

MetService Presentation CAA MET Symposium 1 October 2020



Safe and profitable

Combining customer insights with our scientific expertise & ingenuity

Partnering to create innovative solutions enabling our customers to make informed decisions

Working together to adapt to a changing Aviation Landscape





Introduction

- **Aviation Overview - painting a picture.**
- **SMS - Part 174 experiences and reflections**
- **Reporting Services - Aerodrome Observations, Weather Radar, Lightning Detection.**
- **Products and Partnerships – Data display, delivery, and resilience**
- **Forecasting Services - Pandemic Impact, Collaboration, Meteorologist value.**
- **Forecast R&D - Future Direction.**



Overview and our Achievements:- Ray Thorpe GM Aviation Business

MetService Business Plan flowing into our Aviation Related Goals.
Despite Covid -19 here's what we have managed to achieve.
Looking forward and not backwards.

Six Capitals



**Our Scientific
Expertise**



**Our Networks
and Platforms**



Our Relationships



Our Finances



Our People



Our Environment

BP Goals

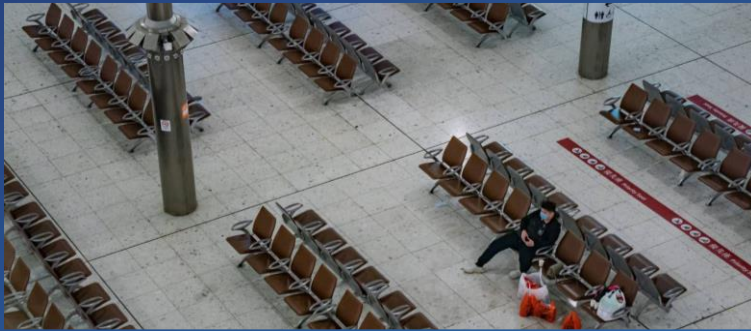
1. Strong strategic relationships with customers and regulators that contribute to a safe and efficient New Zealand aviation system.

2. Reshaped service provision to ensure long term sustainability of aviation safety services at reduced air traffic levels.

Helping people stay safe and make informed decisions based on the weather.

By combining customer insights with our scientific expertise and integrity, to create solutions that support informed decisions.

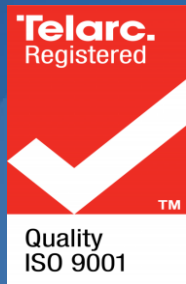
Looking Forward not Backward



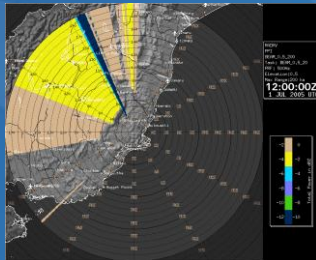
Down ↓ with regards to \$\$

but Up ↑ with regards to resilience & Supporting Industry

Safety



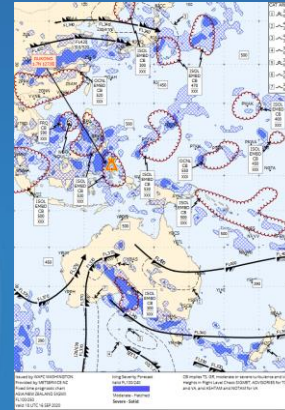
Observation Networks



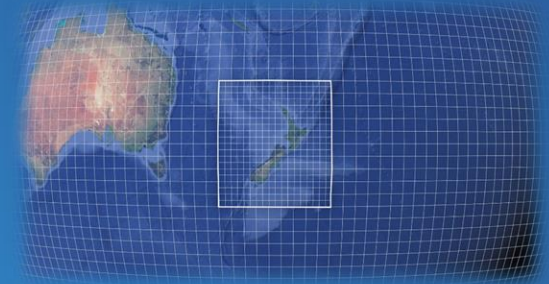
New Platforms Products



Forecasting services



Modelling Bridging the Gap





Our SMS Journey: Anna D'Arcy Safety Management Systems Manager – Strategy and Governance

Overview and reflections from past 10 months

MetService Part 174 experiences and reflections

We help people stay safe and make informed decisions, based on the weather.

The security, integrity and availability of our services are pivotal to the critical safety role we provide.

Our CAA Part 174 Certification is underpinned by:

- CAA Rules Part 100, 12 and 174
- ISO9001 Quality Management System (1st certified Meteorological Service in the world)

New SMS Manager appointed late 2019

- Crisis planning
- Training, Comms and awareness
- Just Culture
 - Trust, Engagement, Reporting, Actions
- Audits, Risk Programme, Investigations

Reflections: 'Just Culture' programme and benefits of CAA Part 174 certification for ALL of our customers.





Reporting Services : Kevin Alder Manager MetData Services

Aerodrome Observations

Weather Radar

Lightning Detection

Reporting Services

Aerodrome Observations

- METAR AUTO Observations with cloud / visibility now available for Kaitaia and Kaikoura.
- METAR AUTO basic observations (no cloud or visibility information) now available for Alexandra, Ardmore, Waiouru, Wairoa and Mount Cook Airports. Aerodrome reporting enhancements e.g. adding QNH to Ashburton.
- Reviewing / improving instrumentation exposure
 - Gisborne
 - Tauranga
 - Whangarei
 - Whakatane



Reporting Services

Weather Radar

- Enhanced tools now available to Forecasters to better analyse weather radar data
- Radar Network upgrades impacted by the COVID-19 economic impact – delayed by 18 months
 - Auckland
 - Wellington
 - Canterbury
- Otago Radar Project
 - delayed by pandemic restrictions and the winter weather.
 - Project is about to restart with onsite assembly of the tower and radar in November.
 - Operational data is expected by year end.





