Satellite Data Utilisation at the National Meteorological Service of New Zealand (MetService)
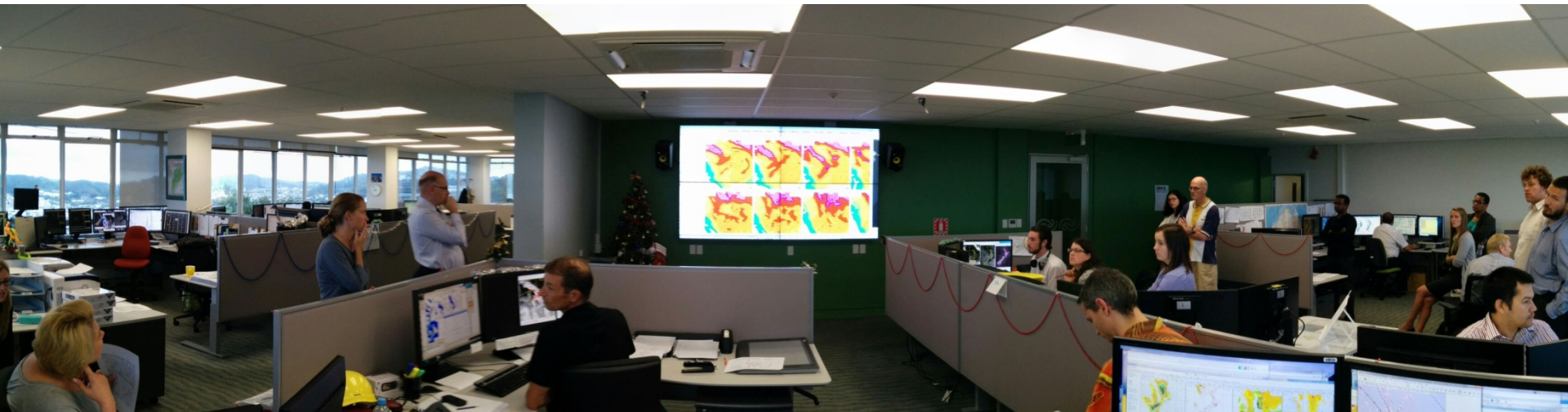
Wim van Dijk
November 2015
AOMSUC6 SC 2-4

POWERFUL WEATHER INTELLIGENCE.

Forecasting at MetService

- MetService currently employs ~275 staff

- ~60 duty meteorologists

- 24 / 7 / 365 rotating shift roster

- 25 shifts / day (public/commercial/marine/aviation/lead/severe weather)

- 10 Lead/TCWC Specialists (+13 Severe Weather Meteorologists)

Hazard 1: Rain, wind and snow from major mid-latitude storms

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Hazard 2: Volcanic eruptions and volcanic ash

