (EPOS) infrastructure

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During the last decade, the European volcanological community has undertaken a process of community building in the frame of the two European Plate Observing System (EPOS) projects: the ECFP7 Preparatory Phase, which ended in 2014, and the ongoing EC H2020 Implementation Phase. The tangible outcome of this effort is the 'Volcano Observations' Thematic Core Service (VO-TCS), which aim is the definition of a clear legal and technical frame for the coordination of the European volcanology community, and management and accessibility of its huge scientific heritage.

The VO-TCS is currently developing facilities allowing long-term, easy access to volcanological data and products, and interoperable services provided by its Volcano Observatories and Research Institutions. The VO-TCS will offer virtual access to data, products, services, and computational platforms, and it is also defining the rules and procedures to properly allow transnational access to its volcanological facilities. The portfolio of data, products, software, and services is quite broad and varied, ranging from geophysics and geochemistry to volcanology. Data collection and analysis varies from in-situ and remote sensing observations to experimental analysis and computational elaborations. Overall, the TCS Volcano Observatories and Research Institutions will provide quantitative, high-quality observations on the European volcanoes and the geodynamic background of the surrounding areas. For the purpose, VO-TCS has been integrating the experiences gained in monitoring and studying the Italian, Icelandic, French, Spanish, Greek, and Portuguese volcanoes. A first concrete result of the implementation of the VO-TCS is the H2020 EUROVOLC project, started in February 2018, which aims at networking the European volcanological community by supporting joint research activities and virtual/physical/remote accesses to selected facilities. Actually, the community involved in EUROVOLC is broader than that implementing the VO-TCS.

The VO-TCS has also the potential to link with multiple international communities; such has already been initiated with the IAVCEI WOVO Commission (World Organization of Volcano Observatories) which is the reference worldwide community building initiative for the volcanological community. Technical solutions and best practices for data access will be shared between VO-TCS and WOVOdat global database. Once, the access to VO-TCS has been definitively set out, the volcanology community expects that the multidisciplinary portfolio of the volcanological databases offered will also attract communities from other domains (e.g. climatology, atmospheric science, biology, etc.). Examples of this potentiality are the experiences carried out in the transnational accesses managed in the frame of the ENVRIPlus EC H2020 project on Mt. Etna observatory.

In this initial state, the institutions contributing to the implementation of the VO-TCS are: Centre National de la Recherche Scientifique (CNRS; Units of "Institut the Physique du Globe " and "Université Clermont Auvergne"); Consejo Superior de Investigaciones Científicas (CSIC); Dublin Institute for Advanced Studies (DIAS); GeoForschungsZentrum (GFZ); Institute of Geology & Mineral Exploration (IGME); Instituto Geográfico Nacional (IGN); Icelandic Meteorological Office (IMO); Istituto Nazionale di Geofisica e Vulcanologia (INGV); Universidade dos Açores (UAc); and University of Bristol (UB); University of Iceland (UI). In the future, the VO-TCS envisages the contribution of many other universities and research institutions around Europe.