AMSI News

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Communiqué from the participants of the Maths of Planet Earth Conference

Global challenges: The vital role of maths and stats

This week, mathematicians, statisticians and scientists from the public and private sectors gathered to discuss many of the critical challenges facing our planet.

Although the time scales of these challenges are often very different, they are all materially and intellectually urgent. Along with our physical, biological and social knowledge of the planet, our mathematical skills are indispensable to progress.

The conference, led by the Australian Mathematical Sciences Institute (AMSI), brought together five government agencies, along with national and international researchers, government departments and centres of excellence.

Over five exciting days discussing new ideas, research and collaboration allowed us to examine the vital role of mathematics and statistics in areas such as

- Delaying the onset of Alzheimer's disease
- The detection of cells in terrorist networks
- Building the next generation of climate change models
- Managing the toughest biosecurity standards in the world
- Bullet-proofing the global financial system
- Modelling natural disasters to reduce human casualties

Some of the challenges we worked on are of humanity's own making and some are not, but collectively they affect our lives and those of our fellow species.

Earth system science, sustainability, financial risk modelling and management, climate change science, data mining, biosecurity, natural disaster mitigation, social policy — each of these areas is under intense development. Yet the fundamental role played by the mathematical sciences is generally unknown. Perhaps this is because the words 'mathematics' and 'statistics' do not appear once in the names of these areas, and the mathematical scientists who work in these areas are known by other titles.

The public, those learning mathematics in schools and universities and those making public policy must be made aware that mathematical scientists are pivotal to innovation.

Why is this important? Because without recognising the role of the mathematical sciences in meeting these challenges, we threaten the future supply of mathematically capable professionals able to work on current and future global challenges.

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Australia cannot afford this loss of capacity.

We, the delegates in attendance, wish to make two important points to the Australian community:

> We will strive for a safer and better understood planet through the development and application of mathematical and statistical research. As a community of scientists and professionals we have the principal responsibility for the public awareness of our work, so important for the inspiration of tomorrow's researchers.
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> Australian policy makers and governments must address declining interest in advanced mathematics and statistics in our schools and universities. All Australian children deserve to have qualified maths teachers and they should be engaged with the work that mathematically capable professionals perform, especially that which has an immediate and material benefit to the planet.

Conference partners and sponsors

I was a Monash undergraduate and took out a La Trobe PhD in 1981 in geometric mechanics and Lie groups. This was followed by a postdoc at the Institute for Advanced Study in Dublin. I've enjoyed teaching at RMIT, UNE and La Trobe. My research interests lie mainly in differential equations, differential geometry and the calculus of variations. I'm a proud Fellow of the Society, currently a Council and Steering Committee Member. I became AMSI director in September 2009.