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## Slide 1

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**AC1** Alison Chick, 22/11/2021

## Introduction

- Initial presentation of NIWA capabilities to lines company representatives at Electricity Networks Assn. quarterly meeting
- Data Science: Hindcast analysis of geo located weather-related outage data; thresholds established for lines assets
- Tool forecasts future outage events out to 5 days for various weather elements using NIWA NZCSM 1.5 km resolution forecast data updating 4x per day
- Next phase: auto ingest of outage data in near real time with application of M/L to continually narrow error bands
- Deterministic to Probabilistic Forecasting – 18 members
- Auto reporting for ComCom

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## NIWA Outage Forecast & Maintenance Planning Tool

### Agenda:

Run through Key Features

Live demo

Questions

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**Asset Weather Monitoring & Maintenance Planning Hub**

Category	High Risk	Medium Risk	Some Risk
Asset Risk Alerts	28		
Asset Outage Alerts	9	123	215
Asset Maintenance Planning	584	68	318

Forecast maps include: Forecast Wind Gusts, Forecast Temperature (Mid-altitude), Forecast Temperature (Low-altitude), and Forecast Cloud and Rain.

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## Dashboard Details

- Outage alerts – potential risk to assets
- Maintenance planning – impact on crews in the field

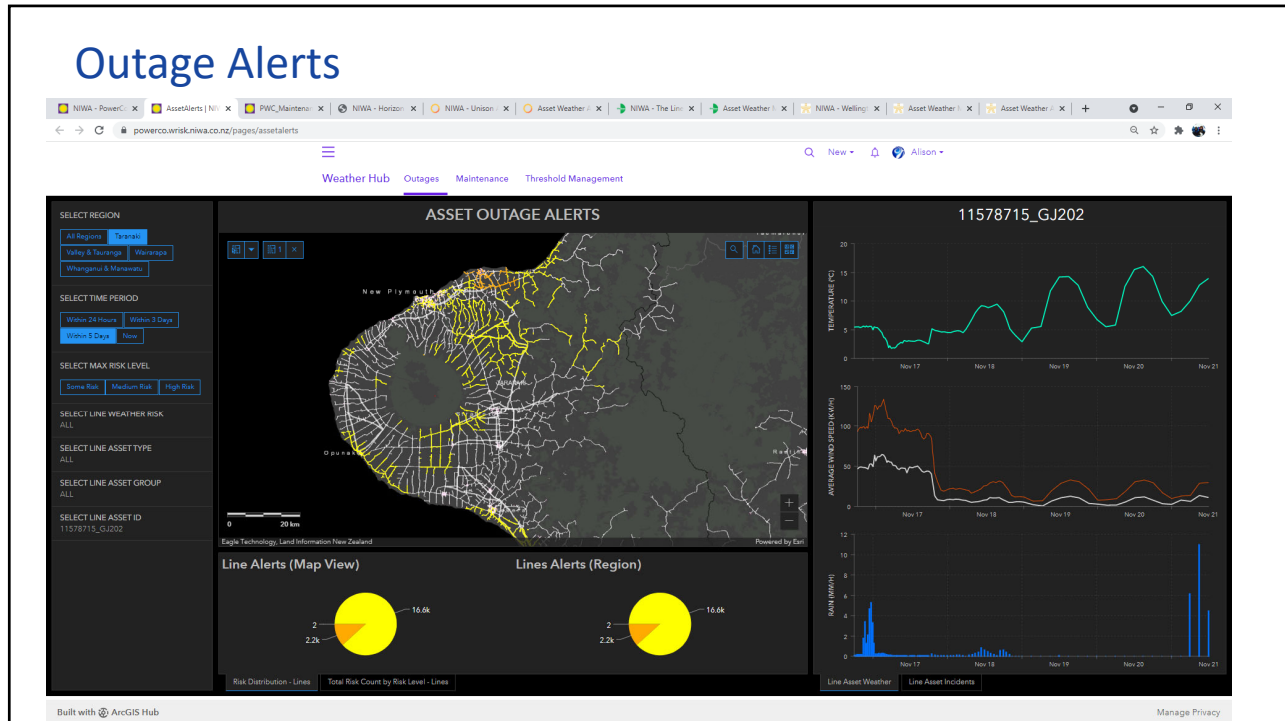
Summary Statistics	Region: All Regions	Line Maintenance: ALL	Line Alerts: ALL	Select Time Period: ALL
Asset Outage Alerts Launch Asset Outage Alerts	LINE ASSETS	HIGH RISK	MEDIUM RISK	SOME RISK
		3,371	22,957	75,269
Asset Maintenance Planning Launch Asset Maintenance Planning	LINE ASSETS	HIGH RISK	MEDIUM RISK	SOME RISK
		57,877	43,720	57,024

