



DECADE web portal: toward the integration of MaGa, EarthChem and VOTW data systems to further the knowledge on Earth degassing

Carlo Cardellini (1), Alessandro Frigeri (2), Kerstin Lehnert (3), Jason Ash (4), Brendan McCormick (3), Giovanni Chiodini (5), Tobias Fischer (6), and Elizabeth Cottrell (7)

(1) Università di Perugia, Dipartimento di Fisica e Geologia, Perugia, Italy (carlo.cardellini@unipg.it), (2) Istituto di Astrofisica e Planetologia Spaziali, INAF, Roma, Italy, (3) Lamont-Doherty Earth Observatory, Columbia University, Palisades, NY United States, (4) University of Kansas, Lawrence, KS, United States, (5) INGV, Osservatorio Vesuviano, Napoli, (6) University of New Mexico, Albuquerque, NM, United States, (7) National Museum of Natural History, Smithsonian Institution, Washington, DC, United States

The release of volatiles from the Earth's interior takes place in both volcanic and non-volcanic areas of the planet. The comprehension of such complex process and the improvement of the current estimates of global carbon emissions, will greatly benefit from the integration of geochemical, petrological and volcanological data. At present, major online data repositories relevant to studies of degassing are not linked and interoperable.

In the framework of the Deep Earth Carbon Degassing (DECADE) initiative of the Deep Carbon Observatory (DCO), we are developing interoperability between three data systems that will make their data accessible via the DECADE portal: (1) the Smithsonian Institutionian's Global Volcanism Program database (VOTW) of volcanic activity data, (2) EarthChem databases for geochemical and geochronological data of rocks and melt inclusions, and (3) the MaGa database (Mapping Gas emissions) which contains compositional and flux data of gases released at volcanic and non-volcanic degassing sites.

The DECADE web portal will create a powerful search engine of these databases from a single entry point and will return comprehensive multi-component datasets. A user will be able, for example, to obtain data relating to compositions of emitted gases, compositions and age of the erupted products and coincident activity, of a specific volcano.

This level of capability requires a complete synergy between the databases, including availability of standard-based web services (WMS, WFS) at all data systems. Data and metadata can thus be extracted from each system without interfering with each database's local schema or being replicated to achieve integration at the DECADE web portal.

The DECADE portal will enable new synoptic perspectives on the Earth degassing process allowing to explore Earth degassing related datasets over previously unexplored spatial or temporal ranges.