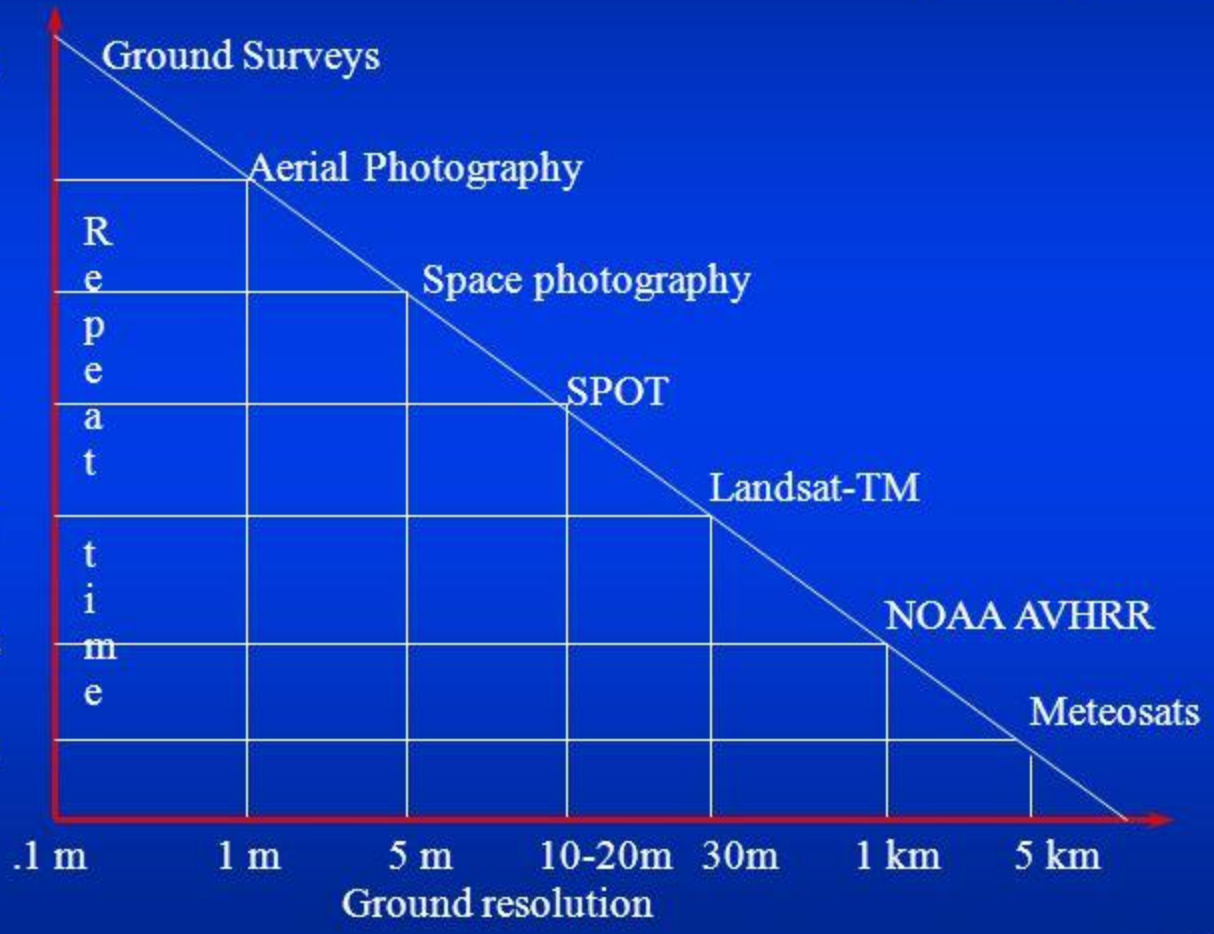
Computer vision for the environment: applications for policy and delivery in Defra