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Reporting Services

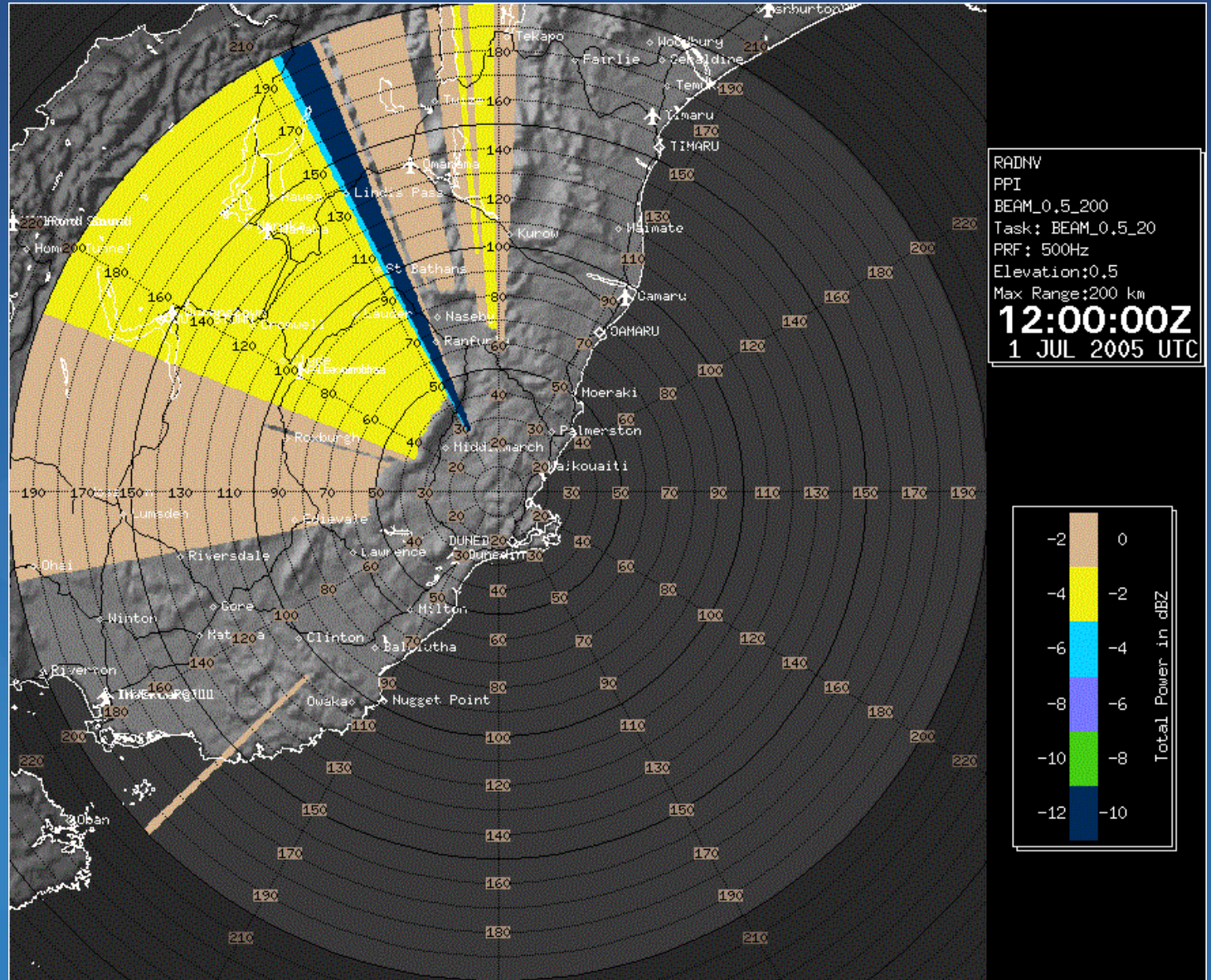
Otago Radar

Site

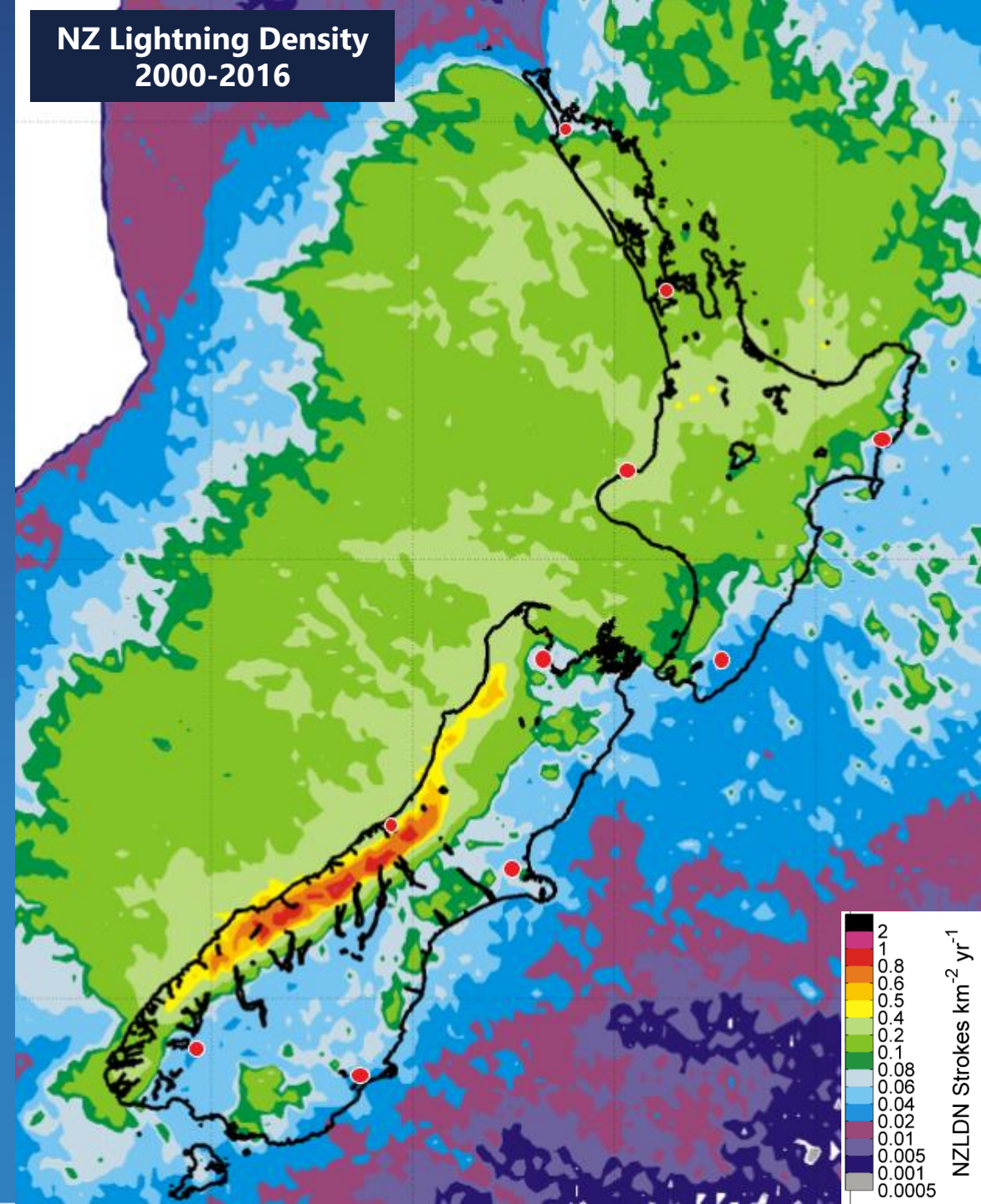
- Lambhill Station, Hindon
- 25km NW of Dunedin City
- Alt 763 metres

The Radar

- 250 km range
- 8 scans per hour
- Rain/Snow/Hail and rain intensity
- Doppler mode – wind profiles and velocity information



NZ Lightning Density 2000-2016



Reporting Services

Lightning Detection Network

- The National Lightning Detection Network consists of ten sensors optimally located around the country.
- Lightning events are detected in real time with discharge locations and intensities are computed on servers based in Wellington.
- Lightning events near airports are coded as 'TS' in METAR AUTO Reports.
- Data is available through MetOps Display.
- Field sensors were upgraded 6 years ago. Server infrastructure upgrade planned for early 2021.
- Reliable and accurate network for the next ten years.



New Platforms/Products: Dhiresh Hansaraj Product Owner - Platforms

Data display - Portals

Our product development approach involves **planning but responding to change**.

The reduction in flights due to COVID-19 meant adjusting our focus.

That means more 'nailing the basics' and less 'brand new stuff'.

