



Aviation MET Symposium Oct 2021

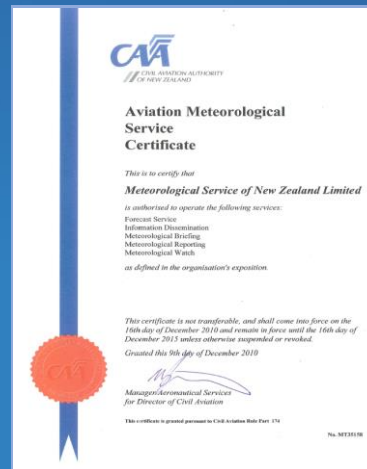


Introduction

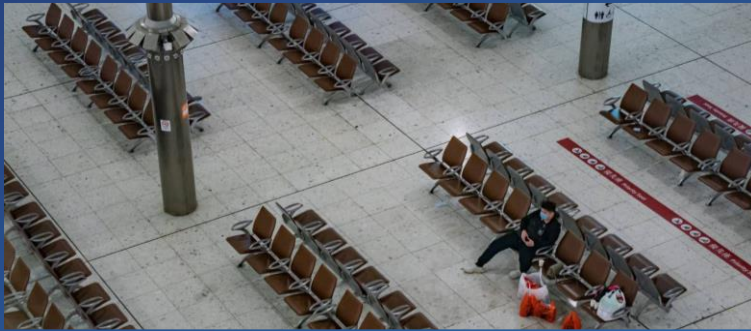
- **Aviation Overview - Painting a picture .**
- **Reporting Services - Aerodrome Observations, Weather Radar, Lightning Detection.**
- **Forecasting Services - Collaboration, Meteorologist value.**
- **Products and Partnerships – Future of Weather**
- **Forecast R&D - Future Direction.**
- **Resilience.**



Aviation overview painting a Picture: Ray Thorpe General Manager Aviation Business



Still looking Forward not Backward



Down ↓ with regards to \$\$



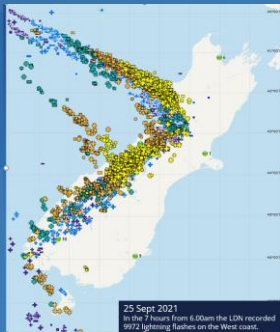
but still ↑ Up with regards to Supporting Industry

Painting a Picture
Customer/Industry
engagement

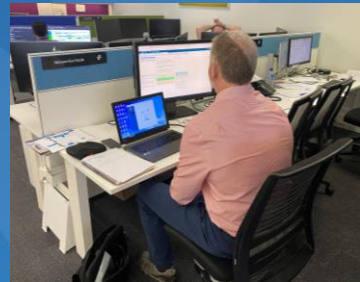


- Relationships & Partnerships
 - Aeroport collaboration
 - Air NZ flight keys migration
 - Customer engagement
- Research & Innovation
 - Point Specific Forecasts
 - New / emerging opportunities – e.g. UAV & Aerospace
 - NZ Defense Force
- Forecaster Transition
 - Formalise forecast consultancy service
 - New & enhanced user products - Wind/Seaer Forecast & QNE Automation
- Resilience
 - Aviation MET Data Resilience
 - Decommission of legacy systems
- Sustainability
 - Aviation Charging Model
 - Enhancements - Market refresh & products

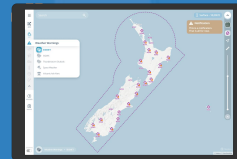
Observation
Networks
reporting services



Forecasting
services



New Platforms
Products in a data
driven world



R & D Future Direction



Resilience



What our customers are saying

What should be the highest priority right now?



Focus Areas Short and Medium Term

Relationships & Partnerships

- Aeropath collaboration
- Air NZ flight planning system integration work
- Customer engagement (ATSG, NSS, BARNZ, Aviation NZ, QMUG, Flight Training, Airports, ATM)

Research & Innovation

- New /emerging technologies
- NZ Defence Force
- Aerospace & eVTOL/UAV

Forecaster Transition

- Forecaster consultancy service
- Automation Mid Level SIGWX, new Wind Shear Forecasts & QNH Automation

Resilience

- Aviation MET Data Resilience
- Decommission of legacy systems

Sustainability

- MetFlight replacement
- COVID and Environmental Challenges

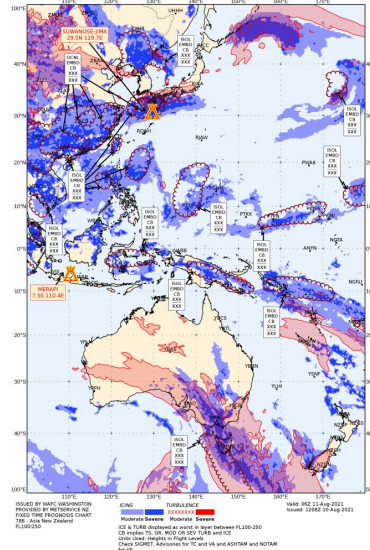


Walking the walk

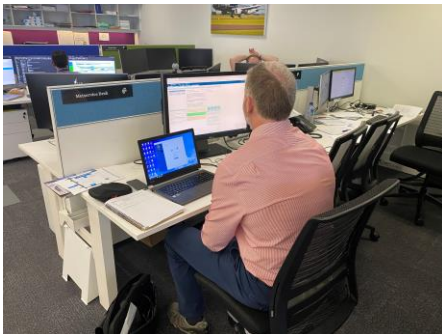


Increased **user engagement** through the Aviation Transformation Services Group supplemented by NSS

Improved **data quality & visualisation** to deliver value-add to customers as well as gaining **forecaster efficiencies** through automated SIGWX charts



Systems Migration and Relocation
Seabridge House, Level 2, 110 Featherston St
with choice based working



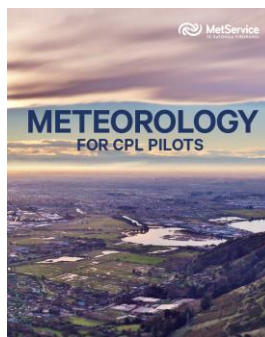
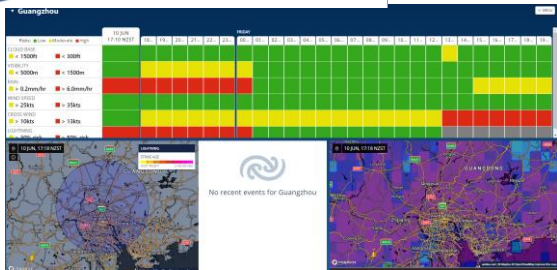
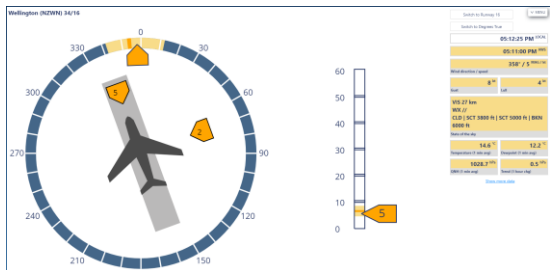
Positive feedback from embedded forecaster trial with Air NZ demonstrated the value of providing **tailored solutions** to meet customer needs supported by continuation of embedded forecaster consultant in the Aerospace sector and our training meteorologist at AFB Ohakea.



