METEOROLOGY PANEL

Proposed Elevation of the Volcano Observatory Notice to Aviation (VONA)

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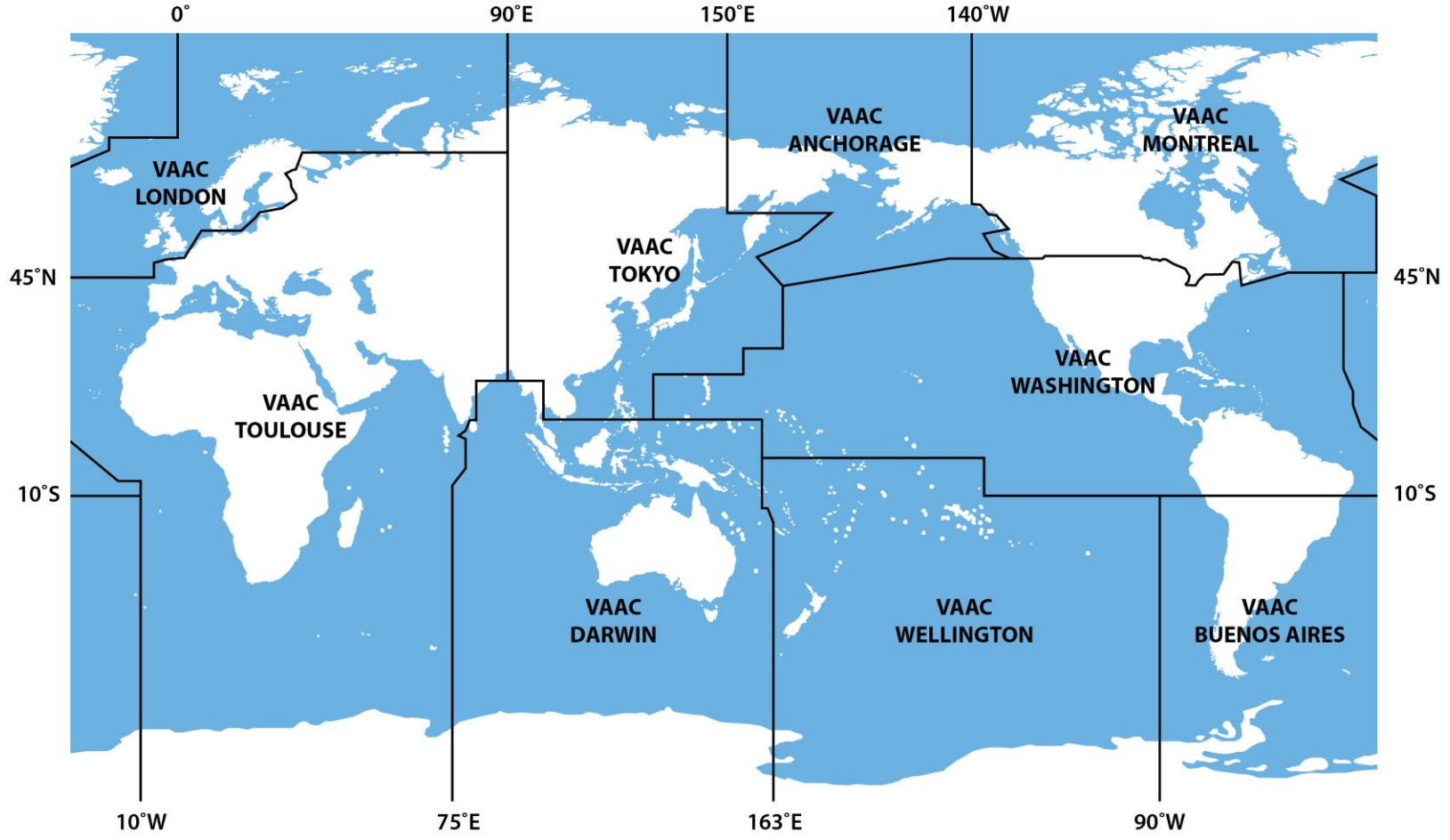
Volcanic Ash Advisory Centres (VAACs)



