

**INTERNATIONAL CIVIL AVIATION ORGANIZATION**



**REPORT OF THE METEOROLOGY/AIR TRAFFIC MANAGEMENT  
(MET/ATM) SEMINAR 2015**

**AND**

**REPORT OF THE FOURTH MEETING OF THE ASIA/PACIFIC METEOROLOGICAL  
REQUIREMENTS TASK FORCE (MET/R TF/4)**

Tokyo, Japan (June 29 – 3 July 2015)

The views expressed in this Report should be taken as those of the  
Meeting and not the Organization

Approved by the Meeting  
and published by the ICAO Asia and Pacific Office, Bangkok

MET/R TF/4  
Table of Contents

---

**CONTENTS**

INTRODUCTION.....	i
1. Seminar and Meeting.....	i
2. Attendance.....	i
3. Chair and Secretariat.....	i
4. Opening of the Seminar and Meeting.....	i
5. Documentation and Working Language.....	i
6. Draft Conclusions, Draft Decisions and Decisions of MET R TF.....	i
REPORT ON THE MET/ATM SEMINAR 2015.....	1
1. Keynote address.....	1
2. Discussion and outcomes.....	1
REPORT ON MET/R TF/4 AGENDA ITEMS.....	2
1. Organizational Matters.....	2
2. Review of the Follow-Up from Previous Meetings.....	2
3. MET/ATM coordination.....	4
4. MET Required to Support End User Systems (CDM, AT/ATFM).....	6
5. Sub-Regional Exchange of MET.....	10
6. Future Work Programme.....	11
7. Any Other Business.....	11
<b>APPENDIXES TO THE REPORT</b>	
Appendix A: List of Participants.....	A-1
Appendix B: List of Papers.....	B-1
Appendix C: Terms of Reference and Work Programme.....	C-1
Appendix D: Reports from breakout groups.....	D-1
Appendix E: List of Action Items from the meeting.....	E-1

## INTRODUCTION

### 1. Seminar and Meeting

1.1 The Meteorology/Air Traffic Management Seminar 2015 and the Fourth Meeting of the Meteorological Requirements Task Force (MET/R TF/4) were held at the *Mita Kaigisho*, Tokyo, Japan, from 29 June to 3 July 2015.

### 2. Attendance

2.1 The Seminar was attended by 64 participants and the Meeting was attended by 40 participants from 11 States, 1 Special Administrative Region of China and 3 International Organizations, including Australia, Bangladesh, China, Hong Kong China, India, Japan, Malaysia, Philippines, Republic of Korea, Russian Federation, Singapore, Thailand, Viet Nam, the International Air Transport Association (IATA), the International Federation of Air Line Pilot's Associations (IFALPA) and ICAO. A list of participants is provided at **Appendix A** to this Report.

### 3. Chair and Secretariat

3.1 Mr Jun Ryuzaki, Senior Scientific Officer, Japan Meteorological Agency, presided as Moderator of the Seminar and Chair of the Meeting.

3.2 Mr. Peter Dunda, Regional Officer Aeronautical Meteorology, and Mr. Shane Sumner, Regional Officer Air Traffic Management, ICAO Asia and Pacific Office, acted as the Secretariat and ICAO Coordinators for the Seminar and Meeting.

### 4. Opening of the Seminar and Meeting

4.1 Mr. Peter Dunda welcomed all participants on behalf of Mr. Arun Mishra, Regional Director, ICAO Asia/Pacific Office, Bangkok, and thanked the Government of Japan and the Japan Meteorological Agency for hosting the event.

### 5. Documentation and Working Language

5.1 The MET/R TF met as a plenary throughout the Meeting. The working language of the Seminar and Meeting was English inclusive of all documentation and this Report. A total of 23 special presentations (SP) and 9 information papers (IP) were discussed in the Seminar. A total of 7 working papers (WP) and 4 information papers (IP) were considered by the Meeting. The list of papers and presentations is attached at **Appendix B** to this report. All documentation (including this Report) is available at the following websites: <http://www.icao.int/APAC/Meetings/Pages/2015-METATM-Seminar-.aspx> and <http://www.icao.int/APAC/Meetings/Pages/2015-MET-R-TF4.aspx>.

