



## **MAGA, a new database of gas natural emissions: a collaborative web environment for collecting data.**

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The data on volcanic and non-volcanic gas emissions available online are, as today, are incomplete and most importantly, fragmentary. Hence, there is need for common frameworks to aggregate available data, in order to characterize and quantify the phenomena at various scales. A new and detailed web database (MAGA: MApping GAs emissions) has been developed, and recently improved, to collect data on carbon degassing from volcanic and non-volcanic environments. MAGA database allows researchers to insert data interactively and dynamically into a spatially referred relational database management system, as well as to extract data. MAGA kicked-off with the database set up and with the ingestion in to the database of the data from: i) a literature survey on publications on volcanic gas fluxes including data on active craters degassing, diffuse soil degassing and fumaroles both from dormant closed-conduit volcanoes (e.g., Vulcano, Phlegrean Fields, Santorini, Nisyros, Teide, etc.) and open-vent volcanoes (e.g., Etna, Stromboli, etc.) in the Mediterranean area and Azores, and ii) the revision and update of Googas database on non-volcanic emission of the Italian territory (Chiodini et al., 2008), in the framework of the Deep Earth Carbon Degassing (DECADE) research initiative of the Deep Carbon Observatory (DCO).

For each geo-located gas emission site, the database holds images and description of the site and of the emission type (e.g., diffuse emission, plume, fumarole, etc.), gas chemical-isotopic composition (when available), gas temperature and gases fluxes magnitude. Gas sampling, analysis and flux measurement methods are also reported together with references and contacts to researchers expert of each site. In this phase data can be accessed on the network from a web interface, and data-driven web service, where software clients can request data directly from the database, are planned to be implemented shortly. This way Geographical Information Systems (GIS) and Virtual Globes (e.g., Google Earth) could easily access the database, and data could be exchanged with other database. At the moment the database includes: i) more than 1000 flux data about volcanic plume degassing from Etna and Stromboli volcanoes, ii) data from ~ 30 sites of diffuse soil degassing from Neapolitan volcanoes, Azores, Canary, Etna, Stromboli, and Vulcano Island, several data on fumarolic emissions (~ 7 sites) with CO<sub>2</sub> fluxes; iii) data from ~ 270 non volcanic gas emission site in Italy.

We believe MAGA data-base is an important starting point to develop a large scale, expandable data-base aimed to excite, inspire, and encourage participation among researchers. In addition, the possibility to archive location and qualitative information for gas emission/sites not yet investigated, could stimulate the scientific community for future researches and will provide an indication on the current uncertainty on deep carbon fluxes global estimates