



## CLIMATE CHANGE: A GUIDE FOR LAND MANAGERS

### REGIONAL SUMMARY

# Effects and impacts: West Coast

#### KEY EFFECTS

- Warmer winters, reduced frequency of frost and a longer growing season.
- Increased average precipitation in the main divide which would increase river flows throughout the region.
- An increase in frequency and intensity of high rainfall events which could increase flood risk, already high in many parts of the region.

#### KEY CHANGES

- The greatest gains are likely to arise from possible increases in pasture productivity due to higher temperatures and increased carbon dioxide (CO<sub>2</sub>) in the atmosphere.
- The greatest losses are likely to arise from a possible increased flood risk.

The South Island's West Coast will become wetter, particularly in winter and spring. Average annual temperatures are likely to rise by about 1.0 °C by mid-century and 2.0°C by 2100.

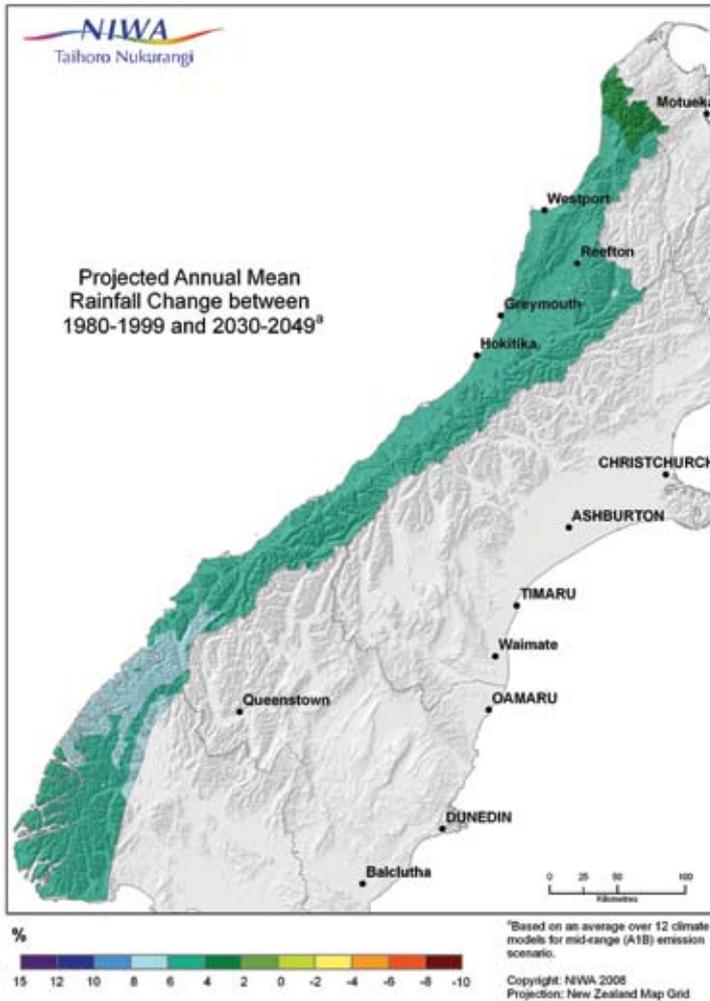
#### LIKELY IMPACTS AND OPPORTUNITIES

- Higher temperatures will generally be of benefit to pastoral farming throughout the West Coast.
- Changes in pasture composition could take place, particularly in the north of the region, with a potential increase in the incidence of sub-tropical pasture species such as paspalum.
- Animal health may be affected over time, particularly with warmer and more humid conditions in the north of the region.
- It is likely that plant pests will become more of a problem with higher temperatures and increased rainfall.
- West Coast communities are located along narrow coastal and river strips beneath mountain ranges; hence they are very exposed to increased risks of storms, flooding and landslides. The projected increased rainfall may pose a more immediate threat to those farms without any flood protection works and to those farms that may not be able to afford to maintain/improve existing flood protection works.
- Higher rainfall will increase the risk of problems with soil management such as compaction and nutrient run-off.
- Increased rainfall will have consequences for local and regional infrastructure including: land drainage; flood protection; culverts and bridges, and erosion control.

