Holocene explosive eruptions in the Rungwe Volcanic Province, Tanzania

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Abstract

The Holocene explosive eruptive record of Rungwe and Ngozi volcanoes of the Rungwe Volcanic Province in Tanzania was reconstructed based on detailed stratigraphic field evidence combined with whole-rock major and trace element analyses of tephra samples. This reconstruction is supported by 25 new radiocarbon dates on palaeosols that provide additional constraints on the Holocene tephro-chronostratigraphy. We show evidence of two catastrophic Ngozi eruptions and five Rungwe pumice fallout deposits, and also identify several more intercalated poorly preserved pumice and ash deposits. The Ngozi eruptions probably played a role in shaping the present-day caldera. The Rungwe record includes a ca. 2.2 km^3 deposit of a Plinian-style eruption dated at ca. 4 ka, a sub-Plinian one at ca. 2 ka and at least three additional smaller-scale fallout deposits. The Rungwe explosive eruptive record shows that the volcano has been frequently active in its late Holocene past. This study highlights the need for volcanic monitoring in the region and presents herewith the first basis of future volcanic hazard assessment.
, moderate to Plinian-style.

Keywords

Rungwe Volcanic Province;
eruptive history;
explosive eruptions;
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volcanic hazard assessment