

**WORLD METEOROLOGICAL ORGANIZATION**

**WRAP-UP MEETING OF THE PILOT PROJECT ON SIGMET  
COORDINATION IN SOUTHEAST ASIA**

**SINGAPORE**

**27-29 March 2017**

**FINAL REPORT**



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## **1. OPENING OF THE MEETING**

1.1 The meeting was opened by Ms Patricia Ee, Director of the Weather Services Department of Meteorological Service Singapore (MSS). She welcomed the participants on behalf of the Director-General of MSS and Permanent Representative of Singapore with WMO, Ms Chin Ling Wong and expressed the satisfaction of MSS of the successful pilot phase of the SIGMET Coordination project. The participants were also welcomed by Mr Kwok Wah Chow, the pilot project coordinator.

1.2 Mr Dimitar Ivanov, Chief, Aeronautical Meteorology Division, WMO, also welcomed participants on behalf of WMO and thanked all experts who participated in the pilot phase of the project. He expressed his expectation that the results of the pilot phase will serve as a solid basis for the future operational SIGMET coordination between the participating MWOs and that other MWOs of the neighbouring countries will join this coordination process.

1.3 The meeting was attended by 30 participants representing the three project States (Indonesia, Malaysia and Singapore), the supporting NMHSs (HKO and JMA), other interested States/parties (Philippines, Thailand, MET Alliance), the user community (ATM experts and pilots), the International Civil Aviation Organization (ICAO), the International Federation of Air Line Pilots' Associations (IFALPA), and the World Meteorological Information (WMO). A list of participants is provided in Annex 1.

1.4 The meeting adopted the agenda as shown in Annex 2.

## **2. OBJECTIVES AND EXPECTED OUTCOMES**

2.1 Mr Ivanov presented a briefing on the project history and activities.

2.2 The objectives of the meeting were:

- To review and analyse the results of the "quasi-operational" pilot phase;
- To present and analyse a set of selected SIGMET coordination case studies;
- To analyse the operational coordination procedures used during the pilot phase and provide feedback for their further improvement;
- To inform and engage additional meteorological watch offices from adjacent countries to take part in the SIGMET coordination effort;
- To formulate a set of recommendations for the transition from "quasi-operational" to operational regime of SIGMET coordination.

2.3 The expected results of the meeting were formulated as:

- Agree on the way forward;
- Contribute to the development of guidance material by both WMO and ICAO;
- Make the case for further expansion of SIGMET coordination in SE Asia and other regions;
- Receive initial feedback from users – pilots, ATM;
- Provide feedback to the developers of IT tools facilitating SIGMET coordination.

## **3. PRELIMINARY REPORT ON THE OPERATIONAL PHASE OF THE PILOT PROJECT ON SIGMET COORDINATION**

3.1 Mr Chow presented the preliminary report of the SIG-Coord pilot project [\[link\]](#). His report highlighted the guiding principles of the project, the achievements during the five-month pilot phase, the improved coordination procedures between the participating MWOs, the interaction with the supporting offices of JMA and HKO and the feed-back provided for the development of their software platforms. The report highlighted also the issues encountered by the MWOs that need to be resolved.

3.2 A total of 417 cases of coordination between MWOs took place during the five-month period. In most of these cases, the MWOs were able to reach a broad level of consensus during coordination, particularly on the key consideration such as the geographical extent of the CB phenomena across the affected FIRs.

3.3 A good achievement of the project was the conduct of regular monthly meetings to review the coordination activities, comment on any difficulties or issues and revise the procedures through consensus. Specific interesting case studies have also been presented and discussed.

3.4 The preliminary report covered also the verification issues, including proposal for standardization of the verification methods used by MWOs based on satellite information from Himawari-8.

3.5 Based on the achieved maturity of procedures, supporting web tools and gained valuable experience by the operational personnel, the preliminary report concluded that real-time cooperation for coordinated SIGMET issuance is feasible in practice and contributes to en-route aviation safety and efficiency.

3.6 The meeting noted the remark from Mr Dunda (ICAO) that similar SIGMET coordination activities are taking place in other parts of the region, as well as, the need for receiving more feedback from users concerning the SIGMET quality before and after the coordination has started. It was also reminded that, in view of the rapid development and short life span of the tropical convective storms, the coordination procedures should be so designed to ensure that there will be no delay in the SIGMET issuance.