### 6. Draft Conclusions, Draft Decisions and Decisions of MET R TF

6.1 The Meteorological Requirements Task Force recorded its actions in the form of Draft Conclusions, Draft Decisions and Decisions within the following definitions:

- a) **Draft Conclusions** deal with matters that, according to APANPIRG terms of reference, require the attention of States, or action by the ICAO in accordance with established procedures;
- b) **Draft Decisions** deal with the matters of concern only to APANPIRG and its contributory bodies; and
- c) **Decisions** of the Meteorological Requirements Task Force relate solely to matters dealing with the internal working arrangements of the Task Force.

List of Draft Conclusions, Draft Decisions and Decisions of MET R TF

6.2 MET/R TF/4 Draft Conclusions

**Draft Conclusion MET/R TF 4/2: Survey of State Meteorological Information Supporting Air Traffic Management**

That, States are urged to respond to a survey of meteorological information provided by MET services to support Air Traffic Management including Air Traffic Flow Management operations.

6.3 MET/R TF/4 Draft Decisions

**Draft Decision MET/R TF 4/1: Amend terms of reference of MET/R TF**

That, the revised terms of reference of the Meteorological Requirements Task Force (MET/R TF) at **Appendix C** to the report on MET/R TF/4 be adopted.

6.4 MET/R TF/4 Decisions

There were no Decisions recorded by MET/R TF/4.

## REPORT ON THE MET/ATM SEMINAR 2015

### 1. Keynote address

1.1 Mr. Takeshi Imagome, Director of Air Traffic Control Division, Japan Civil Aviation Bureau (JCAB), and Mr. Toshihiro Kurauchi, Director of Aeronautical Meteorology Division, Japan Meteorological Agency (JMA), delivered keynote presentations addressing the collaboration between ATM and MET services provision in Japan supporting international civil aviation.

### 2. Discussion and outcomes

2.1 The Seminar programme included presentations and discussion on the following agenda items:

Agenda Item 1: Review of MET and ATM coordination in States

Agenda Item 2: Impact of MET on Air Traffic Flow Management (ATFM)

Agenda Item 3: ATM-tailored meteorological services

Agenda Item 4: Future directions

2.2 Participants provided information in 4 SPs and 1 IP under Agenda Item 1, 4 SPs and 3 IPs under Agenda Item 2, 8 SPs and 4 IPs under Agenda Item 3 and 4 SPs under Agenda Item 4.

2.3 A summary of the presentations, discussion and key outcomes from the Seminar was provided in SP20. It was apparent that participation by key representative organizations would enhance the formulation of ATM requirements for MET.

2.4 Some States are already implementing ATM-tailored MET services (in addition to traditional Annex 3 ‘products’) to meet user requirements. Such information should be provided with consideration to the ‘general provisions’ in Annex 3 – even when the technical specifications have not been developed in Annex 3. In this respect, regional guidance material could be enhanced to assist States to develop MET services to meet the (current and future) requirements of ATM.

2.5 The development of future global provisions for tailored MET services to support ATM shall be managed principally by the ICAO Meteorology Panel. Support from, and coordination with, regional groups will remain important.

## REPORT ON MET/R TF/4 AGENDA ITEMS

### 1. Organizational Matters

#### Adoption of Agenda (WP/01)

1.1 The Secretariat provided information on the overall objective of the MET/R TF, and presented a provisional agenda addressing the business of the meeting and work programme of the task force.

1.2 The provisional agenda, provided in the **Attachment to MET/R TF/4 WP/01** was adopted by the meeting.

#### Review the Terms of Reference of the Meteorological Requirements Task Force (WP/02)

1.3 The Secretariat provided background information on the history of the MET/R TF and the development of its terms of reference (TOR), which were reviewed by the meeting. The meeting proposed several amendments to the TOR, and agreed to the following Draft Decision:

#### **Draft Decision MET/R TF 4/1: Amend terms of reference of MET/R TF**

That, the revised terms of reference of the Meteorological Requirements Task Force (MET/R TF) at **Appendix C** to the report on MET/R TF/4 be adopted.

1.4 The meeting expressed concern that the absence of participants representing the Civil Air Navigation Services Organisation (CANSO), Pacific Island States and New Zealand (in the fields of both MET and ATM) and Australia (in the field of ATM), presents some difficulties in formulating (comprehensive) requirements for MET information to support ATM.

