

Geowissenschaftliches Kolloquium

Ground displacements in volcano regions detected by satellite and camera monitoring systems

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The construction of volcanoes, i.e. the intrusive and eruptive growth, can be intermittently interrupted by destructive events. Dome building volcanoes, in specific, grow by magma extrusion and are partially destroyed again, posing a significant hazard in form of pyroclastic flows and other processes. The explosion at Merapi (Indonesia) in 2010, and at Colima volcano (Mexico) in 2013 are good examples of associated dramatic morphometric changes. There is only limited understanding of the deformation style and the stress changes within the conduit and the dome itself associated with such volcanism, because sophisticated geodetic methods are hazardous to operate and are even destroyed during such eruptions. In this talk multi-scale displacements are presented based on new generation satellite radar interferometry (InSAR) and time-lapse camera arrays. The data allows to better understand eruption precursors, syneruptive deformations and morphometric changes. Possible other applications are discussed for landslides and regions of tectonic faulting.

Thomas Walter studied Geology at University Freiburg, received his PhD 2002 at GEOMAR and the University Kiel and worked as Postdoc at Dept. of Volcanology, GEOMAR. 2003 to 2005 he was visiting researcher at the Geodesy Lab and CStars at Univ. Miami. Since 2005 Walter is University Lecturer in Potsdam and Research Associate in the Dept. Physics of the Earth at the GeoForschungszentrum and Head of the Emmy Noether Junior Research Group Volcano Tectonics.



His top-5 research interests are: Mechanisms of dike intrusions, flank instability and effects of giant landslides, evolution of magma chambers and calderas, stress field development and stress transfer in volcanic regions.

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