

Hydrology Case Study

Northland drought 2009-2010

During mid 2009 the National Institute of Water and Atmosphere (NIWA) climate scientists advised that an El Niño weather pattern in the Pacific Ocean was expected to intensify and persist through to the autumn of 2010.

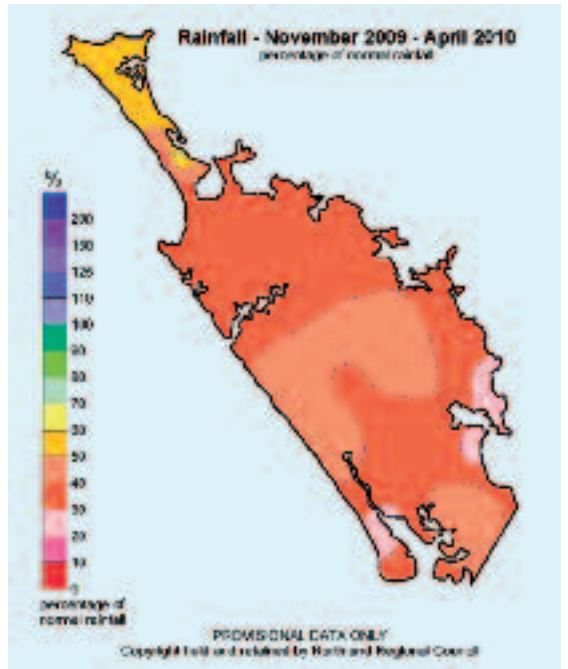
This El Niño began as a weak event in spring 2009, and then strengthened during October and November. Low spring and summer rainfalls occurred in the east of Northland between Kaitiāia and Whāngārei.

During early December the Northland Regional Council issued more than 600 letters to consent holders taking water from bores, streams and lakes. These advised users of potential water shortages and restrictions and the need to conserve water, monitor usage and plan for alternative supplies.

The Government declared Northland a medium level drought zone in January 2010.



Dry pastures Hikurangi swamp hills.



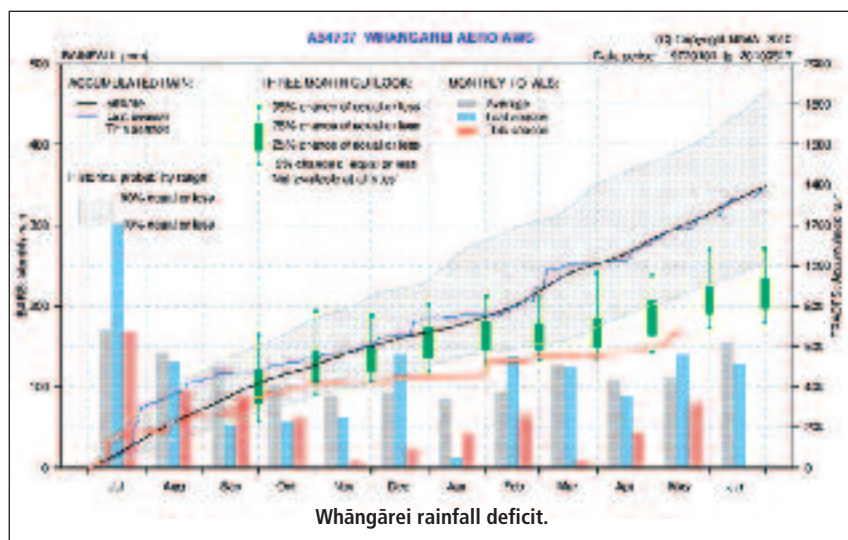
Drought progression

Rainfall amounts from November 2009 to April 2010 were only 300mm along the eastern coast of Northland (normally 800mm), the lowest rainfall amount for this period in 90 years. The regional rainfall deficit over the six month period was 400mm.