#### **4. TARGET NMHS EXPERIENCES AND RECOMMENDATIONS**

##### **4.1 *BMKG MWOs***

4.1.1 Representatives of MWO Jakarta and MWO Ujung Pandang presented [\[link\]](#) on their positive experience during the pilot phase. They also highlighted possible areas of improvement with recommendations for the transition to the operational 24/7 phase.

4.1.2 The meeting was informed of observed issues with the determination of the cloud top height using different estimates provided by the HKO and JMA web tools. This issue needs further investigation in cooperation with the developers of the software.

4.1.3 BMKG informed of their bilateral coordination with the Bureau of Meteorology (BoM) Australia, to develop similar SIGMET coordination procedures for their neighbouring FIRs.

4.1.4 It was appreciated that the use of the web tools and the coordination procedures contributed to reducing of coding errors.

4.1.5 With regard to the transition to a fully operational 24/7 phase, BMKG requested assistance from the WMO in developing a standard MOU between the participating States. It was noted in this regard that the approval of formal MOUs between the States could be a lengthy process. Less formal agreements at operational level could be used in the meantime.

4.1.6 The meeting noted a comment from IFALPA concerning the use of special air reports (a.k.a, PIREPs or special AIREPs), in the issuance and verification of the SIGMET. It was agreed that a study of the availability of such reports and their accessibility by the MWOs should be conducted.

4.1.7 BMKG raise the question of eventual extension of the SIGMET coordination procedures to cover volcanic ash (VA) SIGMET. Such procedures should be consistent with the existing ICAO Annex 3 requirements for issuance of VA SIGMET based on the VA advisories issued by the VAACs.

## 4.2 **MetMalaysia MWOs**

4.2.1 The presentation by MetMalaysia [[link](#)] provided information on all local activities before and during the pilot project. The overall assessment of positive experiences was that the Malaysian MWOs' forecasters increased their knowledge and confidence through the coordination process. The cooperation with the neighbouring MWOs also helped to improve the local SOPs. The new technology used (the web tools) provided new possibilities for monitoring the situation and generating more aligned SIGMET messages.

4.2.2 Proposed areas for improvement include the use of additional information sources and types that could improve the location and development of the SIGMET phenomena, as well as the validation of the information.

4.2.3 The recommendations from MetMalaysia included:

- More training on the use of the satellite images and their interpretation;
- Get better information and guidance from ICAO and WMO on the use of graphical SIGMET, as well as criteria for issuance of SIGMET;
- Willingness to expand the coordination with other neighbouring FIRs: Bangkok and Yangon (for Kuala Lumpur FIR) and Manila (for Kota Kinabalu FIR).

4.2.4 An issue was raised regarding observed discrepancy between the CB positions in satellite and radar information. The explanation of such inconsistency (due to parallax) should be sought from experts in radar and satellite meteorology, possibly through the Expert Team on Information and Services for Aviation (ET-ISA) of the Commission for Aeronautical Meteorology (CAeM).

4.2.5 The meeting was made aware by Capt. Jaffar Hassan (IFALPA) about the use of the on-board weather radar by pilots. Further study is necessary to improve the consistency of the radar information seen by pilots and the one provided by ground-based radar.

## 4.3 **Singapore MWO**

4.3.1 Singapore MWO [[link](#)] emphasized that the pilot project proved the feasibility of setting up and operating sustainable SIGMET coordination between different countries. Moreover, such coordination provides additional benefit of learning from one another which helps improving the services provided. The technological enhancement that were provided by HKO and JMA during the project were also appreciated as they contributed to building common situational awareness and delivering better products.

4.3.2 Improvements were needed to allow to resolve differences during consultations in terms of key parameters of the hazardous weather analysed, such as, horizontal and vertical extent, direction and speed of movement and changes in intensity.

4.3.3 In addition to consultation with neighbouring MWOs and the use of new technology, the subjective assessment elements is still a factor for SIGMET quality. Hence, the training and competence of MWO forecasters is of great importance.

4.3.4 It was also agreed that the timeliness of SIGMET issuance should not be compromised by the coordination procedures; in this regard, a target should be to limit the consultation period to about 15 minutes, though, in the case of three-party consultation, the process is more time-consuming.

4.3.5 Singapore MWO's recommendations for improved coordination and SIGMET consistency included strong support to continuing the coordination in the pilot project area and undertaking steps to expand the coordination areas with the neighbouring countries. There is also a need to improve data sharing and develop assessment methodology for the objective verification of SIGMET. The coordination procedures should also be improved, in particular, pre-tactical discussion, especially for large-scale systems.



