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ABSTRACTS

***Fostering Integrative
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Geodynamic setting of volcanoes in Southeast Asia: Comparing slab and crust parameters with magmatic productivities

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The location, size, and composition of volcanoes reflect inner processes of the Earth and can thus be used to explore the effect of large scale tectonics on eruptive dynamics. We have compiled an extensive database of Quaternary volcanoes (total of 159) and volcanic eruptions (total of ~1500) for Indonesia and the Philippines. Our database includes general information about each volcano, such as its geographical position (latitude, longitude), elevation, type (e.g. stratovolcano, caldera, cinder cone, intrusive dome), volume (assuming a cone shape) and a short geological summary. To identify the age of a volcanic edifice, we used geological maps and the geological summary of each volcano. The database also includes the geodynamic setting and parameters of the subduction zone: the depth of the mantle column for each volcano, the distance to the trench, the age of the incoming plate, locations of fracture zones and sea mounts on the slab, the thickness and age of the crust, and the stress regime (i.e. extensional, compressional or transform setting). For the eruptions, we report the age, magnitude (Volcanic Explosivity Index - VEI), volume and some meteorological observations of ash dispersion when available. Because Southeast Asia is a densely populated region, records of historical observations (2 ka BP to present) are available for almost all volcanoes. Meteorological observations of the strongest eruptions were used to describe the elevation of ash clouds, the ash transport directions, and the possible areas of ash fall. Preliminary analysis of our database reveals that across arc variations show a tendency toward a larger number of volcanoes in the frontal part of the arc but larger edifice volumes in the rear part of the arc. Along arc variations, on the other hand, show possible correlations between geodynamic setting and the source of voluminous (VEI > 6) eruptions. With the goal to understand interactions between geophysical parameters, magma generation, and the type (frequency and magnitude) of volcanic activity, we are adding all published geochemical and isotopic data for these Indonesian and Filipino volcanoes to the database. This should enable a greater understanding of volcanic hazards on the scale of an arc, and provide some constraints on the spatial distribution of geochemical fingerprints that can be useful for tephrostratigraphic reconstructions.