PUNNET

The University of Nottingham

UNITED KINGDOM · CHINA · MALAYSIA

Satellite Based Land Stability Monitoring and Mapping

PUNNET offers a major step forward in land deformation monitoring for sectors such as oil & gas, mining and exploration.

Capability

PUNNET uses a series of images created from satellite data to create millimetric-precision maps of land surface deformation.

Services

PUNNET supports adherence to regulations and industry standards. These include:

- Baseline surveys to assess site suitability for operations.
- Ongoing monitoring of active sites
- Post-operational surveys

Coverage

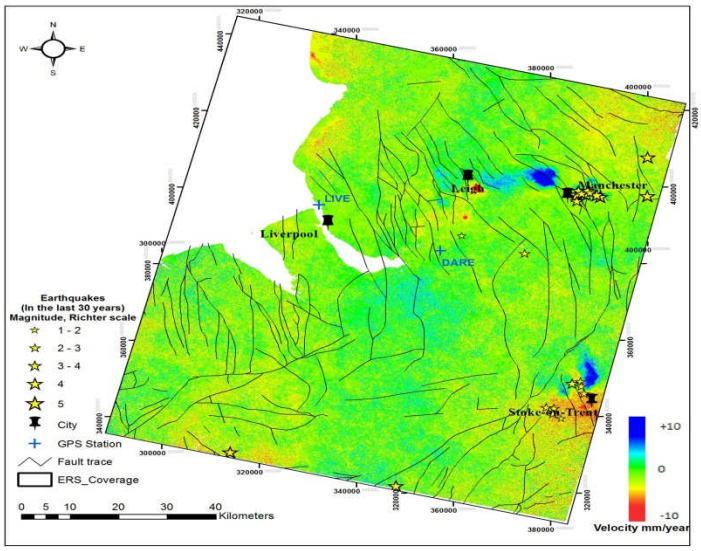
PUNNET has been tested using satellite data gathered from the Arctic down to the tropics. It is able to detect millimetric rates of land motion resulting from a wide variety of causes including: permafrost heave, mining, landslides and industrial groundwater abstraction.

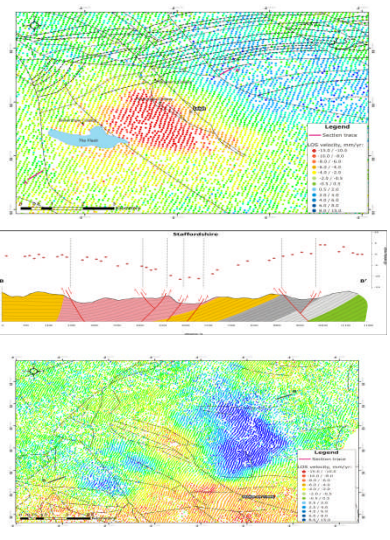
Satellite data used

Any satellite synthetic aperture radar (SAR) mission with an interferometric capability. This includes the recently launched European Sentinel-1 satellite and a range of existing platforms including TerraSAR-X, COSMO-Skymed and ALOS.

Case Study: Manchester and Stoke-on-Trent, UK

This PUNNET analysis of a set of images from 1995-2000 reveals the influence of active and historical coal mining on the UK landscape. Areas of uplift (blue) and subsidence (red) are clustered around historical and active coal mines and demonstrate the effect that groundwater pumping, and cessation of pumping, has. Furthermore, some areas of land movement are clearly bound by geological faults, which may have implications regarding induced seismicity.





Contacts

Andy Sowter: Email - andrew.sowter@nottingham.ac.uk Tel – +44 (0)115 823 2765

Paul Bhatia: Email - paul.bhatia@grace.ac.uk Tel: +44 (0)7825 753940