4.3.6 Singapore MWO also stressed on the need to continue the dialogue with users and solicit feedback to improve quality of SIGMET information.

## **5. RESOURCE NMHS EXPERIENCES AND RECOMMENDATIONS**

### **5.1 *Hong Kong Observatory (HKO)***

5.1.1 HKO presented on the use and further development of the regional SIGMET Coordination web platform, which was provided to the MWOs participating in the project [\[link\]](#). The platform provides the possibility to use different satellite-based applications for diagnosis of convection, as well as a chat room for coordination between the MWO's forecasters. The HKO statistics indicates that about 300 coordination episodes have been conducted during which 1761 text messages have been exchanged.

5.1.2 HKO received a feedback from the participants through a survey. It showed a high level of satisfaction with the platform, which is considered a very effective coordination tool. The survey also provided a "wish list" for further development, including provision of an "advisory" product, lightning information (already implemented), WAFS and other NWP guidance. HKO provided information on the currently on-going developments, such as nowcasting capabilities, satellite simulated radar reflectivity, and improved cloud top height algorithms.

5.1.3 In connection with the identified differences in determining the cloud top height by HKO and JMA platforms, Capt. Jaffar Hassan noted that the commercial aircraft normally do not fly above FL430 and only some business jets fly higher. Thus, the exact cloud top heights above these layers have little operational impact. The meeting was of the view that such information could be spelled out in the future definition of user requirements; not necessary information is regarded by users as "clutter" and pilots don't want to see such clutter in the products they are provided for use.

5.1.4 HKO assured participating MWOs that their web platform which was developed in support of the pilot project will continue to be available after the pilot phase and MWOs will be able to use it in the same way as now.

### **5.2 *Japan Meteorological Agency (JMA)***

5.2.1 JMA presented their web platform provided to pilot project MWOs and related developments [\[link\]](#). The web tool provides IR satellite imagery from Hinawari-8 and specialized products for "probable CB areas and polygons" as well as CB TOP information. The web tool can also display all valid SIGMETs (SIGMET Viewer) as text and graphics. A BBS is used for the exchange of text messages between the MWO forecasters and a SIGMET Making Support tool helps to generate correctly formatted (according to ICAO Annex 3) SIGMET messages.

5.2.2 Forecasters are supported by the JMA tool through an application that highlights most intensive CB areas that need to be included in SIGMET. JMA has put an effort to develop a verification method for the probable CB areas using METAR and SPECI from the airports in the region. JMA has been working continually to improve their web platform with the next update planned for June 2017.

5.2.3 JMA also presented their verification methodology for SIGMET [\[link\]](#), which could be helpful to pilot project MWOs for verification of their SIGMETs. JMA conducts regular verification for TURB and TS SIGMETs by using pilot reports for the Fukuoka FIR (PIREPs, AIREPs and special air reports), which are received through the Japan Civil Aviation Bureau (JCAB).

5.2.4 The meeting noted that, currently, there were different methods used how to depict the TS polygons; this was not only for the three pilot project countries but a wider problem;

an example was given for the BoM where an algorithm for automatic depiction of the polygon was used. It was expected that there should be a convergence of these different methods; currently the ICAO MET Panel has been working on the concept for the future information and services for hazardous weather.

5.2.5 The meeting commented on the availability and use of pilot reports that would be necessary for more consistent SIGMET verification. Currently, only MSS has working arrangements for the transmission of pilot reports by ATC to the MWO via AFTN. MetMalaysia is in a process of establishing such working arrangements with the Directorate for Civil Aviation. The transmission of pilot reports to the MWOs in Indonesia is not yet arranged.

## **6. AVIATION USERS' PERSPECTIVES**

6.1 Capt. Jaffar Hassan presented on the capabilities of the weather radar on board of modern aircraft (such as Airbus 350-900) [[link](#)] and the typical use of the radar information by pilots during different phases of flight. It was noted that the main interest of pilots for SIGMET information for TS goes beyond the useful range of their on-board radar, i.e., further than approximately 300 nautical miles ahead of the current position. For severe turbulence, a warning of 3-4 minutes (e.g., 40-50 nm ahead) would be very useful.