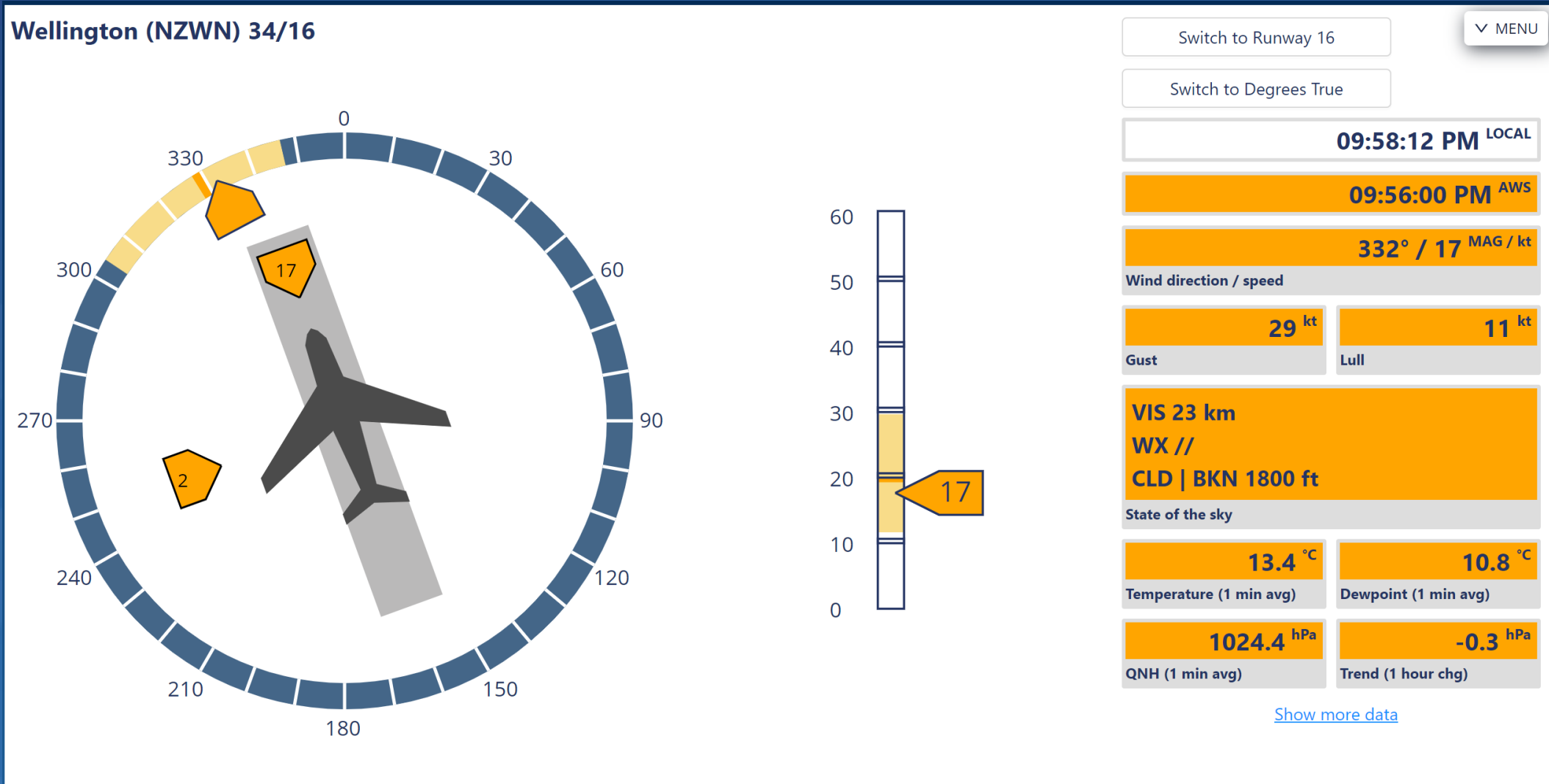
The image shows a mock-up of the MetJet portal interface. At the top, there is a header with the MetService logo, a user greeting, and navigation links for FTP, Help, Admin, and External links. Below the header, there are two tabs: 'AWS' and 'AAW'. The main content area features a map of New Zealand with various regions labeled, such as FAR NORTH (FN), TAMAKI (TA), TE KUITI (TK), SANSON (SA), TASMAN (TN), WINDWARD (WW), FIORDS (FD), ALPS (AL), CLYDE (CY), GORE (GE), PLAINS (PL), STRAITS (ST), DANNEVIRKE (DV), and MAHIA (MH). Each region has a corresponding weather forecast icon. To the right of the map, there are several panels: 'AREA FORECASTS' with buttons for Z1, Z2, Z3, Z4, North, South, and New Zealand; 'NZ TAF' with radio buttons for International and Domestic; 'SEVERE WEATHER' with buttons for Severe Wx Warnings and Thunderstorm Outlook; and 'OTHER WEATHER' with buttons for Graphical NZ SIGWX, Additional MET, Webcam, Drop Zones, and Email. At the bottom of the map area, there is a 'Choose Region' dropdown menu set to 'New Zealand'. On the far right, there is a sidebar with sections: 'OPMET' with an Alerts button and checkboxes for TAFs, SIGMETs, and METARs; 'OTHER ADVISORIES' with checkboxes for Volcanic Ash, Tropical Cyclone, and Space Wx; 'SELECTED AREAS / LOCATIONS' with a text input field; 'ROFOR' with a dropdown menu and a Details button; 'PACKAGE' with a dropdown menu and a Details button; 'Scheduling' with Create schedule and Preview buttons; and 'Graphical Products' with Chart, Radar, and Satellite buttons. At the bottom of the sidebar, there are buttons for 1 Min MetDisplay, Restore All Settings, and Save Current Settings.

Mock-up of planned MetJet (and MetFlight) redesign.

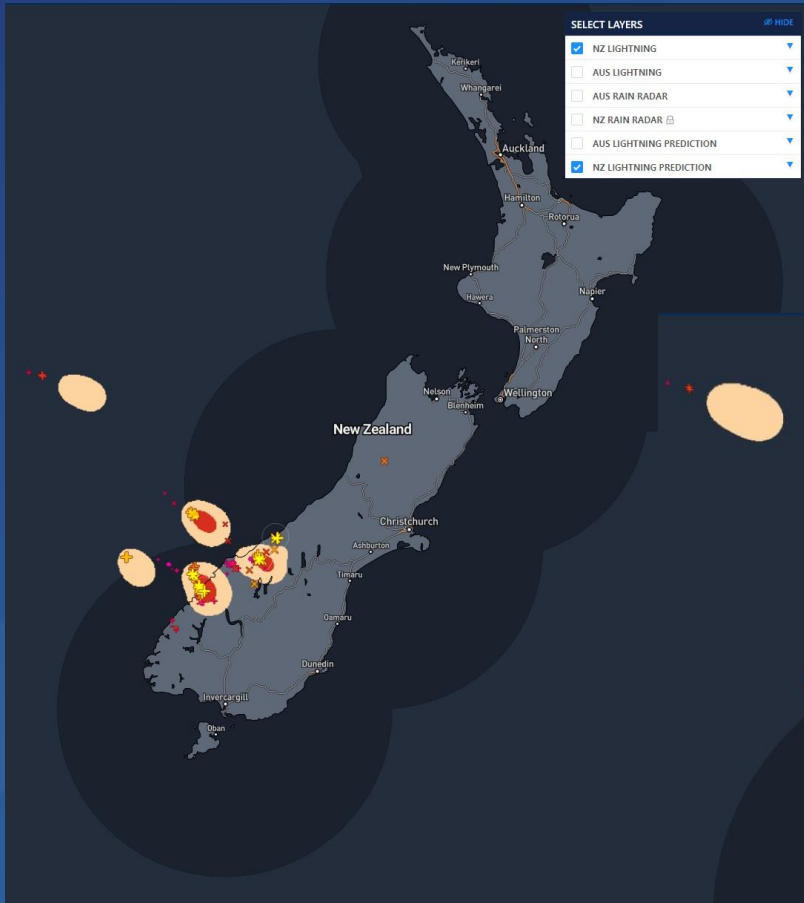


Data display - Runway Dials

The technology these pages are built with go End Of Life (EOL) on 31 December 2020. We've brought forward the work to launch a new version of these dials; powered by our new 1-min-obs API.