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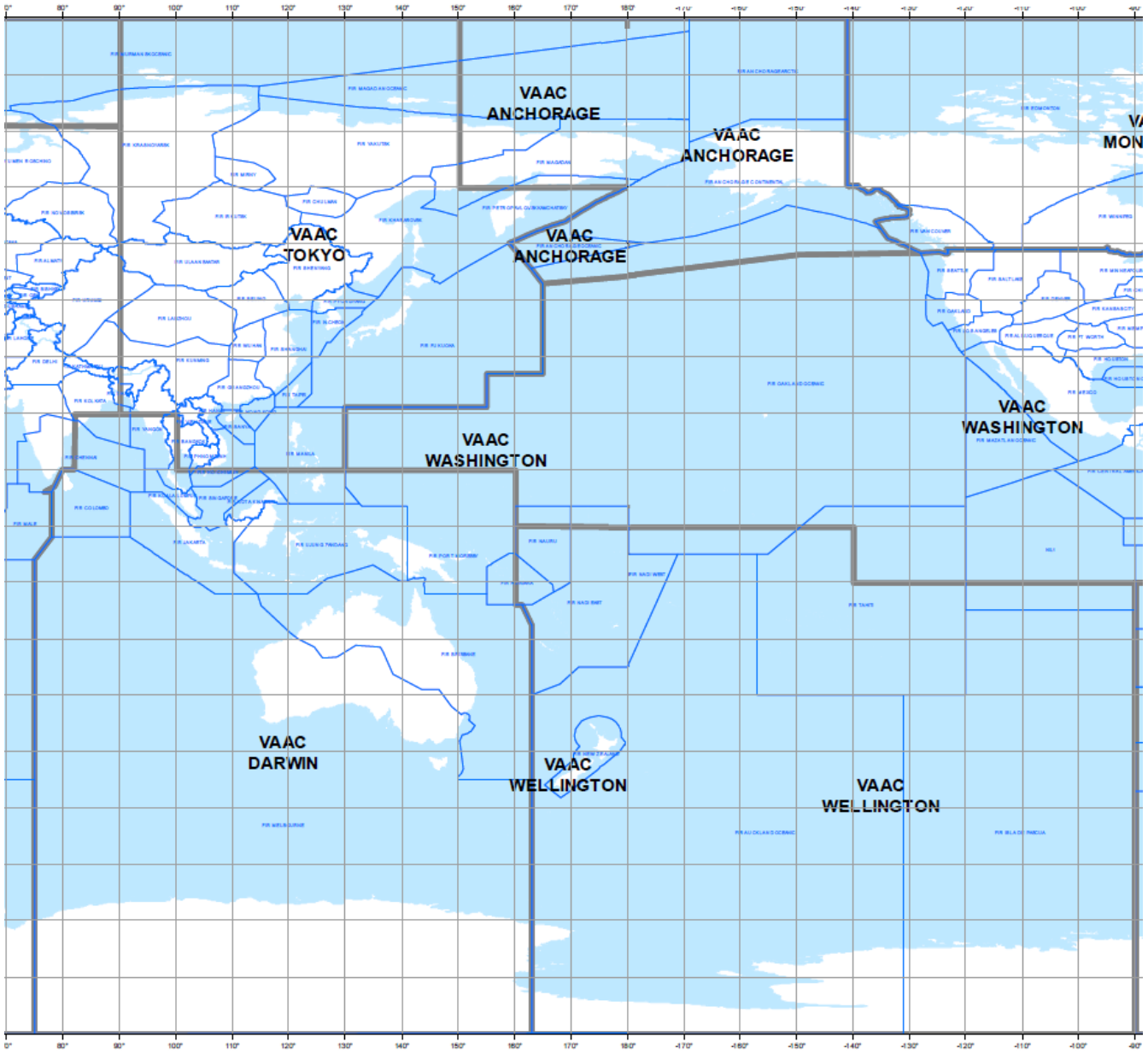
APAC VAAC areas of responsibility and the FIRs located within



