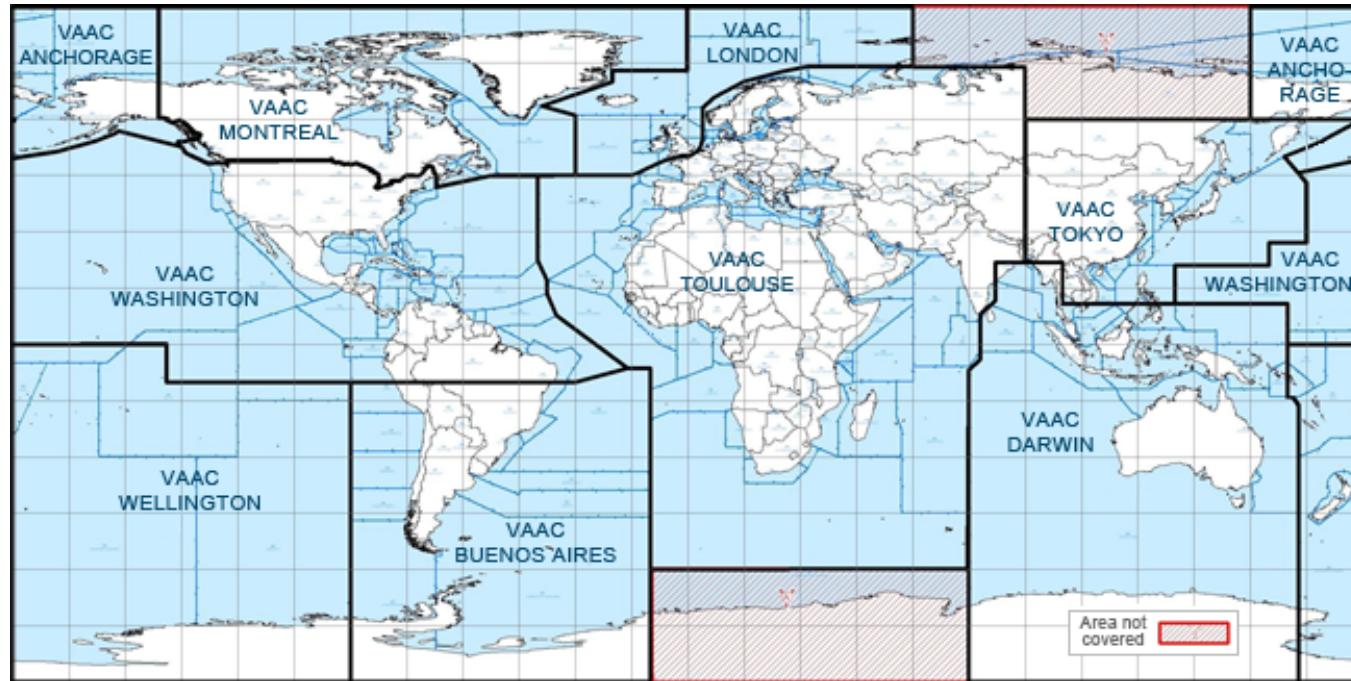


# VOLCANIC ANALYSIS

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# Volcanic Ash Advisories



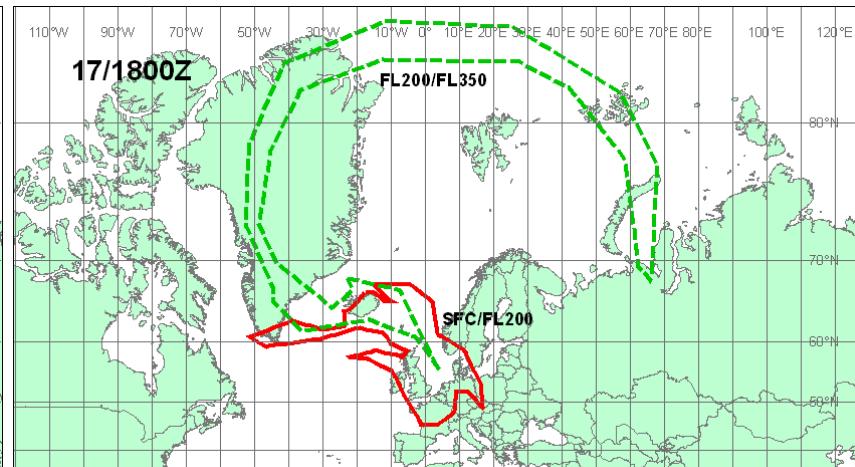
