

Expressing confidence in the VAAC's T+0 assessment

Progress so far...

Meeting	Outcome
VAAC Best Practices 1 <i>February 2012</i>	<p>Group discussed the IATA proposal to investigate the use of confidence levels on advisories</p> <p>Agreed to</p> <ul style="list-style-type: none">• walk before run• Look at T+0 first• Investigate ways to include confidence in the RMK section



Expressing confidence in the VAAC's T+0 assessment

Progress so far...

Meeting	Outcome
VAAC Best Practices 2 <i>June 2012</i>	<p>Group looked at some case studies and obtained feed back from users</p> <p>Agreed that</p> <ul style="list-style-type: none">• Only use two confidence levels: <i>High</i> and <i>Low</i>• User education is critical to success• Enhanced graphical confidence products may be useful but VAAC resourcing is a challenge to implementation



Expressing confidence in the VAAC's T+0 assessment

Progress so far...

Meeting	Outcome
IAVWOPSG/7 March 2013	<p>Group discussed outcomes from the best practices process</p> <p>Agreed to</p> <ul style="list-style-type: none">• <i>Define the details concerning the inclusion of confidence in VAA/VAG and possible roll-out strategies to support implementation; (7/19)</i>• <i>decide where information and guidance material for VAACs and users will be made available; and (7/19)</i>• <i>provide the final material to the Secretary by October 2013 for inclusion in appropriate ICAO manuals (Doc 9691 and/or Doc 9766) and posting on the IAVWOPSG website, if necessary. (7/19)</i>



Expressing confidence in the VAAC's T+0 assessment

Progress so far...

Meeting	Outcome
IAVWOPSG/7 <i>March 2013</i>	<p>Group discussed outcomes from the best practices process</p> <p>Agreed to</p> <ul style="list-style-type: none">• <i>Determine the scientific limitations for assigning confidence to volcanic ash analysis and forecasts; (7/20)</i>• <i>Determine an appropriate product(s) to help inform users safety risk assessments; and (7/20)</i>• <i>Report progress to the IAVWOPSG/8 meeting (7/20)</i>



Expressing confidence in the VAAC's T+0 assessment

Progress so far...

Meeting	Outcome
IAVWOPSG/8 <i>February 2014</i>	<p>Group discussed outcomes on 7/19 and 7/20</p> <p>Agreed to these definitions:</p> <ul style="list-style-type: none">• High confidence - Strong observational evidence of volcanic ash and high confidence in model(s) prediction resulting in low forecast uncertainty• Low confidence - Weak observational evidence of volcanic ash and/or low confidence in model(s) prediction resulting in high forecast uncertainty



Expressing confidence in the VAAC's T+0 assessment

Progress so far...

Meeting	Outcome
IAVWOPSG/8 <i>February 2014</i>	Group discussed outcomes on 7/19 and 7/20 Agreed to: <ul style="list-style-type: none">• <i>Undertake a collaborative operational trial of the provision of confidence information in the remarks section of VA advisories, and (8/19)</i>• <i>Report progress and experience to the IAVWOPSG/9 Meeting (8/19)</i>



Expressing confidence in the VAAC's T+0 assessment

Progress so far...

Meeting	Outcome
Best Practices 3 <i>May 2015</i>	<p>Group discussed 8/19, the use of evidence checklists, new products from VAACs London and the use of coloured polygon edges</p> <p>Agreed to:</p> <ul style="list-style-type: none">• Only use two confidence levels!• Collaborate on the development of a T=0 volcanic ash confidence graphical product proposal, based on the Best Practices 'Evidence Checklist' to underpin a High of Low confidence assessment (VW010)



Risk Assessment Support Products

At the Anchorage 2015 side meeting, consensus was reached amongst VAAC managers and VAAC representatives on the following outcomes:

Confidence level of high or low for T+ 00 hour will be included in the remarks section of the VAA and VAG.

Two possible statement examples were offered:

T+0 CONFIDENCE HIGH (or LOW)