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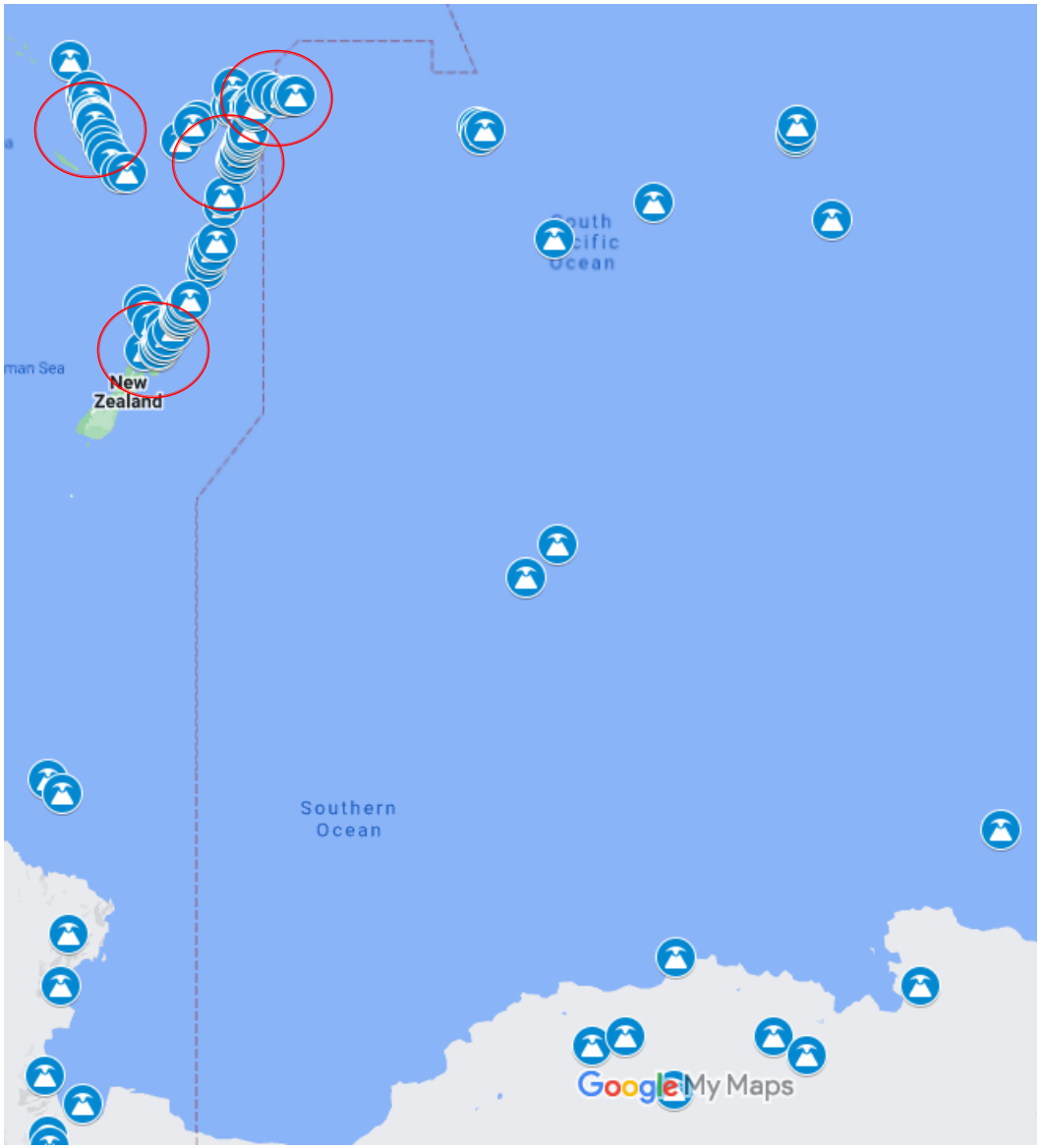

Zooming in on the VAAC Wellington AOR – around 100 volcanoes active during the last 10,000 years ('Holocene' period).

Some volcanoes are very remote and/or undersea – the environment not easy or suitable for ground monitoring by State volcano observatories.

