Research Interests – Geodetic Monitoring and Geospatial Engineering

Geodetic, geophysical and engineering applications of high-precision GNSS:
- Long-term monitoring of 3D land and structural movements (climate change, sea level rise, glacial isostatic adjustment, plate motions, crustal and structural deformation);
- Long-term, near-real-time and real-time monitoring of atmospheric parameters (water vapour, climatology, meteorology, severe weather, ionosphere, space weather);

Geodetic, geophysical and engineering applications of remote sensing and 3D imaging technology:
- Monitoring of 3D land and structural movements (urban subsidence, mining, ground water extraction, geodetic datum definition, synthetic aperture radar, airborne and terrestrial digital photogrammetry, laser scanning technologies);

GNSS processing strategies and related methods:
- Global and regional GNSS network processing;
- Precise Point Positioning and integer ambiguity resolution;
- Modelling of systematic biases, including atmospheric effects on GNSS signals;
- Automated quality control and data evaluations of large GNSS networks;
- Specific GNSS station investigations and station monumentation;
- Stochastic modelling of time series, including noise analyses, sidereal and spatial filtering;

Remote sensing and 3D imaging techniques:
- Digital photogrammetry and laser scanning from terrestrial, aerial and space platforms;
- Reality capture for Building Information Modelling (BIM) and autonomous driving/vehicles;
- Synthetic Aperture Radar - Persistent scatterer interferometry;