1.5 Noting that all ICAO Members in the Asia/Pacific are invited to participate in the MET/ATM Seminar and MET/R TF, including International Organizations such as IATA, IFALPA, the International Federation of Air Traffic Controllers' Association (IFATCA) and the WMO, plus the Russian Federation for inter-Regional coordination on MET/ATM matters such as those related to volcanic ash, the meeting agreed that participation by the absent States should be encouraged where it would assist the task force in carrying out its work. Furthermore, the meeting agreed that CANSO should be invited to join the task force (Action Item 1 refers).

1.6 The meeting was reminded that it may not be appropriate to identify in the TOR a link to a specific Task Force/Steering Group where such a body may be expected to discontinue or be placed into recess when its assigned task is completed. Rather, it would be more appropriate to refer to a relevant APANPIRG Sub-Group/s (e.g. ATM/SG), where necessary, when interdisciplinary coordination is an important factor for the TOR of the task force.

### 2. Review of the Follow-Up from Previous Meetings

#### Review of the Third Meeting of the MET/R TF (WP/03)

2.1 The meeting was provided with an overview of outcomes from the MET/R TF/3 meeting, held together with the MET/ATM Seminar 2013 in Bangkok, Thailand, from 26 to 29 November 2013, including a progress report on follow-up action to the MET/R TF/3 outcomes in the **Attachment to MET/R TF/4 WP/03**.

2.2 It was noted that the action item to develop a proposal for capacity building activities for digital MET information exchange had been overtaken by outcomes from the Thirteenth Meeting of the Regional OPMET Bulletin Exchange Working Group (ROBEX WG/13), through **Draft Conclusion ROBEX WG 13/4 – Capacity building workshop to facilitate planning and implementation of digital exchange of aeronautical meteorological information.**

2.3 The meeting was also informed that, while the importance of cross-boundary alignment of graphical SIGMET information was discussed at the 18<sup>th</sup> Meeting of the MET Sub-Group of APANPIRG (MET SG/18); no further proposals were developed for the provision of additional guidance to States on the alignment of SIGMET with respect to cross-FIR-boundary phenomena. The meeting considered the issue still warranted further action and agreed to coordinate further with the Meteorological Hazards Task Force (MET/H TF) on this issue with a view to possibly updating the Asia/Pacific Regional SIGMET Guide in order to better assist States in aligning cross-boundary SIGMET information. It was noted that the Regional SIGMET Guide stipulates collaboration between (inter alia) the meteorological watch offices (MWOs) concerned is essential for the successful implementation of the SIGMET service and that SIGMET should be disseminated (by the responsible MWO) to the other MWOs concerned. The issue of cross-boundary SIGMET alignment was further discussed in paragraphs 4.16 to 4.18 of this report.

2.4 The meeting noted that the MET/R TF/3 Draft Conclusion (3/6), which proposed an ICAO ATM-MET requirements survey that would assist APAC Seamless ATM Planning, was still to commence and that the Air Traffic Flow Management (ATFM) survey conducted by the ATFM Steering Group, and subsequently used to analyse the current ATFM status of the Region, did not include any particular analysis of meteorological information that States may have developed in support of ATFM operations. It was noted that a survey of current MET information supporting ATFM would provide important input to the development of regional guidance for such information. In order to further promote this initiative, the meeting agreed to the following Draft Conclusion (Action Item 2 refers):

**Draft Conclusion MET/R TF 4/2: Survey of State Meteorological Information Supporting Air Traffic Management**

That, States are urged to respond to a survey to gauge the types of meteorological information provided by MET services to support Air Traffic Management including Air Traffic Flow Management operations.

Review of MET/ATM Seminar 2015 (WP/04)

2.5 The Secretariat provided a summary of the 2015 Asia/Pacific Meteorology/Air Traffic Management (APAC MET/ATM) Seminar. Outcomes from the Seminar were considered for possible further action to be adopted by the meeting.

2.6 Several examples of ATM-tailored solutions are being developed for the provision of MET information to support ATM. The MET/R TF considered how to provide guidance to assist States to develop MET services to meet the (current and future) requirements of ATM.

