Earth Structure & Dynamics

Prof. Gillian R. Foulger

Course instructors

Prof. Gillian R. Foulger (Michaelmas term) Dr. Jeroen van Hunen (Easter term)

| Course structure | | |
|------------------|-------------------|----------------------|
| Week | Subject | Practical |
| 1 | Introduction | - |
| 2 | Locations | locations |
| 3 | Magnitudes | magnitudes, b-values |
| 4 | Source mechanisms | locations |
| 5 | Instruments | source mechanisms |
| 6 | Nuclear detection | nuclear detection |
| 7 | Earth structure | chaos |
| 8 | Earth structure | chaos |
| 9 | reading | reading |
| 10 | reading | reading |



Assessed work deadlines

Practical work from Week 4: 6.00 pm, Thursday 10th November

Nuclear detection essay (Week 6): 6.00 pm, Thursday 17th November





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Continental intraplate earthquakes







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Contributions of earthquakes to PT

| Locations | Map of plate boundaries Existence of subducting slabs Temperature distribution at boundaries Direction of motion of plates |
|----------------------------------|--|
| Magnitudes, fractal dimension | Variations in stress at different boundaries |
| Focal mechanisms | Mode of deformation at plate boundaries (extension, compression or strike-slip) Direction of motion of plates Evolution of transform zones (transform vs. transgressional) |
| Earth structure | • Existence of crust, transition zone, 670- km discontinuity, liquid outer core (explanation for magnetic field) 47 |

Current hot topics

- Relative relocations
- Source processes (non-shear mechanisms)
- Application to social problems hazard reduction, tsunami warnings
- Application to geothermal prospecting
- Nuclear discrimination
- Earth structure & the hunt for plumes
- Dynamics of the core and the CMB