

Long term peatland subsidence monitoring by using the ISBAS InSAR technique: validation over Bad a Cheo forest, North East Scotland.

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Interferometric Synthetic Aperture Radar (InSAR) data from the ESA Sentinel 1 constellation has potential as a cost effective and practical method of measuring ground motion in remote peatland. However, current techniques such as Persistent Scatterer Interferometry (PSI) are tuned to work only on hard, non-vegetated surfaces negating their application to peatland areas. The new Intermittent Small Baseline Subset (ISBAS) method provides a verified method for measuring ground motion over vegetated areas allowing InSAR to be used as a method to monitor annual peat mass accumulation and loss, factors directly related to peat condition and carbon emission. This work examines the feasibility of the ISBAS technique for long term height change over peatland areas through validation over a small forest area (Bad a Cheo forest) in the Flow Country, NE Scotland (56 ERS C-band images, covering the period 1992-2001, and 46 Sentinel-1 C-band images, covering the period 2015-2016).