

Enhanced Regional Hazardous Weather Information Services

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WMO OMM

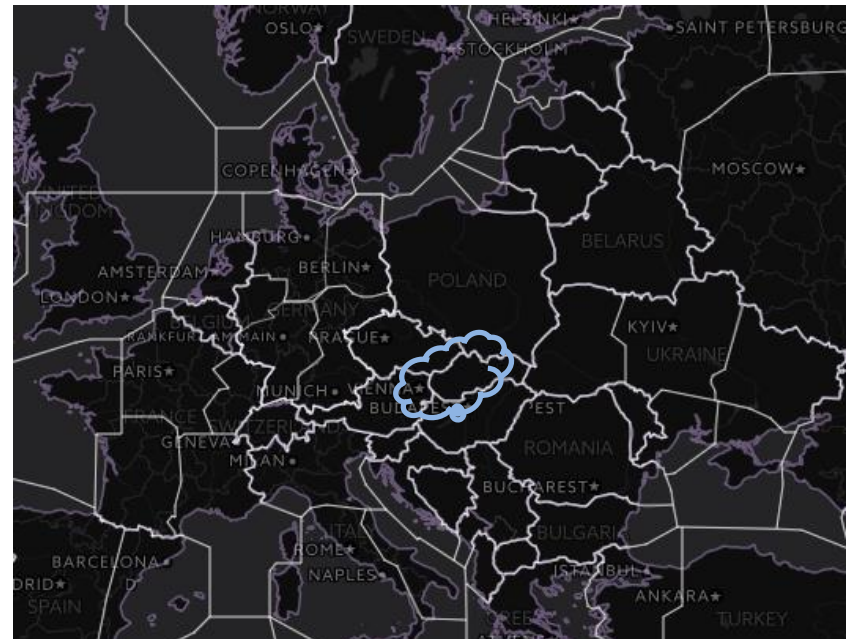
World Meteorological Organization
Organisation météorologique mondiale