Visualising and monitoring landscape processes with Earth Observation

Geoff Smith

Spatial and temporal resolution

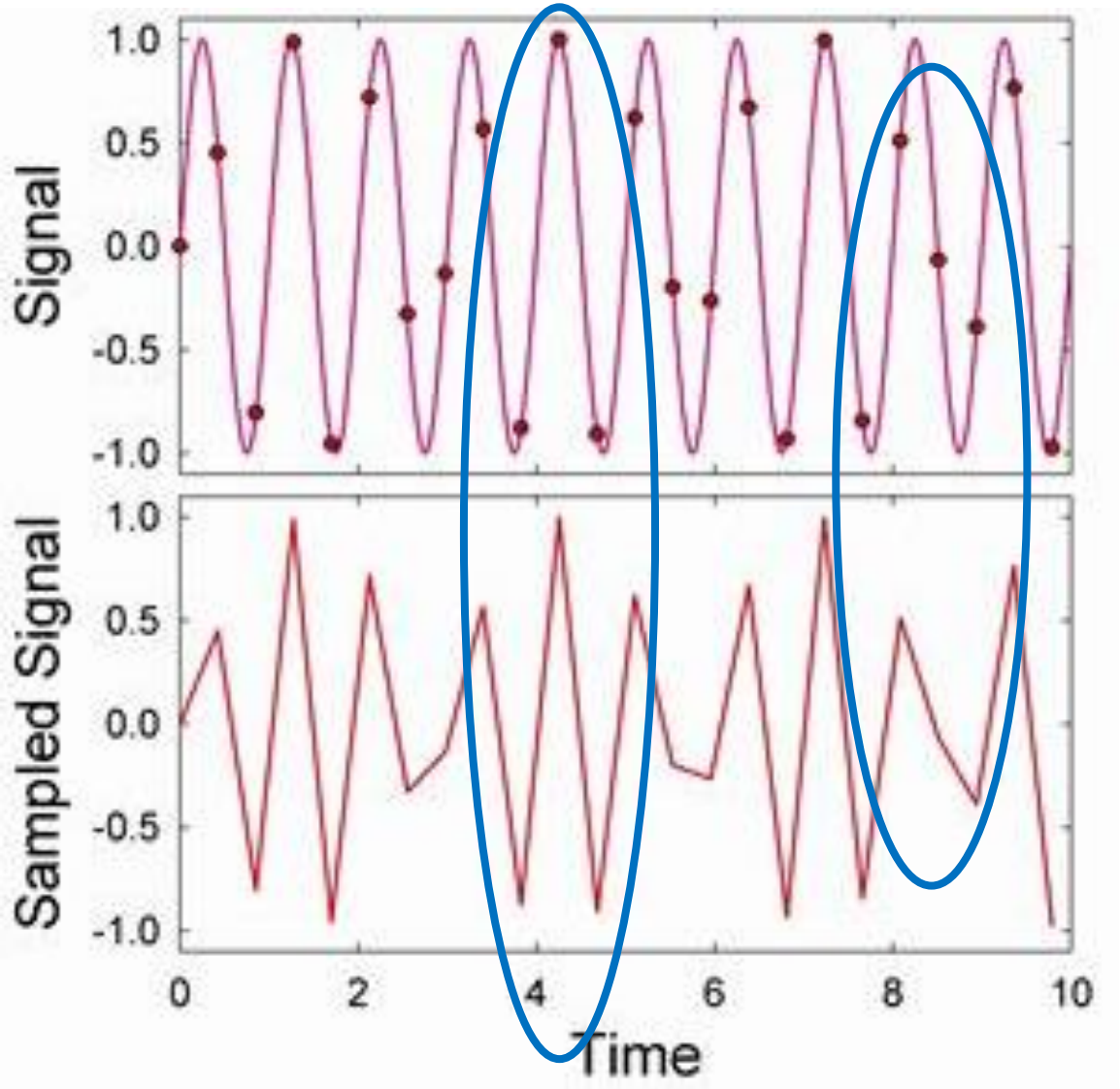
As spatial resolution increases, the revisit time is also increased, as are the applications that are appropriate and the cost



Center for Remote Sensing and Spatial Analysis, Rutgers University

Confounding factors

Sampling environmental processes



EO-based environmental monitoring

- Stock or status maps
- Possibly change mapping

- UK Land Cover Maps
  - Dual date (summer / winter) images
  - + / - 1 year time window
  - Dual images not always from same growing season
  - Some areas only a single image or none
  - 8 – 10 year update
  - Change difficult