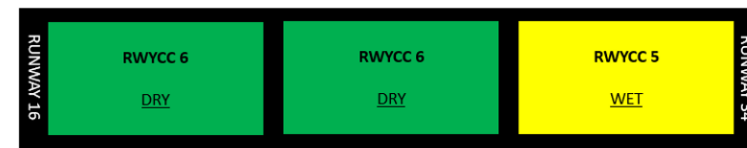


Strategic relationships maintained and on-going collaboration with NWS's, regulators and industry groups

Enhancements to MetOps to facilitate better Collaborative Decision Making and retiring legacy systems. **Education material** - revised and new PPL CPL Met Training manuals



Collaboration and Aviation Partnerships



NZWN 04121607 16 6/6/5 100/100/100 NR/NR/02 DRY/DRY/WET



Completed all planned New Southern Sky deliverables

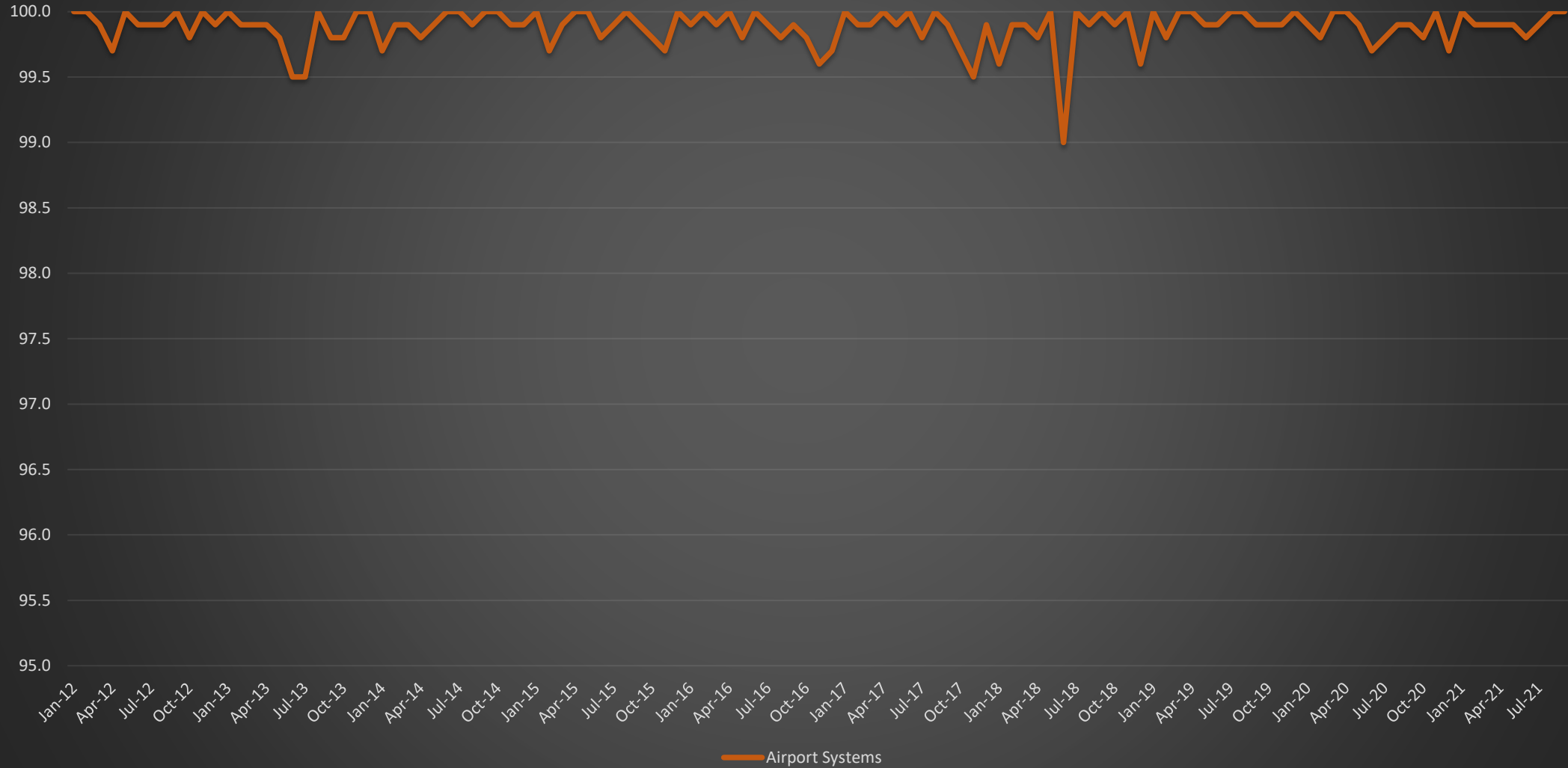




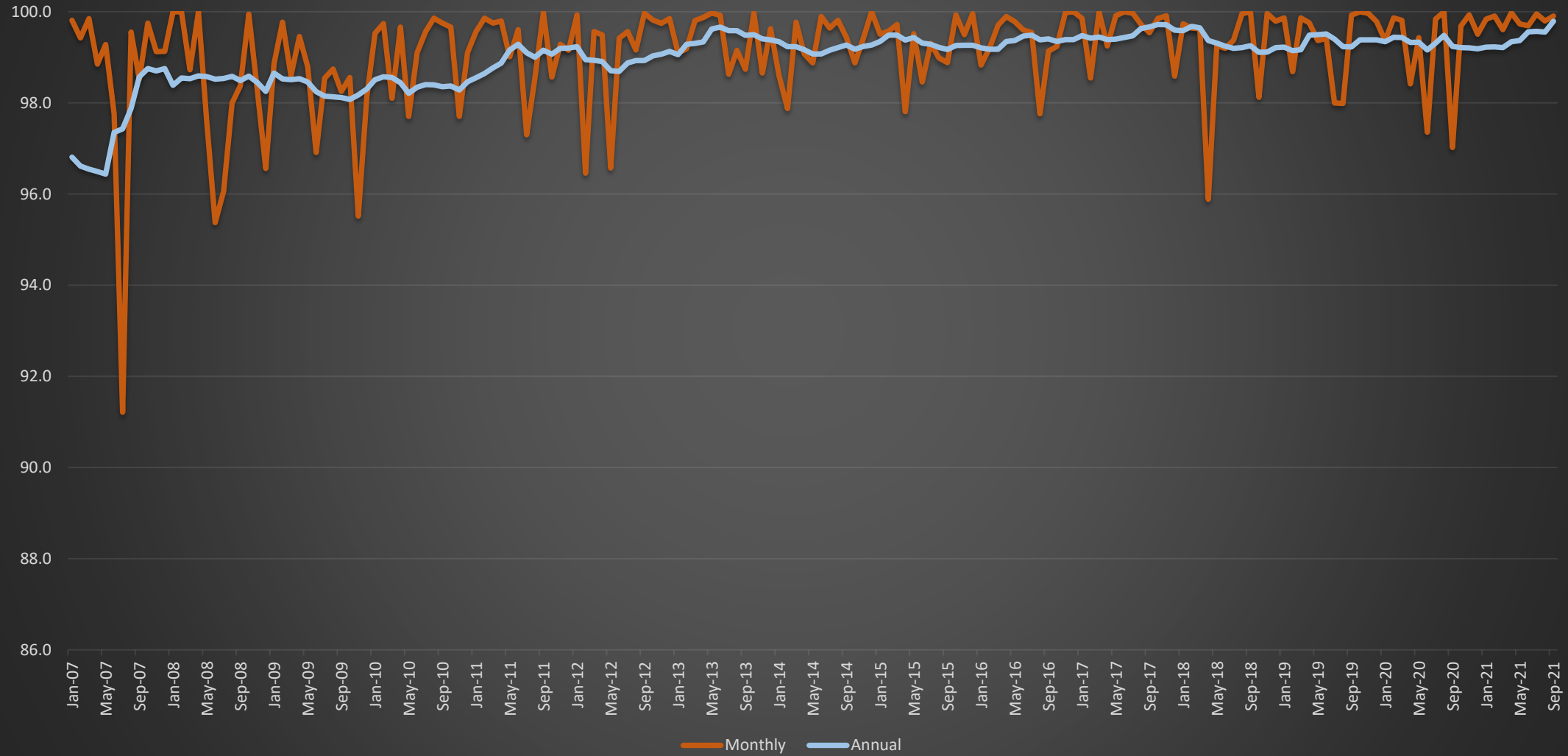
Reporting Services : Kevin Alder Manager Met Data Services

- AWS / Weather Radar Network Performance
- Lightning Network Upgrade
- Wellington Radar Upgrade

