Des Fitzgerald

Grahame Sands Award

Adelaide August 2016

CITATION

This award is based on an endowment made by members of the ASEG and the geoscience profession in memory of the late Grahame Sands, who was tragically killed at the prime of his life in an aircraft crash in 1986, whilst developing and testing new equipment for geophysical survey aircraft. Because of Grahame's abilities to turn scientific theory into innovative application, the award is made for innovation in applied geophysics through a significant practical development of benefit to Australian exploration geophysics in the field of instrumentation, data acquisition, interpretation or theory.

The Grahame Sands Award for 2016 is presented to Dr Des Fitzgerald in recognition of Des' leadership and significant personal involvement in directing the development of the Intrepid Geophysical Processing System into an internationally renowned system for the processing of potential field and radiometric data.

Des graduated from the University of Melbourne in 1971 and completed his PhD in 1977. He founded Des Fitzgerald & Associates in 1978. Over the decades since that time, Des has been a great ambassador for Australian geophysics, the ASEG and his company. Des led the development of the Intrepid Geophysical Processing System, which began with an amalgamation of the successful BHP Pitts and BMR ARGUS geophysical processing systems, but under Des' leadership was developed into a world class, flexible, adaptable system to allow both GUI-based interactive and batch processing of potential field and radiometric data. The geophysics behind the software is very robust, due in no small part to Des' personal involvement in the writing and testing of the software.

As well as the Intrepid data processing system, Des has been instrumental in the development of the Jetstream data management and delivery system, which is at the core of the GADDS data delivery system used to deliver geophysical data collected by Geoscience Australia and state and territory surveys to the exploration industry. In addition, the Geomodeller software, initially developed by the BRGM (GeoFrance3D), was significantly enhanced under Des' leadership to invert geological field measurements to produce a geological model, in association with additional field geology observations. Combinations of implicit functions calculate the model from the interpreted geophysics and field geology observations. Testing and improving the 3D geology model is achieved via forward and potential field inversions.

The international success of the Des' software is testimony to the ability of the Australian geophysics industry to create solutions and a range of practical tools with universal application, making the software a major promoter of innovative Australian geophysics.

Des is generous with his time in helping students both from within Australia and overseas and with advice to practicing geophysicists and geologists. He shares his knowledge and experience in the geophysical community, regularly presenting at ASEG and other conferences, publishing numerous papers and encouraging his colleagues to publish their works. He has represented the ASEG at overseas conferences on a number of occasions. Des also chairs GeoJAG Australia, an association of companies and public sector organizations exporting a wide range of geoscience services. He was an early participant in setting up the Uncover initiative.

Des continues to bring new and innovative approaches to his software, in so doing helping Australian potential field and radiometric geophysics to flourish. He travels the world in search of new ideas and incorporates them into his software, thereby making the ideas available to Australian geophysicists. On this leading edge, Des has helped champion a 2.5D AEM solution for complete surveys, as well as a patented tensor gridding algorithm, as part of a comprehensive processing and interpretation system for vector and tensor observed gradients.

Through collaboration with Government, University and Company research organizations, Des has been able to bring new, innovative developments in geophysics to a much broader range of users through rapid development, enhancement and commercialization of new ideas.

Des is not only an excellent software engineer, he is also an outstanding geophysicist who has been able to turn scientific theory into innovative application, resulting in many internationally recognized products of practical benefit to Australian and international exploration geophysics. He is a worthy recipient of the ASEG Grahame Sands award.