THIS WEEK

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Diplomatic service

Government science advisers are unlikely to be specialists on the subject of a crisis, but they are key to bringing together relevant experts and disseminating the information clearly and accurately.

If all political careers end in failure, then what does that say about the scientific advice those politicians receive? Academic wisdom on tap is becoming more common in policy-making. Almost 60 years after the launch of the first Soviet satellite Sputnik startled US President Dwight Eisenhower into appointing James Killian as his nation's first scientific adviser, Killian's modern equivalents from around the world will meet in New Zealand this week for their own conference. They will, presumably, keep their mobile phones switched on.

Researchers and politicians want different things from these people. To working scientists, an adviser is one of their own who has the ear of government and has the chance to talk up the importance of science and to protect national investment in research. Politicians, however, want the stamp of peer-reviewed approval for their policies. Sometimes, they even want those policies to be based on the peer-reviewed evidence. Incidentally, none of these functions was a priority for Eisenhower, who wanted to harness domestic science to improve US economic and military prospects (see *Nature* **488,** 559; 2012).

Science advice to governments, either through the formal mechanism popular in the United States, Britain and some other European countries, or through more ad hoc systems, often takes on an emergency-response and crisis-management role. This topic is a special focus for the New Zealand meeting. On page 360 of this issue, *Nature* highlights and analyses three examples in which scientists were at the centre of a national crisis. A volcanic eruption in Iceland in 2010 grounded flights across Europe and saw the crude output of atmospheric models discussed on the front pages of tabloid newspapers. And just as that emergency started to ease, experts in the United States had to wrestle with the political, environmental and economic fallout of the fatal explosion of the BP Deepwater Horizon drilling rig and the massive oil leak into the surrounding Gulf of Mexico. Then, a year later, dozens of people in Germany were killed and hundreds more hospitalized in Europe's worst recorded outbreak of *Escherichia coli* poisoning.

Science and science advice received mixed reviews in each of these incidents. The research got there in the end: the oil spill was contained and quantified, and the source of the *E. coli* identified. Should another volcanic eruption burst through the Iceland ice — and one was threatening to as *Nature* went to press — regulators now have more refined models with which to work out the likely impact. But, too often, the scientific response to a problem is overtaken by events.

A week is a long time in politics, but it is an eternity in a crisis. Britain's response during the 2010 eruption offers a model that could be emulated elsewhere. The country's chief science adviser was able to tap into a previously developed crisis-response strategy and convene a broad panel of scientific and technical experts that included people both inside and outside government. Events still moved faster than the panel did, and key decisions were taken before the committee even met, but once the scientists gathered, they provided important advice that helped the government to decide how to respond to the developing emergency.

Communication, of course, is key. Peter Gluckman, New Zealand's chief science adviser, is hosting this week's conference and wants it to spawn a network of science advisers who can learn from past crises and call on each other for help. "We're a small country. If something happens which is not in our area it would be nice to ring up someone in Europe who has the expertise," he says. Keep those phones on, folks. ■

People power

Climate models must consider how humans are responding to a warming world.

Physics and mathematics can tell us how the Universe began, but as the cosmologist Stephen Hawking noted: "They are not much use in predicting human behaviour because there are far too many equations to solve."

The motives, needs and desires that drive human action have long resisted rational analysis. From the volatility of the stock market to fads and fashions that flare brightly and then vanish, the ability of individuals to act unpredictably has undermined attempts to model their behaviour with any level of precision.

The science-fiction writer Isaac Asimov had the right idea. If one considers a sufficiently large population of people, he wrote, then just as the mass movement of a gas can be inferred through simple calculations — whatever the individual molecules might do — so too can the future actions of a large population.

Asimov called his fictional science of predicting people's behaviour psychohistory. He used it as a central plank of his classic *Foundation* series of books. The predictions of psychohistory were more than a model, they were a set of instructions for how future societies must respond to a predictable crisis they helped to create.

In a Comment on page 365, Paul I. Palmer and Matthew J. Smith call for human adaptation to climate change to be modelled to help avert a real-life predictable crisis. Existing models of the planet's changing climate are insufficient, they argue, because they leave out the people. Omitting human behaviour from these mathematical studies, they write, is like "designing a bridge without accounting for traffic".

Societies will be different in a warmer world, they point out, and we should understand how this will unfold. It is, in essence, another feedback in the climate system, and one that should be quantified and accounted for. Perhaps another seven billion equations will need to be added to the mix. ■