

This month we get to know Dr Philip Heath from the Geological Survey of South Australia.

1. What is your current role?

My current title is "Senior Geophysicist - Data Processing." I've worked for the South Australian Government (specifically the Geological Survey of South Australia) since 2008. At the core of my job is preparing and uploading geophysical data onto SARIG. I mostly deal with magnetics and gravity (both ground and air), as well as Airborne EM. Occasionally I head out into the field and acquire some new geophysics - usually gravity - but mostly I'm office based.

2. For how long have you been a geophysicist?

I finished honours geophysics in 2002... So let's say 17 years.

3. What are you reading at the moment?

I have just finished reading Gravity's Rainbow by Thomas Pynchon. It was arguably less about gravity and more about bombs during World War II. It did contain some mathematical formulae though so I forgive it. A great book.

4. What made you decide to be a geophysicist?

I hadn't even heard of geophysics when I started my Science degree at University! I originally wanted to be a physicist, but after the first year of University physics I fell in love with all the mathematics subjects - vector calculus became my passion - but I couldn't see myself getting a job in that. Fortunately my backup subject (geology) introduced something called geophysics which had the best of all worlds. The physics, the maths, the beer, the social aspect, and of course the field equipment. It was love at first gravity meter.

5. What's your most treasured textbook

I love them all, but Blakely's "Potential Theory in Gravity & Magnetic Applications" is perhaps my most well flipped through, alongside Telford, Geldart and Sheriff's "Applied Geophysics second edition." Kreyszig's "Advanced Engineering Mathematics" is another well-used personal favourite. And speaking of Sheriff... his Encyclopedic Dictionary of Applied Geophysics is another treasured resource.

6. **What do you do in your spare time?**

When I'm not parenting I'm a member of a public speaking club (shout-out to SA Rostrum club 32), I practice Aikido along with my kid (no I'm not a black belt), I'm a painter and pianist and am currently trying my hand at writing some fiction. I expect I should stick to the geophysics.

7. **When you are asked "What's a geophysicist??" or "What does a geophysicist do?" what is your stock answer?**

My stock answer is usually "It's my job to work out what's underground but without using a shovel." I then try and describe geophysical images as "x-rays of the earth" and if they're still paying attention I hit them with the 3D vector calculus with obligatory arm waving to simulate harmonic functions and fingers pointing in all directions to demonstrate a 3D vector field. If that doesn't scare them off I look for the nearest broom so I can gently usher them away†

†That was a joke I totally have never done that.

8. **Do you think AI will take over your job or will the human element remain vital to exploration successes?**

I can visualise AI taking over numerous aspects of my job, especially the data QA/QC process, but I feel there's a long road before we all have our own geophysics QC-bots. And things will move on. Data standards and formats change, new technology is constantly evolving. I don't know how effective futureproofing any AI we create now would be. We simply don't know what the future holds. However even if we reach full automated QC, an experienced person or persons would still be needed to oversee the process.

On the processing side, I see there will likely be some consolidation of software and greater use of open source platforms. For a long time hard rocks

geophysicists have relied on a large number of different software products, many reliant on one or two key people to develop it. I don't see this as being sustainable longer term and new generations of students are tending towards open source, more collaborative approaches.

