



Flying drone missions for the Austrian Torrent and Avalanche Control

Feasibility study for the application of drones to mapping catchments, protection forests and avalanche mitigation structures

Contracted by the BMLFUW
Austrian Federal Ministry of Agriculture, Forestry, Environment & Water Management



Austrian Research Centre for Forests
Department of Natural Hazards
● Hofburg Rennweg 1 | A-6020 Innsbruck | Austria

DRONE MISSIONS FOR MAPPING:

- Catchments
- Protection forests
- Avalanche mitigation structures



Drones open up new possibilities for regular and cost-efficient monitoring in (high-)alpine terrain!

In 2014, we performed **26 drone-flights** in 4 study areas (1800 – 2700 m a.s.l.), located in the Wattental (Tyrol), Western Austria. We recorded more than **43,000 single images**, which were then processed with photogrammetric software packages and analysed.

RESULTS

CATCHMENT

~40ha area

Detail:

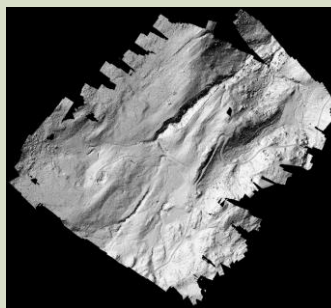
Ground resolution ~10cm

Overview:

Hillshade

Detail:

fine structures easily recognisable



PROTECTION FOREST

Detail

RGB

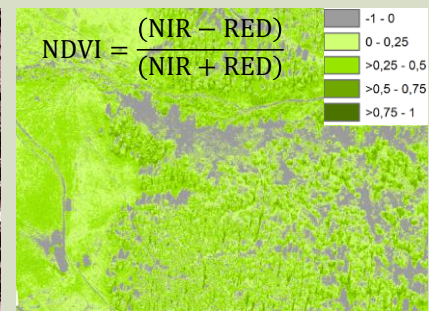
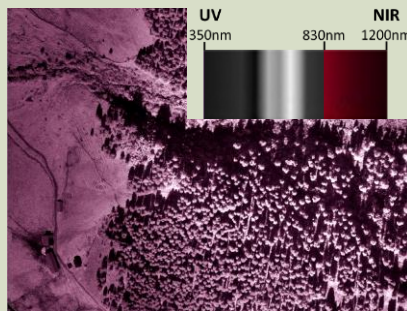
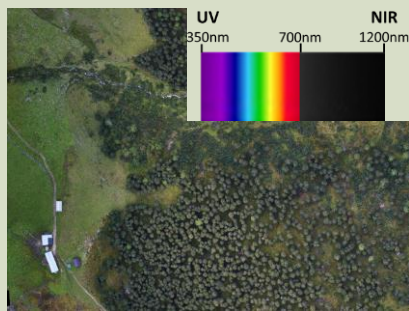
Visible spectrum

NIR

Near-infrared imagery

Calculating vitality indices

-1 not vital to +1 very vital



AVALANCHE MITIGATION STRUCTURES

Overview

top view

side view

detailed view



Adams M., Lechner V. & Kleemayr K. (2014): Technical report on BAUWEKA project – available in German (Technischer Bericht Teilprojekt BAUWEKA II: Unterstützende Erkundung von Schutzmaßnahmen und Einzugsgebieten mittels UAV (Unmanned Aerial Vehicles) im Rahmen von Pilotprojekten)

