

A day in the life of a Geophysicist

Today's a day for data acquisition. I will be collecting broadband magnetotelluric data throughout Botswana.

Magnetotellurics (MT) is a method that provides information on the electrical conductivity of the Earth by measuring the natural time-varying electric and magnetic fields at its' surface. These fields are generated from electric currents that are produced from natural variations in the Earth's magnetic field. The project in Botswana is part of a larger effort to understand the conductivity structure of the deep crust and upper mantle beneath Southern Africa. This involves putting in stations every 20 km along a profile, or highway, and allowing them to record for 3 days with the hope of obtaining information from depths of 150 – 200 km. Today we are working on the profile between Francistown and Kasane.

7am, the team of 12 meets for breakfast to discuss the plan of action. Decide to split into 3 groups, each group pulling one site out of the ground and putting a new one in further down the line. After packing up the landcruiser with all the necessary equipment and fuelling up, my group of 4 hits the road. When we get to our first site, the first thing I do is ensure that the unit is still recording and that the site has not been disturbed.

There is a lot of local wildlife that enjoys chewing on wires nosing around the instruments! If all is well, I download the data and have a quick look at the time series to be sure that the equipment was working correctly before removing the site.

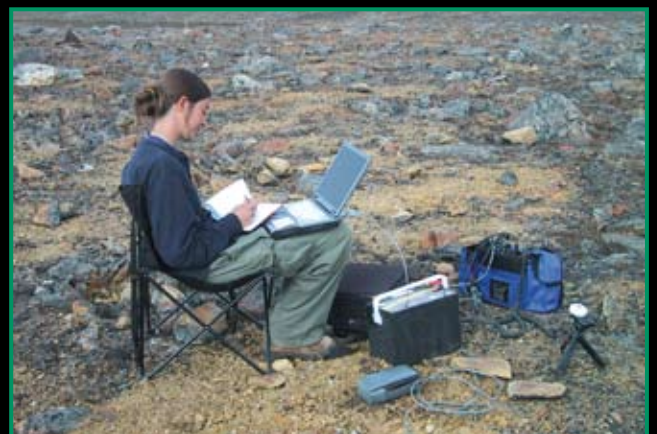
Setting up a new site is not quite as easy. After driving over 60 km down the highway to the next location, we drive around the area to find someone who works locally on the land. Good thing we have a local Setswana speaker with us, the farmer is able to find us a great spot under a large shady mopane tree where we can keep the recording box out of the sun. Installing the site takes about 2.5 hours, and most of that time is spent digging holes for each of the sensors. I then attach all the sensors to the recording box and set it to record data for the next 3 days.

On return to the lodge, there are a few chores to be done. The batteries that power the instruments need to be charged, the trucks tidied, equipment problems need to be tested and fixed, and accommodation needs to be booked for the following night. If we are going to be camping we will need to do some grocery shopping.

After a quick clean up, I then sit at the computer and back up the data from the three sites collected that day. The data is quickly processed giving us an indication of any changes to the site installation that are necessary the following day. If I have time, I will run more complex processing and edit the response curves so that each site will be ready for 2-dimensional modelling when we return to Dublin. But for today, I will enjoy the fantastic African sunset before the group meets again to discuss the day's events, and plan for tomorrow.

Jessica Spratt

'There is a lot of local wildlife in Botswana that enjoys chewing on wires nosing around the instruments!'



Jessica Spratt, Geophysical Research Technician from Dublin Institute for Advanced Studies, setting up a recording box on central Baffin Island, Canada. Jessica has a BSc in geology and an MSc in geophysics