Soil moistures dropped in response to low rainfall and the warmer temperatures and river flows steadily declined in most catchments. Rivers in the Far North and eastern areas were at their lowest flows in 40 to 50



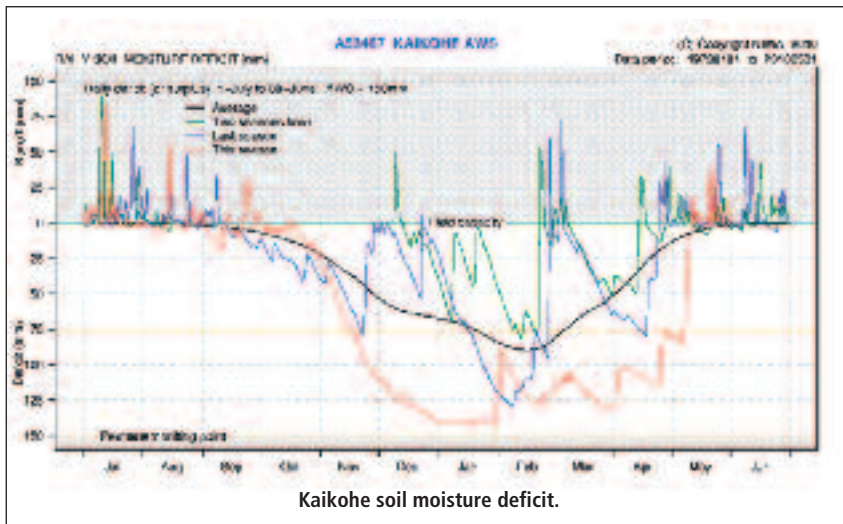
Northland Regional Council Kaitiāia Area Manager Peter Weissing in the drought-affected Awanui River.



Whāngārei rainfall deficit.



Lake Owhareiti.



Source: NIWA

Drought 'broken'

The drought was 'broken' when significant rain fell during the first week of May. Water shortage directions were cancelled and water restrictions were lifted. By the end of May 2010 many parts of Northland had received double the May average rainfall resulting in improved river flows and an increase in soil moisture.



Dry cracked pasture.

Impacts on Northland

The effects of the drought were severe and widespread. The economic cost of the drought on Northland has been estimated to be over \$300 million, production loss from dairy and livestock farming was the major contributor. Other impacts included:

- Poor pasture cover, stock feed shortages;
- Poor condition of stock and animal health problems;
- Water supply shortages - rural, urban and irrigation;
- Stress, health and welfare;
- Financial losses and hardship;
- Extreme fire risk; and
- Environmental and ecological stress.

Even though the drought has broken, the impacts are still being felt across Northland. Costs of re-stocking and winter feed, lower lambing/calving, water stress impacting tree health and next season's harvest are just a few of the ongoing impacts of the drought.



Filamentous algae in the Awanui River.

years. Many irrigators had to stop taking water from rivers because the levels were so low.

Severe drought conditions continued throughout April in areas of the Far North and central and eastern Northland. Water restrictions were enforced in the Far North areas during January. The water level in Whāngārei's Whau Valley Dam was only 45% full at the end of April.

Water restrictions were placed in Whāngārei City and Whāngārei Heads areas in April. The fire risk remained high, with a total fire ban in force across Northland throughout the summer.

Northland was not the only region suffering – during early April medium level drought conditions were declared in Rodney, Papakura, Manukau and Waikato districts.

Drought management

A Northland Drought Committee was established in January 2010, led by Rural Support Trust Northland. The committee provided advice and support to farming families affected by the drought. Information on welfare (social and animal), finance and communications was provided via workshops, a 24/7 0800 phone line and the Regional Council's website. Agricultural recovery facilitators were available.

The Northland Regional Council provided water management advice, monitoring and reporting to major water users and the public and managed consent compliance.

More than 400 river and stream flow measurements were carried out, mainly related to consent compliance monitoring of 459 water takes. Other monitoring included incident investigations and mediation as well as water quality monitoring. Weekly situation reports were compiled by the Northland Civil Defence Emergency Management Group (CDEMG).

District Councils were responsible for public water supply, demand management and water conservation strategies. All three District Councils – Far North, Whāngārei and Kaipara – were warned of the pending water shortage in December 2009 and encouraged to plan appropriately.

River levels in the Awanui, Tirohanga and Hātea Rivers dropped below the consented level, which is the level that the District Councils are normally required to stop taking water. The Resource Management Act allows a water shortage direction to be issued in extreme conditions where natural surface water flows are insufficient to meet the requirements of existing users – mainly for public water supplies.

The Northland Regional Council issued four water shortage directions during the drought. This allowed the District Councils to continue to take water from specific rivers to ensure public water supply.