



Application of remote sensing techniques to peat landslide scar detection

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While peat failures have occurred in Ireland for thousands of years, research into this problem has really only intensified in recent years after a number of failures in Ireland in 2003 and a parallel failure in the Shetland Islands.

Research in UCD Civil Engineering began looking at the ability of remote sensing techniques to detect scars of landslides, which would be used for detailed geotechnical stability analyses. This study used a combination of LANDSAT satellite imagery, aerial photography and digital elevation models to detect scars. Various geological mappings and targeted field visits were employed to assist in the interpretation of features.

The main conclusions from this study were;

- Visual analysis of black and white aerial photography draped on digital elevation models is by far the most efficient technique to detect scars.
- Advanced techniques using spectral signature in LANDSAT imagery are not efficient in the first instance to detect scars chiefly due to lack of resolution, strong variability of material and failure surface, regrowth of peat and damage to peat surface.
- Convolution filtering techniques were found to be a useful method of detecting faint scars.

- LANDSAT imagery is a useful tool to interpret the state of the peat surface. It can show if a peat surface has suffered damage from activities such as grazing or burning. This has important implications for realistic stability analyses, which take into account the contribution of the strength, derived from the strongly fibrous surface.