

Eruptive history during the last 10 ky for the caldera-forming eruption of Rinjani volcano, Indonesia

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Rinjani volcano, Lombok island (edifice volume: 100 km³), Indonesia, had grown on the eastern flank of Central Lombok volcano complex (edifice volume: 850 km³). The eruptive history of Rinjani volcano is divided into Stratocone building stage, Low volcanic activity stage, and Syn-caldera stage. Eruption rate was kept constant during Stratocone building stage. It decreased to 0.6 km³/ky during the last period of Stratocone building stage (12000-6000 y.B.P.). Finally, it became 0.15 km³/ky during the last 5200 years before the caldera-forming eruption (6000-800 y.B.P.) (Low activity stage). At Low activity stage, eruption interval became longer than the previous stage; subplinian Propok pumice (DRE volume: 0.1 km³) and Lember lava flow (volume: 0.4 km³), Rinjani ash, and subplinian Rinjani pumice (DRE volume: 0.3 km³) occurred. Plagioclase-phyric basalt, and andesite became common for the last period of Stratocone building stage. Dacite with hydrous minerals erupted during Low activity stage. The main magma path shifted 5 km toward the eastern flank of Central Lombok volcano complex to grow Rinjani volcano at the end of the complex. After stratocone building, the volcanic activity migrated more 5 km eastward for Low activity stage. Propock pumice and Lembah lava flow erupted. Next, the activity migrated back to Rinjani summit. Rinjani ash and Rinjani pumice erupted. Syn-caldera stage started with plinian West Rinjani pumice (DRE volume: 3 km³) at the center of Central Lombok volcano complex. Segaraanak caldera collapsed with eruption of huge pyroclastic flows (The subareal DRE volume: 7 km³), not at Rinjani, but at the center of Central Lombok volcano complex. The dated results of seven charcoals indicate the climax of caldera forming-eruption is the period of AD 1210-1260 years B.P. The caldera collapse may have been associated with the sector collapse of the western flank of Rinjani volcano. The present caldera is 6 km x 7 km in size of rim to rim, and, in its eastern part, is connected to a horseshoe-shaped caldera of 3.5 km long and 3.5 km wide.