



Identifying tropical mountain wetlands with Asymmetric Synthetic Aperture Radar

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Land cover classification in remote areas is often done with remotely sensed data. However, on classic spectrometer data, wetlands are difficult to distinguish from neighbouring grass and shrubland vegetation, despite the differences in hydrological regime and species variety. Another problem with spectrometer data is the interference of cloud cover, which is abundant in the areas where wetlands tend to occur. Radar measurements, which are not affected by cloud cover, are sensitive to soil moisture. As such, they have the potential to identify wetlands from well drained grasslands. In this study, Asymmetric Synthetic Aperture Radar from the ESA ENVISAT satellite are used to identify wetlands in the Ecuadorian paramo ecosystem. This ecosystem occurs above the treeline (3500 m) and is characterised by highly intermingled grass- and wetlands. By comparing ASAR data from different months, hydrologically active zones can be identified. Corroboration with field observations and rain gauge data show that the areas identified with ASAR coincide with locations with a high tendency for saturation and ponding. By linking precipitation data from local raingauges with the ASAR images, the hydrological regime of the area can be characterised. This information is valuable for hydrological and ecological studies, particularly in the paramo region, which has an important water supply function and is a hotspot for biodiversity.