Airport Automatic Weather Station Performance 2012 - 2021

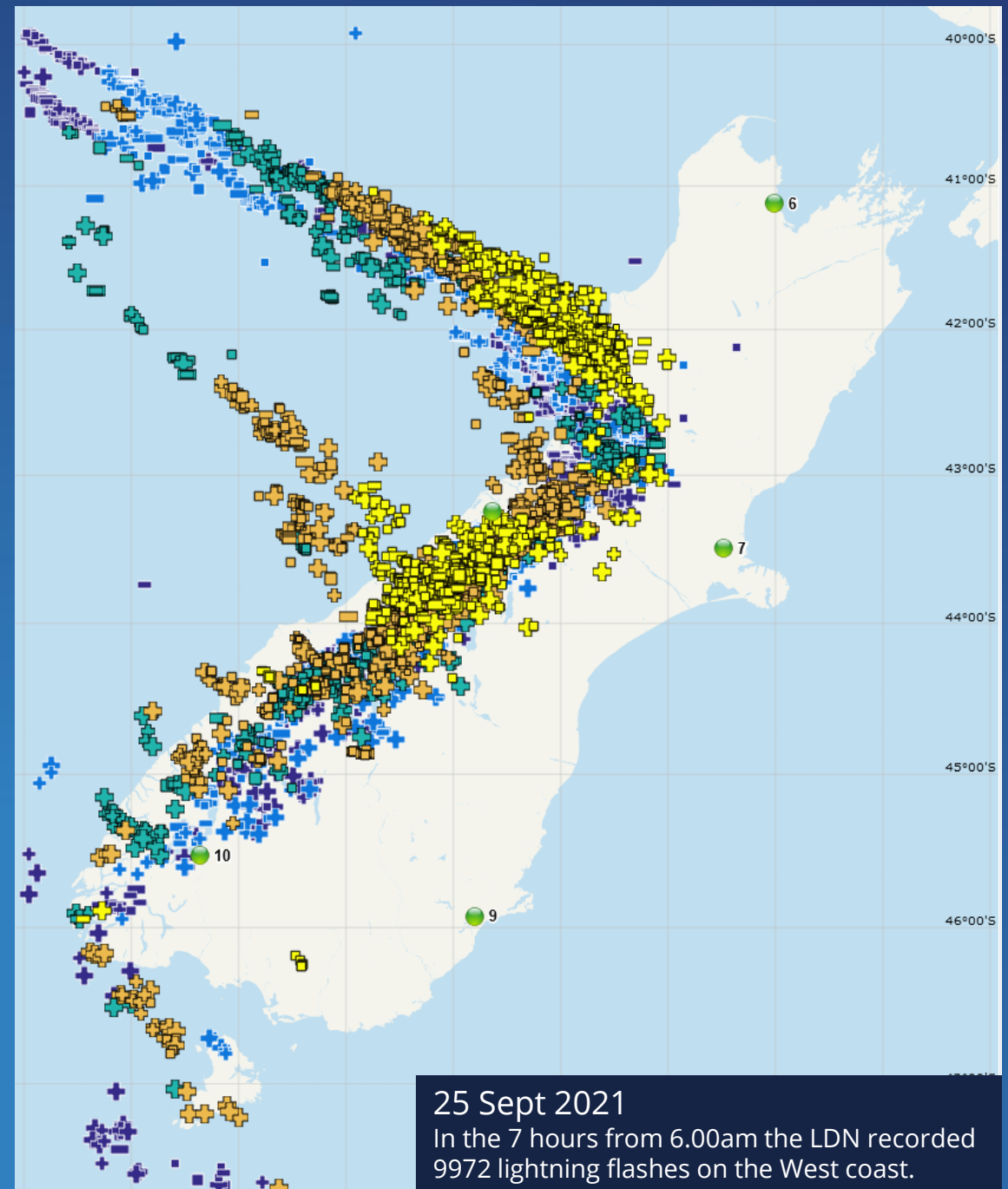


Weather Radar Network Performance 2007 - 2021



Lightning Detection Network Improvements

- A significant upgrade to the National Lightning Detection network was completed in June 2021.
- New software features have improved the output from the network, with better location accuracy and vastly improved detection efficiency, particularly of cloud-cloud lightning.
- Similar upgrades overseas have resulted in a four-fold increase in the detection of Cloud-Cloud lightning events.
- Data from the network are used to enhance METAR AUTO reporting, and Lightning products are available through a range of our platforms.



Wellington Weather Radar

Project: Upgrade the Wellington Weather radar at Outlook Hill, 13 km W of NZWN. Budget \$2.3M

Scope:

- Strengthening of the existing tower.
- Removal of the radome and radar hardware.
- Installation of a new dual polarised doppler weather radar receiver, transmitter, antenna and radome.

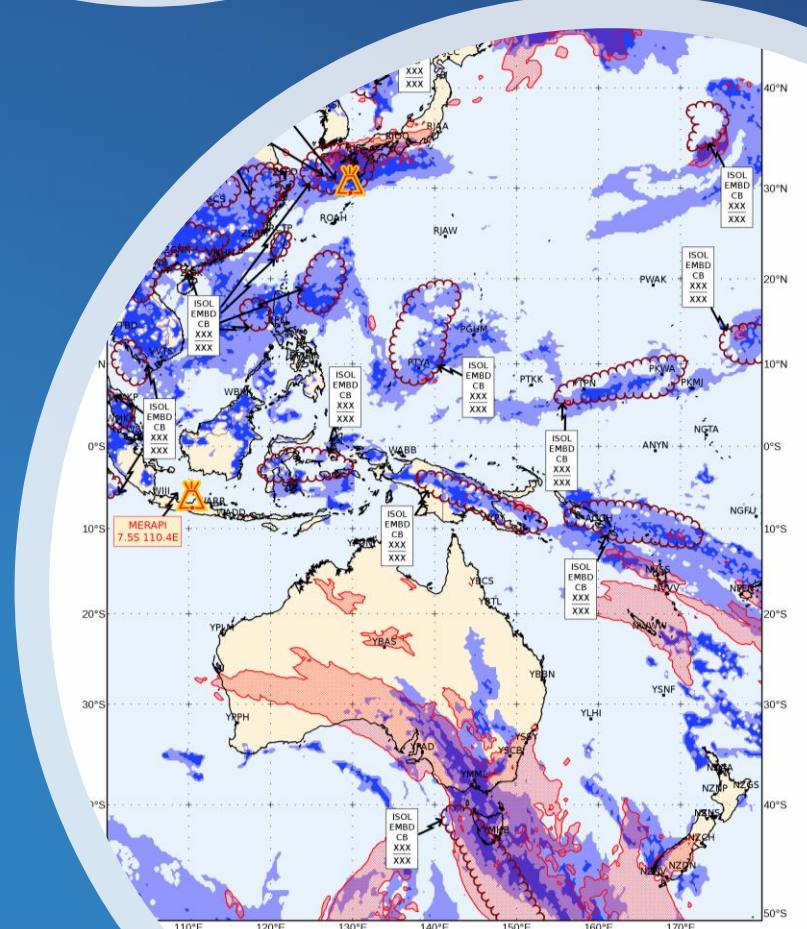
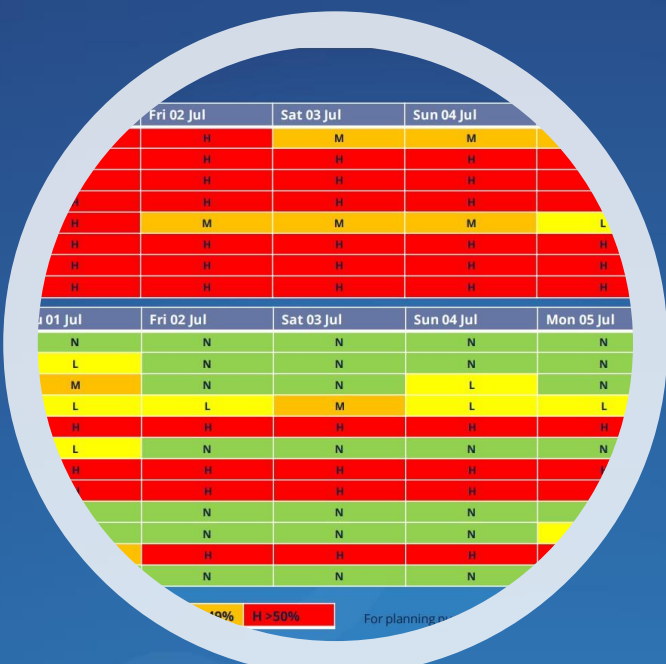
Site works are scheduled for March - May 2022.

Radar products will be unavailable during the installation phase (6-8 weeks).