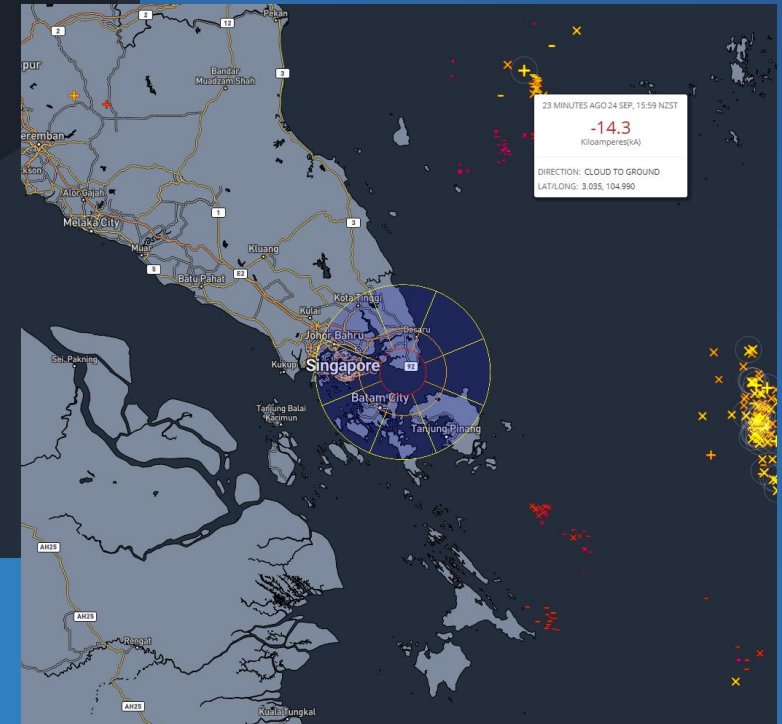
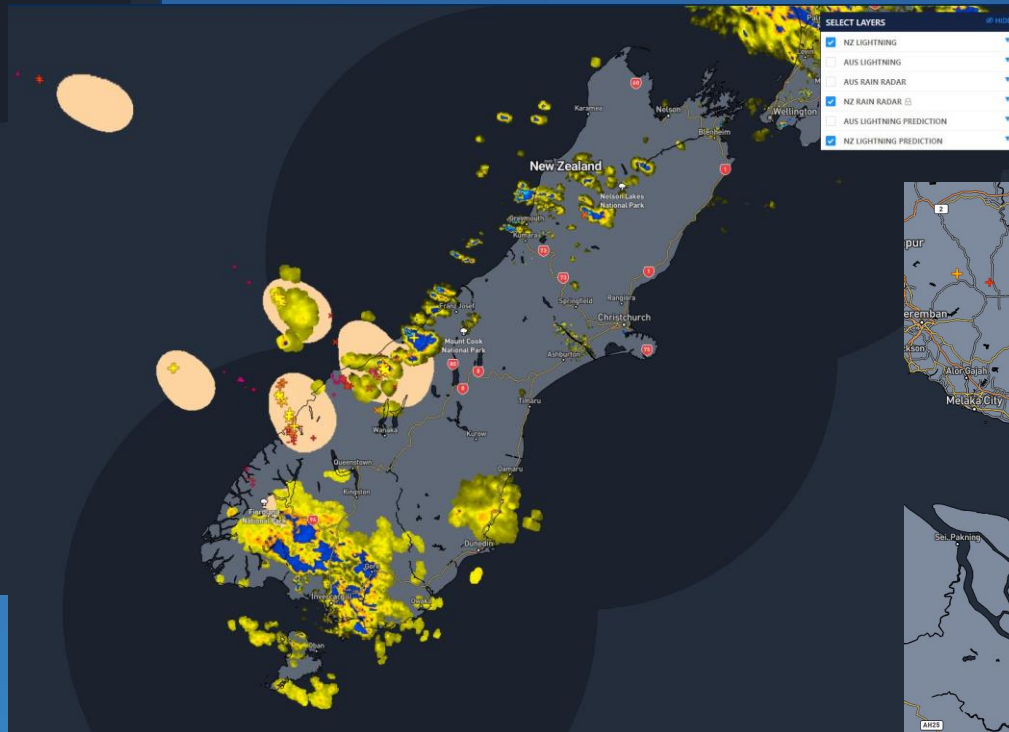


Data display – Rain Radar and Lightning



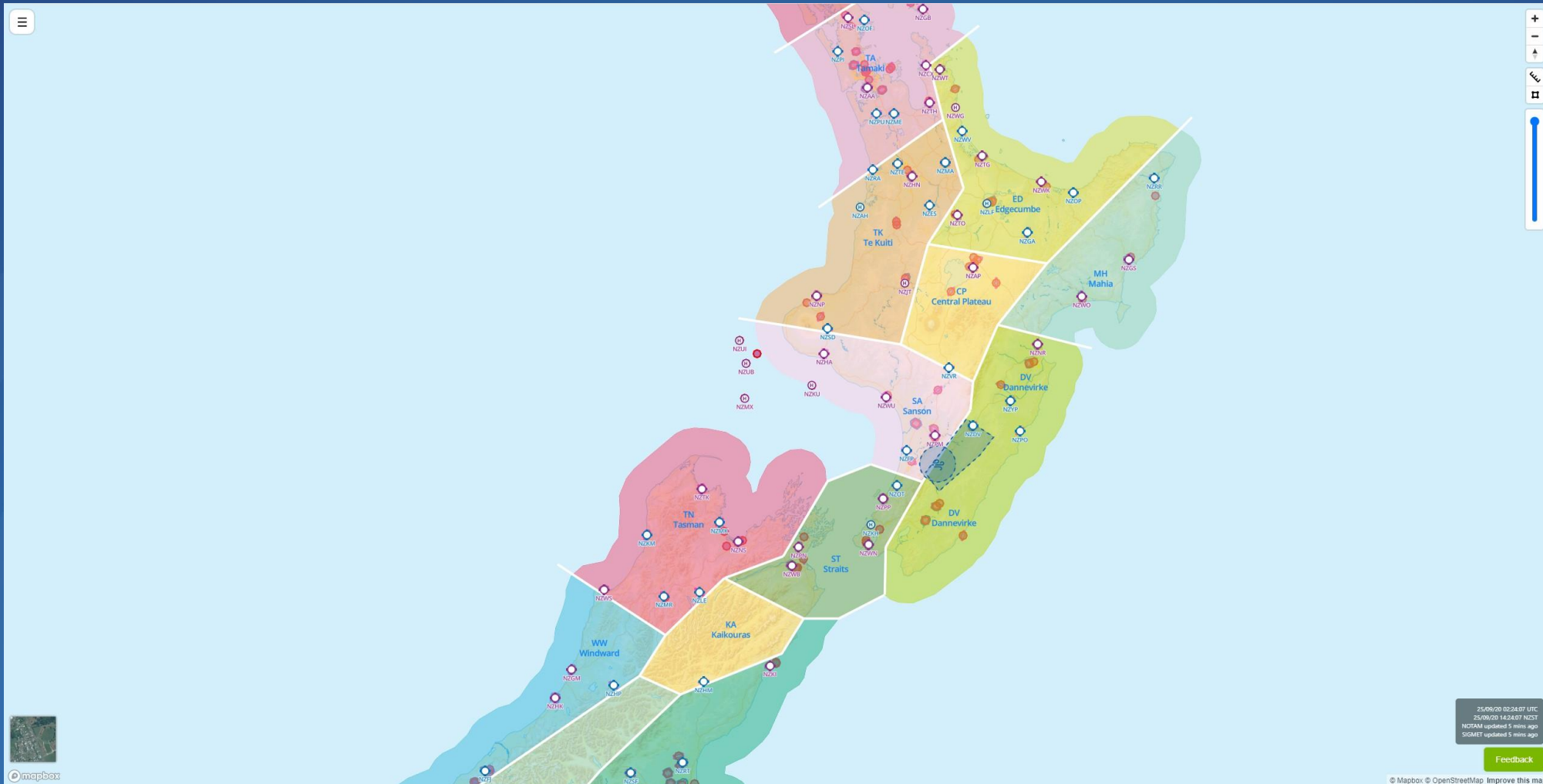
New Lightning Prediction Algorithm (LPA) in our MetOps platform.