CAeM-16
23 to 27 July 2018
Exeter, United Kingdom

Existing Enroute Information Service

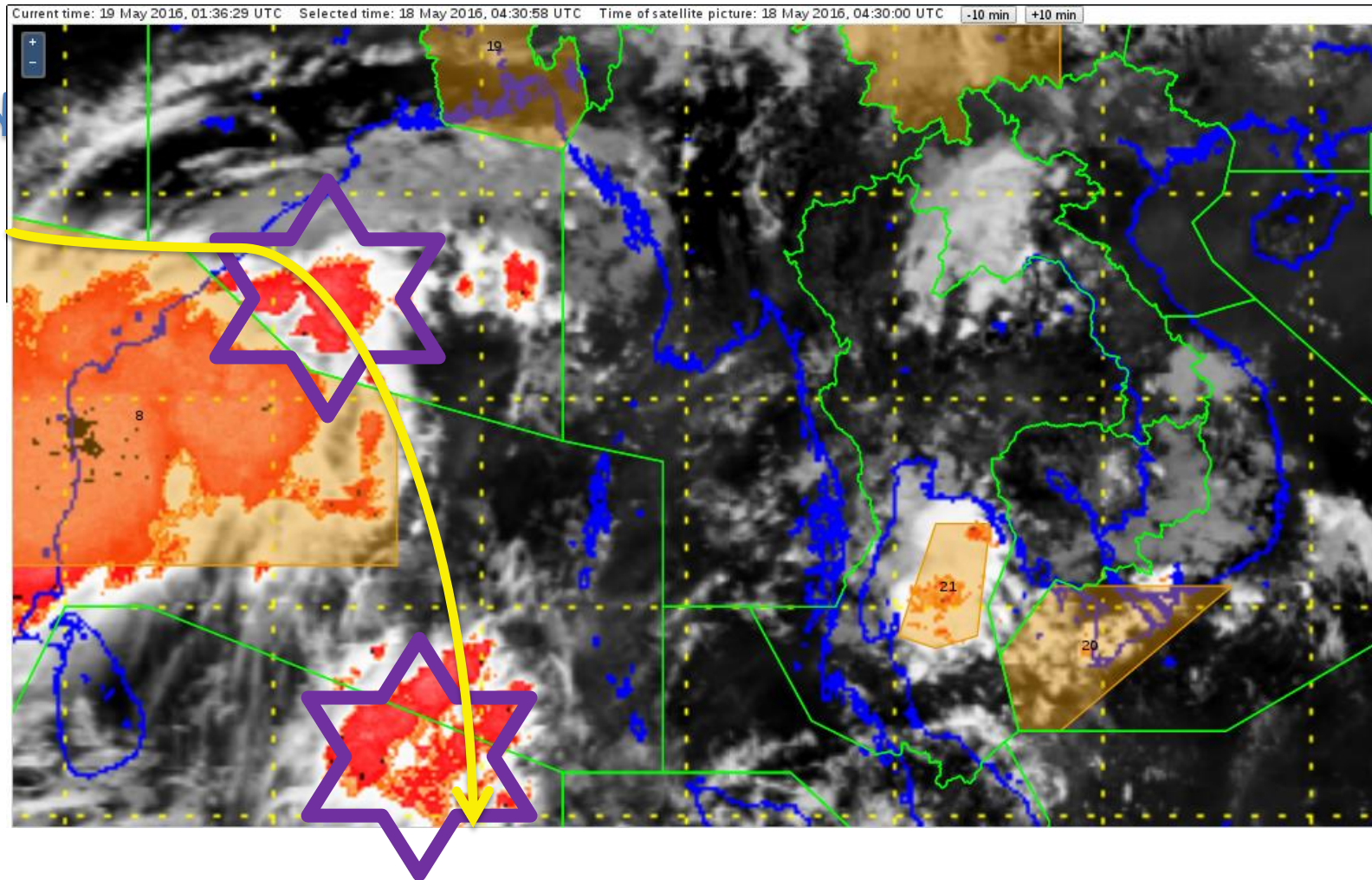
- **SIGMET**

- Unavailability of SIGMET
- Text-based → not easy to interpret automatically
- FIR-based →
 - For region with small FIRs, one weather phenomenon might involve a number of SIGMETs
 - Discontinuity across FIR boundaries
 - Different local practice adopted in SIGMET issuance
- **SIGMET area too big**



