



The Leichhardt Award

2015

Joan Esterle

***In Recognition of Original Contribution to
the Advancement of Coal Geology or Related
Disciplines in Queensland***



The Prussian naturalist and explorer, Ludwig Leichhardt, discovered significant “beds of coal” in the Blackwater region in 1845, en route to Port Essington in the Northern Territory. According to Leichhardt, these coal deposits were “indistinguishable from those on the Hunter at Newcastle”.

Citation

Summary of Original Contribution to Coal Geology in Queensland

Joan Esterle

- In 1992, Joan joined the CSIRO as a junior scientist in the Geomechanics Division (before it became Exploration and Mining) in Brisbane, Australia. There, Joan started in the heady days of Coal Seam Gas, but quickly moved into coal characterization for processing and utilization (in particular, the application of brightness profiles to predict ROM and product size and quality).
- In 1994, advanced to a senior scientist and group leader, developing the Coal Mine Geology Group which expanded to look at advances in coal petrology, 3D modelling and visualization of interburden for minescale geotechnical assessment, and basin analysis via industry “super models” in the Bowen Basin with colleagues Graham O’Brien, Guy Le Blanc Smith, Renate Sliwa and Joel Yago, among many others who came and went from the group.
- In 2004, went part-time at both CSIRO and University of Queensland (determined to promote coal geology in earth sciences and engineering).
- In 2008, worked with GeoGAS-Runge under the tutelage of Ray Williams to finally learn about coal seam gas for mine drainage and commercial production. During this time Joan also became involved in the early days of Fugitive Emissions estimations from coal mines.
- Since 2010 and currently, Joan is the Chair of Vale-UQ Coal Geoscience Program at the University of Queensland and has responsibility for developing and implementing the research program run from the School of Earth Sciences, St Lucia Campus. During that time she has graduated 4 PhD, 4 MSc students, and numerous Honours students. Joan currently supervises a large and externally funded group of 4 post doctoral fellows, 2 Research Fellows, 6 PhD, 4 MSc, 3 honours and 3rd year project students. Her group and lab are open hubs for visiting researchers and industry persons for scientific discussions and a place to hang out.
- Prolific author. To date, Joan has authored or co-authored 85 peer-reviewed publications (consisting of 43 conference papers, 41 journal articles and a book chapter). Most importantly, she has steered projects through the Australian Coal Association Research Program.
- Service has been through being a lifetime member of the BBGG, and the GSA Coal Geology Group.

Professor Joan Esterle is the University of Queensland’s Chair of Coal Geoscience. Her research interests are varied but focus on how geological history impacts on coal behaviour during mining, processing and utilisation. She also develops 3D models for the distribution of sedimentary strata that can be used to predict geohazards in coal mines or reservoir behaviour in conventional and non-conventional gas resources.

An example of the variety of her involvement in projects includes: Spatial variability of coal seam gas reservoirs and its impact on GHG emissions estimates (CSIRO/GeoGAS-ACARP); Building a national Solid Earth and Environment Grid Community (CSIRO/GA/Auscope); 3D Sedimentary Modelling and Geohazard Prediction for Mines (ongoing with industry partners).

In addition, Dr Esterle currently holds a part-time position with GeoGas Pty Ltd and previously worked with the CSIRO for 17 years.

1. ACARP

Joan's involvement in the Australian Coal Association Research Program has covered a wide variety of open-cut and underground geoscientific projects across the coal geology disciplines of exploration, structural geology, coal quality, geotechnical and geophysical sciences. She has been instrumental in the conception, inception, guidance and leadership of projects. A direct contribution to Geology was through the benchmark Bowen Basin Super Model project – a major review and melding of data across government and mining houses to create a contiguous 3D geological model and structural framework covering the Bowen Basin (Queensland's premier coal-producing region). Joan was the driver (team leader) of this project and primary author of the resulting seminal document. To see the gamut of ACARP projects Joan has championed and been involved with, visit the ACARP website.

2. Education

Joan has been teacher, coach, mentor, trainer, guide, challenger, advisor and gentle-cajoler to an innumerable number of students and coal geologists during her career in Queensland. Her extensive experience has enabled her to educate geoscientists across a number of experience levels from undergraduates, graduates and post-graduates, exploration geologists, mine geologists, resource modeling geologists to senior geologists and heads of department. A number of people Joan has been involved with have progressed to become prolific contributors in their own right to the body of knowledge on Queensland coal geology. In this sense, Joan has generated a multiplier affect on the contribution to coal geology knowledge in Queensland through her original contribution.

Although her focus to date has been, and still is, on the Bowen Basin, Professor Esterle has students working across Australia to understand the fundamental issues controlling coal seam behaviour.

Qualifications and Pre-Australian Coal Career

Joan Received her PhD from The University of Kentucky, USA, in 1990. After graduation, she joined the University of Canterbury as a post doctoral fellow in New Zealand, working on Meso and Cenozoic coal measures.

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