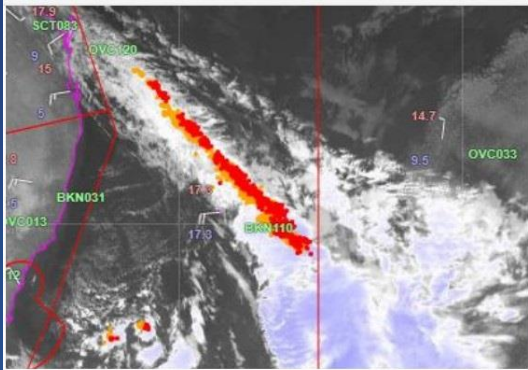
Forecasting Services : Marcel Roux
Manager Aviation Weather Services



Connecting with our Meteorologist

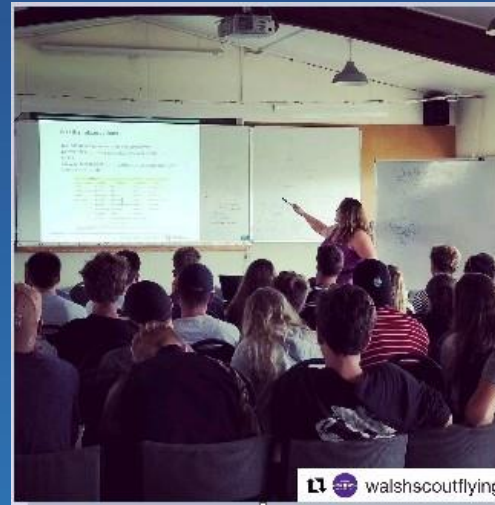
How our meteorologists connect

Day to day



Good morning NZ Met, we have just renewed TS SIGMET H05 over northern Tasman Sea. Its approaching FIR boundary and may need SIGMET coverage within an 1 hour. Lord Howe Island recorded 48kt gusts as the squally line went across.

Contextual



VAAC Collab NZ/AUS [SEC=UNCLASSIFIED] Chat Files Meeting Notes Whiteboard Polls +

VAAC Wgn 02/09/2021 7:45 pm
Hey VAAC Darwin, hopefully you've heard that we've got some maintenance going on overnight tonight and will be asking you to take over VAAC Wellington for us shortly as backup for the duration. We actually have an active VAA tonight! So we'll need a little more detailed handover than usual. We're expecting our maintenance outage to begin around 11Z and hopefully should be over around 14Z. If all goes well you won't have to issue anything because the next issue of our VAA is expected just after 15Z.

VAAC Darwin 02/09/2021 7:49 pm
Good evening, hope you are well. Thanks for the information, all noted. is the duty VAAC forecaster tonight, we will stand by for further instructions when closer to 11Z.

VAAC Wgn 02/09/2021 8:12 pm
Excellent. We'll want the takeover message in effect by about 10.50Z because its one of the checklist items needed before our tech guys can start their work :) I'm happy to brief any time between now and then, a phone or teams call might be best otherwise I'll be here all night typing out too much info!

VAAC Darwin 02/09/2021 8:13 pm
No worries. Lets say 10:30Z for a Teams conversation here?

VAAC Wgn 02/09/2021 8:15 pm
Perfect

VAAC Darwin 02/09/2021 8:15 pm
Would you have any monitoring capability left during outage period 11Z-15Z?

VAAC Wgn 02/09/2021 8:17 pm
Yup absolutely. The problem is that the outage will kill visual weather!

VAAC Darwin 02/09/2021 8:18 pm
OK. Will ring you/chat at 10:30Z

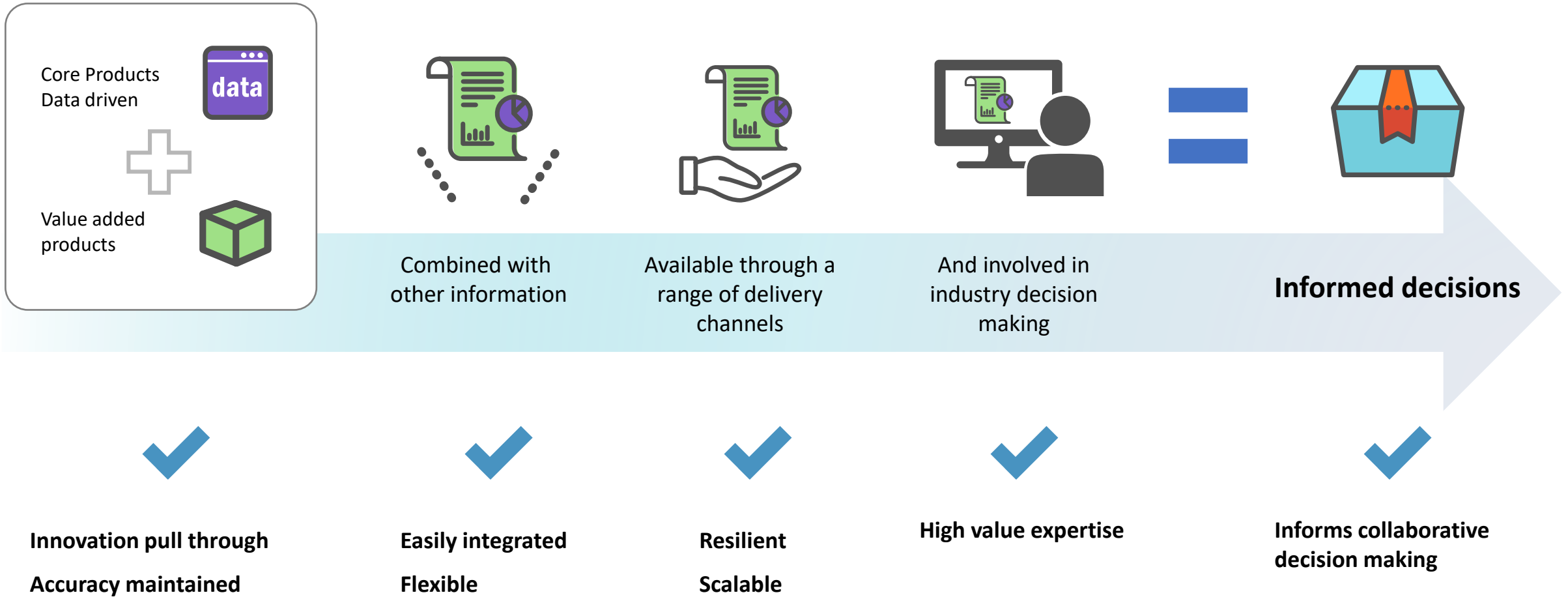




Future of Weather

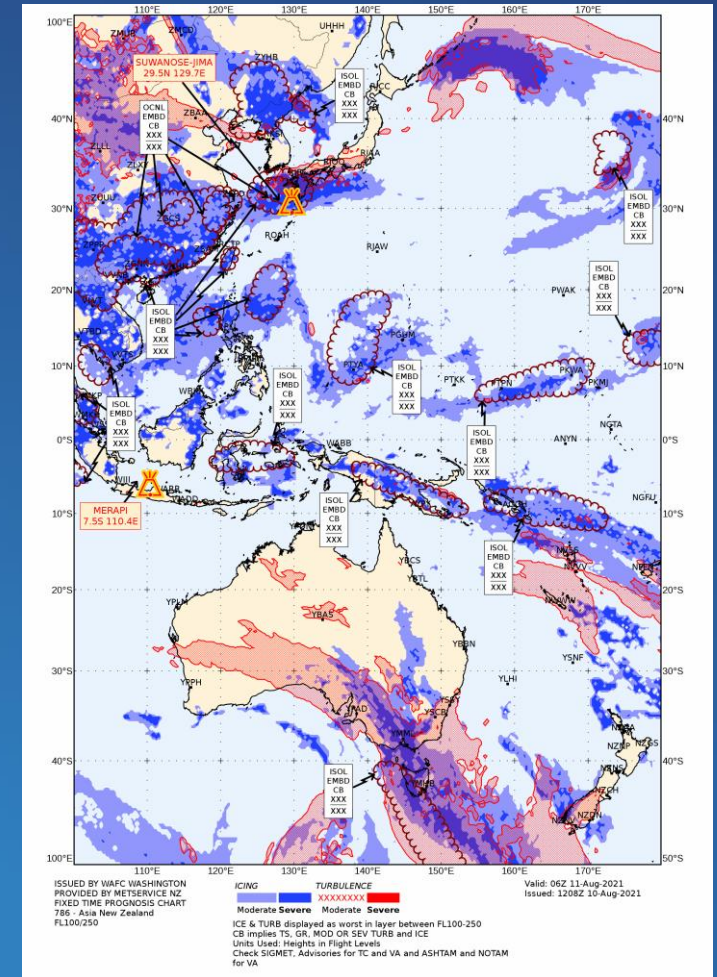
Amy Dreverman - Aviation Solutions Delivery Manager