- ALL
- Within 24 Hours
- Within 3 Days
- Within 5 Days
- Now

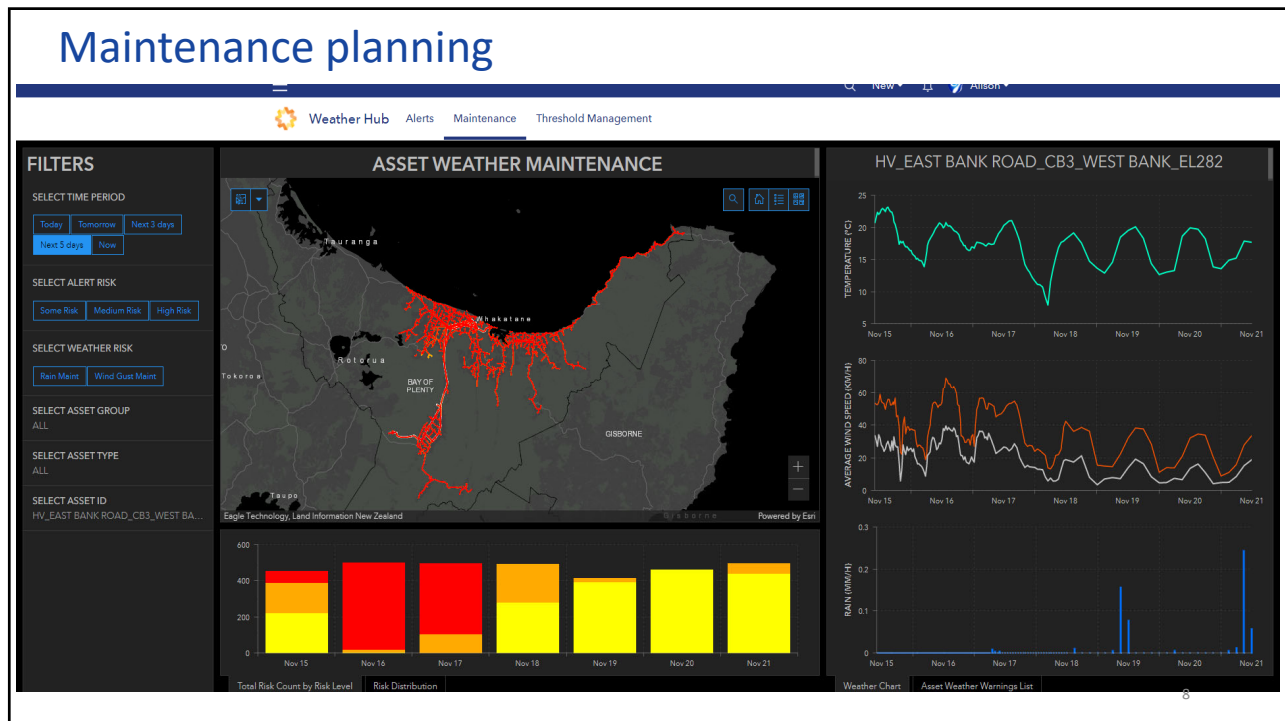
Filter by location, weather parameter or time period to narrow down areas of interest

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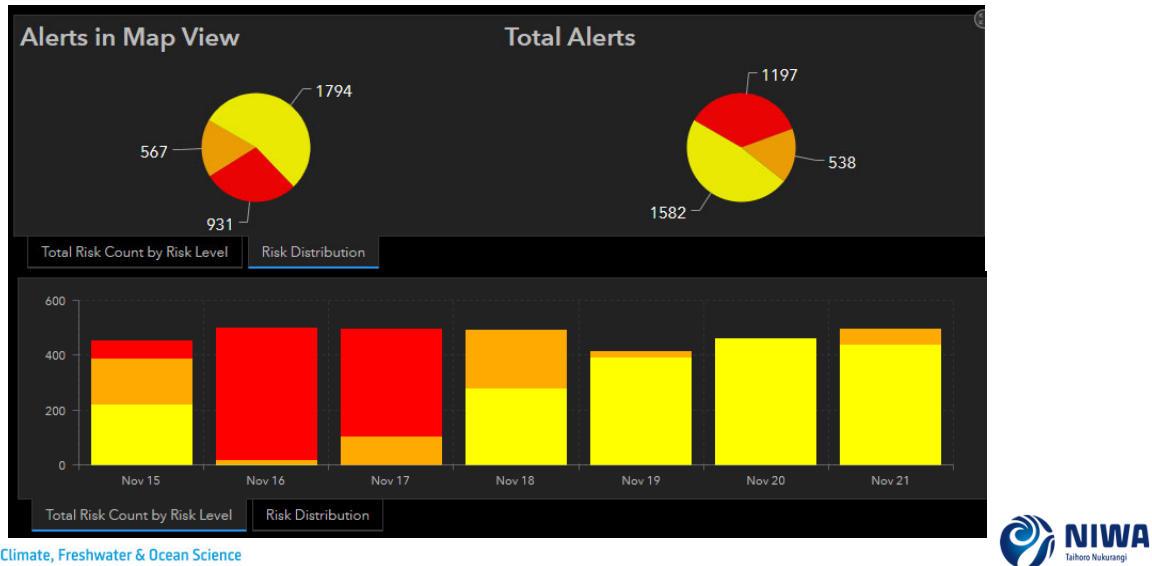


