

# **Crustal Structure of the Caucasus/Caspian region using gravity and receiver functions**

**Jason Ricketts**

**BS Candidate 2008**

**Advisor: Robert J. Mellors**

## **Abstract**

The area west of the South Caspian basin is an area of complex and uncertain tectonic structure. Thick sediments within the Kura Depression mask the basement and its subsurface geology is poorly constrained. Forward modeling of receiver functions provides initial constrains. However, a good match is sometimes difficult due to the thick sediments. To further constrain the sedimentary thickness, a 2-D gravity profile from EGM2008 is forward modeled using 2 layers over a half-space.

The 2-D profile extends between the two seismic stations BRD and ALI, and the initial model was based on receiver function results. Gravity data was then used to verify these results as well as to provide any additional constrains on the model.

A proposed cross-section shows a depth to basement of 8 km beneath BRD, and a depth of 18 km beneath ALI. Gravity data also suggests that the sediment-basement contact between these two stations is highly irregular. A model where the basement displays an anticlinal shape fits the gravity data as well as the receiver functions. Also located to the south of the profile is the Saatly deep well, which reaches a depth of more than 8 km without hitting basement. The westward component of motion of the South Caspian basin relative to the Kura Depression creates E-W shortening in this region, which can be supported by this model.