

## AusIMM NZ Branch – Visiting Lecturer Programme – Oct–Nov 2015

The third in the series of 2015 AusIMM New Zealand Branch Visiting Lecturers is Associate Professor Steven Micklethwaite ([steven.micklethwaite@monash.edu](mailto:steven.micklethwaite@monash.edu)) from the School of Earth, Atmosphere and Environment, Monash University, Clayton, Victoria, Australia. Steve will present a short course and lectures at several centres during October and November.

### Steven Micklethwaite Biography

Steven Micklethwaite is an Associate Professor at Monash University. He completed his BSc(Hons) and PhD at Leeds University, UK, in 2002, before moving to the Australian National University for postdoctoral and subsequent research positions. He is currently establishing the Centre for Resource Science and Technology (CReST) at Monash having held appointments in Australia's two largest minerals exploration focused research centres (CODES and CET). Trained as a structural geologist, his research now spans the tectonic to microstructural controls on fluid flow and mineralisation, as well as the application of Unmanned Aerial Vehicles to field mapping and minerals exploration. Outcomes of this research have led to the discovery of gold resources in Western Australia and the commercialisation of a fracture mechanics tool for mining, minerals exploration and petroleum reservoir management.

### Programme

The programme for Steve Micklethwaite's visit in October-November 2015 is shown below. For specific dates, times and venues for events, where they are not listed, please refer to notices that will be circulated locally or contact the relevant person listed in the Contacts and further information section at the end of this notice.

Date	Time	Presentations	Location	
Tuesday October	27 09:00-16:45	Short course (1-day)	Dunedin	GNS Science, 764 Cumberland St, Dunedin
Tuesday October	27 17:30-19:00	Lecture 1	Dunedin	Lonestar, 484 George St (upstairs in the Saloon)
Thursday October	29 10:45-17:15	Short course (1-day)	Christchurch	Golder Associates, 214 Durham St, Christchurch Central
Thursday October	29 18:00-19:30	Lecture 1	Christchurch	Golder Associates, 214 Durham St, Christchurch Central
Friday October	30 17:30-19:00	Lecture 1	Nelson	Golders, Level 3, 295 Trafalgar Street
Monday November	2 Time to be notified	Lecture 2	Hamilton	University of Waikato, location to be notified
Tuesday November	3 Time to be notified	Lecture 2	Waihi	Newmont Waihi Gold
Wednesday November	4 09:00-16:45	Short course (1-day)	Auckland	Room 201E-143, 15 Wynyard St, University of Auckland
Wednesday November	4 17:30-19:00	Lecture 1	Auckland	Campbell MacPherson offices, Level 14, 36 Kitchener Street, Auckland
Thursday November	5 17:30-19:00	Lecture 1	Wellington	Straterra, 93 The Terrace, Wellington
Friday November	6 9:00-17:00	Short course (1-day)	Lower Hutt	GNS Science, 1 Fairway Drive, Avalon, Lower Hutt

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## Short course: Introduction to Photogrammetry and Drones for Geoscientists

Photogrammetry from the ground, or from drones has undergone an unprecedented revolution in the last 5 years. We are now able to vastly enhance our field work, data quality and analysis capabilities. Simply from photographs we can efficiently generate scaled 3D models, orthorectified photomosaics and digital elevation data. Ground control points (or GPS units on board drones) enable photogrammetric models to be fully georeferenced, making such data ideal for scientists, mining geologists and mineral exploration teams. This is a hands-on course, introducing geoscientists to photogrammetry, as well as providing an outline of drones and what they are enabling us to achieve, both now and in the near future (e.g. expert-driven automatic mapping, hyperspec., mag. etc). Attendees will work with existing photographic datasets, collect and make their own preliminary 3D photogrammetric models and be introduced to methods for analysing the data or extracting orientation information quickly and easily.

The material we cover will be from the perspective of a structural geologist, but the principles will apply to many other facets of the geosciences.

You will need to bring a digital camera or DSLR, a laptop (or share one with a colleague) and some means of transferring photos to your laptop.

**PRE-REQUISITES** - download and install AGISOFT PHOTOSCAN PROFESSIONAL demo ([www.agisoft.com](http://www.agisoft.com)) and CLOUD COMPARE ([www.danielgm.net/cc/](http://www.danielgm.net/cc/)). Note, don't install AGISOFT at the last minute as it requires a license key to be sent by email.

**Short course attendance is by registration. Click [HERE](#).**

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### Lecture 1: Can drones save the Earth and our industry?

For relatively little investment drones can generate unprecedented high-resolution data in 3D, transmit real-time data (e.g. video) and sense the environment (pH, temperature, humidity, CO2 etc). We will look at just a few ways drones are being used and then explore photogrammetry as an outstanding but inexpensive method for collecting geological data in the field or mine sites. The rate of technological and computational advance is breathtaking and there is some justification to the fear that drones may replace jobs. However, I will suggest such a development will be a stupid waste of the opportunities presented before us. Instead of replacing workforce they should be used to enhance it, enabling us to do more with less, collect multi-sensor data for the full mining value chain, facilitate social license to operate and explore places we could never explore before.

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### Lecture 2: Drones and the making of the super-geo

This lecture will be a more technical version of the AusIMM Regional Evening Lecture 1 listed above.

Attendance at the lectures is free of charge, but please email your intention to attend to the relevant contact person listed below for planning of refreshments.

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### Contacts for further information

**Dunedin short course** (Tuesday 27 October): Adam Martin at GNS Science, [a.martin@gns.cri.nz](mailto:a.martin@gns.cri.nz), phone 03 479-9683

**Dunedin evening lecture** (Tuesday 27 October): Sean Aldrich, [s.aldrich@rscmme.com](mailto:s.aldrich@rscmme.com), phone 03 668 0001 or 021 708193

**Christchurch short course** (Thursday 28 October): Dean Fergusson, [dean@rarl.co.nz](mailto:dean@rarl.co.nz), phone 0274 454928

**Christchurch evening lecture** (Thursday 28 October): Dean Fergusson, [dean@rarl.co.nz](mailto:dean@rarl.co.nz), phone 0274 454928

**Nelson evening lecture** (Friday 30 October): Peter Hancock, [peter.hancock@anu.edu.au](mailto:peter.hancock@anu.edu.au), Phone: 03 541 0458

**Hamilton daytime lecture** (Monday 2 November): Shaun Barker, [sbarker@waikato.ac.nz](mailto:sbarker@waikato.ac.nz), phone 07 838 4514 or 027-937-6415

**Auckland short course** (Wednesday 4 November): Julie Rowland, [j.rowland@auckland.ac.nz](mailto:j.rowland@auckland.ac.nz), phone: 09 3737599 ext 87412, or 021 747709

**Auckland evening lecture** (Wednesday 4 November); Roger Gregg, [roger.gregg@ihug.co.nz](mailto:roger.gregg@ihug.co.nz), phone 09 634-8066, or 021 181-4843

**Wellington evening lecture** (Thursday 5 November): Tony Christie, [t.christie@gns.cri.nz](mailto:t.christie@gns.cri.nz), phone 04 570-4682

**Lower Hutt short course** (Friday 6 November); Tony Christie, [t.christie@gns.cri.nz](mailto:t.christie@gns.cri.nz), phone (04) 570-4682