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# Meteorological Service of New Zealand Limited

## Strengthens Weather Watch

*New Zealand's National Meteorological Service selects Vaisala to install first dual polarization weather radars in the country.*

On the evening of 1 June 2010, torrential rainfall caused flash-flooding in Whakatane, a city in New Zealand's Bay of Plenty. While this was well managed by local agencies, the event highlighted the challenge that New Zealand's highly variable weather poses to its residents, businesses and tourists.

For MetService, New Zealand's National Meteorological Service, the country's rugged topography and geographical isolation make weather forecasting a difficult task. As part of an initiative to provide warnings of localized, short-term severe weather, MetService commenced a five-year,

\$12 million program of upgrades and expansion to its weather radar network in 2007.

### Valuable Information for Severe Weather Forecasting

By emitting pulses of microwaves and measuring the return, weather radars sense the location and intensity – and in some cases, the velocity – of precipitation echoes. This information is highly valuable for weather forecasting, particularly when severe weather is either possi-

ble or occurring. Weather radar data is also used by road maintenance and aviation authorities, for example, to ensure safe road and air traffic.

MetService invited leading weather radar suppliers to participate in a competitive tender process for the weather radar expansion project. Two factors tilted the balance in Vaisala's favor.

Firstly, MetService already used weather radar systems provided by Sigmat Inc., a weather radar signal processor company that was acquired by Vaisala in 2006. Vaisala's strong expertise in weather radars turned out to be the second crucial factor. The MetService considered





Vaisala an innovative company with high quality weather equipment, and saw great benefits in choosing weather radars that would seamlessly integrate with their existing data processing systems.

Developed in collaboration with leading universities in the United States and Finland, Vaisala's weather radars are designed to meet the most demanding requirements. Furthermore, the offered dual polarization capability provides more detailed information on precipitation, distinguishing between variations in precipitation type and providing more accurate rainfall estimates.

### More Detailed Information, More Accurate Warnings

The first Vaisala Weather Radar WRM200, the new dual polarization C-band magnetron Doppler weather radar, was installed in October 2009 on Mahia Peninsula, on the east coast of New Zealand's North Island. This filled a significant gap in MetService's radar network.

The Mahia radar has a range of 300 kilometers, enabling it to monitor weather systems over the Pacific Ocean immediately to the east of the North Island, as well as over its eastern and central parts.

MetService radar meteorologist John Crouch says the dual polarization capability of the new radars has provided forecasters with a lot more information about weather systems, particularly discrimination between liquid and frozen precipitation within clouds, raindrop size, and super-cooled water droplets that can cause aircraft icing problems, leading to better and more accurate warnings.

### Operational Reliability Above Expectations

In 2010, a second Vaisala WRM200 was installed at Mamaku in the Bay of Plenty. Together with the Mahia radar, this has enabled MetService to extend its Severe Thunderstorm



### Optimized Dual Polarization Performance

Vaisala's weather radar product family consists of a complete offering of Doppler C-band weather radars, signal and radar control processing technology, and related software and services. The heart of the product family is the dual polarization capability, for which the whole line was originally developed. All hardware and software have been optimized to work as an integrated system to provide the best possible data quality.

Dual polarization technology ensures more detailed information on precipitation, distinguishing between variations in precipitation type and providing more accurate rainfall estimates.

Warning Service to most of Gisborne, Hawke's Bay, Bay of Plenty, Taupo and Rotorua. All in all, the dual polarization radars have proven valuable in enhancing data availability and quality.

New Zealand's rugged terrain makes servicing the equipment a difficult task, which means that the reliability of the equipment is extremely important. The Vaisala WRM200 provides real-time remote motoring and fault diagnostic capabilities, which has reduced the need for site visits thereby lowering maintenance costs. What's more, the Mahia and Mamaku radars have performed nearly without a fault since their installation.

Happy with their experiences with Vaisala, MetService has strengthened the co-operation and signed an agreement for weather radar installation in Westland in 2011 and another in Northland in 2012. These are now in the planning stage with one to be located in the far north of the North Island and the other the west coast of the South Island.

#### Further information:

[www.vaisala.com/en/meteorology/products/weatherradars](http://www.vaisala.com/en/meteorology/products/weatherradars)