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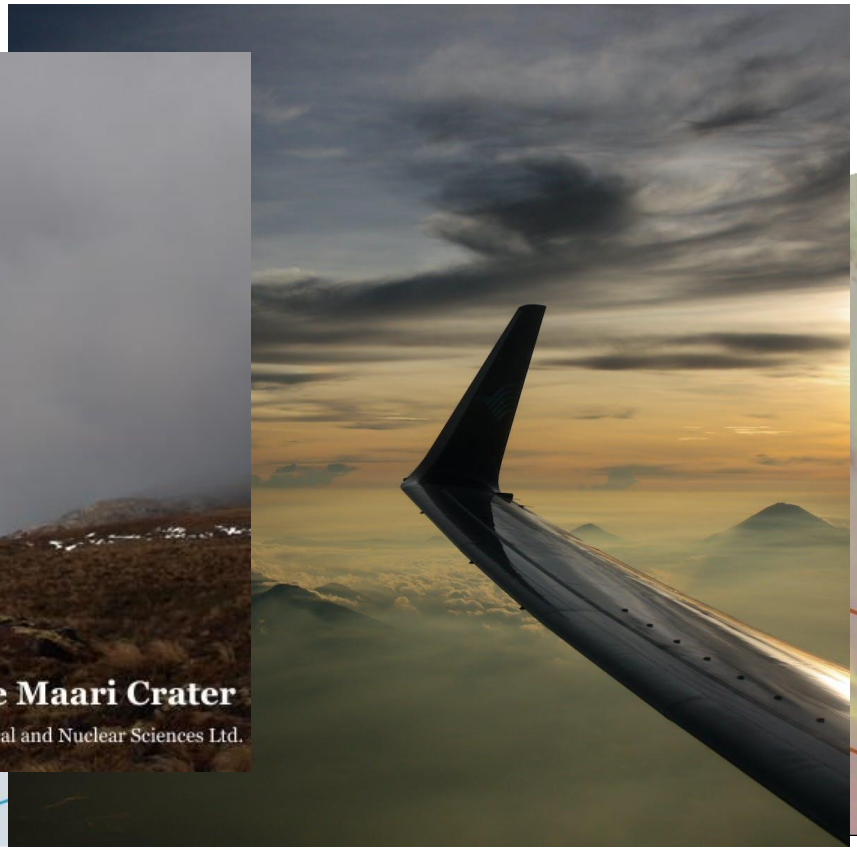
VAAC monitoring tools



2022-01-13 15:34:12 - 2022-01-14 12:32:39

Negative	Positive	Cloud
57186 (29.9%)	16088 (8.4%)	118035 (61.7%)

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Current Annex 3 requirement

3.6 State volcano observatories

Contracting States with active or potentially active volcanoes shall arrange that State volcano observatories monitor these volcanoes and when observing:

a) significant pre-eruption volcanic activity, or a cessation thereof;

b) a volcanic eruption, or a cessation thereof; and/or

c) volcanic ash in the atmosphere

shall send this information as quickly as practicable to their associated ACC/FIC, MWO and VAAC.

Note 1.— Pre-eruption volcanic activity in this context means unusual and/or increasing volcanic activity which could presage a volcanic eruption.

Note 2.— Doc 9766 contains guidance material about active or potentially active volcanoes.

Current Annex 3 requirement

4.1 Information from State volcano observatories

Recommendation.— *The information required to be sent by State volcano observatories to their associated area control centres (ACCs)/flight information centres (FICs), meteorological watch office (MWO) and VAAC should comprise:*

a) for significant pre-eruption volcanic activity: the date/time (UTC) of report; name and, if known, number of the volcano; location (latitude/longitude); and description of volcanic activity; and

b) for volcanic eruption: the date/time (UTC) of report and time of eruption (UTC) if different from time of report; name and, if known, number of the volcano; location (latitude/longitude); and description of the eruption including whether an ash column was ejected and, if so, an estimate of height of ash column and the extent of any visible volcanic ash cloud, during and following an eruption; and

c) for volcanic eruption cessation: the date/time (UTC) of report and time of eruption cessation (UTC); name and, if known, number of the volcano; and location (latitude/longitude).

Note 1.— Pre-eruption volcanic activity in this context means unusual and/or increasing volcanic activity which could presage a volcanic eruption.

