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## **The geomorphic impacts of the AD 1257 eruption of Samalas Volcano (Indonesia) on the western coastline of Lombok Island**

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By AD 1257, Lombok island (Indonesia) was devastated by the eruption of Samalas volcano from the Rinjani complex. This event can be interpreted as one of the greatest eruption of the Holocene.

This eruption triggered Pyroclastic Density Currents whose deposits reached depths up to 50 m, 25 km away from the caldera. During the past 750 years, the thick pumice fallout and PDC deposits have been sharply eroded and have spread downstream, leading to noteworthy changes in the morphology of the island. This study aims to reconstruct the pre-eruptive landforms and the actual geomorphic evolutions of Mataram plain (capital of West Nusa Tenggara Province) and the former western coastline.

We first surveyed the wells around Mataram to gather qualitative data of the ground composition. Then, we carried out GPR surveys and measured the ground resistivity of the sediments, using a Supersting resistivimeter in key areas of the city and its suburbs, unveiling parts of the paleotopography. In combination with the resistivimeter, we collected cores in order to sample the superficial sediments.

Mataram is currently standing on the lowlands forming a relatively flat region at the foot of the Rinjani complex. We highlight that almost half of this area in which the city is standing on was underwater before the eruption, and that the pre-eruptive coral reef is buried beneath the Samalas AD 1257 deposits, under the urban area. The coastal plain is currently filled by those pumice fallouts and pyroclastic deposits, along with reworked sandy materials.

Our preliminary results underline a former bay, which could have been the cradle of the lost civilisation of Pamatan, an old kingdom which ruled the lands of Lombok as mentioned in the Babad Lombok, the chronicle of the island.