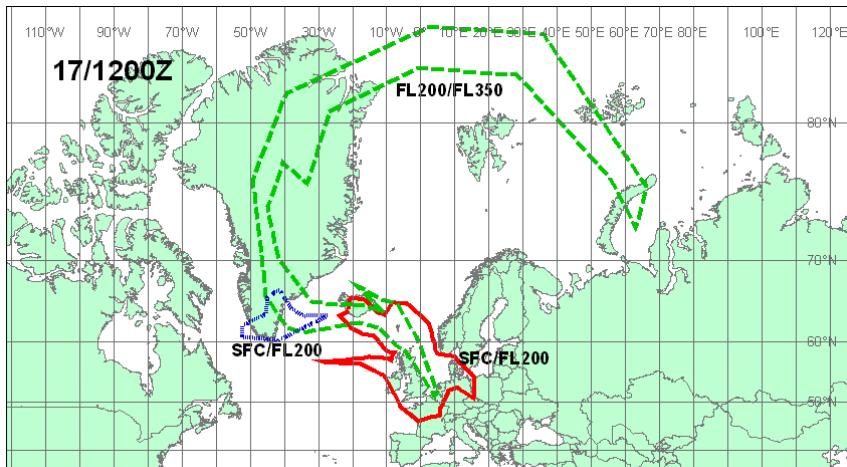
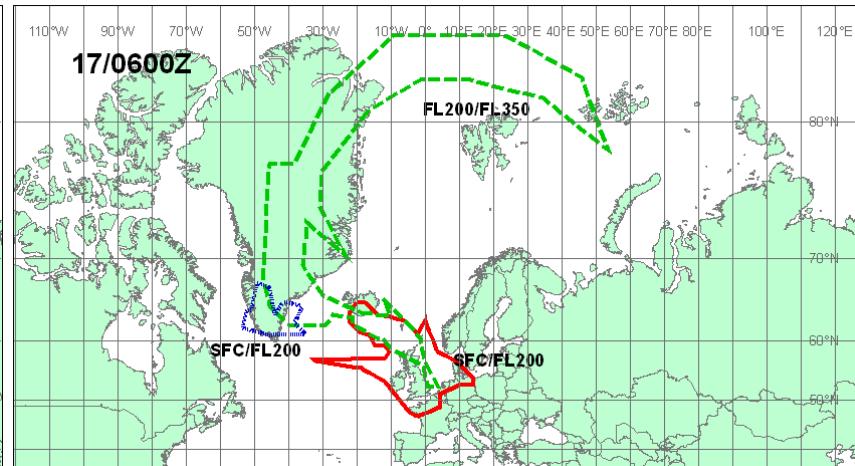
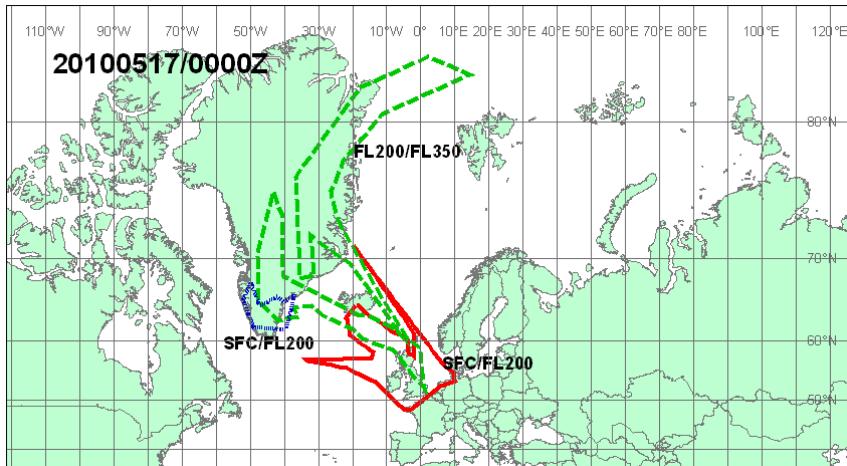
*Information Sources:*  
Pilot reports  
Volcano observatories  
Satellite imagery