Points of Interest (aka lightning circles) can be created anywhere on the globe and with our new API providing real-time lightning data, users can be alerted visually. Audible and other alerting is part of planned future work.



Data delivery - Aviation API

A focus on overall resilience of aviation met data, with the delivery mechanism ultimately being the API. All aviation products will be available to all users from this API; either directly, via our aviation portals, or third-party applications.





Forecasting Services : Marcel Roux Manager Aviation Weather Services

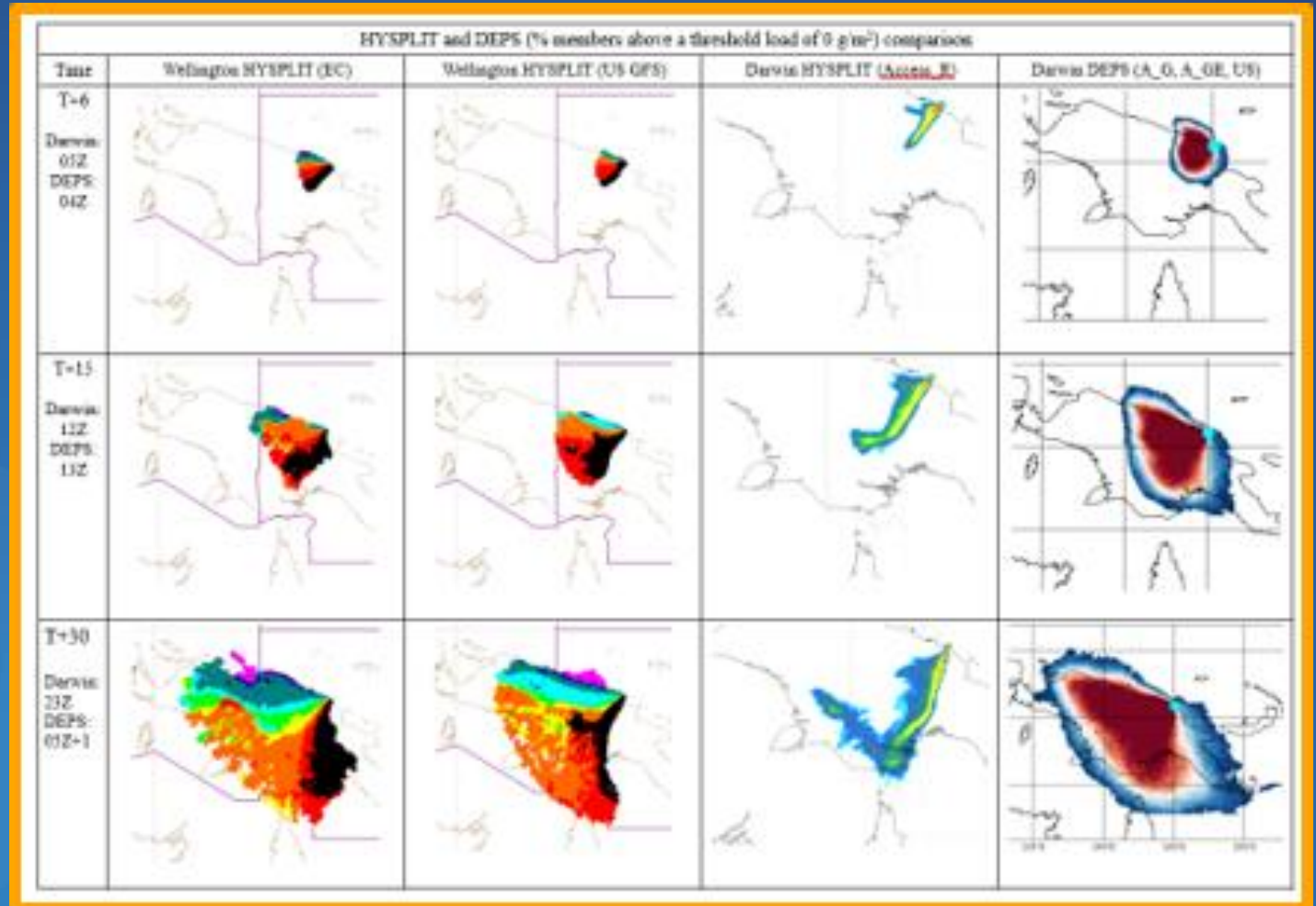
Pandemic Impact

Collaboration

Meteorologist value

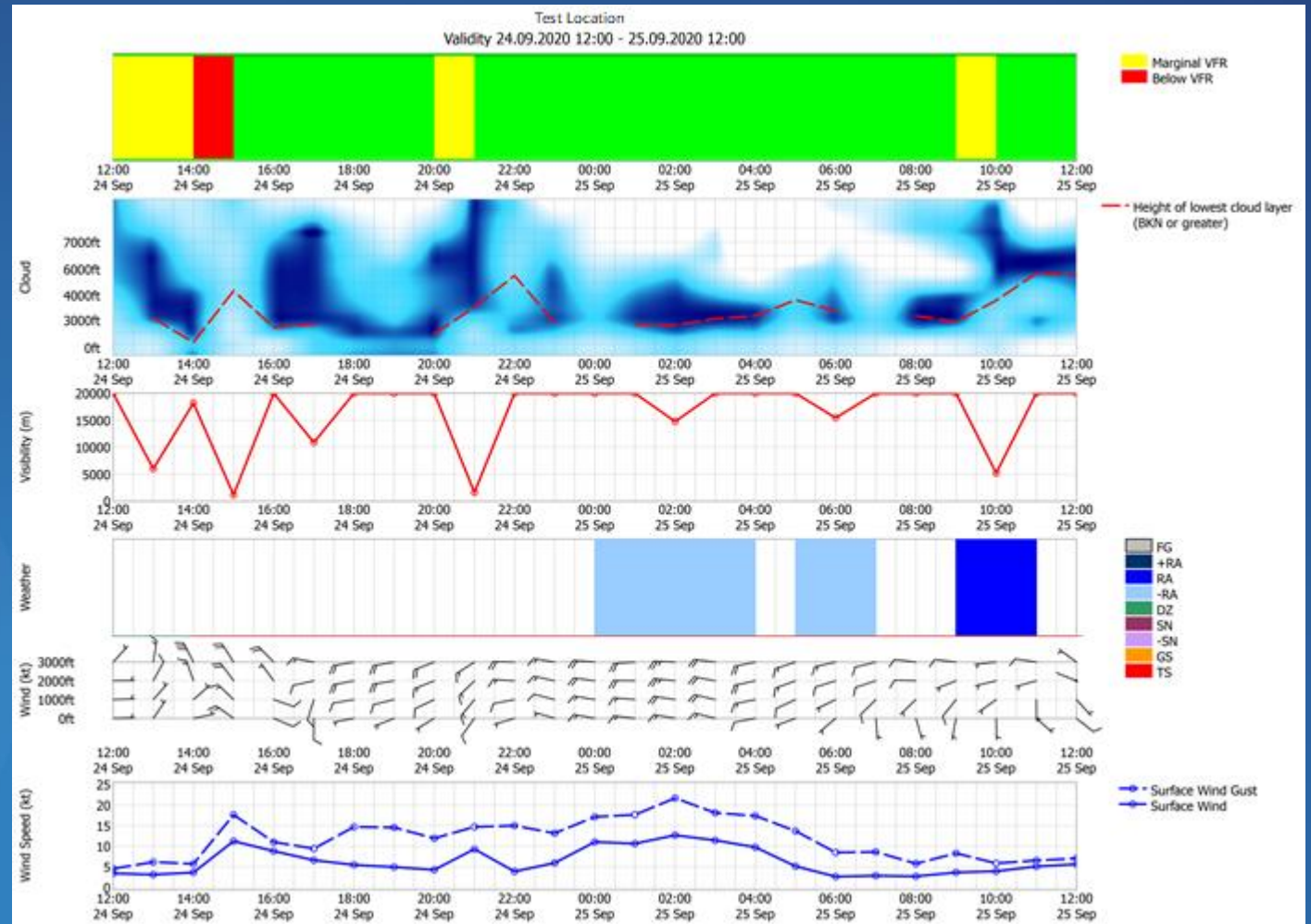
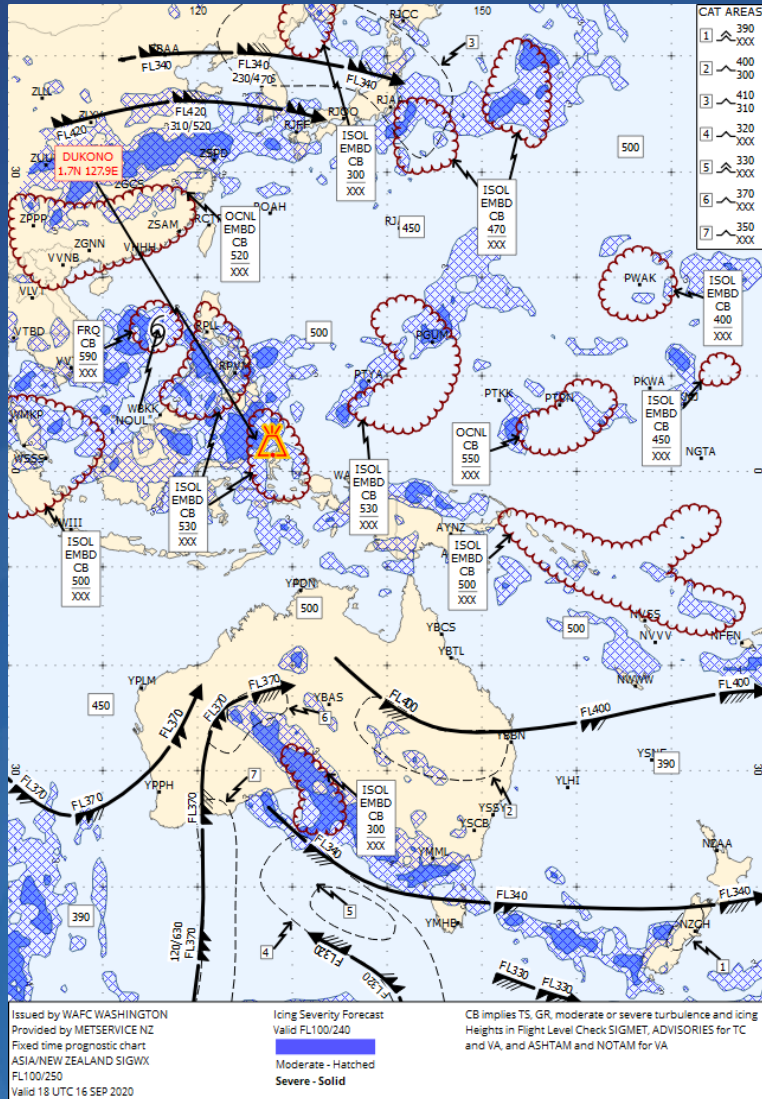
Forecasting Services

- COVID19: Where we worked and how we connected.
- VOLCEX, Tonga, SIMS exercises. VAAC Darwin collaboration.
- Meteorologist move to high value work. Better connect them with the industry as part of its evolution to a data centric focus. Provide confidence based advice.
- Integrating upgraded WAFC upper air gridded data.
- Supplementary meteogram forecasts