Note 2.— The State volcano observatories may use the Volcano Observatory Notice for Aviation (VONA) format to send information to their associated ACCs/FICs, MWO and VAAC. The VONA format is included in the Handbook on the International Airways Volcano Watch (IAVW) — Operational Procedures and Contact List *(Doc 9766) which is available on the ICAO website.*

VONA – ICAO Doc 9766

VOLCANO OBSERVATORY NOTICE FOR AVIATION (VONA)

Item No	Element	Content
1	Message title	VOLCANO OBSERVATORY NOTICE FOR AVIATION
2	Issued:	20190626/0600Z
3	Volcano:	White Island 241040
4	Current Aviation Color Code:	Yellow
5	Previous Aviation Color Code:	Green
6	Source:	GNS Science, New Zealand
7	Notice Number:	NZ VONA 01/19
8	Volcano Location:	3752S17718E
9	Area:	White Island
10	Summit Elevation:	1053FT
11	Volcanic Activity Summary:	Moderate to heightened volcanic unrest with second highest SO2 flux of past 20 years
12	Volcanic Cloud Height:	NIL
13	Other Volcanic Cloud information:	NIL
14	Remarks:	ACC changed from Green to Yellow
15	Contacts:	Duty Volcanologist, +6472761784ph,+6473748199fax
16	Next Notice:	Will be issued if there is a change in aviation color code or when a significant volcanic event happens within the current color code.

The Volcano Observatory Notice to Aviation – or VONA – is a *suggested* format for the information provided by SVOs to VAACs, MWOs and ACC/FIC – contained in ICAO Doc 9766 *Handbook on the International Airways Volcano Watch*.

ICAO COLOUR CODE	STATUS OF ACTIVITY OF VOLCANO
GREEN	Volcano is in normal, non-eruptive state. *or, after a change from a higher level*: Volcanic activity considered to have ceased, and volcano reverted to its normal, non-eruptive state.
YELLOW	Volcano is experiencing signs of elevated unrest above known background levels. *or, after a change from higher alert level* : Volcanic activity has decreased significantly but continues to be closely monitored for possible renewed increase.
ORANGE	Volcano is exhibiting heightened unrest with increased likelihood of eruption. *or*, Volcanic eruption is underway with no or minor ash emission. *[specify ash-plume height if possible]*.
RED	Eruption is forecasted to be imminent with significant emission of ash into the atmosphere likely. *or*, Eruption is underway with significant emission of ash into the atmosphere. *[specify ash-plume height if possible]*.

SVO Designation

How do you know your VO is a designated SVO?

Need to check the ICAO regional air navigation plan (ANP) – Volume 1, Table MET I-1 (same Table in every ICAO region!)