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## Alert statistics by location and time



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## Threshold Setting

The screenshot shows the 'Threshold Management' interface in a web browser. The page title is 'Create New Weather Threshold'. On the left, there are options to 'Define Weather Threshold Conditions' and 'Medium Risk'. The central part of the screen features a map of New Zealand with various cities labeled. On the right, there is a 'Select existing weather threshold to modify threshold parameters' section. This section lists several thresholds: 'Rain Alert' (Alerts), 'Wind Gust Maint' (Maintenance), 'Rain Maint' (Maintenance), and 'Wind Gust Alert' (Alerts). Each threshold has associated fields for 'Asset Type', 'Asset Group', and 'Asset ID'. Below this, there are input fields for 'Value\*' and a dropdown for 'Medium Risk\*' with the option 'greater than or equal'. The bottom of the page includes 'Built with ArcGIS Hub' and 'Manage Privacy'.



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### FILTERS

SELECT TIME PERIOD  
 Today Tomorrow Next 3 days  
 Next 5 days Now

SELECT ALERT RISK  
 Some Risk Medium Risk High Risk

SELECT WEATHER RISK  
 Rain Maint Wind Gust Maint

SELECT ASSET GROUP  
 ALL

SELECT ASSET TYPE  
 ALL

SELECT ASSET ID  
 HV\_EAST BANK ROAD\_CB3\_WEST BA...

Filter... Asset Group

- ANIWHENUA\_A34\_ANIWHENUA
- EAST BANK ROAD\_CB3\_WEST BANK
- EAST BANK ROAD\_CB4\_THORNTON
- EDGECUMBE\_2182\_WBM NORTH
- EDGECUMBE...


Filter... Asset Type

- EHVCOND\_LN1
- PRICOND\_LN

Filter... Asset ID

- HV\_EAST BANK ROAD\_CB3\_WEST BANK\_EL282
- HV\_EAST BANK ROAD\_CB3\_WEST BANK\_EM282
- HV\_EAST BANK ROAD\_CB3\_WEST BANK\_EM283

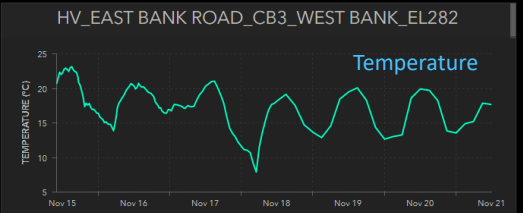
Filters – right hand side



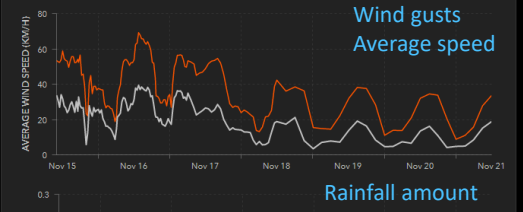
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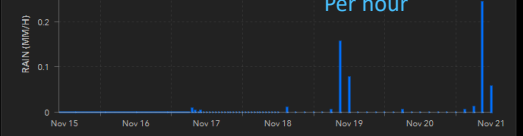
### Timeseries forecasts – event details



Temperature



Wind gusts  
Average speed



Rainfall amount  
Per hour

Weather Chart Asset Weather Warnings List

Time	Event	Wind Speed
Tue Nov 16 2021 13:00:00 GMT+1300	Wind Gust Maint	63 km/h
Tue Nov 16 2021 14:00:00 GMT+1300	Wind Gust Maint	65 km/h
Tue Nov 16 2021 14:30:00 GMT+1300	Wind Gust Maint	64 km/h
Tue Nov 16 2021 15:00:00 GMT+1300	Wind Gust Maint	66 km/h
Tue Nov 16 2021 16:00:00 GMT+1300	Wind Gust Maint	62 km/h
Tue Nov 16 2021 16:30:00 GMT+1300	Wind Gust Maint	61 km/h
Tue Nov 16 2021 17:00:00 GMT+1300	Wind Gust Maint	57 km/h
Tue Nov 16 2021 17:30:00 GMT+1300	Wind Gust Maint	56 km/h
Tue Nov 16 2021 18:00:00 GMT+1300	Wind Gust Maint	47 km/h
Tue Nov 16 2021 18:30:00 GMT+1300	Wind Gust Maint	46 km/h
Tue Nov 16 2021 18:30:00 GMT+1300	Wind Gust Maint	41 km/h


Weather Chart Asset Weather Warnings List

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**Live demo**

Alison Chick – NIWA Senior Project Manager

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**Thanks You**

**Questions ?**

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