

Climate change may boost Middle East rainfall

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The prospect of climate change sparking food and water shortages in the Middle East is less likely than previously thought, with new research by an Australian climate scientist suggesting that rainfall will be significantly higher in key parts of the region.

Recent projections from the Intergovernmental Panel on Climate Change (IPCC) raised fears that storm activity in the eastern Mediterranean would decline this century if global warming continues on present trends. In turn, that would have reduced rainfall by between 15 and 25 per cent over a large part of the so-called Fertile Crescent.

This is land encompassing parts of Turkey, Syria, northern Iraq, and north-eastern Iran and the strategically important headwaters of the Tigris and Euphrates rivers.

When University of New South Wales Climate Change Research Centre researcher Dr Jason Evans analysed the IPPC projections, he found that the region's agricultural base faced significant challenges as a result. About 170,000 square kilometres of viable rain-fed agricultural land would be lost; a longer dry season would limit grazing on rangelands; and changes in the timing of maximum rainfall would force farmers in northern Iran to change cropping strategies and even crop types. The results are to be published in the journal *Climatic Change*.

But the IPCC projections were based on the results of global modelling of climate change, which tends to obscure smaller-scale regional effects.



"The global models are good for investigating what's likely to happen on a planetary scale but the resolution is quite coarse when looking at a more localised regional scale," says Dr Evans. "It's a bit like enlarging a digital photograph until it becomes pixellated and all sorts of detail is blurred out."

"Simulating the climate of the region is a challenge for climate models, due in part to the high natural inter-annual variability, the topography of the region - which includes multiple mountain ranges and inland seas and the presence of a slight cooling trend in recent decades despite the global trend being a warming."

So in a second far more detailed study, to be published in the Journal of Hydrometeorology, Evans used regional climate modelling specific to the Middle East, and the result was very different.

It emerged that while storm activity over the eastern Mediterranean would indeed decline, moisture-bearing winds would be channelled inland more often and diverted by the Zagros Mountains, bringing an increase of over 50% in annual rainfall to the Euphrates-Tigris watershed.

"We need to confirm this result with other models, but a 50 per cent increase in rainfall in such an important agricultural area is a much more hopeful scenario than a 15 per cent decline," says Evans.

Source: University of New South Wales

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