APAC ANP: https://www.icao.int/APAC/Pages/APAC-eANP.aspx

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APAC SVOs

TABLE MET I-1
STATE VOLCANO OBSERVATORIES

Explanation of the Table

Column

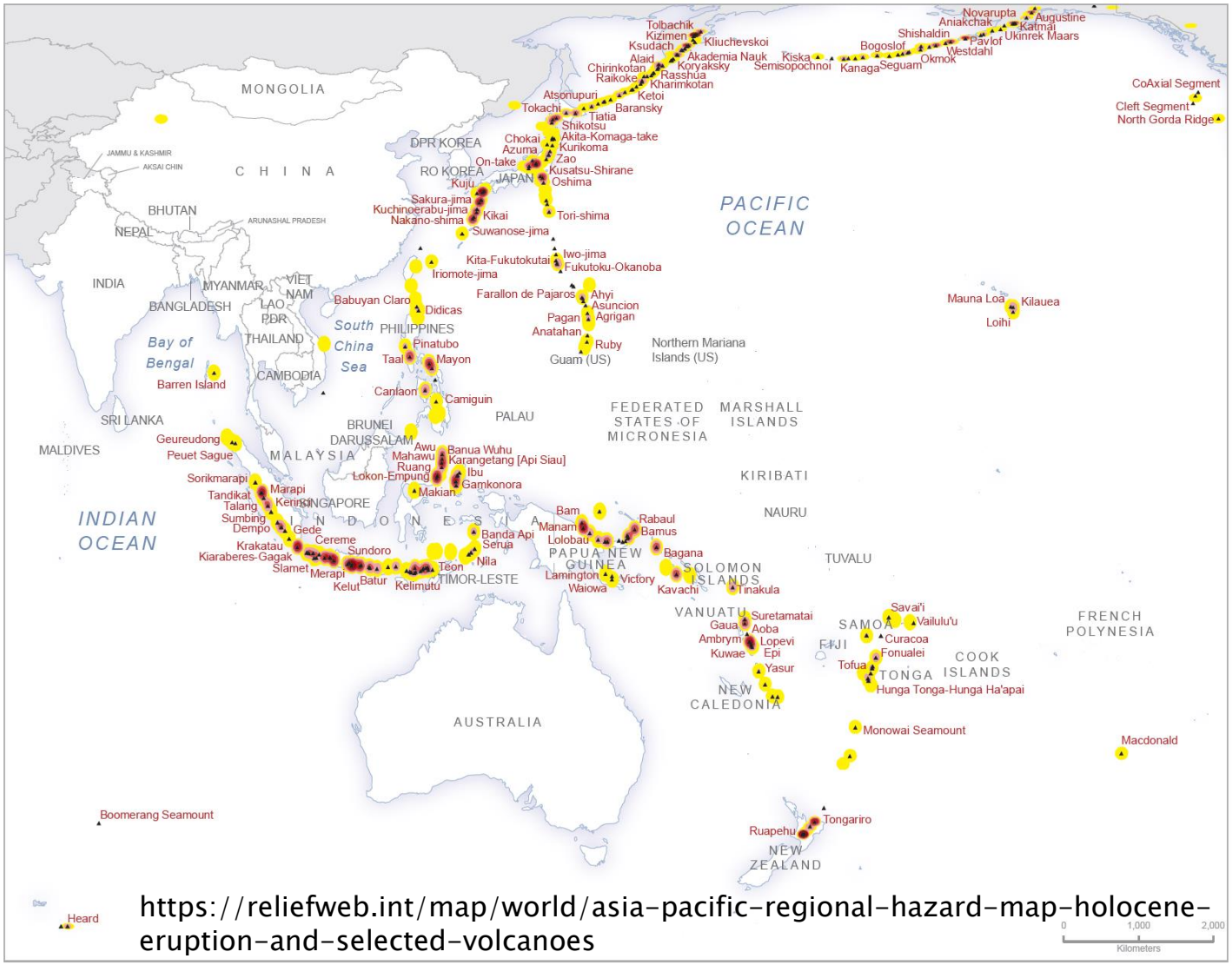
1 Name of the State responsible for the provision of a volcano observatory

2 Name of the volcano observatory

State	Volcano observatory
1	2
China	Heilongjiang Wudalianchi Volcano Observatory
China	Jilin Changbai Mountain Tianchi Volcano Observatory
Japan	Fukuoka Volcanic Observation and Information Center, Japan Meteorological Agency
Japan	Kagoshima Local Meteorological Office, Japan Meteorological Agency
Japan	Sapporo Volcanic Observation and Information Center, Japan Meteorological Agency
Japan	Sendai Volcanic Observation and Information Center, Japan Meteorological Agency
Japan	Tokyo Volcanic Observation and Information Center, Japan Meteorological Agency
India	TBD
Indonesia	Directorate of Volcanology and Geological Hazard Mitigation (DVGHM)
New Zealand	Wairakei Research Centre Institute of Geological and Nuclear Sciences
Papua New Guinea	Rabaul

Asia-Pacific: Holocene Eruption and Selected Volcanoes

OCHA



Volcanic Explosivity in Asia-Pacific

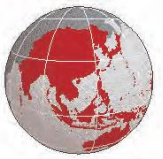
This map shows the density of volcanic eruptions based on the explosivity index for each eruption and the time period of the eruption. Eruption information is spread to 100km beyond point source to indicate areas that could be affected by volcanic emissions or ground shaking.

The original source of the data is a point dataset of worldwide historical volcanic eruptions occurring within approximately the last 11,500 years (to 2002). Adapted from Simkin and Siebert, 1994 "Volcanoes of the World: an Illustrated Catalog of Holocene Volcanoes and their Eruptions" and produced digitally by the Smithsonian Institution's Global Volcanism Program.