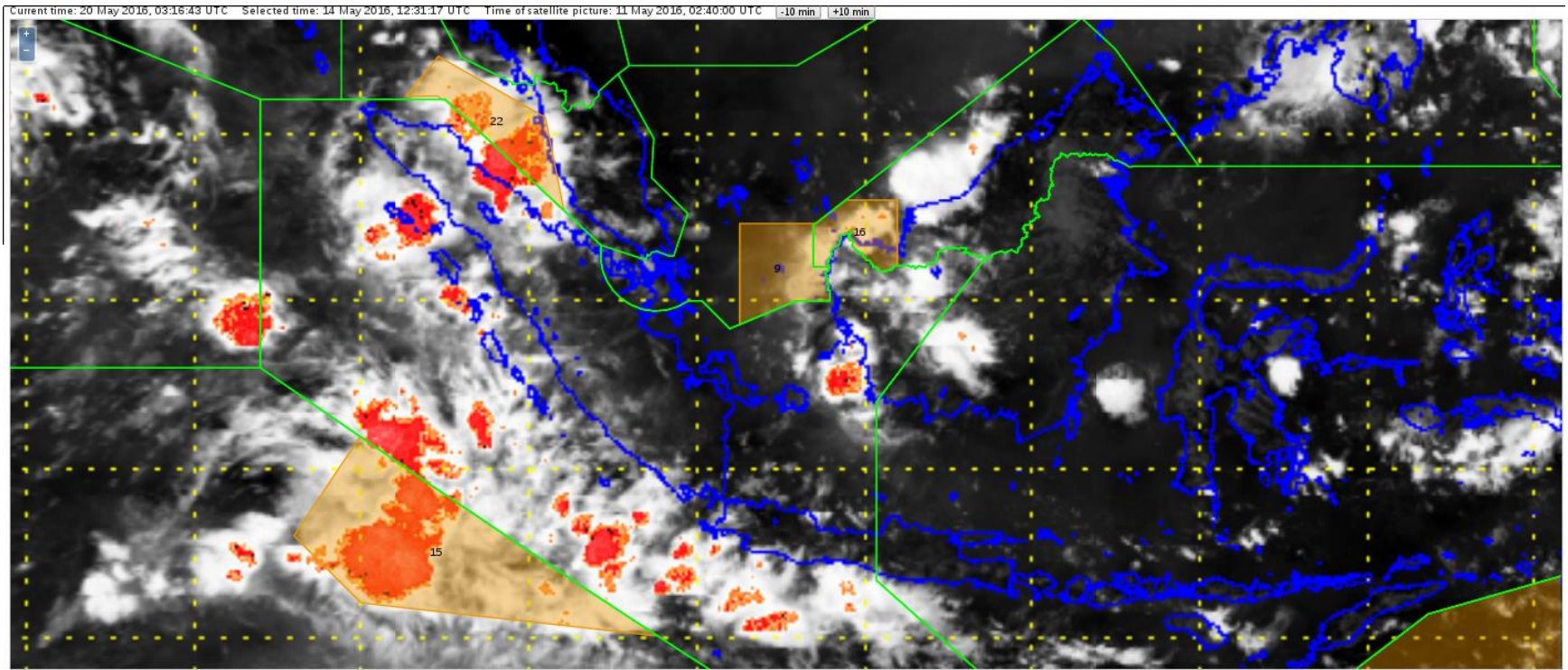
User feedback

- Unavailability of SIGMET



Forecaster's view

But when we
take out the satellite image...



What pilots get

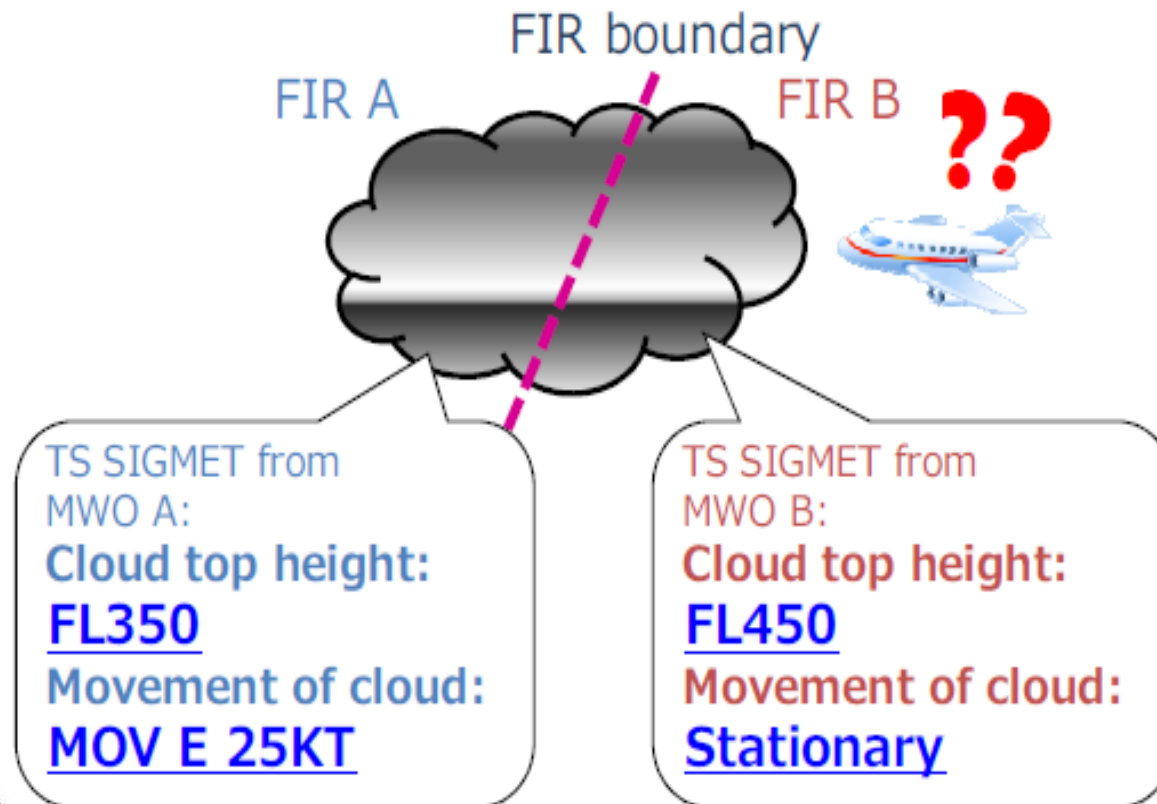
How misleading to the big picture these SIGMETs could be



