



Photo by Jock Darragh, WEMO.



## Climate change increases fire risk

NIWA scientists, working with colleagues from Scion (previously Forest Research Institute), are predicting that the risk of rural fires will increase with climate change over the rest of the century. This is particularly so in the Bay of Plenty, Wellington, Nelson, and in the east of both islands from Gisborne to Wairarapa and Marlborough to Canterbury. These findings are contained in a report to the Fire Service Commission.

Currently, there are about 3000 rural fires a year, burning about 7000 ha of land. Dangerous fire weather results from a combination of strong winds, high temperatures, low humidity, and seasonal drought. The drier, windier weather expected with climate change will lead to easier ignition, faster fire spread, greater

areas burned, and increased fire suppression costs and damage. Increased frequency of drought will lead to longer fire seasons, greater fuel availability, increased fire intensities, and increased resource requirements and more difficult fire suppression. There are also likely to be more thunderstorms with attendant lightning, though some of these risks may be offset by increased rainfall.



Photo by Jock Darragh, WEMO.

## and drought risk

In many eastern parts of the country, drought is a major natural hazard. The 1997–99 drought in Canterbury cost \$230 million at the farm gate alone.

In a major study, just released, our climate scientists outline four scenarios which span many of the most plausible projections for climate change in New Zealand. All of the scenarios result in increased drought risk in already drought-prone areas.

The report defines severe drought as the current 1-in-20 year drought. Under a ‘low–medium’ scenario, by the 2080s

severe droughts are projected to occur at least twice as often in many drought-prone eastern areas. Under a ‘medium-high’ scenario, some areas could experience severe droughts more than four times as often.

We also expect droughts to get longer. Under a ‘medium-high’ scenario, in dry eastern regions, pasture could start to dry out about a month earlier in spring by late this century.

The report was produced for the Ministry for the Environment and the Ministry of Agriculture and Forestry. The full report, including detailed maps, is available at [www.climatechange.govt.nz/resources/reports/drought-risk-may05/](http://www.climatechange.govt.nz/resources/reports/drought-risk-may05/)

## not to mention floods

But don’t assume more droughts and forest fires means fewer floods. Our climate change research suggests parts of the country may get more instances of very heavy rainfall, even where it gets drier overall.

## Putting numbers on Westport flood risk

Each year, there's a 2% (or 1 in 50) chance that 4.6% of Westport could be more than shin deep in water. There's a 1% (or 1 in 100) chance that 18.4% of the town could have more than 200 mm of water through it.

These findings are from the final phase of a major flood hazard project for the Buller District Council.

The council will use the 2% 'annual exceedence probability' (1-in-50 year) floods to assess minimum floor building levels for compliance with the Building Act. The more extreme, 1% annual exceedence probability (1-in-100 year) flood simulations will be used to identify the key points where floodwaters could enter the town. One of the suite of reports we prepared for the council outlines options to protect Westport from the 1% floods, including the approximate location, length, and height of stopbanks.

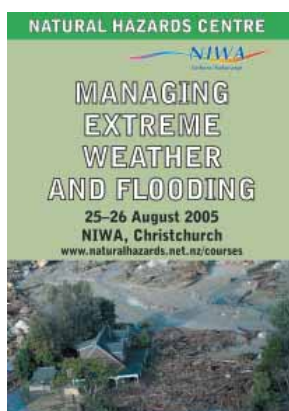
'We were pleased with the interaction that developed with NIWA during the course of the work', says the council's regulatory services manager, Terry Archer. 'We would be happy to endorse NIWA's flood inundation modelling expertise in future.'



Rintoul Street, Westport, during the 1970 flood.

## Managing extreme weather & flooding – short course

Learn how weather systems develop and the extent of the resulting hazards posed by wind and rainfall. Hear about hydrological processes and how to assess the associated flooding risks. The course includes practical presentations, hands-on group projects, and an extensive field trip covering various approaches to hazard mitigation. You even get the chance to try your hand at weather forecasting.



when: 25–26 August  
where: NIWA Christchurch  
who: anyone involved in resource or hazards management

Further information and registration forms can be found at:  
[www.naturalhazards.net.nz/courses](http://www.naturalhazards.net.nz/courses)

or phone Warren Gray on 0-4-386 0332

## The township that looked like a tsunami hit it

May's heavy rainfall in the Bay of Plenty was phenomenal. Tauranga had its wettest month in more than a century, experiencing two floods.



During the 17–18 May floods, the coastal township of Matata was badly hit. A torrent of floodwater, mud, rock, and debris raced out onto the alluvial fan, devastating the township. The official rain gauge at Tauranga airport recorded a massive 347 mm of rain in 24 hours. We calculate the amounts of rain accumulated over 2 to 24 hours at Tauranga airport occur there on average once every 150 years or even more rarely. This 'average recurrence interval', however, does not mean Tauranga is guaranteed a reprieve till 2155, but that we might see events like this six times in 1000 years. The next one could turn up next year.



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