The volcanic eruptions were rated using the Volcanic Explosivity Index (VEI). The VEI is a simple 0-to-8 index of increasing explosivity, with each successive integer representing about an order of magnitude increase.

Volcanic Explosivity

- 1 Less explosive
- 2
- 3
- 4
- 5
- 6 Most explosive
- Holocene Volcano



https://reliefweb.int/map/world/asia-pacific-regional-hazard-map-holocene-eruption-and-selected-volcanoes

Proposed Amd 81 – VONA

Using the VONA template becomes a “recommended practice” for State volcano observatories. VONA to be provided to operators like any other aviation MET warnings.

To be provided in both traditional alphanumeric code (TAC) and IWXXM format.

VONA	
DTG:	20240216/0130Z
VOLCANO:	KARYMSKY|300130
PSN:	N5403 E15927
AREA:	RUSSIA
SOURCE ELEV:	1536M AMSL
NOTICE NR:	2021/4
CURRENT COLOUR CODE:	YELLOW
PREVIOUS COLOUR CODE:	ORANGE
SVO:	KVERT
ACT STS:	DECREASED ACT
ONSET:	NIL
DUR:	NIL
VA CLD HGT:	15KM AMSL
HGT SOURCE:	GND OBSERVER
MOV:	SW
CTC:	DUTY VOLCANOLOGIST, TEL +123-456-789 EMAIL, DUTY.VOLCANOLOGIST[AT]VOLCANO.COM, WWW.VOLCANO.COM
RMK:	SATELLITE, SEISMIC AND INFRASOUND DATA SHOW NO EVIDENCE OF FURTHER ERUPTIVE ACT. FUTURE EXPLOSIONS AT KARYMSKY ARE LIKELY. THEY OCCUR WO WRNG AND TYPICALLY PRODUCE SMALL VA CLD THAT DISSIPATE QUICKLY; HOWEVER, LARGER ASH EM ARE POSS.
NXT NOTICE:	WILL BE ISSUED BY 20240223/0130Z

Proposed Amd 81 – VONA

New “unassigned” colour code for poorly monitored volcanoes (e.g., undersea volcanoes, remote volcanoes)

ICAO Colour code	Status of activity of volcano
GREEN	The volcano is in a normal, non-eruptive state; or, volcanic activity is considered to have ceased, and the volcano has reverted to its normal, non-eruptive state.
YELLOW	The volcano is experiencing signs of elevated unrest above known background levels; or, volcanic activity has decreased significantly but continues to be closely monitored for possible renewed increase;.
ORANGE	The volcano is exhibiting heightened unrest with increased likelihood of an eruption; or a volcanic eruption is underway but with no or minor volcanic ash emission.
RED	A volcanic eruption is expected to be imminent with significant emission of volcanic ash into the atmosphere likely; or, a volcanic eruption is underway with significant emission of volcanic ash into the atmosphere.
UNASSIGNED	There is insufficient information available to assess the current status of the volcano or volcanic activity.

How will this work?

- The first thing is for national aviation authorities (NAAs) to reach out to their SVOs and discuss the requirements.
- SVOs are not likely to have AFS connections – so working with their associated meteorological or ATC offices, or with MWOs/VAACs will be important.
- Guidance is being developed for inclusion in the *Handbook on the International Airways Volcano Watch* (Doc 9766) to assist SVOs.
- Dissemination is being worked on – WMO is providing an IWXXM schema and bulletin headers.

Amd 81 proposes:

"*State volcano observatories shall send information on volcanic activity and/or volcanic ash in the atmosphere as quickly as practicable to their associated VAAC, MWO, NOTAM office, ACC/FIC and, in accordance with regional air navigation agreement, international OPMET databanks…*"

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SVOs – where to start?

- First, check the following:
  - Ensure inclusion in the ANP Table MET I-1
  - Ensure meeting current Amd 80 requirements – if possible, use the Doc 9766 VONA template for sending information to VAAC, ATC, etc.

- Talk to NAA about how to disseminate the VONA on the AFS – even if it's just in TAC form to start with.

- Talk to your associated VAAC – they will likely have some good advice and be keen to help.

Questions?

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