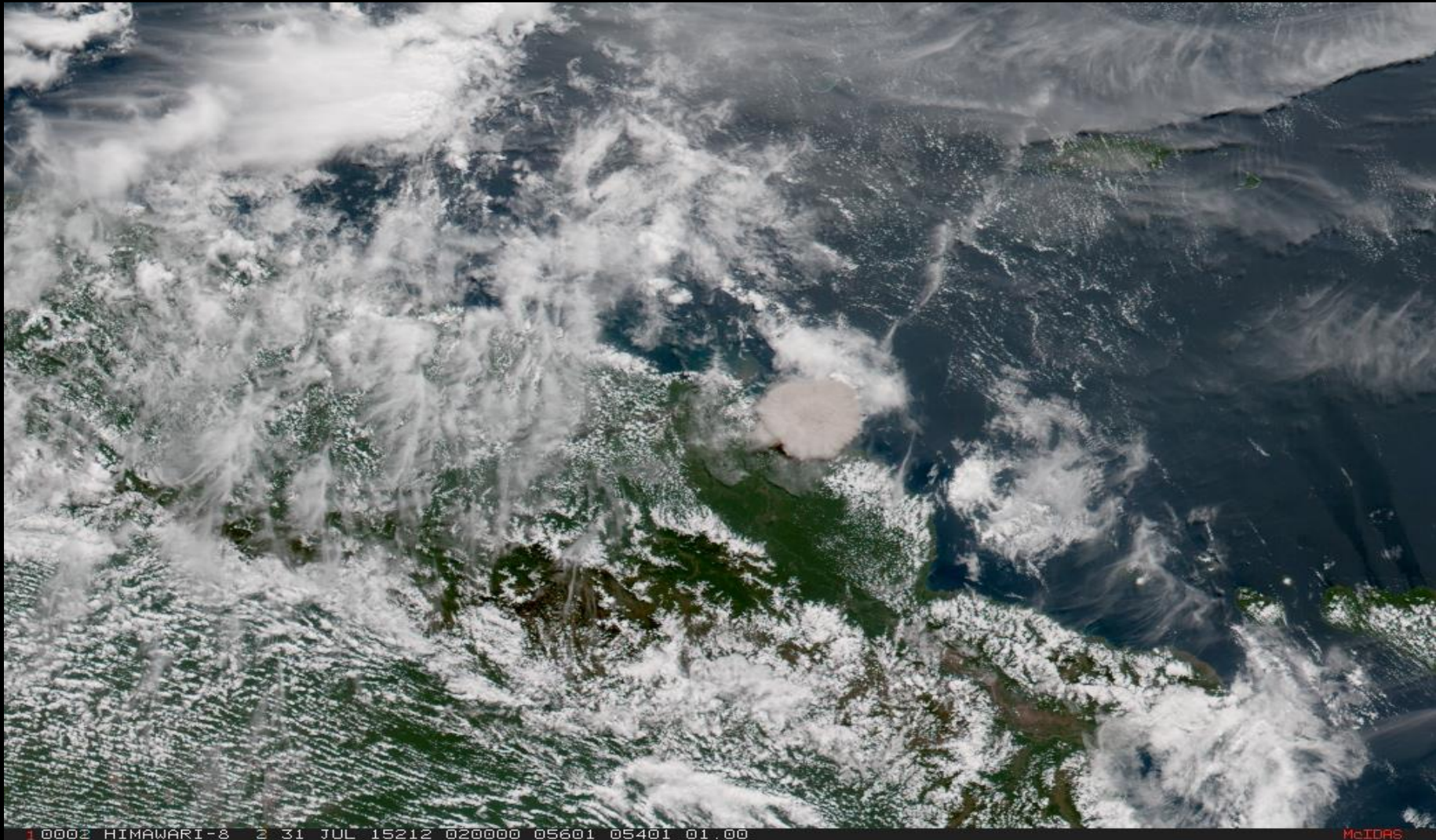
Risk Assessment Support Products

So what happened?

Status	VAAC
Consistently including confidence assessment in VAA	Montreal, Toulouse
Occasionally including confidence assessment in VAA	Darwin
Not yet including confidence assessment in VAA	Tokyo, Washington, Anchorage, Wellington, Buenos Aires
Insufficient data to assess	London



