

An interactive web-based database application for collaborative collection, storage and retrieval of data on volcanic lakes

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Regular or occasional monitoring of volcanic lakes has yielded a growing quantity of data sets on compositions and other parameters that characterize their properties, behavior and potential changes over time. Much progress is made in volcanic lake research, but further steps in more comprehensive and statistical data analysis or data mining would be beneficial to fundamental and applied studies, in particular those focusing on hazard mitigation. Here, we introduce an interactive web-based database application for the collection, storage and retrieval of data on volcanic lakes aimed at serving the scientific community in this field.

The tool is designed for an open web-based environment to allow

(1) fast and robust gathering and storage of new or existing data into a structured, relational database by any researcher with the right of entry using state-of-the-art security and data-safety technology, (2) easy and intuitive data retrieval without access limitations by any user from the volcanological community at large using state-of-the-art web interfaces while providing registered users with additional features, and (3) a time-efficient and easily transferable management routine. Database building is community powered under supervision of (an) expert moderator(s) to secure quality requirements.

The application can handle a wide range of geochemical, physical and other observational data relevant for volcanic lake studies. Features include a comprehensive, intuitive spreadsheet-based interface for both data entry and retrieval. Data can be downloaded in a format suitable for the common spreadsheet programs, if needed, after prior evaluation in tabular form or visualized as a graph on the web page. Flexibility is ensured for the user-defined selection of parameters and their order in output files and for the units preferred for concentration, temperature and other data, to be converted automatically from the original input data.

Currently, the tool is in the late beta-stage of development and virtually ready to use. Potentially interested users are invited to provide suggestions for further refinements of the database and application design and additional features to maximize versatility. We believe that this interactive database application can facilitate progress in our understanding of volcanic lakes and will serve as a resourceful instrument in the collaborative effort to maximally utilize data from past and future field-based research.