



Traditional Māori Weather and Climate Forecasting

Over the centuries, Māori have developed an extensive knowledge of weather and climate. The lessons learnt have been incorporated into traditional and modern practices of agriculture, sailing, fishing, and conservation.

NIWA's Māori Environmental Research Centre – Te Kūwaha o Taihoro Nukurangi – in collaboration with iwi from across Aotearoa New Zealand, initiated a pilot project in 2005 to explore Māori knowledge of weather and climate variability and change. The project documented an intimate understanding of local weather and climate conditions, including the use of a vast indigenous nomenclature for local weather and climate phenomena, the oral recording of weather- and climate-based events and trends, and the identification of environmental indicators to forecast weather and climate.

This poster shows a selection of traditional indicators used by Māori from across Aotearoa New Zealand to forecast weather and climate. While the indicators are of most use in their respective localities, many of them are shared by different iwi in other locations. Often more than one indicator is used to forecast for the day, month, or season ahead. While modern methods of weather and climate prediction have demonstrated significant skill and continue to improve, there remain opportunities to enhance our understanding of local weather and climate prediction through the application of Māori knowledge.

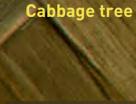
Weather

Weather is the day-to-day state of the atmosphere, varying from minute to weeks (i.e., what you see out of the window each day and over the next few days).

Name	Indicator	Expected outcome	Iwi/Region
 Kārearea Falcon	1. The kārearea screams in a fine day 2. The kārearea screams on a rainy day	1. It will rain the next day 2. It will be fine the next day	Ngāpuhi Taitokerau
 Pūkeko Swamp hen	Pūkeko head for higher ground	Imminent storm and flooding	Ngāti Wai Taitokerau
 Kākā Native parrot	Kākā begin acting up, twisting and squawking above the forest	A storm is on the way	Ngāti Pare Hauraki
 Ruru Morepork	The shrill cries of more than one ruru can be heard at night	Rainfall is approaching	Ngāti Pare Hauraki
 Ngā ngaru Waves	The sound of breaking waves up the valley	Approaching rainfall and inclement weather in expected	Te Roroa Taitokerau
 Pakakē Sea kelp	The furling and unfurling of hanging kelp	Rainfall or storm is expected	Ngāti Wai Taitokerau
 Rāwaru	Stones in the belly of the fish	Bad weather is coming	Ngāti Koata Te Taiuhi o te Waka
 Moehau Mt Moehau	Large cloud on top of Moehau	Heavy rainfall is imminent	Ngāti Pare Hauraki
 Whakaari White Island	1. The plume lies to the left 2. The plume flattens and the end breaks off	1. Rainfall is expected 2. Watch out, extreme weather is expected	Te Whānau-ā-Apanui Tairāwhiti
 Te Rā Sun	1. A vivid halo encircles the sun 2. A pale and dim halo encircles the sun	1. A storm is approaching 2. A storm is far away	Ngāi Tūhoe Mātaatua
 Kōhara Lightning	Lightning flickering above the horizon	The side on which the flashes were strongest was a sign of the direction from which the wind would come	Kāi Tahu Te Wai Pounamu
 Mangoroa Milky Way	1. Mangoroa is curved 2. Mangoroa is straight	1. Bad weather is in prospect 2. Fine weather is expected	Kāi Tahu Te Wai Pounamu

Climate

Climate is the synthesis of weather, averaged over longer periods from months to years, and even centuries (e.g., this year it was colder than normal).

Name	Indicator	Expected outcome	Iwi/Region
 Pīpīwharau Shining cuckoo	The return of pīpīwharau	The beginning of warmer weather	Ngāti Pare Hauraki
 Kūaka Godwit	The arrival of kūaka	The season of warming has begun	Ngāti Tūhoe Mātaatua
 Matuku-hūrepo Bittern	The continuing cry of the bittern as it moves around at night	A season of floods will follow	Ngāti Ruanui Taranaki
 Kōtuku Heron	The heron are plentiful in summer	Gales and a heavy winter will follow	Kāi Waewae Te Tai Poutini
 Puahou Five finger	1. The lower branches blossom first 2. The top branches blossom first	1. A warm, bountiful season will follow 2. A cold, unproductive season will follow	Ngāti Awa Mātaatua
 Pōananga Clematis	Periodic blooming	A warm season lies ahead with gentle breezes	Te Whānau-ā-Apanui Te Tairāwhiti
 Pōhutukawa	1. Flowering starts on upper branches and progresses downwards 2. Flowering starts on lower branches and progresses upwards	1. A cold winter-like season will follow 2. A warm and pleasant season lies ahead	Te Arawa Wairariki
 Ti kouka Cabbage tree	Early and profuse flowering	A long, hot summer follows	Kāi Tahu Te Wai Pounamu
 Pareārau Jupiter	The shimmer of Pareārau is light and misty	A wet month follows	Te Whānau-ā-Apanui Te Tairāwhiti
 Marama Moon	1. The moon is lying on its back 2. The moon is standing upright	1. A dry month lies ahead 2. A wet month lies ahead	Te Whānau-ā-Apanui Te Tairāwhiti
 Autahi Canopus	1. The rays of Autahi shine towards the south 2. The rays of Autahi shine towards the north	1. Rain and snow will follow 2. The season ahead will be mild and warm	Ngāi Tūhoe Mātaatua
 Matariki Pleiades	1. The stars of Matariki appear wide apart 2. The stars of Matariki appear to be close together	1. Warmer temperatures and plentiful season expected 2. Cooler temperatures and lean season expected	Ngāi Tūhoe Mātaatua

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