Yorkshire Wildlife Trust

Earth Observation Fact Sheet

SENTINEL 1

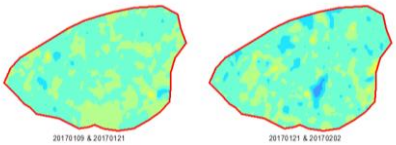
Background
This factsheet is part of a series produced by the Yorkshire Peat Partnership (YPP) to share the knowledge developed in the application of open source earth observation technologies for the remote monitoring of peatland habitats.

Satellite technology
Earth observation satellites provide us with the capability to analyse current and retrospective data at a landscape scale.

Sentinel 1
Part of the European Space Agency's (ESA) Copernicus Programme, Sentinel 1 is a C-Band Synthetic Aperture Radar (SAR) satellite. Unlike the Landsat and Sentinel 2 satellites, Sentinel 1 is an active radar satellite; acquiring data by transmitting a signal to the Earth's surface and measuring its return. Active radar signals are capable of penetrating clouds, meaning all data is cloud free! SAR data can be used to generate elevation data, measure surface deformation, and quantify areas of wildfires. Due to the cloud free data, vast quantities of imagery can be used to develop comprehensive time series.

SPECIFICATION

LAUNCH DATE:	3rd April 2014
FREQUENCY:	C Band at 5.405 Ghz (wavelength: 5.6cm)
POLARISATION:	Single: HH & VV (WV) Dual: HH + HV and VV + VH (IW, SM, EW)
IMAGE MODES (RESOLUTION):	Interferometric Wide Swath (5 x 20m) Strip Map (5 x 5m) Expanded Wide Swath (20 x 40m) Wave (5 x 5m)
SWATH WIDTH:	Interferometric Wide Swath (250 km) Strip Map (80 km) Expanded Wide Swath (400 km) Wave (20 x 20km vignettes)
REVISIT TIME:	6 days



Surface displacement maps

VH multi-temporal image: Red 21/05/2017; Green 08/06/2017; Blue 20/06/2017

Artist's rendering of the Sentinel 1 satellite. Credit: ESA

Data Sources
Sentinel 1 data can be downloaded for free on the Copernicus Open Access Hub:
https://scihub.copernicus.eu