NEW ZEALAND SOCIETY FOR EARTHQUAKE ENGINEERING

Life Membership

Conferred on:

Warwick Smith

CITATION:

Dr Warwick Smith has had a distinguished career at DSIR and GNS Science, ranging from traditional seismology to seismic hazard modelling and earthquake and volcanic loss modelling.

Warwick's Ph.D. studies with Professor Bruce Bolt at Berkeley involved finite-element modelling of the effects of embedded material on seismic shaking. This was one of the early applications of finite elements outside structural engineering.

Warwick was New Zealand's chief seismologist from 1979 to 1995. In this role, he was well-known to the New Zealand public from interviews on radio and television. He served on the governing council of the International Seismological Centre from 1979 to 1998. He was responsible for obtaining the first million-dollar grant from EQC to install digital seismographs and strong-motion accelerographs, a forerunner of the Geohazards project.

Warwick has been a member of NZSEE from its early days. The New Zealand Seismological Observatory produced detailed annual reports of seismic activity detected by the National Seismograph Network, from which Warwick provided regular summaries for the Bulletin of NZSEE. He was a member of the NZSEE management committee from 1977 to 1983.

He was a member of the United Nations working group on the detection of underground nuclear explosions for a period of 15 years, including meetings in Geneva. He enjoyed the irony of using part of the Rainbow Warrior reparation payments to fund a seismograph to monitor the tests at Mururoa Atoll.

The Smith and Berryman seismicity model (1983, 1986) was used in combination with response spectrum attenuation models to produce the hazard estimates that were the basis for the earthquake design motions specified in the 1992 New Zealand Loadings Standard NZS4203:1992, which remained in use until 2004. It was one of the first uses internationally of a probabilistic seismic hazard analysis as the basis for a national seismic design code. Warwick was also involved in the estimation of earthquake hazard in other parts of the south-western Pacific.

From early in his career, Warwick was interested in risk modelling, first for earthquakes and later extended to tsunami and volcanic ashfall. He developed estimates of the likelihood of earthquake shaking in New Zealand in terms of Modified Mercalli Intensity, first from a statistical study of historical intensities in New Zealand (1976) and then through developing a New Zealand-based attenuation model for MMI (2002) which he used in conjunction with his seismicity model. He progressed from there to estimates of earthquake losses in monetary terms. He applied this work for EQC and the insurance industry, and for risk management.

In these activities, Warwick has worked in an inter-disciplinary environment, collaborating with his colleagues in geology, statistics and engineering to produce research and consulting that is useful for end-users in insurance, engineering and planning. His pioneering contributions to improve the understanding of hazard and risk and to convey it to professionals in other fields and the public make Warwick a worthy recipient of Life Membership of the New Zealand Society of Earthquake Engineering.