Future Solutions Framework



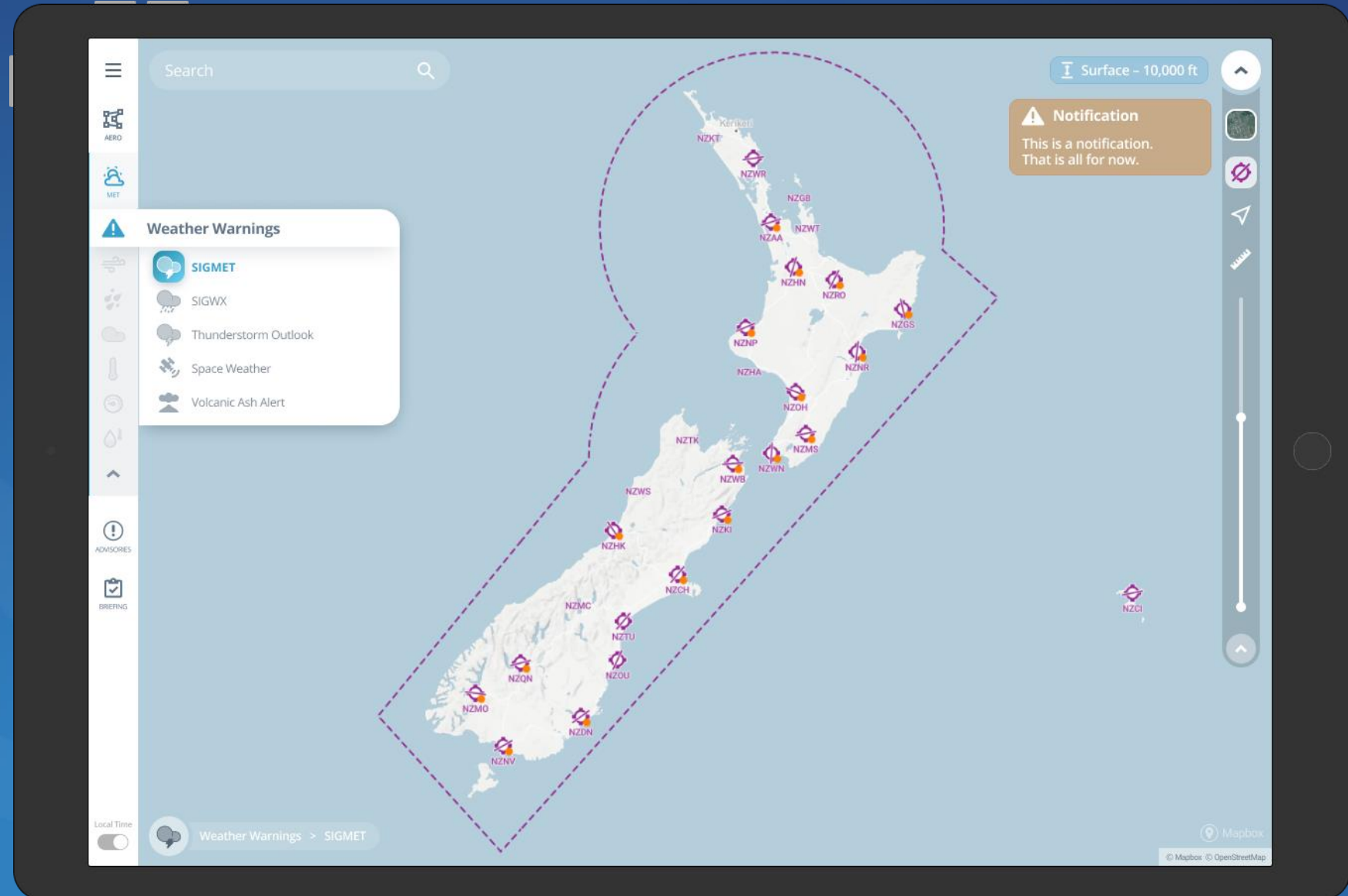
Future of weather

- Making use of enhanced data sets
 - New SIGWX Charts
- Easily consumable data EG IWXXM, JSON
 - APIs allow flexible integration with customers systems
 - Aeropath partnership
 - Electronic Flight Bags
 - Flight Planning systems
 - Bridge the gap between weather data and customer impacts
- High value forecasting expertise
 - Automation allows forecasters to focus on what really matters
- Research and innovation is key to adding value and meeting requirements for emerging technologies such as UAVs
- Collaboration with users
 - Ensure development of products that are fit for purpose

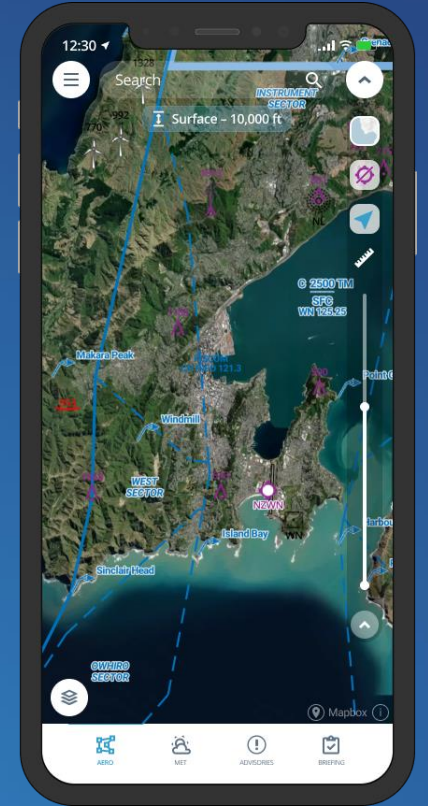
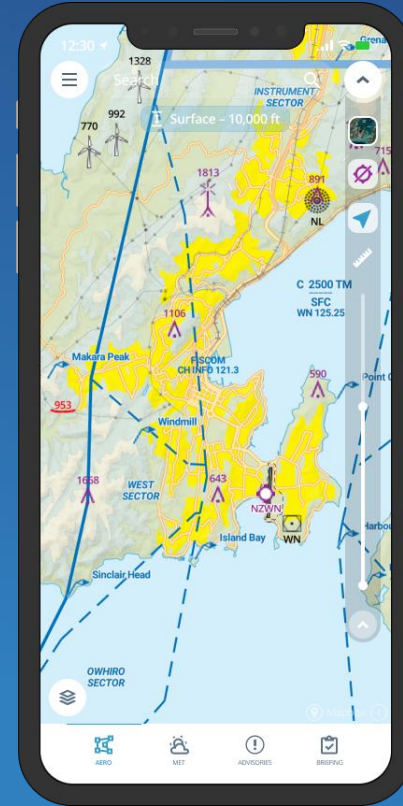
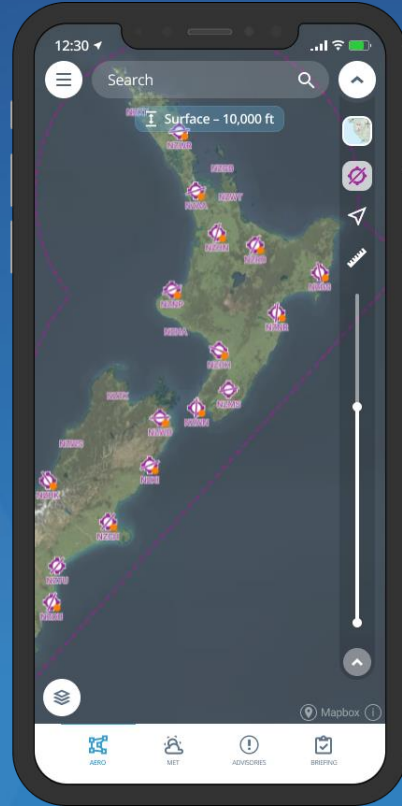
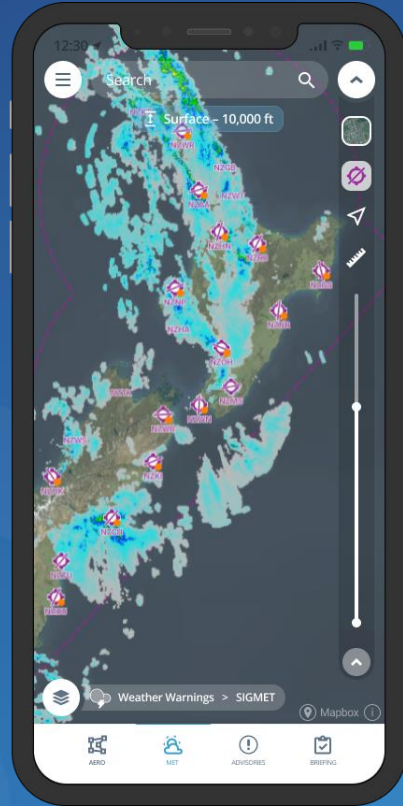
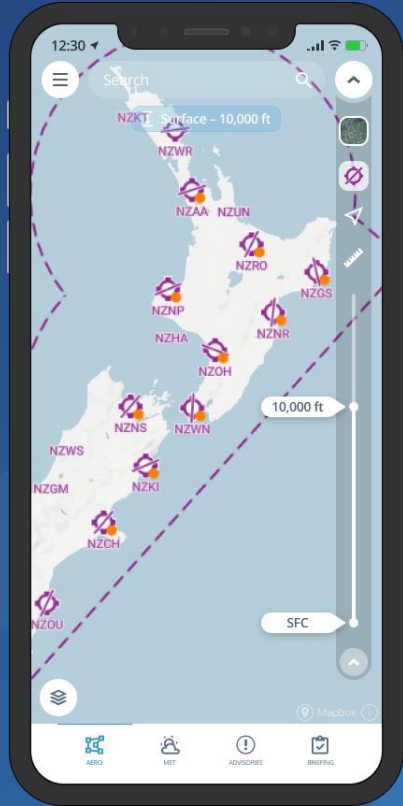