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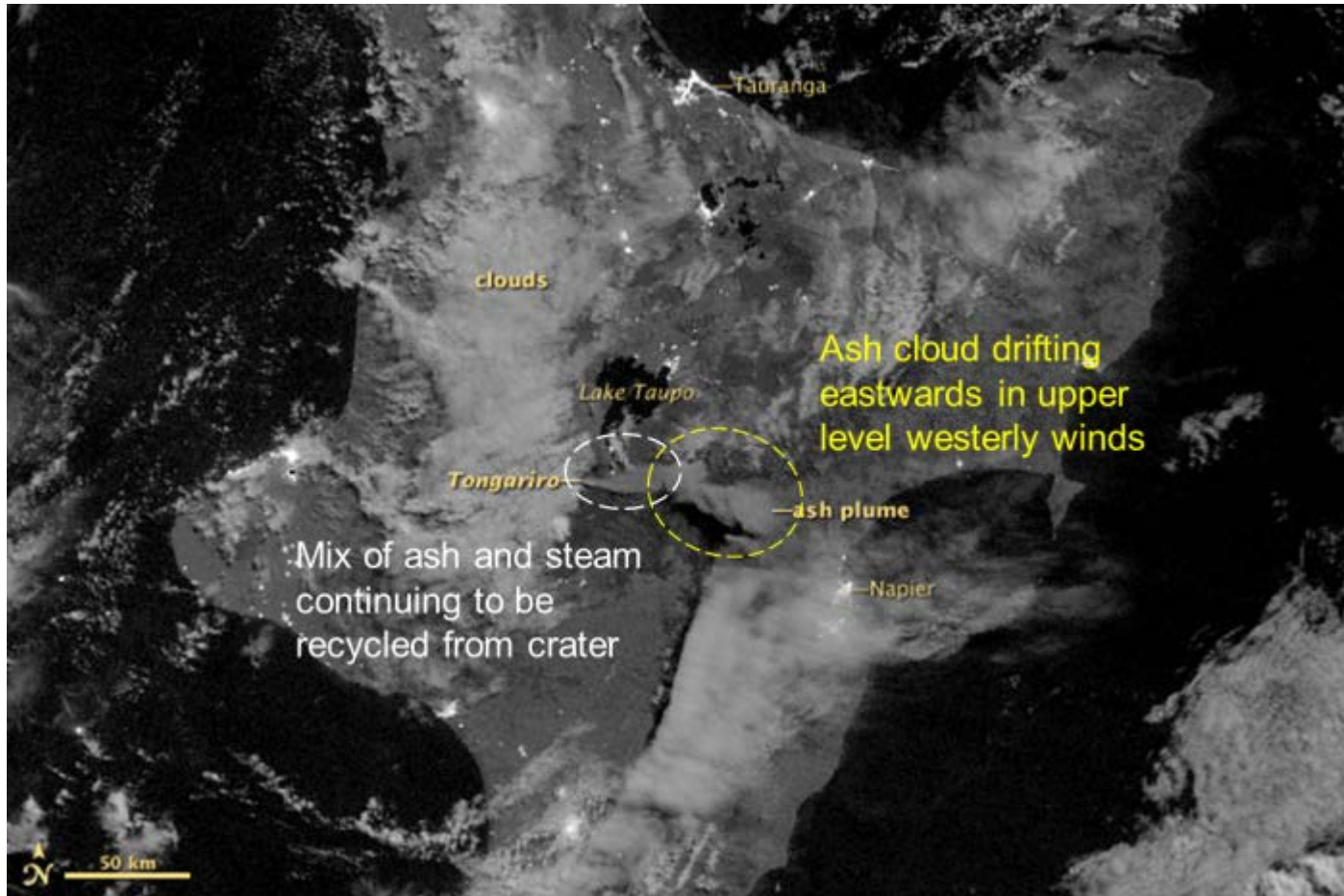
Hazard 3: Severe thunderstorms

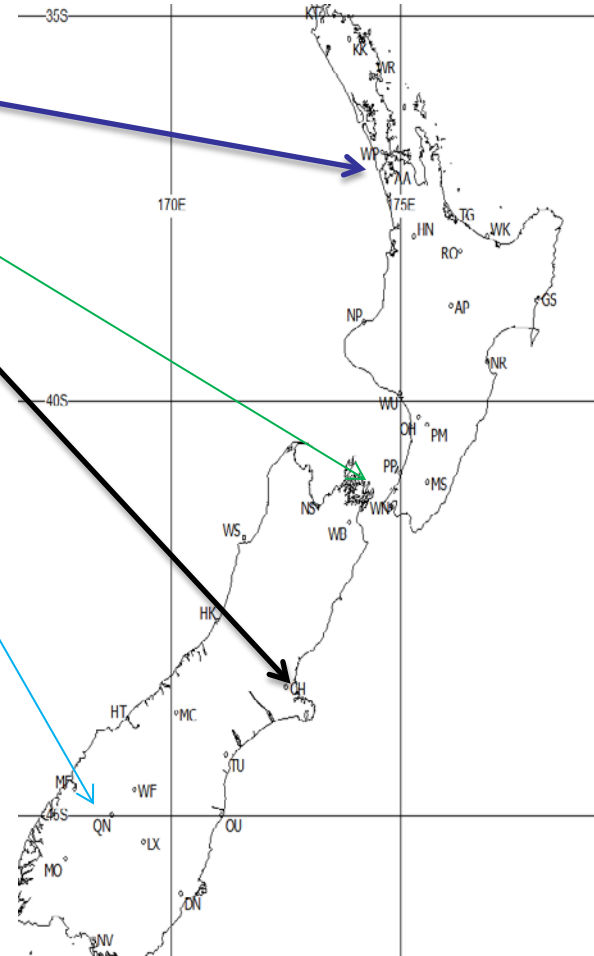MetService

Hazard 4: Dense Fog

Fog event days at international airports in last 12 months where visibility was reported as less than 1000m

Auckland – 15 events
Wellington – 3 events
Christchurch - 35 events
Queenstown – 8 events