User feedback

- Range of differences in intensity, coverage, forecast position, development and timings

➤ Inconsistencies of SIGMET



METDIV-14/CAeM-15

- Recommendation 2/9 — Implementation of a **regional** advisory system for select en-route hazardous meteorological conditions
- Meteorology Panel (METP) Regional Hazardous Weather Advisory (RHWAC) workstream responsible for the job card

Near-term solution

- Encourage SIGMET coordination to address consistency issue
- Additional guidance information on SIGMET coordination in Doc 8896
 - WMO Pilot Project on SIGMET Coordination (Indonesia, Malaysia and Singapore) [since operational]
 - Collaborative SIGMET Issuance (Japan, Lao PDR, Myanmar, Philippines, Thailand and Viet Nam)
 - SIGMET Coordination Trial (Hong Kong, Guangzhou, Sanya, Vietnam< Chengdu)
 - SIGMET Coordination in North Pacific (Japan, Philippines and US)
 - METAlliance SIGMET Coordination Project
 - Russian Federation SIGMET Coordination Project (Russia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan)
 - Balcans (Bosnia-Herzegovina, Croatia, Serbia and Slovenia)
 - DACH (Germany Austria and Switzerland)
 - NAMCON (Denmark, Estonia, Finland, Iceland, Latvia and Norway)





METAlliance SIGMET Coordination Project

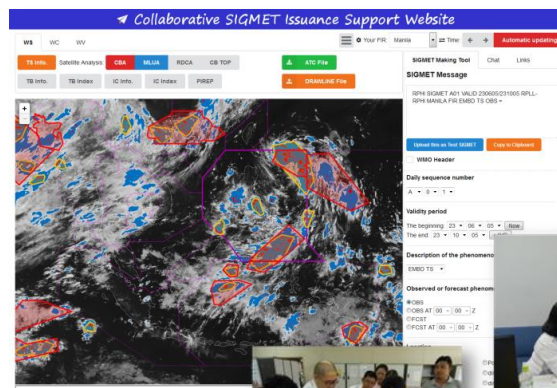
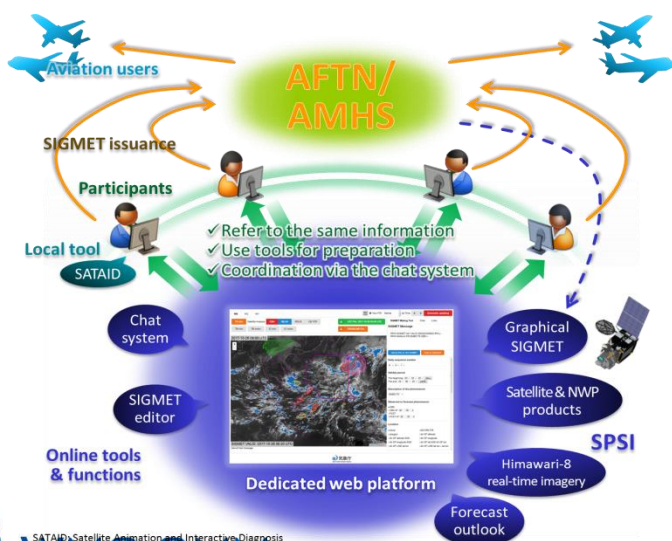


