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VIEWS AND NEWS

International viewpoint and news

Connection between neighbouring Hawaiian volcanoes

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A study published in the November 2012 issue of *Nature Geoscience* has modeled the interactions of two neighbouring Hawaiian volcanoes to explain the highly differentiated eruptive patterns at the Mauna Loa and Kilauea volcanoes. When one volcano is active, the other is silent. In a press release by Rice University, lead author Helge Gonnermann pointed out that both volcanoes are fed by the same hot spot and their simultaneous inflation can be interpreted to be the result of increased pressure of the magma source feeding them. As past volcanic activity had been anti-correlated, it had been suspected that the Kilauea and Mauna Loa competed for the same supply of magma. However, in the last ten years the two volcanoes have inflated concurrently. The attempt to demonstrate that the volcanic activities are linked in this case has been cause for discussion and disagreement.

The study by H. M. Gonnermann, J. H. Foster, M. Poland, C. J. Wolfe, B. A. Brooks and A. Miklius explains how the two volcanoes are coupled in behavior, while being supplied by different parts of the same source region. The authors offer a realistic numerical model, which is based on the measurements of gas emission rates that indicate eruptive activity, and is calibrated to compare with the actual geodetic measurements of surface deformation at both volcanoes.

"Although an increase in the asthenospheric magma supply can cause simultaneous inflation of Kilauea and Mauna Loa, we find that eruptive activity at one volcano may inhibit eruptions of the adjacent volcano, if there is no concurrent increase in magma supply. We conclude that dynamic stress transfer by asthenospheric pore pressure is a viable mechanism for volcano coupling at Hawaii, and perhaps for adjacent volcanoes elsewhere".

The paper by Gonnermann et al. is entitled "Coupling at Mauna Loa and Kilauea by stress transfer in an asthenospheric melt layer". It was published in *Nature Geoscience* 5, 826–829 (2012) doi:10.1038/ngeo1612.

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