New aviation weather portal

- Developed in partnership with Aeropath
- Integrated aeronautical and meteorological solution
- Interactive map with weather & aeronautical overlays
- Altitude slider bar to show information relevant to you
- Desktop, tablet and mobile friendly



New aviation weather portal





Research and Development: Iman Soltanzadeh
Manager Forecasting Research & Development

Nowcasting and Raincast

A landscape photograph featuring a dark, stormy sky with heavy, dark grey clouds. A faint rainbow is visible in the distance, partially obscured by the clouds. The foreground is a lush green field with tall grasses and bushes. In the background, there are dark, silhouetted mountains and a line of trees. The overall mood is dramatic and atmospheric.

Nowcasting @ MetService

Nowcasting roadmap

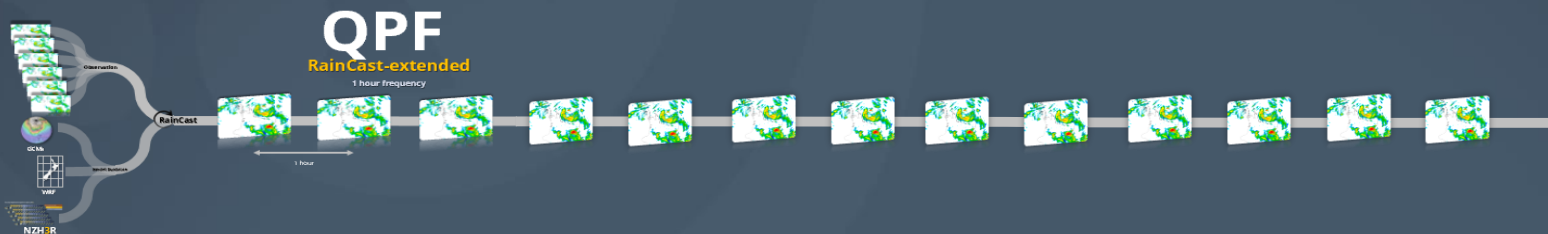
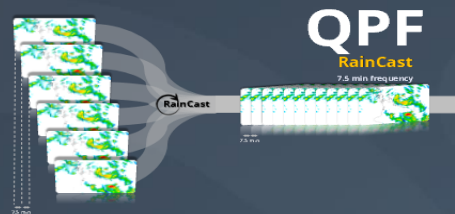
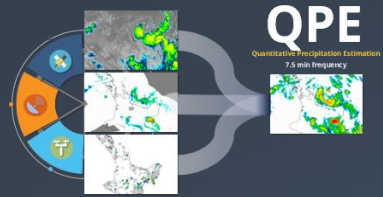


Acronyms:

- **StrikeCast:** Lightning nowcasting system
- **RainCast:** Rainfall nowcasting system
- **WindCast:** Wind nowcasting system
- **CloudCast:** Cloud cover nowcasting system
- **SatCast:** Satellite Nowcast (NWC/GEO)
- **NZH3R:** NZ High-Resolution Rapid Refresh system
- **-Warn:** Warning system



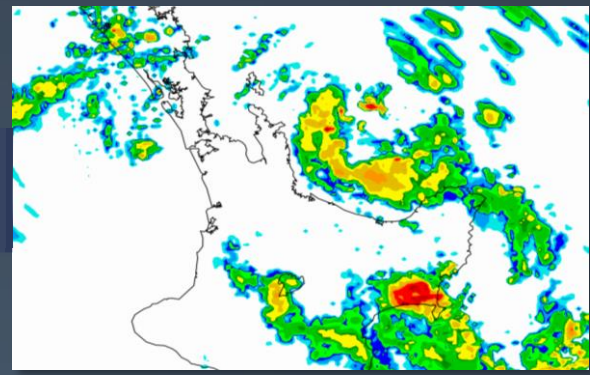
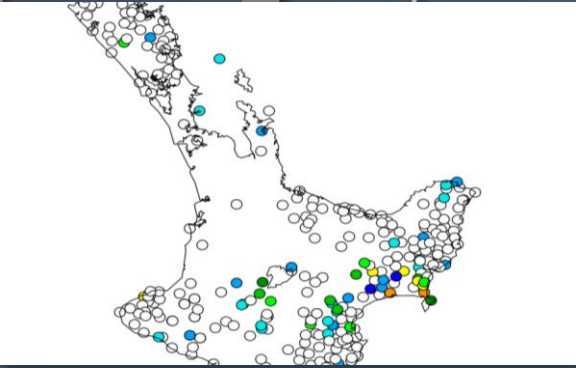
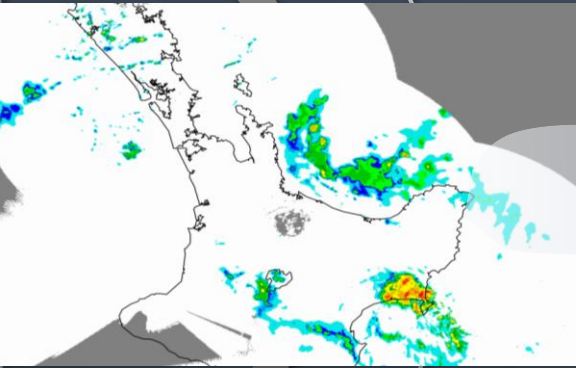
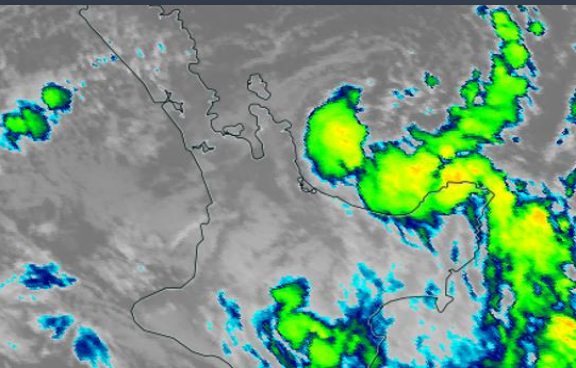
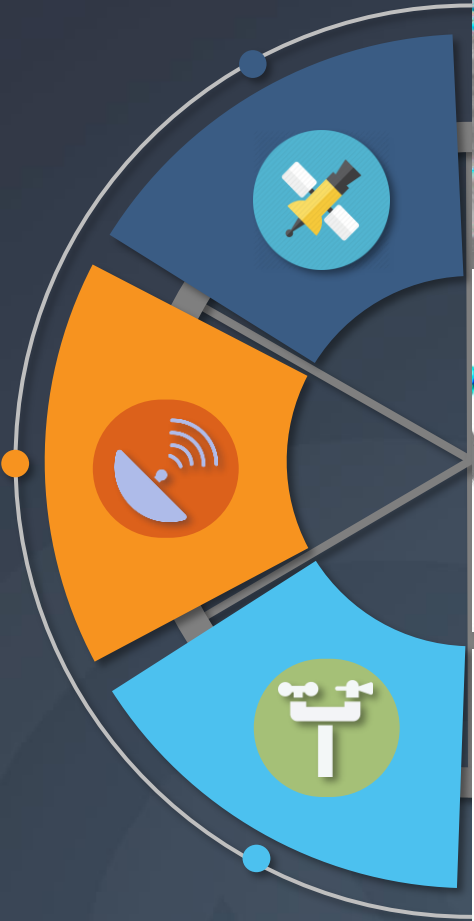
Seamless Precipitation Prediction System