Risk Assessment Support Products



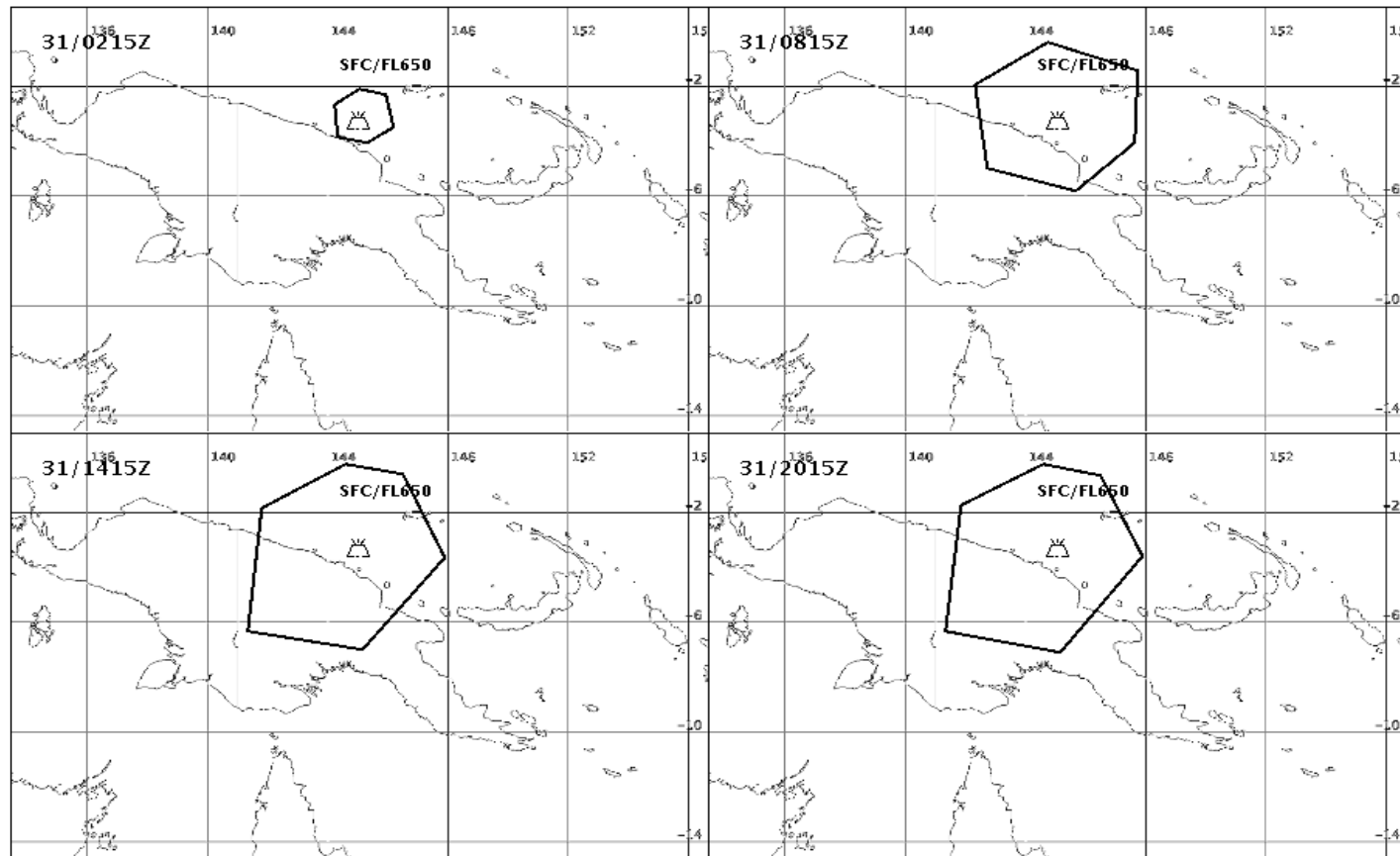
1 0002 HIMAWARI-8 2 31 JUL 15212 020000 05601 05401 01.00

McIDAS



Australian Government
Bureau of Meteorology

Risk Assessment Support Products



VOLCANIC ASH ADVISORY
DTG: 20150731/0221Z
VAAC: Darwin
VOLCANO: Manam 251020
AREA: Papua New Guinea

SUMMIT ELEV: 1807M
ADVISORY NR: 2015/52
INFO SOURCE: HIMAWARI, GROUND REPORT
AVIATION COLOUR CODE: RED
ERUPTION DETAILS: VA PLUME OBS TO FL650 AT
31/0200Z EXT 35NM

RMK: LARGE ERUPTION CONFIRMED AT MANAM. FORECAST CONFIDENCE LOW.
UPDATE ADVISORY UPDATED WITH NEW SATELLITE IMAGERY. *** USE TEXT
ADVISORY FOR FLIGHT PLANNING***
NXT ADVISORY: NO LATER THAN 20150731/0300Z