MET Alliance: 8 European countries
Austria, Belgium, France, Germany, Ireland,
Luxembourg, The Netherlands, Switzerland



Collaborative SIGMET Issuance

- Collaborative SIGMET Issuance Project (Since 2015)
 - Multi-lateral collaborative efforts for better harmonized and phenomenon-based en-route hazardous weather information
 - Project members : Japan (JMA), Lao PDR (LDMH), Myanmar (MDMH), Philippines (PAGASA), Thailand (TMD) ,Vietnam (VATM)
 - After completion of 4-times demonstrations, the operational phase has started since 9 April, 2018



SIGMET Coordination in SE Asia

- Singapore, Kuala Lumpur, Kota Kinabalu, Jakarta, Ujung Pandang
- Hong Kong, Guangzhou, Sanya, Guangxi, Hanoi, Ho Chi Ming, with Cambodia joining soon

The screenshot displays the 'Regional SIGMET Coordination Platform' interface. The main area is a map of Southeast Asia showing various Flight Information Regions (FIR) such as HONG KONG (VHKK), GUANGZHOU (ZGZU), SANYA (ZJSA), and HO CHI MINH (VHTS). The map is overlaid with a grid and color-coded areas representing different SIGMET zones. On the left, there is a 'Generate' panel with options for 'Tool: Ruler', 'Convective Phenomenon' (with icons for rain, snow, etc.), 'Simplify' (with a 'TS parameter' dropdown), and 'Area of Responsibility' (set to 'VHKK'). Below this, there are 'MOVEMENT' and 'FCST PSN' sections with two options for generating SIGMET text. On the right, a 'Chat' window is open, showing a list of messages from users like GHSV, ZGGG, and VHHH, discussing updates to SIGMET areas and parameters. The chat window includes a search bar, a list of messages with timestamps, and a 'Public Message' button. At the bottom of the chat window, there is a 'Type here...' input field and a 'Reminder in 5 minutes' button.

