

2014 MEDALS & AWARDS

GSA PUBLIC SERVICE AWARD

Presented to
Mark C. Quigley



Mark C. Quigley
University of Canterbury

Citation by Jarg Pettinga

It is a tremendous privilege for me to introduce Associate Professor Mark Quigley from the University of Canterbury in Christchurch, New Zealand, as the recipient of the 2014 GSA Public Service Award.

In the early hours of 4th September 2010, the Magnitude 7.1 Darfield Earthquake west of Christchurch city in the South Island of New Zealand placed Mark Quigley in a hugely challenging yet also opportunistic situation. He and his partner Candice were immediately impacted by the severe ground shaking causing significant damaging liquefaction at their home located in the eastern suburbs of the city, something repeated five times in the subsequent months as the Canterbury Earthquake Sequence continued. Yet in those first hours Mark took up the challenge, and focused on both investigating what had happened as well as providing almost immediate communication from a geoscience perspective for the local community as well as national and international audiences.

As the sequence unfolded seismic activity migrated to directly beneath and then progressively east of Christchurch city, with the many thousands of felt aftershocks occurring over a period of more than two years. This was punctuated by a number of large damaging earthquakes, including the disastrous 22 February 2011 quake. Through these difficult times, Mark made

many appearances on National TV and in the international media, providing essential commentary on what had happened and what to expect. His effective engaging style, combined with a rare ability to communicate complex scientific issues to the general audience in a credible and calming way are extraordinary skills to draw on in the immediate turmoil, fear and uncertainty following such major natural disasters. Mark quickly became the person that media organizations turned to for his pragmatic commentary and reliable information. For many months he maintained a very high work rate not only in terms of the hundreds of media commitments (TV/radio/print/internet), but also through leadership of the field research response and rapid collaborative publication of more than 20 international peer-reviewed journal articles – including several key contributions to GSA Today, GEOLOGY and GSA Bulletin. Mark wrote frequently for national newspapers, and has continued to do so, highlighting his commitment to contributing as much science as possible towards Christchurch's recovery and rebuild. When taken in aggregate, these achievements represent a truly exceptional "benchmark" effort.

Just a few brief sentences really do not reflect the enormous contribution that we are recognizing here. For example, Mark has given more than 80 public and invited keynote lectures, including one to a capacity audience of over 1000 in the Christchurch Town Hall in October 2010 and a week earlier to a capacity audience of over 700 at the university, with more than 600 having to be turned away! Mark's inspirational leadership qualities are also evident through the numerous invitations for keynote presentations to scientific, corporate and government organizations. In addition he has been involved in an advisory capacity with the Canterbury Earthquake Recovery Authority (CERA) and other local, regional and central government agencies, so ensuring that the future rebuild of Christchurch city maintains an essential focus on the geological factors that have devastated and are continuing to impact New Zealand's second largest city.

Over the last four years we have seen the emergence of Mark Quigley as not only one of our leading earth scientists, but also a leading science communicator – providing understanding, context and vision. His effective communication style, combined with a deep subject knowledge have been pivotal to providing the general public as well as local, regional and national leaders

with understanding and an awareness of the key relevance of geosciences information to explain what is happening and how this is crucial to guiding decision making with respect to the ongoing recovery and future rebuild of Christchurch city. Mark also maintains a personal website www.drquigs.com which is focused on science communication, which over the last four years has amassed over 3 million hits, and more than 50,000 unique visitors to the site.

Recognition of his outstanding contribution has come by way of the prestigious New Zealand Prime Ministers Prize for Science Communication in 2011, complemented by the award of the NZ Association of Scientists Science Communication Prize and the top Hochstetter Lecturer award by the Geoscience Society of NZ in 2012.

I'd like to include two quotes here. Firstly, one by New Zealand Prime Minister the Rt. Hon. John Key "[Mark] did an enormous amount of research in terms of Christchurch. He was communicating with people at a time when it was important that they understood what was happening in terms of the seismic activity"; and the second by Peter Griffen, Director of NZ Science Media Center, wrote, "[Mark is] one of our best science communicators. He is a scientist who understands the need for effective science communication and is willing to step up and engage with the media in the name of improving the public's understanding of science. He is a great asset to natural hazards research in New Zealand and to science communication in general".

In summary, Mark Quigley is an intuitive, natural leader and over the last four years he has become one of New Zealand's best known and respected earth scientists for his research excellence and through his clear, accurate and engaging scientific communications following the September 2010 Darfield (Canterbury) earthquake. It was no exaggeration when various media outlets started referring to Mark as a "geo-rock star"! It is with great pleasure that I introduce Associate Professor Mark Quigley as the 2014 recipient of the GSA Public Service Award.