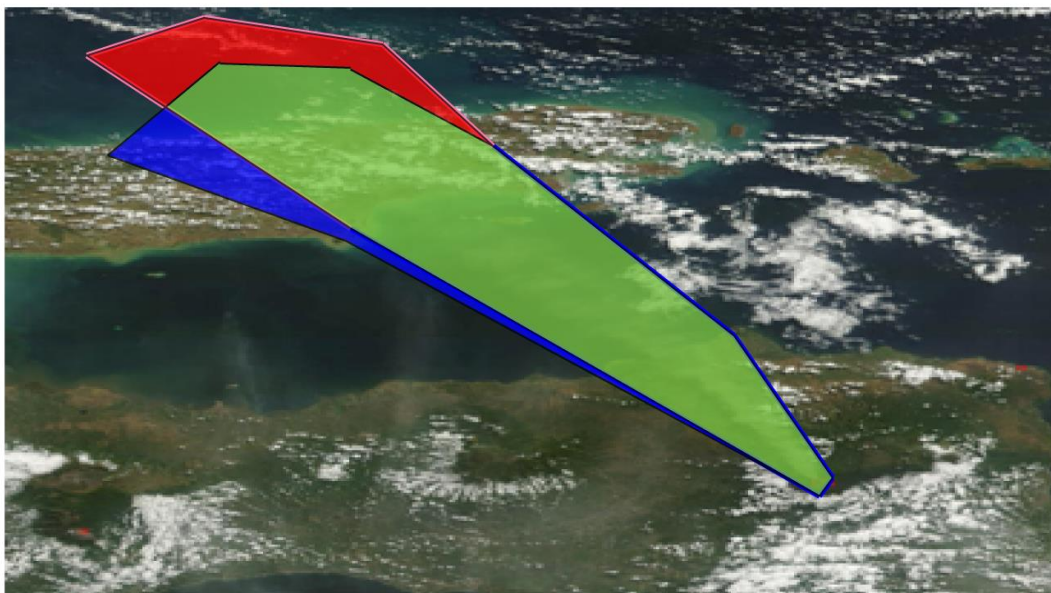
Risk Assessment Support Products

Feed back from users in VAAC Darwin area...


User	Comment
Airline Dispatchers	<i>'What satellite images are you using to get the confidence?'</i> <i>'Which met model are you using and how are you running HYSPLIT'</i>
	<i>'Do you have any training material on how the confidence is determined'</i>
	<i>'What do you expect us to do differently now that you have told us you have high confidence?'</i>
MWO	<i>'VAAC has low confidence so there is not much ash in the area'</i>
Private pilot	<i>'Confidence is meaningless without evidence; what is this based on?'</i>





Risk Assessment Support Products



Volcano: Raung **Issued:** 0300Z 31/07/2015 **VAAC:** Darwin

 Ash observed but
not previously forecast

 Ash observed and
previously forecast

 Ash previously forecast
but not observed

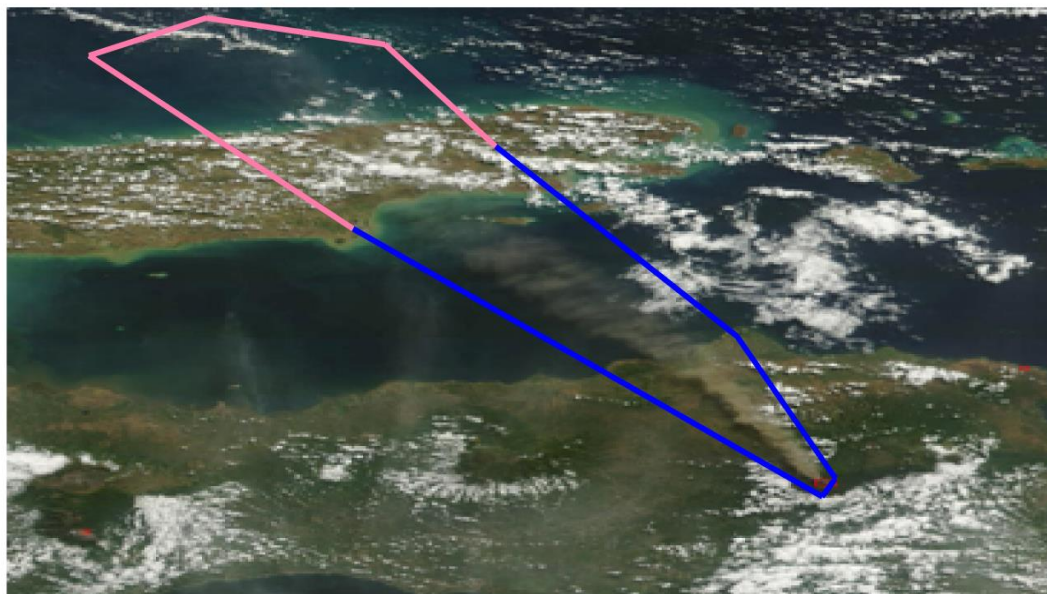
- Comparison of previous VAA T+6 with current T+0
- Uses interpolation for non-routine issue times
- Highlights areas of change

Forecast Stability Product



Australian Government
Bureau of Meteorology

Risk Assessment Support Products



Volcano: Raung **Issued:** 0300Z 31/07/2015 **VAAC:** Darwin Low Confidence High Confidence

Notes:

A sustained, low intensity eruption is continuing at the volcano Raung. Ash is continuing to be erupted to a maximum height of 17 000 ft and prevailing winds are expected to remain southeasterly for the next 24 hours. The ash boundary is clearly discernible in visible imagery extending to 45 nm northwest; however uncertainty increases beyond 45 nm as the plume becomes more diffuse. Ash is not currently discernible beyond 60 nm from the volcano.

- VAG T+0 polygon edges colour coded as high/low spatial uncertainty
- Allows product users to understand the overall body of evidence

Forecaster's assessment of the strength of evidence



Australian Government
Bureau of Meteorology