QPE

Quantitative Precipitation Estimation

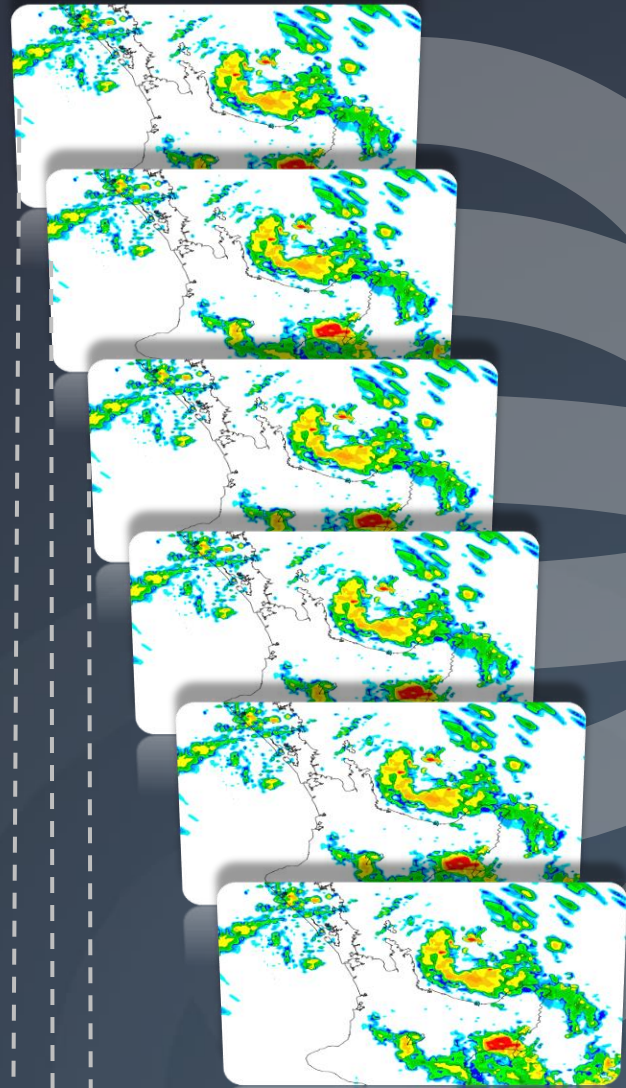
7.5 min frequency



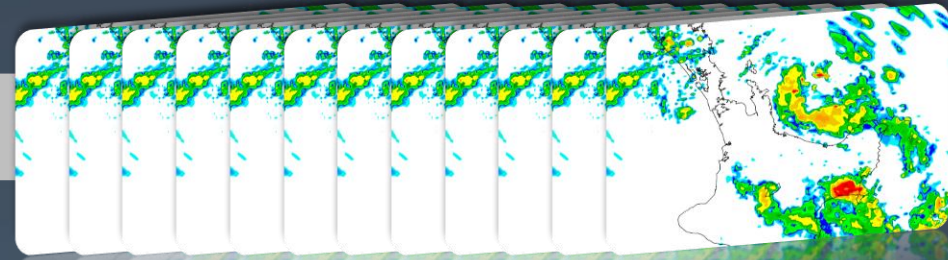
QPF

RainCast

7.5 min frequency



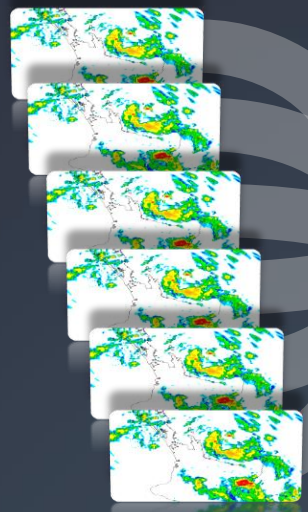
RainCast



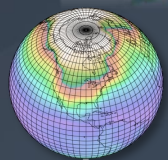
QPF

RainCast-extended

1 hour frequency



Observation



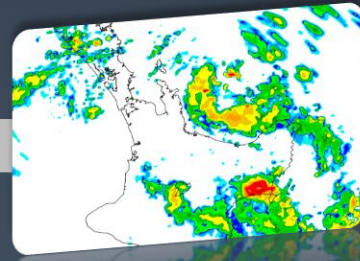
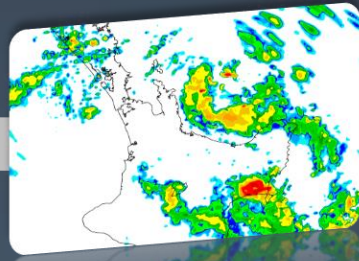
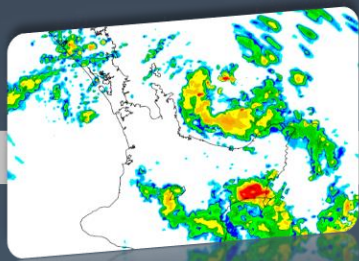
GCMs



WRF

Model Guidance

RainCast



1 hour



NZH3R



New Zealand High-Resolution Rapid Refresh System (NZH3R)

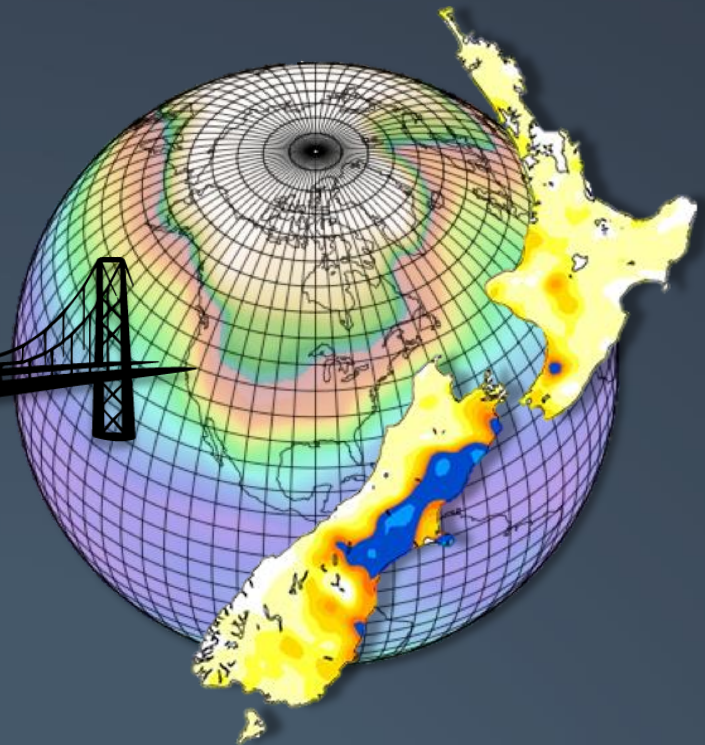
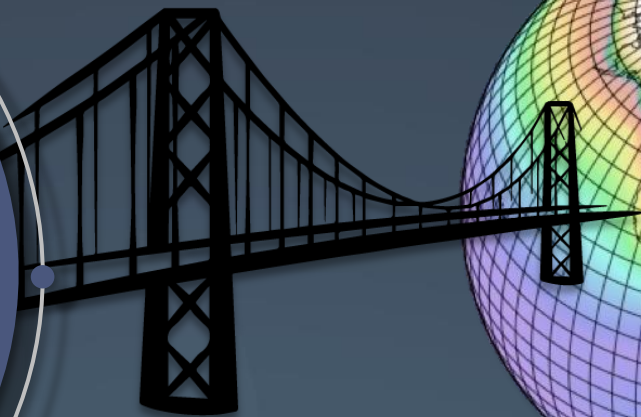


