



## **Statistical analysis of the CCDB (Collapse Caldera Database): An example of the CCDB applicability and a tool for studying and understanding caldera processes.**

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Collapse calderas are one of the most important volcanic structures because of their hazard implications, but also because their high energy potential and their association with mineral deposits of high economic interest. The worldwide Collapse Caldera Database (CCDB) updates the current field based knowledge on calderas, merging together the existing databases and complementing them with new examples found in the bibliography and living it open for the incorporation of new data from future studies. Currently, the CCDB contains more than 360 caldera records. Although the CCDB does not include all the calderas of the world, it tries to be representative enough for further studies and analyses. As an example of the CCDB applicability, first, using univariate and categorical data analysis we have summarized and presented the most relevant features of collapse calderas such as age, dimensions, composition of the extruded deposits, etc. Second, we have performed cross tabulations to explore possible relationships among key categorical variables. (e.g. age-dimensions; crustal type-plate tectonic setting, etc.). Some data gathering limitations in the first place conditions the accuracy, hence the reliability of any general conclusion withdrawn from the study. The bigger and more accurate the dataset, the higher the statistical evidence to support the results. Obviously, general tendencies supported by a considerably high number of calderas will be more reliable than those supported by only a small number of

samples. At this stage, the scarce number of calderas with complete and non missing data for all fields makes it impossible to perform a more complex statistical analysis on the entire dataset. The challenge going forward will be to eventually overcome this milestone.

Apart from the identification of the CCDB restrictions it is interesting to make an attempt to understand and interpret geologically some of the results obtained with the CCDB analysis. The information contained in the CCDB will be relevant to identify general tendencies among collapse calderas worldwide distributed and to speculate about factors controlling caldera collapse processes such as the crustal type or the tectonic setting.