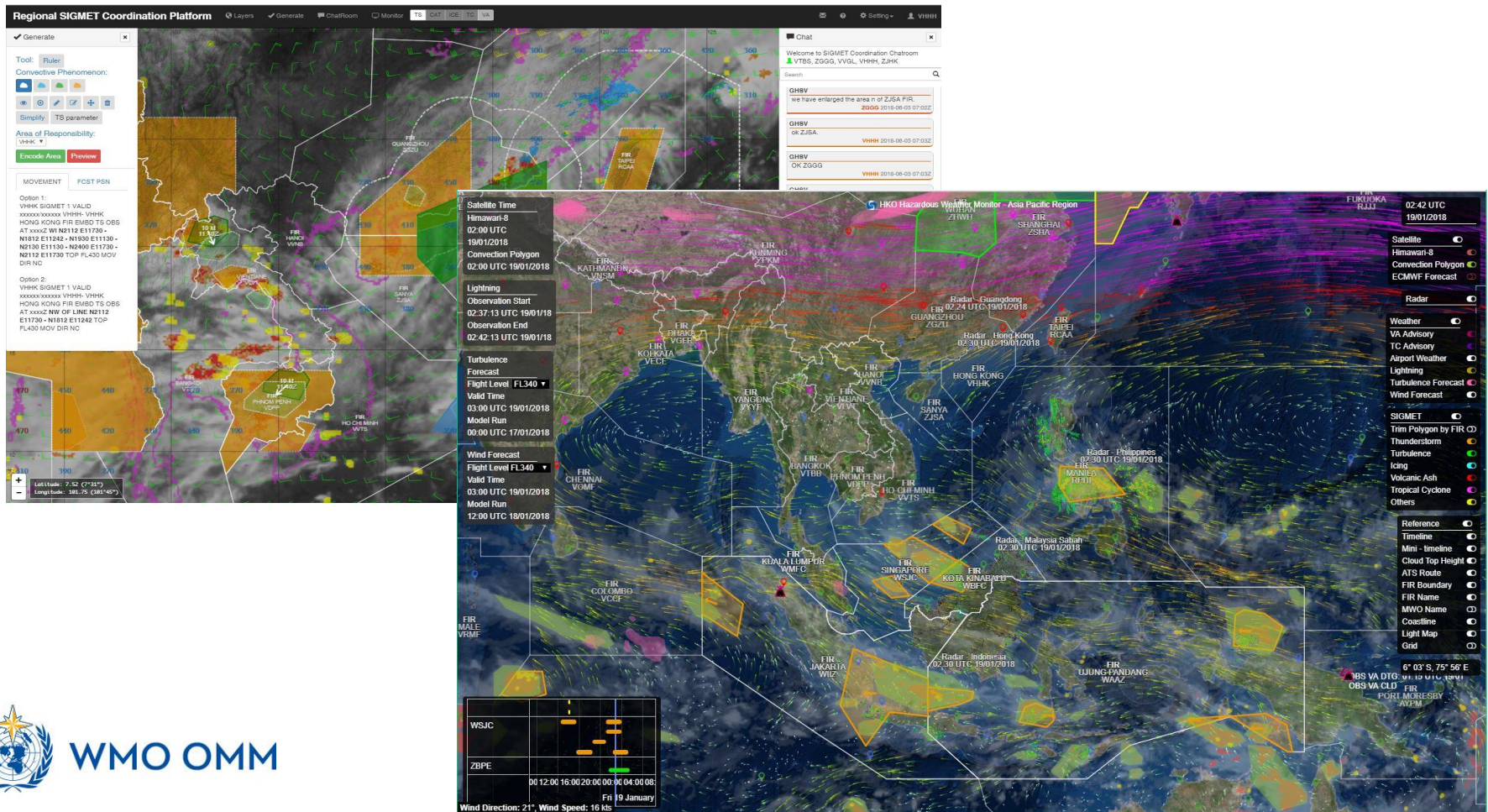


SIGMET Coordination

- Existing SIGMET issuance principles STAYS
 - Efficient, not delay SIGMET issuance
 - In line with Annex 3
 - State remains sovereign

Lessons learnt

- Formalizing the arrangement with detail procedures
- Common situation awareness and interface



Lesson Learnt


- Forecast tools – best practice
- Harmonization of issuance criteria
 - No clear requirement in Annex 3 on dimension of the phenomenon → subjectivity and local practice
 - RHWAC survey on future en-route hazardous weather information