MetService

# MetService's expectations and requirements of the new series of satellites

Hazard	Features	Key requirements
Major mid-latitude storms	Rapid scanning Multi-spectral bands High spatial resolution	Stable provision of imagery without communication errors
Volcanic eruptions and volcanic ash	Rapid scanning High spatial resolution Multi-spectral bands: we still have to change the forecast room culture to make the most of these	Stable provision … Product algorithms Easy-to-understand products
Severe thunderstorms	Rapid scanning High spatial resolution Multi-spectral bands: New instruments: A lightning mapper will help detect Thunderstorms	Stable provision … Product algorithms Easy-to-understand products
Dense Fog	Rapid scanning High spatial resolution Multi-spectral bands:	Stable provision … Product algorithms Easy-to-understand products

Infrastructure challenge - Forecast Inputs

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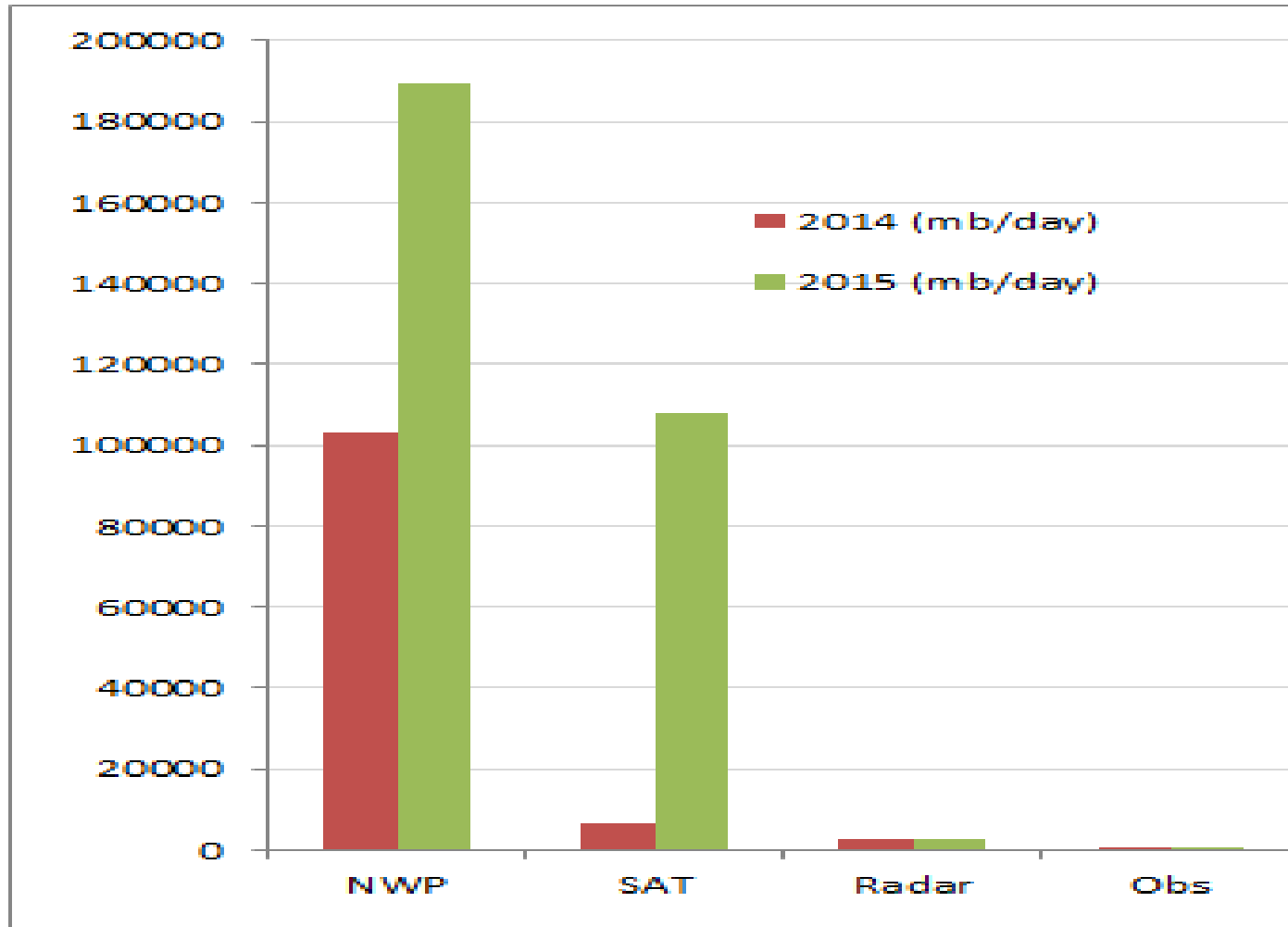
Lessons from our Himawari-8 Project