EO capacity

New EO capacity

- DMC
  - Constellation of similar satellites
  - Orbits give daily acquisition capability
  - Basic imaging sensor, 20 – 30 m
  - Require tasking, commercial
- Copernicus
  - Constellation of satellites with a range of capabilities
  - Pairs identical satellites, 3 – 5 day repeat
  - High performance optical sensors, 10 m
  - Always on over land, free & open access
- Planet Labs
  - Large constellations of cube sats
  - Orbits give daily acquisition capability
  - Basic imaging sensor, ~ 5 m
  - Always on over land, commerical

Beijing Daxing Airport – Sentinel TC

Beijing Daxing Airport – Sentinel TC

A14 Tree removal – Planet TC

Scolt Head Island – Sentinel FCIR

Ouse Washes – Sentinel FCIR

Crop growth – Sentinel NDVI

Discussion points

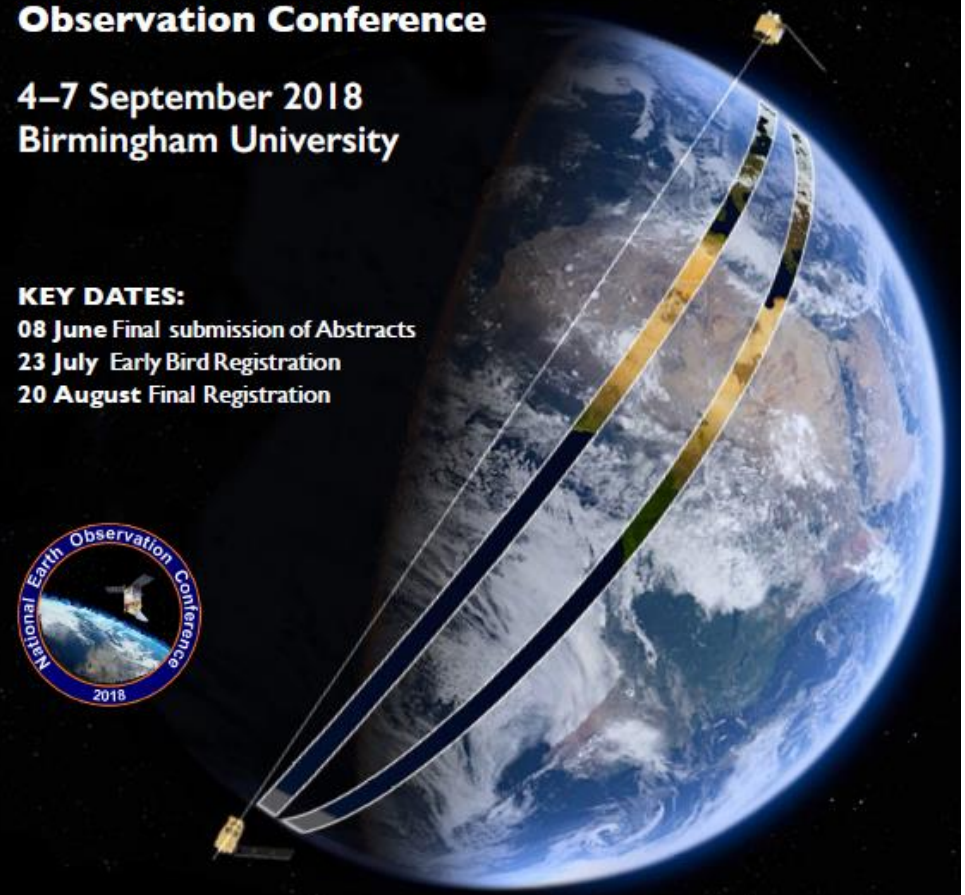
- Analysis Ready Data
  - Pre-processed and correct to surface reflectance
- DataCubes
  - Improve the accessibility of ‘big data’
  - Manipulate large data sets
- Intermediate products
  - Basic information layers
  - Spatially and temporally combine and composite ARD and covert to a ‘surface property’ e.g. soil sealing / biomass

Earth observation into the future

UK National Earth Observation Conference

4–7 September 2018
Birmingham University

KEY DATES:
08 June Final submission of Abstracts
23 July Early Bird Registration
20 August Final Registration



#EarthObsConf2018
www.rspsoc.org.uk/neoconf2018

RSPSoc remote sensing & photogrammetry society
National Centre for Earth Observation
Centre for EO Instrumentation

SPECTO NATURA

Many thanks for your attention

Geoff Smith,
Specto Natura, Ltd.

geoffsmith@specto-natura.co.uk

A14 Tree removal – Sentinel FCIR