

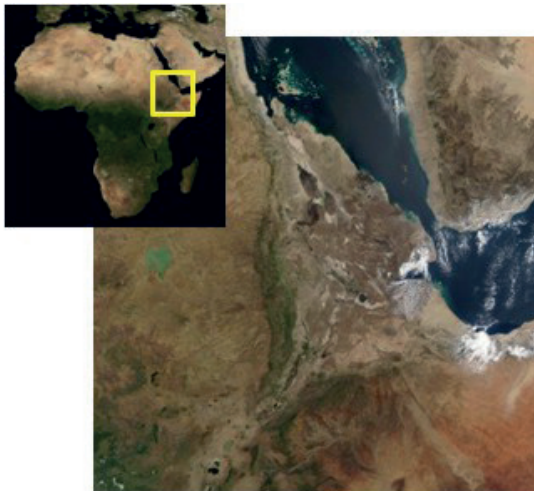
# Geowissenschaftliches Kolloquium

## *Final stages of continental rifting in Afar, Ethiopia – a geophysical perspective*

Donnerstag, 22. Mai 2014 - 16.15 Uhr

### Kathy Whaler (University of Edinburgh)

In September 2005, significant seismic activity heralded the intrusion of a mega-dyke into the sub-surface of a Quaternary magmatic segment in Afar, Ethiopia. The intrusion took about 2 weeks, in four stages, and the whole 60 km long segment was active. It was associated with significant surface faulting, and a small flank eruption of one of the volcanoes at the northern end of the segment. Subsequently, there have been a number of smaller intrusions, and a few further eruptions, towards the centre of the segment. The activity has been monitored by a number of geophysical and remote sensing methods, whose results I will outline. They point to a shallow (mid-crustal) magma source near the mid-segment feeding most of the intrusions, but also a deeper one. My part of the



study of this activity has been a broadband magnetotelluric (MT) survey. We collected data along a profile across the active segment, and across a neighbouring inactive segment, as well as at a few additional sites near one of the volcanoes, and near a currently subsiding region between the active and inactive segments. I will show how the MT survey delineates the deeper magma reservoir, and how combining the MT and other results demonstrates that there are considerable magma volumes in the mantle beneath the active segment. I will also discuss the implications of the observations for understanding continental break-up.

**Prof. Kathy Whaler** is a geophysicist at the University of Edinburgh. She was part of a multi-disciplinary Consortium that studied events in part of Afar, Ethiopia since late 2005. Previously, she has undertaken magnetotelluric surveys in several other parts of Africa, as well as New Zealand and the UK, to understand crustal tectonics and structure.



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