*Volcanic Ash Advisory Centres:*  
Initiate dispersal simulations  
Validate simulation results  
Provide volcanic ash advisory

*Aviation Sector:*  
Use information to inform flight paths

# Volcanic Ash Advisories

Forecast ash dispersion



VA ADVISORY  
DTG: 20100517/0000Z  
VAAC: LONDON  
VOLCANO:  
EYJAFJALLAJOKULL  
PSN: N6338 W01937  
AREA: ICELAND

SUMMIT ELEV: 1666M  
ADVISORY NR: 2010/126  
INFO SOURCE: ICELAND MET OFFICE  
AVIATION COLOUR CODE: RED  
ERUPTION DETAILS: ERUPTION CONTINUING  
TO AN ESTIMATED HEIGHT OF FL230 TO FL260,  
OCNL FL290.

RMK: A SEPARATE AREA OF SFC TO FL200 OVER GREENLAND IS  
MARKED IN BLUE ON GRAPHICS.  
NXT ADVISORY: 20100517/0600Z

text providing key information on  
the volcano, eruption and source of in

# Volcanic Ash Advisories

IDD41290

VA ADVISORY

DTG: 20160106/0330Z

VAAC: DARWIN

VOLCANO: SINABUNG 261080

PSN: N0310 E09824

AREA: INDONESIA

SUMMIT ELEV: 2460M

ADVISORY NR: 2016/1

INFO SOURCE: GROUND REPORTS, HIMAWARI-8

AVIATION COLOUR CODE: RED

ERUPTION DETAILS: MINOR VA/STEAM EMISSION TO FL140  
EXTENDING TO THE WEST

OBS VA DTG: 06/0330Z

OBS VA CLD: SFC/FL140 N0314 E09824 - N0310 E09810 - N0305  
E09811 - N0304 E09817 - N0310 E09826 MOV SW 5KT

FCST VA CLD +6 HR: 06/0930Z SFC/FL140 N0314 E09824 - N0313  
E09811 - N0304 E09754 - N0248 E09738 - N0235 E09737 - N0222  
E09748 - N0237 E09809 - N0309 E09827

FCST VA CLD +12 HR: 06/1530Z NO VA EXP

FCST VA CLD +18 HR: 06/2130Z NO VA EXP

RMK: VA EXPECTED TO DISSIPATE WITHIN 12 HRS.

NXT ADVISORY: NO LATER THAN 20160106/0930Z

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volcano\_name  
colour\_code  
advice\_date,  
advice\_time  
time, date, fl,

# Volcanic Ash Advisories

Each advisory constitutes a text file containing the following information:

## VA ADVISORY

DTG:	20150223/2302Z	[Date and time issuance of advisory]
VAAC:	WELLINGTON	[Responsible VAAC]
VOLCANO:	AMBRYM 257040	[Volcano name and no]
PSN:	S1615 E16807	[Coordinates of volcano]
AREA:	VANUATU	[Volcano area]
SUMMIT ELEV:	1334M	[Elevation of volcano summit]
ADVISORY NR:	2015/17	[Advisory number]
INFO SOURCE:	PIREPS AND SATELLITE SO2 IMAGERY	[Source of information]
AVIATION COLOUR CODE:	UNKNOWN	[Typically provided by local VO's]
ERUPTION DETAILS:	NO OBSERVATIONS OF SIGNIFICANT ASH SINCE PIREP AT 212100Z OF ASH TO 8000FT.	[Information regarding information]
OBS VA DTG:	23/2300Z	[Date and time of observed ash]
EST VA CLD:	VA NOT IDENTIFIABLE FM SATELLITE	[Estimated height (FL) and extent of cloud]
FCST VA CLD+6 HR:	24/0500Z SFC/FL600 NO VA EXP	[Forecast of plume height & extent in 6 hrs]
FCST VA CLD+12 HR:	24/1100Z SFC/FL600 NO VA EXP hrs]	[Forecast of plume height & extent in 12 hrs]
FCST VA CLD+18 HR:	24/1700Z SFC/FL600 NO VA EXP hrs]	[Forecast of plume height & extent in 18 hrs]
RMK:	SATELLITE IMAGERY SHOWS NO SIGN OF ASH. NO FURTHER ADVISORIES WILL BE ISSUED UNTIL CONFIRMED REPORTS RECEIVED.	[Further info. on eruption and observations]
NXT ADVISORY:	NO FURTHER ADVISORIES=	[Time of next advisory]



# Volcanic Ash Advisories

- An “entry”/“row” per report, gathered by “Volcano ID”, with 22 “variables”/“columns”

	colour_code	fl_eruption_L2	no_id_satelite	fl_eruption_L1	file_name	id	confirmed	info_source	issued_time	is	
0502-09	yellow		-1		Darwin/2006/IDD41300.200607130420.txt	0502-09	1	RVO/Sat/Imagery	0420	20	
	yellow		-1		Darwin/2006/IDD41300.200607140356.txt	0502-09	1	RVO/MTSAT-1R/TERRA/MODIS	0356	20	
0502-08	colour_code	fl_eruption_L2	no_id_satelite	fl_eruption_L1	file_name	id	confirmed	info_source	issued_time	issued_date	vaac_obs
	orange		0	140	Darwin/2012/IDD41290.201207101643.txt	0502-08	1	MTSAT-2	1643	20120710	Darwin
	orange		0	140	Darwin/2012/IDD41290.201207102229.txt	0502-08	1	MTSAT-2	2229	20120710	Darwin
	orange		2	140	Darwin/2012/IDD41290.201207110417.txt	0502-08	1	MTSAT-2	0417	20120711	Darwin
	red		0	400	Darwin/2012/IDD41295.201205030543.txt	0502-08	1	MTSAT	0542	20120503	Darwin
	red		0	450	Darwin/2012/IDD41295.201205030608.txt	0502-08	1	MTSAT-2	0607	20120503	Darwin
	orange		0	450	Darwin/2012/IDD41295.201205030722.txt	0502-08	1	MTSAT-2	0721	20120503	Darwin
	colour_code	fl_eruption_L2	no_id_satelite	fl_eruption_L1	file_name	id	confirmed	info_source			
		0			Anchorage/FVAK21PAWU_1701121900.txt	311300	1	SATELLITE			
		-1			Anchorage/FVAK21PAWU_1701150130.txt	311300	1	HIMAWARI/GOES/SEISMICITY			
		0			Anchorage/FVAK21PAWU_1701181405.txt	311300	1	HIMAWARI/GOES/AVO/PILOT/REPORT/LIGH			
		0			Anchorage/FVAK21PAWU_1701181910.txt	311300	1	HIMAWARI/GOES			
		0			Anchorage/FVAK21PAWU_1701190140.txt	311300	1	GOES/MODEL/DATA			
		2			Anchorage/FVAK21PAWU_1701190635.txt	311300	1	GOES/POES/			
		0			Anchorage/FVAK21PAWU_1701201515.txt	311300	1	HIMAWARI/GOES/POES/AVO/PIREPS			
		0			Anchorage/FVAK21PAWU_1701201950.txt	311300	1	HIMAWARI/GOES/POES			
		2			Anchorage/FVAK21PAWU_1701210140.txt	311300	1	HIMAWARI/GOES/POES			
		0			Anchorage/FVAK21PAWU_1701221805.txt	311300	1	HIMAWARI/GOES			

