2012–13 drought: a summary

Overview:

During the 2012–13 summer months, most of New Zealand sweltered under record or near record sunshine, while much of the North Island got less than half their normal seasonal rainfall.

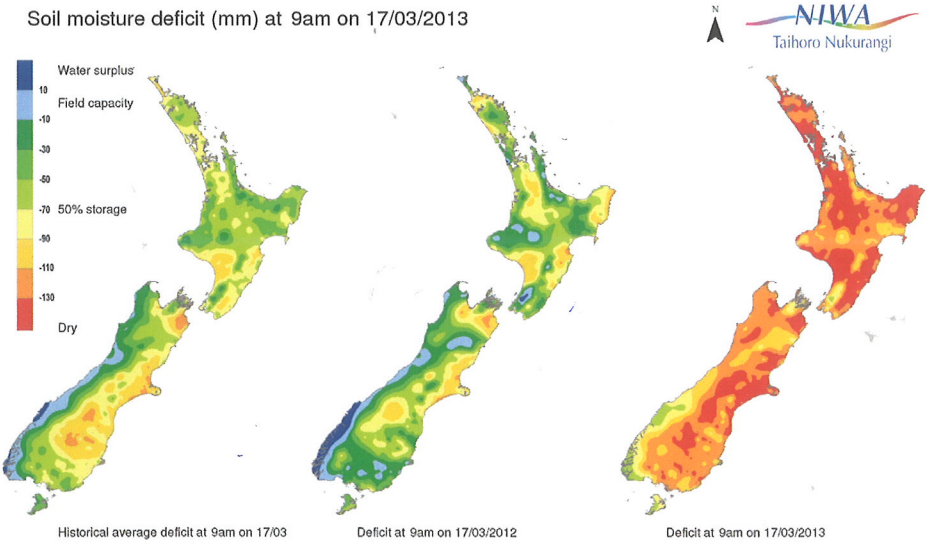
The long dry spell was caused by slow-moving, 'blocking' high pressure systems that sat over the Tasman Sea and New Zealand, steering rain-bearing weather systems around them.

As a result of this dry spell, on 27 February the Minister for Primary Industries declared a drought event for Northland and North Auckland. On 6 March the Minister added South Auckland, Waikato, Bay of Plenty and Hawke's Bay to the event, and then on 15 March the entire North Island was declared to be experiencing "a medium-scale adverse event due to drought". A week later, the drought was extended to include the Buller and Grey Districts of the South Island.

Was the 2012–13 drought the worst on record?

NIWA analysis shows that the 2012–13 drought was one of the most extreme on record for New Zealand. For parts of southern Northland, Auckland, Waikato, Bay of Plenty, Hawke's Bay and the west of the South Island, the 2012–13 drought was the worst in 40 years, more severe even than the 2007–08 Waikato drought. In Hawke's Bay, it was second only to the devastating 1997–98 drought. In Marlborough and North Canterbury, it was less severe than in 1997–98 and 2000–01. However, this drought was one of the most widespread in New Zealand – only the dry of 1972–73 (Wairarapa, Tasman, Otago and Southland) came close to its geographical spread.

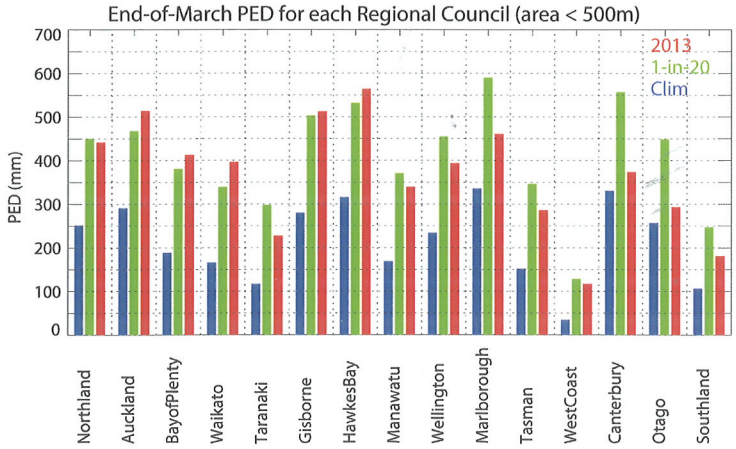
In some locations, the Potential Evapotranspiration Deficit (PED) index – a measure of combined soil moisture loss to transpiration by plants and evaporation – confirms the driest conditions in 70 years or so.



Soil moisture deficits on 17 March, close to the height of the drought. Red shading indicates deficits greater than 130mm.

Ministry for Primary Industries
Manatū Ahu Matua

NIWA
Taihoro Nukurangi



The Potential Evapotranspiration Deficit for each regional council at the end of March 2013.

New Zealand droughts typically break in autumn. Well above normal rainfall occurred in Waikato, Bay of Plenty, Manawatu and the upper South Island in April 2013. By the end of April, soils had been recharged with water throughout much of New Zealand.

What caused the 2012–13 drought?

The immediate cause of the 2012–13 drought was the persistence of slow-moving or 'blocking' high pressure systems over the Tasman Sea and New Zealand over the summer season. The reason for such persistence will need further research. In this particular instance, the El Niño-Southern Oscillation was in its neutral phase and was not a factor.

Who is responsible for officially declaring an area in drought?

The Minister for Primary Industries has powers to declare medium-scale or large-scale drought events. The Minister is unlikely to declare localised events, but local authorities can under some Local Government legislation. The Ministry of Primary Industries' (MPI) role is to assess the impact and scale of any potential adverse event affecting rural communities and the primary industries and, if appropriate, to support the Minister in declaring a medium or large-scale event. MPI has a team of regional policy analysts, who have networks of local contacts and monitor developments.

Was the 2012–13 drought caused by climate change?

The 2012–13 drought cannot be categorically linked to climate change, but NIWA's modelling indicates that droughts are likely to become more frequent, and more severe, in eastern and northern parts of New Zealand in coming decades. For example, a drought in eastern or northern New Zealand with a one-in-20 year return period based on data from 1971 to 2000 may occur twice, or even four times, as often by the end of this century.

How does a drought end?

A drought ends when soil moisture levels return to more normal levels. However, the impacts will continue for some time. For example, if a farm has destocked, it will take some time – several years – to build breeding stock numbers back up again. It's the Minister's decision as to when the official drought declaration is lifted and recovery support measures will end. MPI's assessment includes: pasture cover, levels of available feed, soil moisture deficits and the general ability of farmers to manage their way out of the drought impacts. The Minister has indicated that current measures will end on 30 September 2013, which ensures that affected areas have recovery support through winter and early spring.

For NIWA's latest seasonal climate outlooks and monthly climate summaries, visit www.niwa.co.nz/our-science/climate.

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