6.2 The meeting felt that there should be a better description of the use cases of SIGMET by the operators, e.g., the use of SIGMETs for pre-flight decision-making was different to the use of SIGMET in-flight. Such consideration should be part of the discussions for the future systems and products for providing information about weather hazards including the information to be uplinked in near-real-time.

## **7. OTHER KNOWN SIGMET COORDINATION INITIATIVES AMONGST NMHSS/REGIONS**

### **7.1 *MET Alliance***

7.1.1 Mr Fabien Mason (Météo-France) presented on behalf of the MET Alliance SIGMET Coordination Project [[link](#)]. The project started in 2009 with coordination activities between six neighbouring countries and operational bi-lateral coordination started in 2012. The objective of the project is seamless production of SIGMET across the borders of MET Alliance partners' FIRs. It covers all kind of SIGMETs (Icing, TS, turbulence, etc.). The project doesn't aim at centralization, i.e., SIGMET issuance is still the responsibility of each individual State.

7.1.2 The main form of coordination in MET Alliance is by telephone call mostly before the SIGMET issuance. A common web platform for SIGMET visualization has been developed by Météo-France. There have been several workshops to build better understanding and harmonize procedures, as well as visits by forecasters to neighbouring MWOs for familiarization and information sharing.

7.1.3 The overall experience of MET Alliance is positive with observed improvement of the consistency of SIGMET across the FIR borders of the participating countries. Consequently, the MET Alliance experience has been used for a planned expansion of the SIGMET coordination across other areas in Europe.

### **7.2 *JMA SIGMET coordination activities***

7.2.1 In addition to its support to the SIG-Coord project, JMA [[link](#)] developed tools and conducted two demonstrations of a collaborative SIGMET issuance – one in May 2016 and another one in September 2016. The following MET offices participated: Philippines (PAGASA), Vietnam (VATM), Lao PDR (LDMH), Myanmar (MDMH) and Thailand (TMD). A demo website was used by the participants and JMA provided forecasts and advisories for TS SIGMET issuance.



7.2.2 JMA received positive feedback from the participating MWOs and the plans are in place for furthering such exercises and improvement of the used procedures and products. Next demonstrations are planned for the summer 2017 (for TS) and the winter 2017/2018 (for TS and TURB).

## **8. CASE STUDIES ARISING FROM THE PILOT PROJECT ON SIGMET COORDINATION IN SOUTHEAST ASIA**

8.1 The three participating NMHSs prepared detailed case studies to highlight specific coordination issues in complex coordination environment and report on lessons learnt.

8.2 **The BMKG case study** covered a complex three-party coordination that happened on 23 January 2017 between 00.00 and 00.06 UTC, during a monsoon surge. The coordination was between the MWOs Jakarta, Kuala Lumpur and Singapore. Detailed analysis of the case and the coordination procedures are available here [[link](#)].

8.3 The case study indicated some differences in the SIGMET messages issued by the three MWOs, concerning the CB TOP heights, the movement and intensity of the convective system. Analytical tools used included, in addition to the satellite information (the JMA SATAID application), the WAFS forecasts and streamline gradient wind analysis. The case study demonstrated that further work was necessary to harmonize the methods used by the individual MWOs in order to improve the consistency and seamlessness of the SIGMET across the FIR boundary.

8.4 **The MetMalaysia case study** referred to a case on 19 January 2017; the participating MWOs were Kuala Lumpur and Jakarta. Detailed analysis of the case and the coordination procedures are available here [[link](#)]. The case demonstrated some differences in the CB TOP assessments by the two MWOs, as well as, in the direction and movement. Additional diagnostic tools included the tephigrams, streamline analysis and WAFS products.

8.5 MetMalaysia pointed out some other coordination issues to be considered for the future, including: coordination on Tropical Cyclone SIGMET (WC) & Volcanic Ash SIGMET (WV), techniques for more precise estimates of the movement of the convective systems, and the needed verification on the disposition of embedded CB on the satellite and radar images.

8.6 **The Singapore case study** was about a weather event on 24 January 2017 with SIGMET coordination between four MWOs: Jakarta, Kuala Lumpur, Kota Kinabalu and Singapore. Detailed analysis of the case and the coordination procedures are available here [[link](#)]. The coordination included a pre-tactical consultation on the morning of 23 January between Singapore, Kuala Lumpur and Jakarta MWOs using chatroom and WhatsApp to assess the general synoptic situation. During the episode of the SIGMET coordination, there were few occasions where SIGMETs were not fully harmonized and synchronized.