Long-term solution

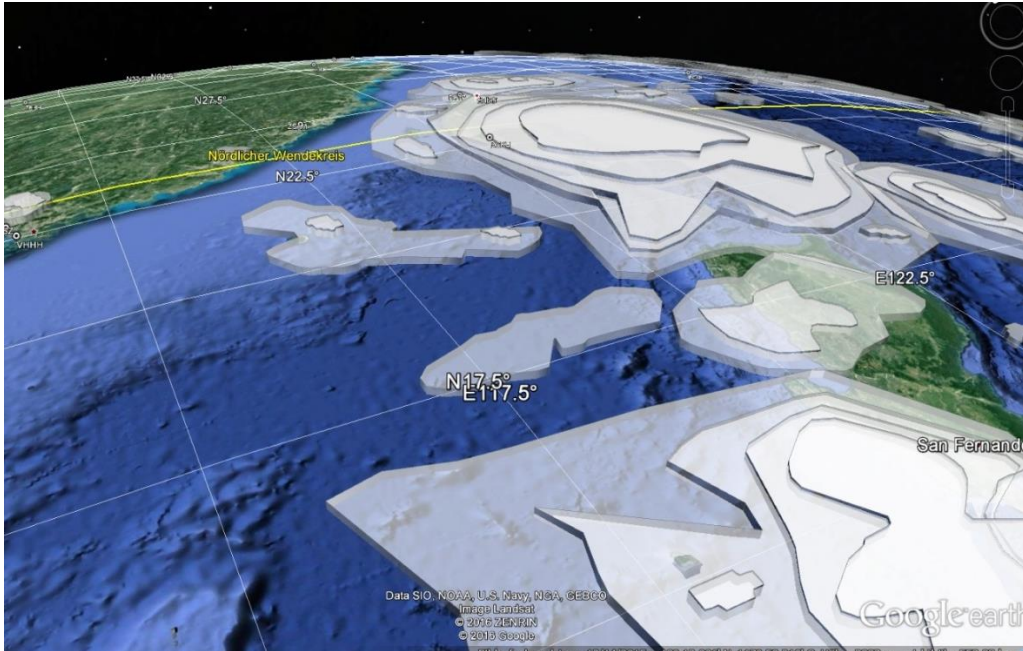
- **Future En-route Hazardous Information**
 - Harmonized, phenomenon-based
 - Aligned and integrated into the future ATM system as part of the Global Air Navigation Plan (GANP)
 - In line with Aviation System Block Upgrades (ASBU) methodology and timeline
 - Integrated in the SWIM environment for further processing by automatic decision support tools
 - Being developed by RHWAC workstream under ICAO METP



Regional Enroute Hazardous Weather - Process

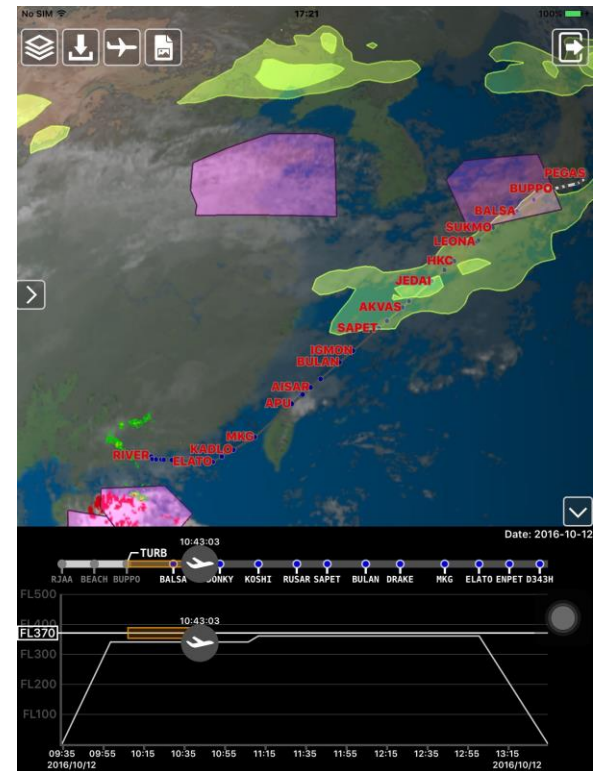
- User needs analysis
 - Survey issued to IATA, IFALPA and IFATCA 
- Requirement Specification
 - Functional requirements
 - Performance requirements
- System for service provision
 - Continuing role of MWOs
 - Coordination between MWOs and regional service providers and between regional service providers
 - Optimal number of regional service providers

Pilot's expectation



Pilot's expectation

- With widespread deployment of EFB, pilots' wish for 3D view may soon materialize