Forecasting Services

Still a work in progress

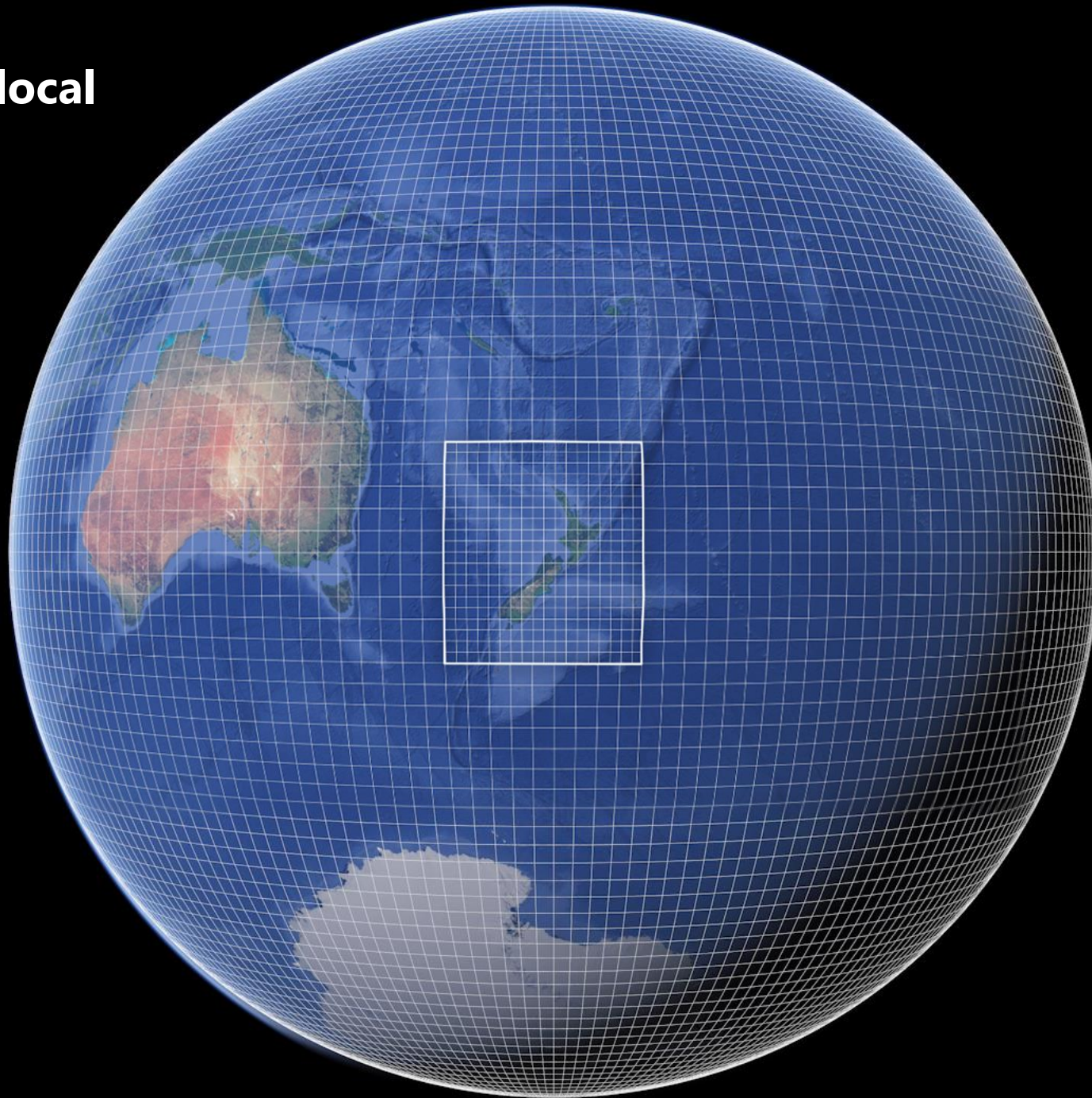




Research and Development: Iman Soltanzadeh Manager Forecasting Research & Development

NZ High-Resolution Rapid Refresh modelling system (NZH3R)

From global to local



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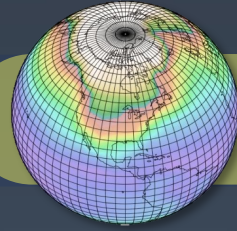
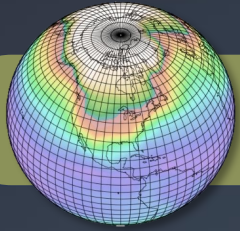
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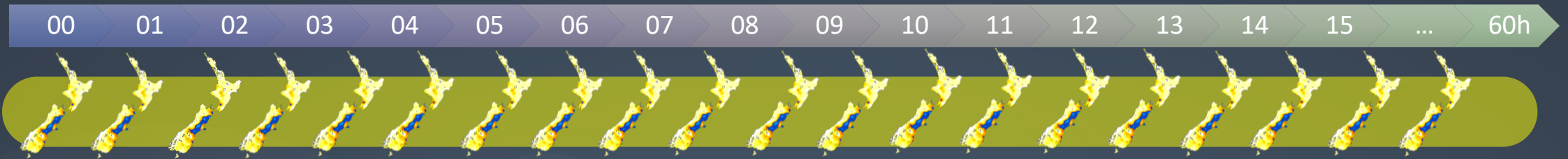


WRF



OBS





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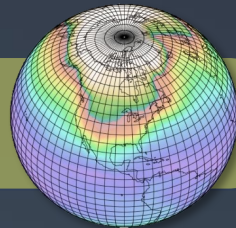
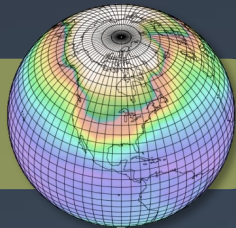
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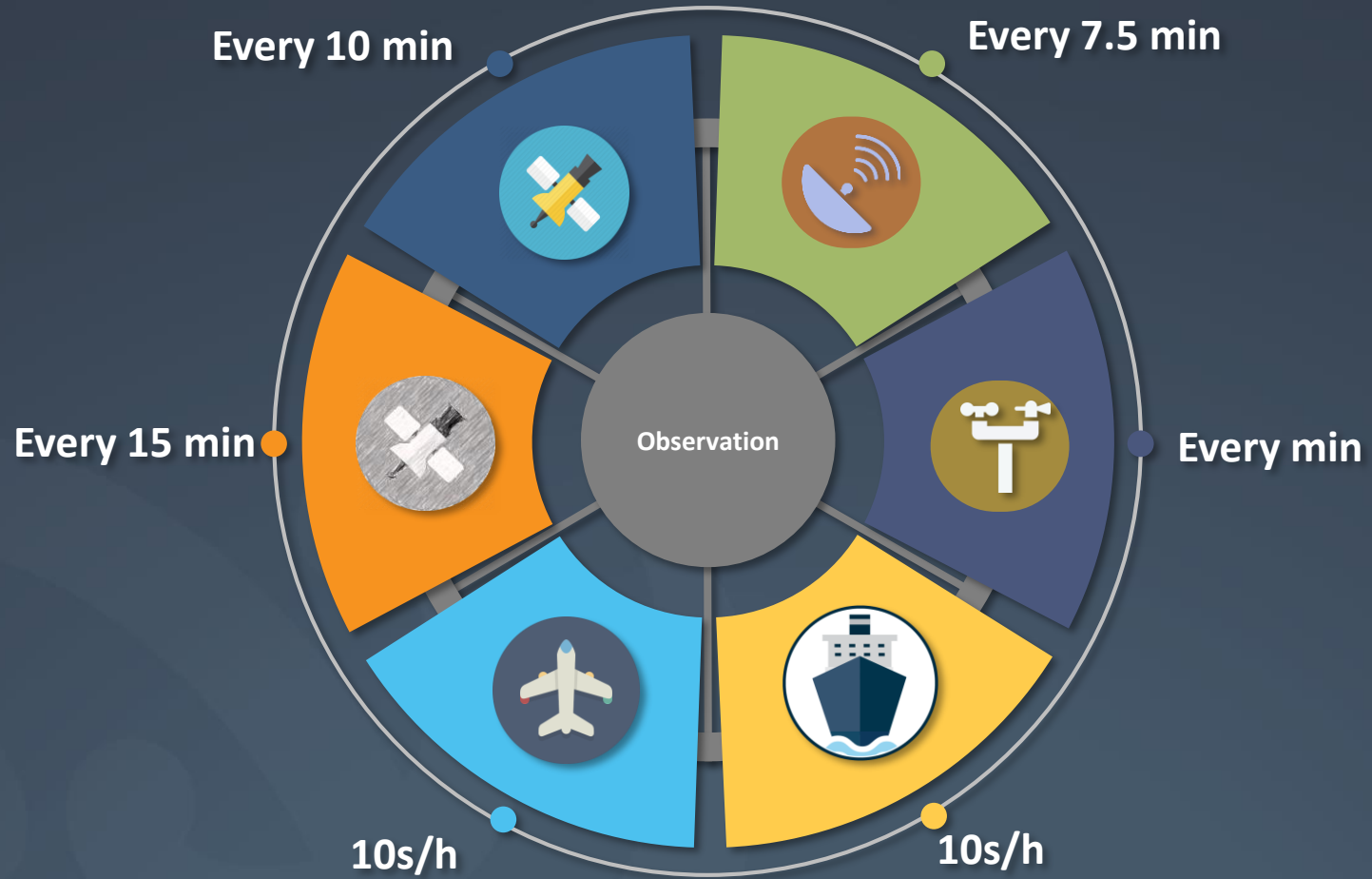
WRF