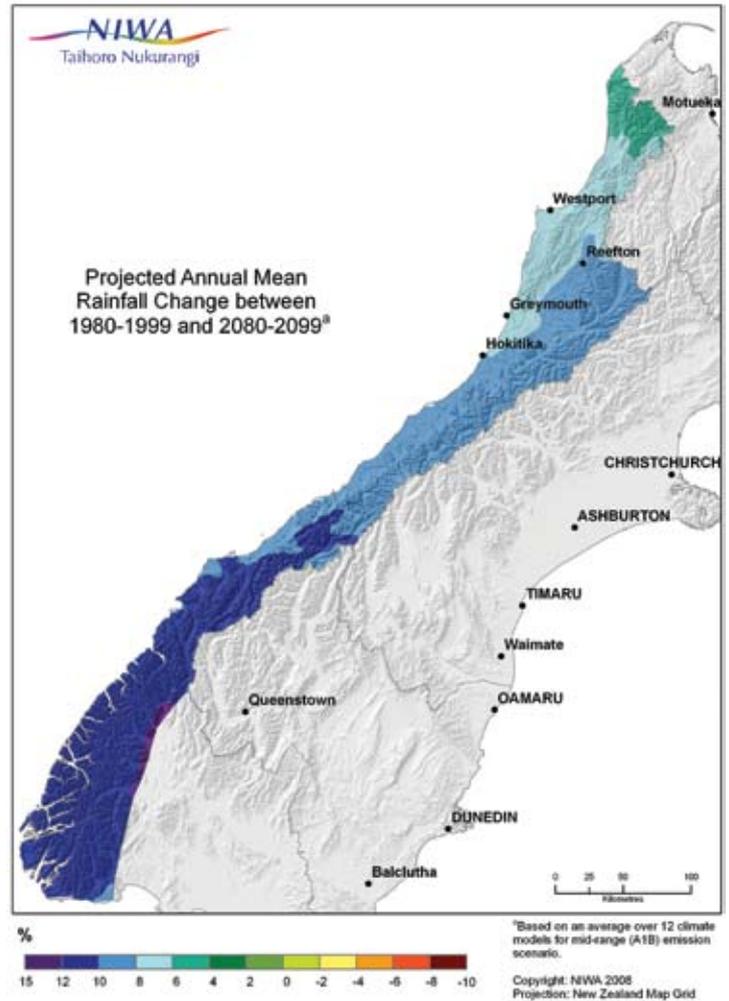


## ANNUAL AVERAGE RAINFALL

The maps below show the projected trend in annual-average rainfall that could be expected by 2050 and 2100, compared to the average for 1980–1999.



**2050:** Fiordland annual rainfalls increase by 6–8 percent by mid-century, Westland rainfalls by 4–6 percent, and northern Buller rainfalls by less than 4 percent.



**2100:** Rainfall in the southwest increases by more than 10 percent, with an 8–10 percent increase in Westland.

## RANGES OF UNCERTAINTY IN TEMPERATURE AND RAINFALL PROJECTIONS

In the table below, the first number in each case is a mid-range estimate of what the change will be and the figures in brackets give the modelled range within which the change could lie. Mean [lower, upper].

For example, the average summer temperature on the West Coast is likely to increase by 2.2 °C by 2090, but estimates of the expected temperature increase range between 0.9 and 5.3 °C.

CHANGE IN TEMPERATURE °C	SUMMER	AUTUMN	WINTER	SPRING	ANNUAL
<b>WEST COAST</b>					
2040	1.0 [ 0.2, 2.4]	1.0 [ 0.2, 2.1]	0.9 [ 0.2, 1.8]	0.7 [ 0.1, 1.7]	0.9 [ 0.2, 1.8]
2090	2.2 [ 0.9, 5.3]	2.1 [ 0.7, 5.0]	2.1 [ 0.6, 4.9]	1.7 [ 0.4, 4.5]	2.0 [ 0.7, 4.9]
<b>CHANGE IN RAINFALL %</b>					
<b>HOKITIKA</b>					
2040	0 [ -22, 19]	3 [ -13, 18]	1 [ 1, 24]	5 [ -1, 18]	5 [ -2, 20]
2090	-1 [ -44, 32]	3 [ -28, 26]	21 [ 5, 52]	8 [ -11, 46]	8 [ -5, 31]

### SOURCE

Ministry for the Environment (2008). *Preparing for climate change: A guide for local government in New Zealand*.

