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Professor Barry Parsons

Professor of Geodesy and Geophysics

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Research Profile

Geodesy is concerned with the measurement of position and movement of points on the earth's surface. Its geophysical applications provide insights into many of the processes central to the earth and environmental sciences. Variations in the height of the ocean surface reflects variations in the earth's gravity field caused by thermally driven motion in the solid mantle, the mechanism that is the basic driving mechanisms for the motion of the plates. Measurements of position and changes in position made with the Global Positioning System (GPS) shows the patterns of deformation associated with the movement of the continents and mountain building, and help identify the forces causing them. A technique called *interferometry* that uses satellite radar observations can reveal what happens at depth on fault planes during earthquakes.

Over the past six years, much of my research has been carried out with colleagues and students in the Centre for the Observation and Modelling for Earthquakes and Tectonics (COMET), of which I am the director. This is an Earth Observation Centre of Excellence supported by the Natural Environment Research Council (NERC) that links scientists at several earth sciences and geomatic engineering departments. COMET has recently evolved into one of the science themes supported by the new National Centre for Earth Observation (NCEO), that on the Dynamic Earth and Geohazards. This science theme concerns the science of volcanoes and other geohazards as well as that of earthquakes.

Teaching Profile

Fundamentals of Geophysics
Remote Sensing and Active Tectonics
Thermal and Mechanical Models of the Earth
Greek Field Trip.

Selected Publications

- Elliott, JR, Biggs, J, Parsons, B, Wright, TJ, (2008) 'InSAR slip rate determination on the Altyn Tagh Fault, northern Tibet, in the presence of topographically correlated atmospheric delays', *GEOPHYSICAL RESEARCH LETTERS*. pp. doi: [10.1029/2008GL033659](https://doi.org/10.1029/2008GL033659)
- Funning, GJ, Parsons, B, Wright, TJ, (2007) 'Fault slip in the 1997 Manyi, Tibet earthquake from linear elastic modelling of InSAR displacements', *GEOPHYSICAL JOURNAL INTERNATIONAL*. pp. 988-1008 doi: [10.1111/j.1365-246X.2006.03318.x](https://doi.org/10.1111/j.1365-246X.2006.03318.x)
- Ryder, I, Parsons, B, Wright, TJ, Funning, GJ, (2007) 'Post-seismic motion following the 1997 Manyi (Tibet) earthquake: InSAR observations and modelling', *GEOPHYSICAL JOURNAL INTERNATIONAL*. pp. 1009-1027 doi: [10.1111/j.1365-246X.2006.03312.x](https://doi.org/10.1111/j.1365-246X.2006.03312.x)
- Pathier, E, Fielding, EJ, Wright, TJ, Walker, R, Parsons, BE, Hensley, S, (2006) 'Displacement field and slip distribution of the 2005 Kashmir earthquake from SAR imagery', *GEOPHYSICAL RESEARCH LETTERS*. pp. doi: [10.1029/2006GL027193](https://doi.org/10.1029/2006GL027193)

- Funning, GJ, Parsons, B, Wright, TJ, Jackson, JA, Fielding, EJ, (2005) 'Surface displacements and source parameters of the 2003 Bam (Iran) earthquake from Envisat advanced synthetic aperture radar imagery', *JOURNAL OF GEOPHYSICAL RESEARCH-SOLID EARTH*. pp. 1-23 doi: [10.1029/2004JB003338](https://doi.org/10.1029/2004JB003338)
- Wright, TJ, Parsons, B, England, PC, Fielding, EJ, (2004) 'InSAR observations of low slip rates on the major faults of western Tibet.', *Science*. pp. 236-239 doi: [10.1126/science.1096388](https://doi.org/10.1126/science.1096388)

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Other Information

Director of Graduate Studies
Fellow of [St Cross College](#)