Use The Cloud for processing and storage
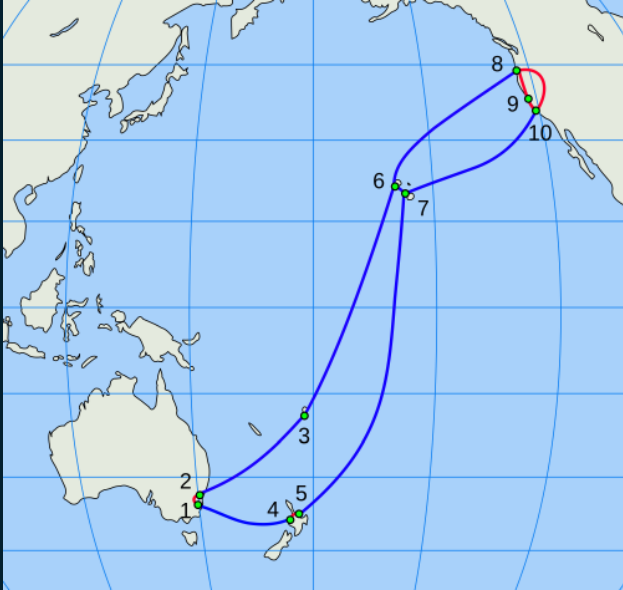
The skills that we need are being able to deal with Big Data

Hype Cycle

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Satellite data at MetService in the next 12-18 months

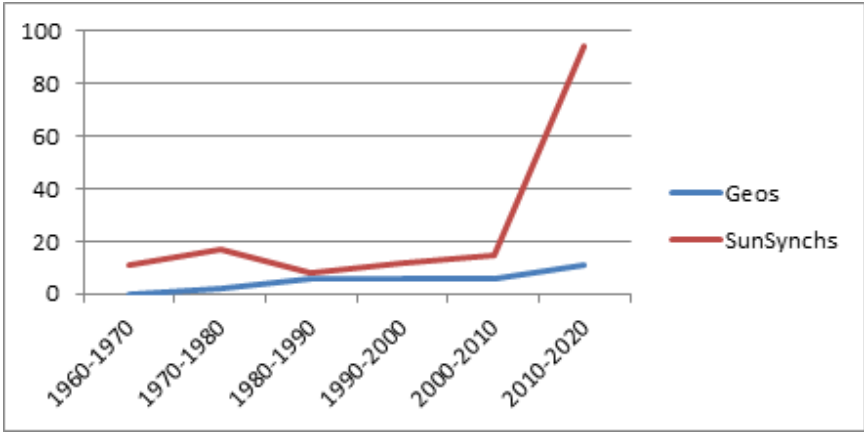Learn to use Himawari data properly in the forecast room

Spread the full extent of Himawari-8 data through other products, particularly graphical ones

Implement Himawari-8 quantitative volcanic ash retrieval system.

Fill the gaps in our Polar orbiter data supply.

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Q1. How long will we need people to write forecasts?

A1. We expect to have work for our meteorologists for the foreseeable future.

Previously the mindset was: "*what is the weather going to be?*"

In the future: "*Is the weather sufficiently different from the plan that I have to change something?*"
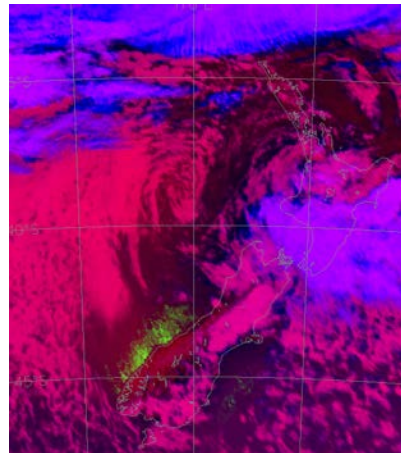
MetService

Q2. Will forecasters always need to see Level1 or even Level2 satellite products?

A2. Complete viewing of Level1 is not practical even now. The real problem is the limit of human "ingest".

megabytes as L1 graphics from Himawari (all bands) available every 0.1 second	Graphical megabytes to cover a standard PC monitor assuming 4 bytes/pixel	
750mb * 10 * 10 / 6000 = **12.5**	4 * 1920*1080/1024/1024 = **7.9**	

Level2 is an good medium term option for us, as long as…

Really long term ??????

Any Questions?

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