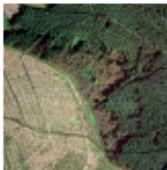
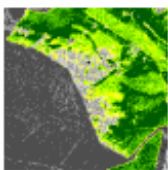
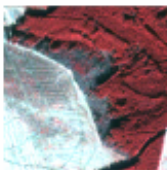





Interpretation of wind damage in conifer plantation forests from remotely sensed imagery.

Damage caused by wind poses a significant threat to the economic management of forests. Traditionally, visual interpretation of aerial photography has been the main method used to assess extent of new wind damage. This example evaluates a variety of remote sensing systems (Table 1) as sources from which windblow can be manually interpreted.

Table 1: Example images from each sensor over a clearly wind-damaged area.

					
Aerial Photography	LiDAR Grid	Ikonos (XS & Pan)	ASTER	SPOT	Landsat (XS & Pan)

24 ground truthed sites of potential windblow were studied in the 8 different images. 16 interpreters took part, each with differing levels of knowledge of forestry, and experience of using remote sensing.

Table 2: Comparing sensors: Specifications and Interpretability

SENSOR	SPECIFICATIONS			% ACCURATELY INTERPRETED		
	Spatial Resolution	Date y-m-d	Spectral Resolution	Total (16)	Experts (9)	Non-Experts (7)
Landsat Multispectral	30m	2002-09-02	6-band: VISB, VISG, VISR, NIR 2xSWIR	59	60	58
SPOT	20m	2002-10-26	4-band: VISG, VISR, NIR, SWIR	54	58	51
Landsat Panchromatic	15m	2003-03-22	Panchromatic	54	54	55
ASTER	15m	2002-09-02	3-band: VISG, VISR, NIR	59	62	55
LiDAR (gridded)	4m	2003-03-28	Canopy Height	74	75	74
Ikonos Multispectral	4m	2002-03-13	4-band: VISG, VISR,	69	79	56
Ikonos Panchromatic	1m	2002-03-13	Panchromatic	74	81	67
Aerial Photography	0.25m	2003-05-14	3-band: Red, green, blue	77	81	74

KEY POINTS

- High spatial resolution imagery (e.g. under 5m) is required for an interpretation accuracy > 70%
- Experience, and therefore training, greatly improves interpretation accuracy.
- Experts find high-resolution satellite imagery as easy to interpret as Aerial Photography.
- Annual high-resolution image collection may therefore provide a valuable alternative to annual aerial photo surveys.

CONTACT INFORMATION

Name Danny Donoghue
 Address Department of Geography,
 University of Durham, England
 Phone ++ 44 191 3341894
 E-Mail Danny.Donoghue@durham.ac.uk