8.7 Several recommendations arose from the case study, including: the need for a common platform for coordination, timely response and continuous 24/7 coordination.

## **9. NEXT STEPS – OPERATIONALIZATION AND EXTENSION OF SIGMET COORDINATION**

### **9.1 *Formalizing of bilateral or multilateral arrangement***

9.1.1 The meeting discussed how to develop appropriate bi-lateral or multi-lateral arrangements to underpin the planned “operational phase” of the SIGMET coordination. A common format for such arrangements should be developed with the assistance of the WMO Secretariat. Sufficient time should be envisaged for more formal arrangements that would require clearance by higher levels, e.g., ministries.

## **9.2 Transition plan to 24/7 operational mode of SIGMET coordination**

9.2.1 After coordination between the SIG-Coord participating MWOs, it was agreed that the fully operational SIGMET coordination (24/7/365) should commence on 1 August 2017. It was requested that WMO should send a letter to the BMKG, MetMalaysia and MSS concerning the transition to the operational phase and provide revised version of the coordination procedures accordingly.

9.2.2 The MWOs agreed that the current procedures for SIGMET coordination will continue until the transition date of 1 August 2017. The logbooks should continue be maintained but there should be some simplifications of the logging procedures.

9.2.3 The monthly WebEx consultations should be maintained for the time being; at a later stage, these consultations could become less frequent. Singapore MWO agreed to keep the coordination role and organize the monthly WebEx sessions. In view of the potential expansion of the SIGMET coordination area, other MWOs could be invited to join the monthly consultations.

9.2.4 Both JMA and HKO assured the meeting that the SIGMET coordination web tools will continue to be available, regularly maintained and further developed based on the feedback from users. The MWOs expressed their appreciation to the JMA and HKO for their support that contributed significantly to the success of the pilot phase and will also ensure the success of the future operational phase.

## **9.3 Extension to other neighbouring NMHSs**

9.3.1 The participants from PAGASA and TMD expressed the willingness of their MWOs to join the SIGMET coordination through appropriate bi-lateral arrangements with neighbouring MWOs. To facilitate the process, several preparatory actions have been recommended, as follows:

- Training for MWO's forecasters in the use of web tools, coordination procedures and satellite information interpretation;
- Making available a template for bi-lateral working arrangements between MWOs.

9.3.2 In order to make a real seamless SIGMET coordination, the meeting considered the need to engage other MWOs (e.g., Vietnam, Myanmar). In this regard, it was agreed to prepare a regional map depicting all potential bi-lateral coordination arrangements (similar to the map shown in the MET Alliance presentation).

9.3.3 It was also considered that within the WMO context, the SIGMET coordination should be seen as part of the respective regional associations' activities aimed at improving aeronautical meteorological services. Thus, Singapore MWO could be designated as the regional SIGMET coordination focal point for the Southeast Asia region.

## **9.4 Supporting ICAO and WMO guidance material development**

9.4.1 The meeting was aware that, at present, additional guidance material on SIGMET has been prepared by ICAO. Such material was to cover also the SIGMET coordination practices and procedures. It was noted that Jun Ryuzaki was coordinating the development of guidance material to be included in the ICAO Doc 8896, *Manual on Aeronautical Meteorological Practice*. The experience gained through the SIG-Coord project would provide a valuable input to such guidance material.

9.4.2 On the WMO side, guidance material should also be developed to cover the methodological aspects of the SIGMET coordination. In this regard, the recommendations of the SIG-Coord project should be reported to the Expert Team on Education, Training and Competency (ET-ETC) of the CAeM in order to identify the needs for new or amended guidance material and training. Such material should cover the use of satellite information, radar

information and other advanced methods for analysis and forecasting of aviation hazards to be included in the SIGMET information.

## **10. FINAL REPORT EXPECTATIONS AND FORMULATION OF PILOT PROJECT RECOMMENDATIONS AND STATEMENT**

10.1 The meeting agreed on the preparation of a joint document on the SIG-Coord pilot project for the forthcoming ICAO MET meetings, in particular, the 21<sup>st</sup> meeting of the MET Sub-group of APANPIRG (MET SG/21) which will take place in Bangkok from 29 May to 2 June 2017. Meteorological Service Singapore will draft the document and coordinate with the participating MWOs before submission to ICAO APAC Office.

