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A comparison of slow slip events at Etna and Kilauea volcanoes

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Mt. Etna and Kilauea Volcano are both large basaltic volcanoes with unstable flanks, on which slow slip events have been observed by continuous GPS networks. The slow slip events (SSEs) last about two days at both volcanoes, although there are some differences in the depths and frequencies. While recurrence intervals were initially somewhat irregular at Kilauea, the most recent 5 events have become more regular with an inter-event time of about 2.4 years. At Mt. Etna, these events seem to be more frequent (about 2 per year) and are often related to the main recharge phases of the volcano. Ground deformation data have been used on both volcanoes for determining the source of the anomalous displacements and, from this point of view, the two volcanoes seem very different. Although slow slip events at Mt. Etna and Kilauea are much shallower than many subduction zone slow slip events, slip at Kilauea occurs on a discrete decollement at about 8 km deep. At Mt. Etna, a variety of data suggest that the sliding could be much shallower and more diffuse. In this work, we show some preliminary results of a "block-like" model of Mt. Etna's slow slip events that is able to explain the source of the flank displacements with slip on the Giarre Wedge near the coast. This work will allow a possible classification of different types of slip events affecting the flanks of large basaltic volcanoes, often densely populated, with a significant impact on the evaluation of seismic and volcanic hazard.