UCL – GEOL0030 Seismology II 2018-19

Coursework 2: Set Week 7, to be submitted Friday Week 11 by 5pm **by email** to A.Ferreira@ucl.ac.uk (with augustin.marignier.14@ucl.ac.uk in Cc). If your report file is very large it is advisable to put in a Dropbox, Google Drive, etc and email us the link.

MINI-PROJECT

Goal: Study in detail one earthquake including both forward and inverse modeling, and interpretation of the results.

(1) Group work:

As part of a team of 3-4 students you will design and conduct your own study – be creative and make sure that you come up with your own ideas. Nevertheless, here goes some basic guidance on the minimum that is expected:

- Data selection and processing: download and process the seismic data from IRIS. You should use at least data from ~10 stations with good azimuthal distribution around the source in an epicentral distance range of ~40-120^{o} to avoid near-field effects and phase interferences. You may wish to start by using only vertical component data (and then later on add horizontal components if possible);

- Comparisons between data and synthetics: you may want to start off by filtering the data in such a way to focus only on long-period surface waves - why? Later on, if time allows you could use body waves too;

- Point source model produced from a least-squares earthquake source inversion (similar to that done in week 9) along with the corresponding data fit and an interpretation of the results obtained.

- Robustness and uncertainty analysis: how reliable is your source model? What are the effects of the assumed Earth structure, data coverage, data types used? You will need to think carefully about these issues and on how to address them.

(2) Individual work:

You will produce an individual report, which should explain the tectonics and geophysical background of the problem, the methods used, the results, their interpretation and references. The individual report should be **not more** than 2500 words plus diagrams, references and appendixes. All the data, final calculations and scripts used will be assessed and should be included as appendices in the report.

Good luck!
Ana Ferreira