10.2 The Final Report of the project will contain description of the pilot phase activities, procedural improvements, lessons learnt, issues that need to be resolved. The report will contain a set of recommendations for further improvement of SIGMET coordination practices and procedures derived from the experience gained during the pilot phase. These recommendations will be reported for considerations by relevant ICAO and WMO groups and meetings.

10.3 The meeting agreed that the Final Report will be drafted by Mr Chow by the end of May and send for coordination to the participating MWOs and the supporting NMHSs, HKO and JMA. Based on the comments received, the report will be finalized in the second half of June 2017.

10.4 The meeting gained a lot from the feedback provided by the representatives of the users, pilots and ATM. It was strongly recommended to keep close contact with the users and study their experience with the information provided to support their operations. Among their recommendations, the meeting noted the pilots' preference for more graphical products, including SIGMET, that would be easy to interpret in pressing decision-making situations.

## **11. CLOSURE OF THE MEETING**

11.1 All participants in the SIG-Coord Wrap-up meeting expressed their appreciation to the MSS for the excellent organization of the meeting and the kind hospitality. Special thanks were expressed to Mr Kwok Wah Chow, the pilot project coordinator, for his great effort throughout the duration of the pilot phase in coordinating the consultations and other activities.

11.2 The general assessment of the pilot project was highly positive. The participating MWOs appreciated the opportunity to work in a collaborative manner with their colleagues, which helped in building a collective capacity in analysing and forecasting the aviation hazards in their area of responsibility. The contributions made by JMA and HKO through developing and making available their excellent web platforms were considered indispensable for the success of the project.

11.3 All participants supported the need to keep the momentum of the pilot phase, to continue the collaboration and proceed to a fully operational phase according to the agreed schedule.

11.4 After the customary exchange of courtesies, the meeting was closed at 15:00 on 29 March 2017.

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**WRAP-UP MEETING OF THE PILOT PROJECT ON  
SIGMET COORDINATION IN SOUTHEAST ASIA**

