

A SURFEIT OF H₂O



COUNTRIES AROUND THE WORLD ARE GOING TO HAVE TO LEARN TO DEAL WITH THE PROBLEM OF HAVING TOO MUCH WATER ON THEIR HANDS

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As many countries have been learning to their cost over the past year or so, one of the many, many downsides of global warming is the paradoxical increase in rain. The science is simple: the more the Earth heats up, the more water evaporates into the atmosphere, which itself can contain more water as it gets hotter. Inevitably, what goes up must come down, though, so we end up with more rain than we had before – at least in some places.

Dealing with an increase in rain and the resulting increase in flooding is going to be a problem for governments around the world. Some governments are more forward thinking than others, however. In Malaysia, which is no stranger to monsoons, the Earth and Sea Observation System (EASOS) has already been used to make predictions about flood risk, as Paul Drury explains on page 32. Using a plethora of geospatial information and a two-dimensional hydraulic and hydrological modelling engine, EASOS outputs dynamic live risk quantifications that can predict the effects of flooding on critical infrastructure, the number of people likely to be affected and quantifications of the expected financial impacts.

The system was used in 2017 to predict floods and then deploy disaster response teams accordingly. But its functions aren't limited to Malaysia, so could potentially be

used by other governments to do likewise.

As well as predicting when floods will occur so that populations can be warned or evacuated, governments are going to have to prepare more infrastructure for flooding. In Iowa in the US, a 20-year project is under way to construct a flood control system for the Cedar River. That will involve building permanent and removable flood walls, levees and gates along 11km of the river's banks.

But surveying that length of river and all its existing infrastructure isn't easy, as Mary Jo Wagner reports on page 28. As well as the simple problem of how to survey features that might be submerged or completely inaccessible, the company involved had a time limit on one survey – a dam would be closed for the first time ever to permit the survey – but only for four hours.

Climate change is also affecting the seas, with rising waters encroaching on all manner of structures. On page 23, Geoff Sawyer looks at how the world's lowest lying country is dealing with dredging, particularly around its valuable coral reefs, now that its hydrographic charts are becoming outdated. It turns out, however, that the Maldives' clear waters do more than attract tourists – they allow satellites to see into their depths.

I hope you enjoy the issue and find it useful in your work.

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