



## **Active large sector collapse on Pico Island (Azores)**

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Volcanic ocean islands are particularly prone to flank instability. Episodes of lateral destabilization can remove a huge amount of volcanic material, either as creeping rotational landslides along a deep décollement, or in the form of fast running debris avalanches produced by the sudden rupture of a flank of the volcanic edifice. Based on high-resolution DEM, fieldwork, GPS and InSAR data, we put in evidence ongoing collapse of the southeast flank of the Pico volcanic Ridge (Azores). We show that: (1) the collapsing sector is several cubic kilometres in dimension; (2) two villages are located in this sector; (3) the collapse involves, at the surface, several curved scarps with a geometry and kinematics typical of normal faults; (4) the horizontal and vertical rates of displacement monitored over a 5 years period within the central outer part of the mobile flank average to 1.5 and -7 mm/yr, respectively. These data suggest that present downward displacement mainly occurs towards the SE along a steep seaward-dipping fault, in agreement with the structural observations; (5) evolution of the deformation along this accident could involve the sudden detachment of a large distal block, possibly followed by the gradual destabilization of the whole collapse area. Such scenario would have hazardous consequences for the local population and could trigger a major tsunami, which may impact the surrounding coastal environments and cause considerable damage.