EFB



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Thank you Merci



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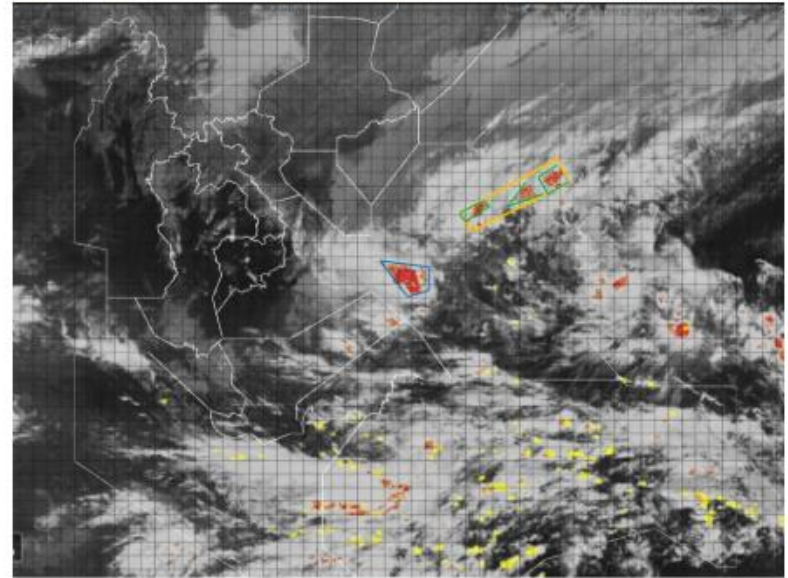
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Very Initial Survey Results (CB)

- Want coverage at multiple levels
- Dimension roughly 0.5x0.5 deg or 1x1 deg
- Separation of 0.5x0.5 deg
- Information about lightning

Himawari-8 satellite picture with significant convection marked in red. Overlaid on top are the lightning in the past 10 minutes in yellow. The grid is 1deg x 1 deg.



9. For oceanic air space, what would be the minimum size of the convection area that you would consider significant and would want to receive information on? Eg. would cause a significant diversion to avoid?

- 30 x 30 nm, i.e. for convection size of around 1/4 the size of green polygons above
- 60 x 60 nm, i.e. roughly the size of the green polygons above
- 90 x 90 nm, i.e. roughly or slightly larger than the green polygons above
- 120 x 120 nm, i.e. roughly the size of the blue polygon above
- Other (please specify)

10. For oceanic air space, what would be the minimum separation distance between two convective systems required to safely navigate between the two

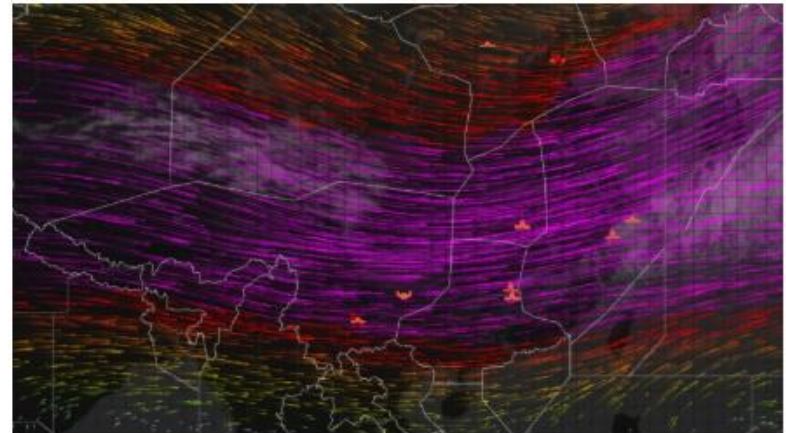
Very Initial Survey Results (CAT)

- Wants informed starting at MOD turb
- Reports of relevance within 1 deg and 2000-5000 ft in past 2 hr
- Resolution 1x1 deg, vertical 2000 ft

1. Do you need to be informed of the occurrence of turbulence if the intensity reported (PIREP or AMDAR) is :

- Nil
- Light
- Light to Moderate
- Moderate
- Moderate or greater
- Severe
- Other (please specify)

Himawari-8 satellite picture with PIREP marked in purple. Overlaid on top are the wind field at FL390. The grid is 1 deg x 1 deg.



2. Within what horizontal distance do you consider the aircraft report (PIREP or automated report) as relevant?

- 30 nm (or 55 km, roughly half a degree in equator)
- 60 nm (or 110 km, roughly 1 degree in equator)
- 120 nm (or 220 km, roughly 2 degrees in equator)