

UAS REMOTE SENSING PLATFORMS FOR CHANGE MONITORING IN HIGH-ALTITUDE ALPINE ENVIRONMENTS

Presented by Forrest Schoessow
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Scott Hall Room 177
1090 Carmack Rd.

Throughout the tropical Andes, the cryosphere is destabilizing as climate warms. The transformation of snow and glacial ice loss is inextricably linked to water availability, water quality, and geohydro hazard risk that have broad human impacts in watersheds below. Since these changes are underway and not likely to be halted, there is a pressing need for more highly accurate, cross scale, on-demand, spatially distributed data to inform scientific understanding and adaptive risk management strategies. The Mountain Drone Team, led by Schoessow, has leveraged advances in science and technology to develop an unmanned aerial system (UAS) - the RANGER - specifically designed to collect aerial observation data at extreme altitudes in the Andes of Peru (4500-6800m a.s.l.).

The RANGER (pictured right) carries active and passive remote sensing instrumentation for measuring surface energy and mass flux; and programmable autonomous mission planning enables generation of high resolution time-series data over repeat flights. The capabilities of UAS for on-demand remote sensing can greatly improve our capacity to observe tropical glacier dynamics at finer spatial-temporal scales, better understand the processes that drive them, and improve our capability for predicting future hazard chain evolution in high mountain environments. This presentation will review the development of the RANGER platform, discuss instrument techniques, and summarize its hazard management applications.