vaac\_total\_line.json

# Volcanic Dataset

```
{"colour_code": null, "fl_eruption_L2": null, "no_id_satelite": 0, "fl_eruption_L1": null, "file_name": "Darwin/2004/IDD41295.200412170409.txt", "issued_date": "20041217", "confirmed": 1, "info_source": "AVHRR/MODIS/USAF", "issued_time": "0408", "id": "252010", "vaac_obs": "Darwin", "referal": 0, "fl_fcst_18hr_L2": null, "fl_fcst_18hr_L1": null, "fl_fcst_12hr_L1": null, "fl_fcst_12hr_L2": null, "nxt_date": "NO_NXT_ADV", "report_id": "IDD41295", "name": " LANGILA", "fl_obs_cld_L1": null, "fl_fcst_6hr_L1": null, "fl_fcst_6hr_L2": null, "fl_obs_cld_L2": null, "nxt_time": "NO_NXT_ADV", "v_id": "252010"}
```

```
{"colour_code": null, "fl_eruption_L2": null, "no_id_satelite": 0, "fl_eruption_L1": null, "file_name": "Darwin/2004/IDD41295.200412170950.txt", "issued_date": "20041217", "confirmed": 1, "info_source": "AVHRR/MODIS/GOES9", "issued_time": "0949", "id": "252010", "vaac_obs": "Darwin", "referal": 0, "fl_fcst_18hr_L2": null, "fl_fcst_18hr_L1": null, "fl_fcst_12hr_L1": null, "fl_fcst_12hr_L2": null, "nxt_date": "NO_NXT_ADV", "report_id": "IDD41295", "name": " LANGILA", "fl_obs_cld_L1": null, "fl_fcst_6hr_L1": null, "fl_fcst_6hr_L2": null, "fl_obs_cld_L2": null, "nxt_time": "NO_NXT_ADV", "v_id": "252010"}
```

# Metadata of the columns

- colour\_code :
  - Green
  - Yellow
  - Orange
  - Red
  - None
- no\_id\_satelite:
  - Nonidentifiable form satellite (-1)
  - METEROLOCIAL CLOUDS (1)
  - WX CLDS (2)
  - Dissipated (3)
  - Do not say (0) / we consider identified
- confirmed (information):
  - confirmed (1)
  - unconfirmed (-1)
  - Do not say (0)
- referral:
  - no issued time/date (1)
  - issued time/date (0)
- id : volcano id
- name: volcano\_name
- vaac\_obs: VAAC name
- report\_id: report number
- fl\_fcst\_(6/12/18)hrs\_L(1/2): Forecast of plume height & extend in 6/12/18 for L1/2
- fl\_eruption\_L(1/2): Eruption details for L1/2
- fl\_obs\_cld\_L(1/2): Observed ash for L1/2
- issued\_time: time issued the report
- issued\_date: date issued the report
- nxt\_time: next time for next report
- info\_source: e.g. MTSAT-1R

# Explore the volcanic dataset - ideas

- Analyse the number of reports that we have by year or by VAAC or by volcano
- Analyse the Flight Levels (eruption or observed )
  - Variables: fl\_eruption\_L1 ; fl\_eruption\_L2 ; fl\_observed\_L1; fl\_observed\_L2
- Analyse the colors (warning) of a volcano
- Analyse which is the volcano that erupted more during the last two years
- Analyse which is the volcano that erupted more across the entire dataset
- Analyse which volcanos appears in more than one VAAC