## SOURCES

### MINISTRY OF AGRICULTURE AND FORESTRY

[WWW.MAF.GOV.TZ](http://www.maf.govt.nz)

- *The EcoClimate report: Climate change and agricultural productions* (2008). Available on the Ministry of Agriculture and Forestry website [www.maf.govt.nz/climatechange](http://www.maf.govt.nz/climatechange)
- Kenny, G (2008) *Adapting to climate change in the kiwifruit industry*. Available from [www.maf.govt.nz/climatechange](http://www.maf.govt.nz/climatechange)

### MINISTRY FOR THE ENVIRONMENT

[WWW.MFE.GOV.TZ](http://www.mfe.govt.nz)

- *Preparing for Climate Change: A guide for local government* (2008). Available from [www.mfe.govt.nz](http://www.mfe.govt.nz); Ref: ME534
- *Climate Change: Impacts on New Zealand* (2001). Available from [www.mfe.govt.nz](http://www.mfe.govt.nz); Ref: ME396
- *Likely impacts on New Zealand agriculture* (2001). Available from [www.mfe.govt.nz](http://www.mfe.govt.nz); Ref: ME412

- *Regional summaries of climate change*; Available from [www.mfe.govt.nz/issues/climate/](http://www.mfe.govt.nz/issues/climate/)
- *Climate change effects and impacts assessment: A guidance manual for local government in New Zealand* (2008). Available from [www.mfe.govt.nz](http://www.mfe.govt.nz); Ref: ME870

### OTHER

- *The International Global Change Institute's CLIMPACTS programme: Examining the sensitivity of the New Zealand Environment to Climate Variability and Change*. Available on the University of Waikato website [www.waikato.ac.nz](http://www.waikato.ac.nz)
- *Adapting to climate change in eastern New Zealand* (2005). Published by Earth Limited.org on their website [www.earthlimited.org](http://www.earthlimited.org)

## FOR MORE INFORMATION

- For general information on climate change for land-based sectors visit the Ministry of Agriculture and Forestry website [www.maf.govt.nz/climatechange](http://www.maf.govt.nz/climatechange)
- For more information on climate change in New Zealand visit [www.climatechange.govt.nz](http://www.climatechange.govt.nz) or the Ministry for the Environment's website [www.mfe.govt.nz/issues/climate](http://www.mfe.govt.nz/issues/climate)
- For more information on animal health visit [www.biosecurity.govt.nz/regs/animal-welfare](http://www.biosecurity.govt.nz/regs/animal-welfare)
- For more information on insect and plant pests and diseases visit [www.biosecurity.govt.nz/pests/surv-mgmt](http://www.biosecurity.govt.nz/pests/surv-mgmt)
- For a popular guide to the IPCC reports, visit the website of the United Nations Environment Programme [www.grida.no/publications/climate-in-peril](http://www.grida.no/publications/climate-in-peril)
- Information on droughts, floods and emergencies, land and water resources, irrigation practices and adverse events can be found in the Rural New Zealand section of the MAF website [www.maf.govt.nz](http://www.maf.govt.nz)
- Information on projects under MAF's Sustainable Farming fund targeting climate related issues can be found in the Sustainable Farming section of the MAF website [www.maf.govt.nz](http://www.maf.govt.nz)
- Your local council may also have information on climate change. Visit [www.localcouncils.govt.nz](http://www.localcouncils.govt.nz) for a list of council websites.

The following websites provide a range of resources and publications related to climate change adaptation.

## INDUSTRY

- Dairy NZ [www.dairynz.co.nz](http://www.dairynz.co.nz)
- Fert Research [www.fertresearch.org.nz](http://www.fertresearch.org.nz)
- Foundation for Arable Research [www.far.org.nz](http://www.far.org.nz)
- Horticulture NZ [www.hortnz.co.nz](http://www.hortnz.co.nz)
- Meat and Wool New Zealand [www.meatnz.co.nz](http://www.meatnz.co.nz)
- NZ Kiwifruitgrowers Inc. [www.nzkgi.org.nz](http://www.nzkgi.org.nz)
- NZ Forest Owners Association [www.nzfoa.org.nz](http://www.nzfoa.org.nz)
- Organics Aotearoa NZ [www.oanz.org.nz](http://www.oanz.org.nz)
- Sustainable Winegrowing New Zealand [www.nzwine.com](http://www.nzwine.com)

## CROWN RESEARCH INSTITUTES

- AgResearch [www.agresearch.co.nz](http://www.agresearch.co.nz)
- GNS [www.gns.cri.nz](http://www.gns.cri.nz)
- Landcare Research [www.landcareresearch.co.nz](http://www.landcareresearch.co.nz)
- NIWA [www.niwa.co.nz](http://www.niwa.co.nz)

**THIS REGIONAL SUMMARY IS ONE OF EIGHT FROM THE RESOURCE PACK: CLIMATE CHANGE: A GUIDE FOR LAND MANAGERS. TO VIEW OTHER MATERIAL IN THIS RESOURCE PACK VISIT [WWW.MAF.GOV.TZ/CLIMATECHANGE](http://WWW.MAF.GOV.TZ/CLIMATECHANGE) OR PHONE 0800 CLIMATE TO REQUEST A HARD COPY.**

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