**Singapore  
27-29 March 2017**

**LIST OF PARTICIPANTS**

<b>NAME</b>	<b>FROM</b>	<b>E-MAIL</b>
MUHAMMAD, Hidayat	BMKG	<a href="mailto:muhammad.hidayat@bmgk.go.id">muhammad.hidayat@bmgk.go.id</a>
MISWANTO, Edy	BMKG	<a href="mailto:edymist_35@ymail.com">edymist_35@ymail.com</a>
ANDI RUSDIN, Amernurfitra	BMKG	<a href="mailto:amernurfitra.andi.rusdin@gmail.com">amernurfitra.andi.rusdin@gmail.com</a>
TRIWIBOWO, Hari	BMKG	<a href="mailto:harie.twb@gmail.com">harie.twb@gmail.com</a>
PRATIWI, Ire	BMKG	<a href="mailto:irepratiwi@gmail.com">irepratiwi@gmail.com</a>
MUHAMMAD YAZIT, Hamray	MMD	<a href="mailto:hamray@met.gov.my">hamray@met.gov.my</a>
MOHAMED EUSOFF, Azlinah (Ms)	MMD	<a href="mailto:azlinah@met.gov.my">azlinah@met.gov.my</a>
AINOLWADY, Idris	MMD	<a href="mailto:ainolwady@met.gov.my">ainolwady@met.gov.my</a>
ABU KASIM, Nor Aini (Ms)	MMD	<a href="mailto:noraini@met.gov.my">noraini@met.gov.my</a>
CHOW Kwok Wah	MSS	<a href="mailto:chow_kwok_kah@nea.gov.sg">chow_kwok_kah@nea.gov.sg</a>
GOH Wee Poh	MSS	<a href="mailto:goh_wee_poh@nea.gov.sg">goh_wee_poh@nea.gov.sg</a>
EE, Patricia (Ms)	MSS	<a href="mailto:patricia_ee@nea.gov.sg">patricia_ee@nea.gov.sg</a>
YAP, Chui Wah (Ms)	MSS	<a href="mailto:yap_chui_wah@nea.gov.sg">yap_chui_wah@nea.gov.sg</a>
LAU, Sum-yee Sharon (Ms)	HKO	<a href="mailto:sylau@hko.gov.hk">sylau@hko.gov.hk</a>
RYUZAKI, Jun	JMA	<a href="mailto:jryuzaki@met.kishou.go.jp">jryuzaki@met.kishou.go.jp</a>
FUJIKANE, Norifumi	JMA	<a href="mailto:nfujikane@met.kishou.go.jp">nfujikane@met.kishou.go.jp</a>
MASSON, Fabien	MET Alliance	<a href="mailto:fabien.masson@meteo.fr">fabien.masson@meteo.fr</a>
HINGPIT, Susan Susie D. (Ms)	PAGASA	<a href="mailto:ssdHINGPIT@yahoo.com">ssdHINGPIT@yahoo.com</a>
DAMRONGKIETWATTANA, Rassmee (Ms)	TMD	<a href="mailto:rassmee@hotmail.com">rassmee@hotmail.com</a>
DUNDA, Peter	ICAO	<a href="mailto:pdunda@icao.int">pdunda@icao.int</a>
IVANOV, Dimitar	WMO	<a href="mailto:divanov@wmo.int">divanov@wmo.int</a>
FOO, Clarence Kaiyu	CAAS	<a href="mailto:foo_kaiyu@nea.gov.sg">foo_kaiyu@nea.gov.sg</a>
HOH, Jermaine	CAAS	<a href="mailto:jermaine_hoh@nea.gov.sg">jermaine_hoh@nea.gov.sg</a>
CHEW, Kim Song	SIA	<a href="mailto:kimsong_chew@singaporeair.com.sg">kimsong_chew@singaporeair.com.sg</a>
TAN, Cheng Yeow	SIA	<a href="mailto:chengyeow_tan@singaporeair.com.sg">chengyeow_tan@singaporeair.com.sg</a>
LIANG, Nicholas	SIA	<a href="mailto:nicholas_liang@singaporeair.com.sg">nicholas_liang@singaporeair.com.sg</a>
MAHALINGAM, Saravanan	SIA	<a href="mailto:saran_m@singaporeair.com.sg">saran_m@singaporeair.com.sg</a>
HASSAN, Jaffar	IFALPA	<a href="mailto:jaffar747@gmail.com">jaffar747@gmail.com</a>
TAN, Dennison	ALPA-S	<a href="mailto:derbiao@singaporeair.com.sg">derbiao@singaporeair.com.sg</a>
CHEONG, Joseph	ALPA-S	<a href="mailto:denison_tan@singaporeair.com.sg">denison_tan@singaporeair.com.sg</a>

**WRAP-UP MEETING OF THE PILOT PROJECT ON  
SIGMET COORDINATION IN SOUTHEAST ASIA**

**Singapore  
27-29 March 2017**

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**AGENDA**

**1. OPENING OF THE MEETING**

- 1.1. Opening remarks and introductions
- 1.2. Adoption of the agenda and working arrangements for the meeting

**2. OBJECTIVES AND EXPECTED OUTCOMES**

- 2.1. Pilot Project objectives, principles and procedures
- 2.2. Expected outcomes of the review and evaluation

**3. PRELIMINARY REPORT ON THE OPERATIONAL PHASE OF THE PILOT PROJECT  
ON SIGMET COORDINATION**

**4. TARGET NMHS EXPERIENCES AND RECOMMENDATIONS**

- 4.1. BMKG Indonesia
- 4.2. MetMalaysia
- 4.3. Meteorological Service Singapore

**5. RESOURCE NMHS EXPERIENCES AND RECOMMENDATIONS**

- 5.1. Hong Kong Observatory
- 5.2. Japan Meteorological Agency

**6. AVIATION USERS' PERSPECTIVES**

**7. OTHER KNOWN SIGMET COORDINATION INITIATIVES AMONGST  
NMHSS/REGIONS**

**8. CASE STUDIES ARISING FROM THE PILOT PROJECT ON SIGMET COORDINATION  
IN SOUTHEAST ASIA**

**9. NEXT STEPS – OPERATIONALIZATION AND EXTENSION OF SIGMET  
COORDINATION**

- 9.1. Formalizing of bilateral or multilateral arrangements
- 9.2. Transition plan to 24/7 operational mode of SIGMET coordination
- 9.3. Extension to other neighbouring NMHSS
- 9.4. Supporting ICAO and WMO guidance material

**10. FINAL REPORT EXPECTATIONS AND FORMULATION OF PILOT PROJECT  
RECOMMENDATIONS AND STATEMENT**

**11. CLOSURE OF THE MEETING**