Allows probabilistic forecasting

Facilitates high-impact & severe WX predictions

Feature recognition





Nowcasting roadmap



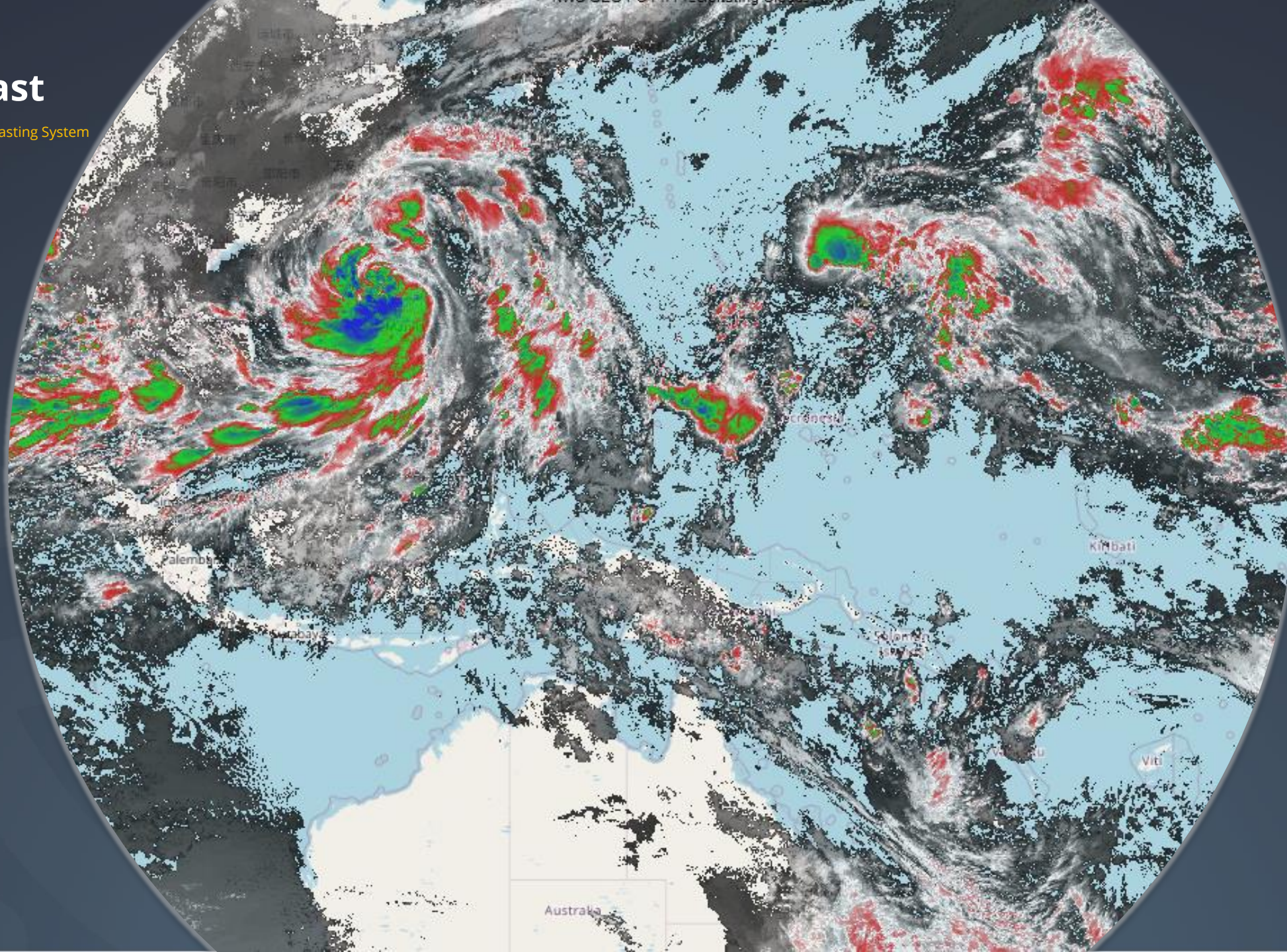
Acronyms:

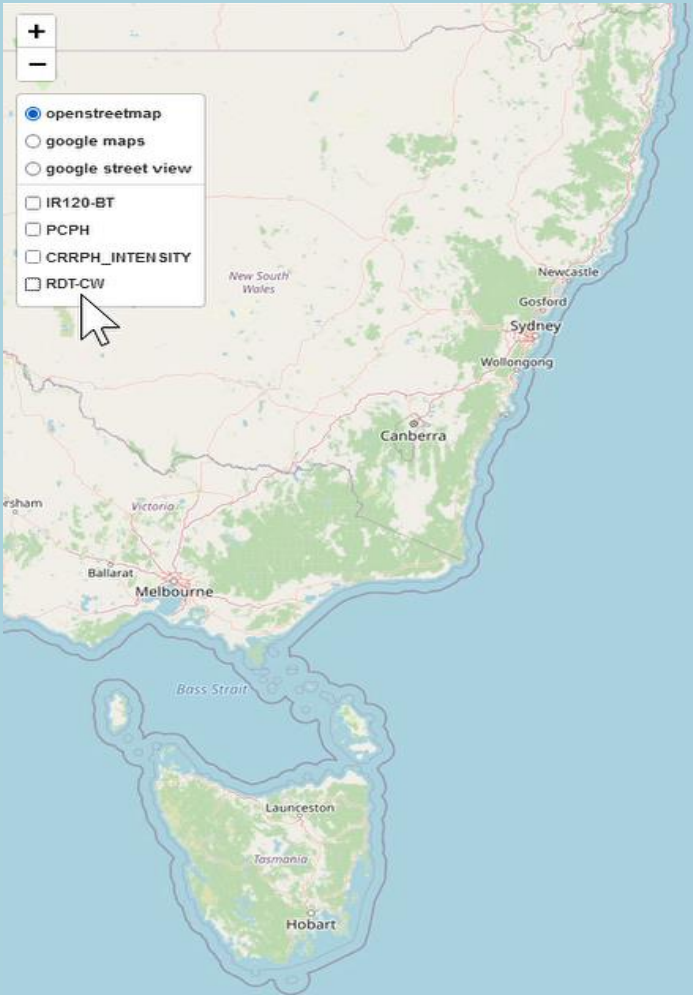
- **StrikeCast:** Lightning nowcasting system
- **RainCast:** Rainfall nowcasting system
- **WindCast:** Wind nowcasting system
- **CloudCast:** Cloud cover nowcasting system
- **SatCast:** Satellite Nowcast (NWC/GEO)
- **NZH3R:** NZ High-Resolution Rapid Refresh system
- **-Warn:** Warning system



SatCast

Satellite Nowcasting System





Latitude: -32.1181
Longitude: 173.1755



Data Centre Migration Project

Moving MetService's servers and applications to AWS and CCL

Over 250 servers now migrated, including several key aviation systems

- WeatherTrakII
- MetJet
- 1 Minute Observations

Remaining server and network migrations to complete by December – including further aviation changes

Key project for MetService, delivered by a dedicated team with considerable experience in migrations, supported by our key IT providers

Wellington Office Relocation

Wellington Forecasting Operations and other staff moving from Kelburn to CBD in December and January





Ngā mihi

Thank you



WWW.METSERVICE.COM