Geophysical Research Abstracts
Vol. 14, EGU2012-10607, 2012
EGU General Assembly 2012

UAV-based remote sensing of landslides as complement to geophysical subsurface monitoring

S. Rothmund, U. Niethammer, and M. Joswig
Universität Stuttgart, Institute for Geophysics, Stuttgart, Germany

It's just some years that UAVs (unmanned aerial vehicles) can acquire high-resolution aerial photos to produce digital elevation models, orthophotos of cm resolution, and short-term dislocation maps by repetitive flight campaigns. We have developed such UAV quadrocopter system at our institute, and successfully applied in high Alpine terrain to observe creeping landslides simultaneously to geophysical measuring campaigns. At Super-Sauze (France) and Heumös (Austria), we observed slide quakes by nanoseismic monitoring, subsurface topography by 2D/3D seismic, and soil moisture by geoelectric tomography. Aerial photos were processed by means of a multi-view-stereo approach for DTM and orthophotos, and multi-spectral decomposition for soil moisture changes. The joint interpretation unveiled surface manifestations of subsurface slide quakes as fissure structures of strike slip, normal and reverse faulting, and vegetation contrasts along water pathway changes.