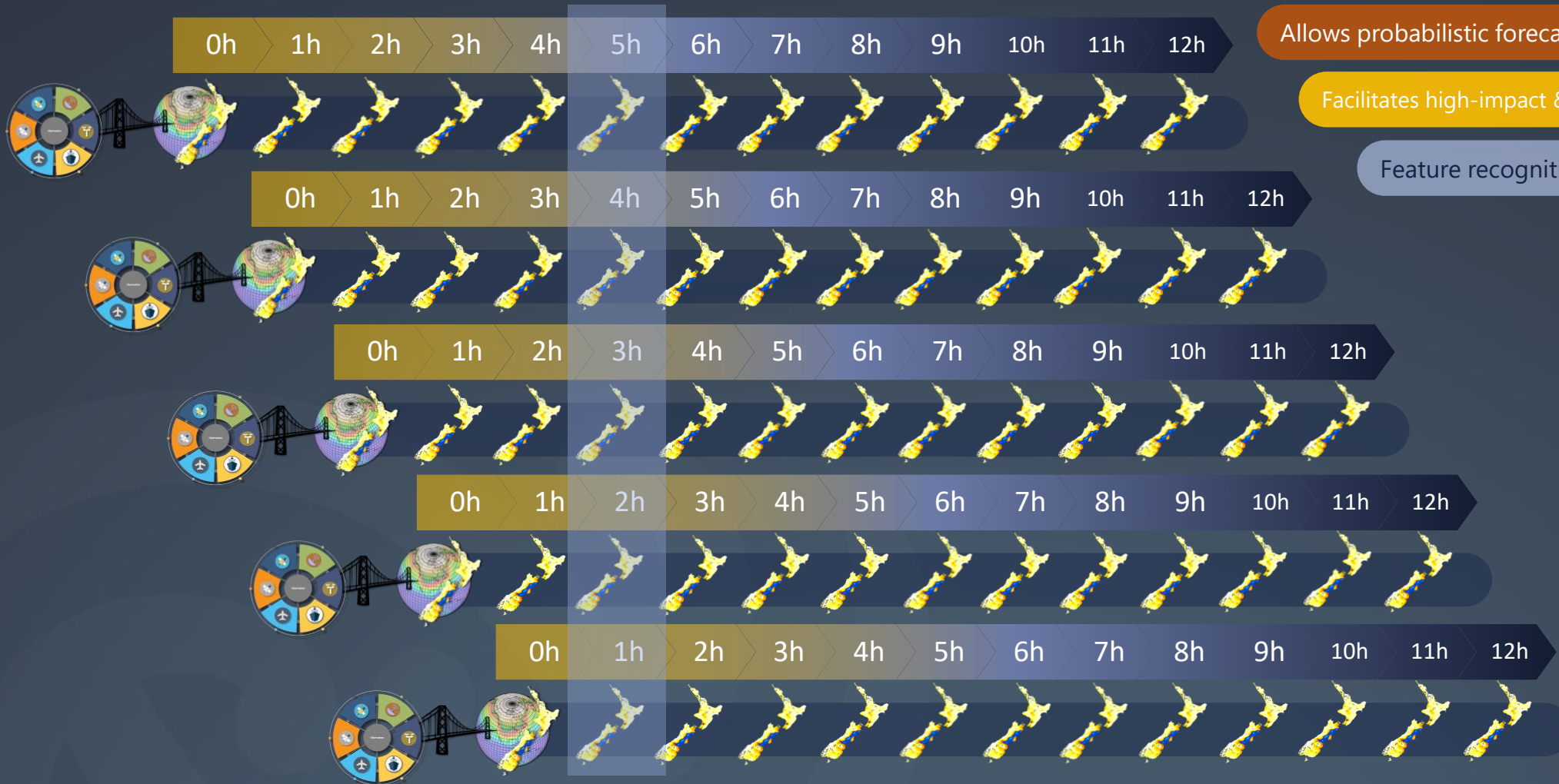
OBS

NZH3R 






New Zealand High-Resolution Rapid Refresh System (NZH3R)

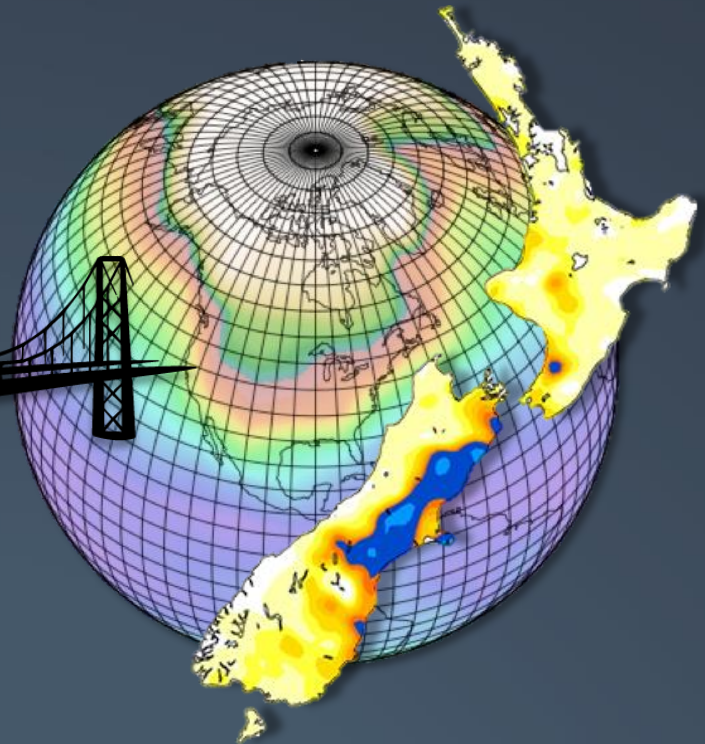
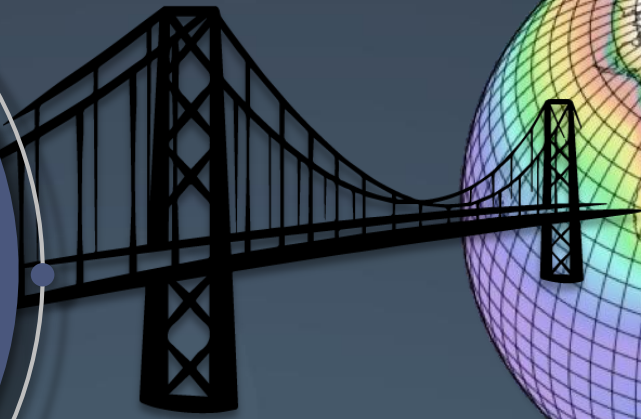


Allows probabilistic forecasting

Facilitates high-impact & severe WX predictions

Feature recognition and 







Thank you 