Response by Mark C. Quigley

Thank you, Jarg. Your words mean a great deal to me because you have spent so much of your career connecting earth science with policy makers, end-users and the general public in your usual thoughtful and thorough

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manner. I have benefited immensely from your selfless and thoughtful mentorship, particularly since the 2010 Darfield and 2011 Christchurch earthquakes, when our personal and professional lives were forever diverted in ways we could not have foreseen. I am deeply humbled to share this award with you.

I would like to thank the Geological Society of America for bestowing upon me the privilege of being the first scientist based outside of America to receive this award. Indeed the challenges we face in science communication and integration into society transcend geographic and cultural borders. I needed only to read the names of previous recipients of this award to appreciate the importance of this recognition. Thank you to the GSA awards committee for allowing me the opportunity to coexist with such fine company.

I share this award with colleagues in New Zealand and abroad. Kevin Furlong was a tireless source of enthusiasm, inspiration, and encouragement throughout the Canterbury earthquake sequence. It was mutually fortuitous that a previously unknown fault waited some 25,000 years so that it could rupture on our watch. I am greatly appreciative to my colleagues and postgraduate students in the Department of Geological Sciences at the University of Canterbury for their support, encouragement, and efforts towards producing the best science we could during a difficult time. Amongst many others, I specifically acknowledge Brendan Duffy, Timothy Stahl, Eric Bilderback, Duncan Noble, and Thomas Wilson.

I spent much of the Canterbury earthquake sequence on the steep part of the learning curve and am thankful to have learned from, and collaborated with, some exceptional scientists from GNS Science. I would like to thank Russ Van Dissen, Nicola Litchfield, Pilar Villamor, David Barrell, Richard Jongens, and the late John Beavan in particular.

Much of my research and public communications could not have been conducted without the financial assistance of the New Zealand Earthquake Commission, and I am greatly appreciative of their continuing support of my work. I'd also like to thank the Christchurch Press for providing me with the opportunity to communicate effectively with the general public.

I am delighted to share this award with my family, my friends, and most importantly my partner Candice Egan, whose encouragement, resilience, and love inspired me in immeasurable ways.

Each year, approximately 150 magnitude 6 or greater earthquakes occur on our planet. Some occur in places where they do not inflict damage on our natural and built environments. Others cause numerous fatalities and billions of dollars of damage, forever changing the lives and environments of those affected.

Such events may populate global news for a day or a week, but diminish rapidly within the abyss of the constantly evolving news cycle. Certainly scientists have important roles to play in the immediate aftermath of these events, when rapid data capture and interpretation is essential for informing the emergency response, forecasting the temporal and spatial distribution of future hazards, and increasing our knowledge of earthquakes. However, the importance of science engagement and communication does not mimic Omori's Law of aftershock decay. Science is equally important after the news cameras have gone home and seismicity rates have decreased. This is when decisions pertaining to future land use are commonly made by national governments and local councils. This is when opportunities to use science to reduce societal and financial exposure to future hazards are most abundant. This is when initial trauma accompanying the natural disaster subsides and is commonly replaced by a thirst for knowledge.

It is increasingly clear that society demands more of earth scientists than seismic hazard maps or journal articles. We have learned repeatedly that pacifistic or dismissive approaches to invalid earthquake prediction claims, for example, enable the proliferation of untenable reasoning to a vulnerable public seeking certainty via hungry and fast-moving news media. Scientists must be prepared to engage quickly, transparently, and respectfully to increase public trust in science. The public can handle scientific debate if the underpinning scientific principles are explained and supporting data is publicly available. Public engagement benefits from scientists who are willing to let the public see their personal side, who share their hypotheses openly and honestly, and who explain what we do and don't know (and why we don't know it). Scientists should engage beyond the comfortable peripheries of their immediate research expertise to publicly pressure those in charge and float ideas for safer, more sustainable futures; with our skill sets, earth scientists are ideally placed to act as critics and consciences of society.

The successful acceptance and integration of science into society requires strong efforts in communication with the

general public through all media channels, just as it requires clear transparent messaging to those in charge. The hard reality is that the tasks required to force change in how councils, governments, planners and developers perceive and deal with the challenges of natural hazards are typically laborious, unglamorous, and incremental in impact. This represents a major challenge for young academics seeking tenure and promotion; time spent on writing newspaper articles, council reports and delivering public talks is time removed from writing grants and research publications. Citation metrics fail to capture the impact of non-peer reviewed media contributions, even though these messages often extend well beyond the range of our best research papers in influencing public opinion. Up skilling the media abilities of our scientists, increasing incentives for public engagement, and granting free open access with no media embargoes for all research publications that have direct and timely societal implications are all useful topics for collegial discussion. When it comes to science communication and policy engagement, all scientists are on the same team with the same common goals.