2.7 The meeting noted that so-called ‘ATM-tailored’ MET information, when provided to support international air navigation, is still required to comply with the Annex 3 ‘General Provisions’ – even if the detailed technical specifications are yet to be specified in Annex 3.

2.8 With consideration to the outstanding action (Decision 3/5) for the ad-hoc group comprising Australia, China, Hong Kong, China, and Japan, which is to develop a list to guide States on the aeronautical meteorological information or services necessary to support implementation of each element of the APAC Seamless ATM Plan, the meeting considered how to progress this action and

develop specific regional guidance material to assist States with implementation of ATM-tailored MET information (Action Item 5 refers).

### 3. MET/ATM coordination

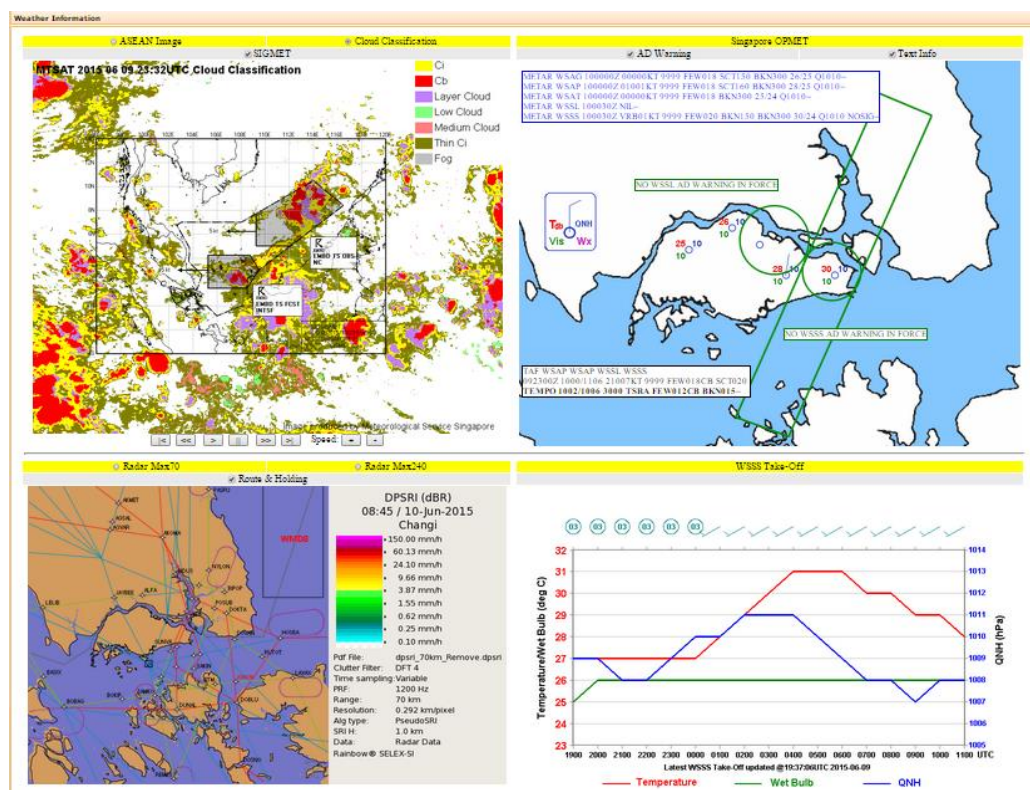
#### Meteorological and Air Traffic Management Collaboration in Singapore (WP/06)

3.1 Singapore presented the progress of MET/ATM collaboration in Singapore in line with the ICAO Global Air Navigation Plan (GANP) including the Aviation System Block Upgrades (ASBU) framework. The various efforts highlighted were aimed to promote sharing of best practices of collaboration between the air navigation service provider (ANSP) and the aeronautical meteorological service provider. Beyond such partnership, collaboration between aeronautical meteorological service providers could further encourage development of solutions to support the progress of ASBU implementation in the field of MET.

3.2 Air navigation services including ATM in the Singapore FIR are undertaken by the Civil Aviation Authority of Singapore (CAAS), while MET services are provided by the Meteorological Service Singapore (MSS), a division of the National Environment Agency.

3.3 Since 2014, MSS and CAAS have met to identify areas of collaboration. Regular exchange visits between meteorologists and Air Traffic Control (ATC) have been organized.

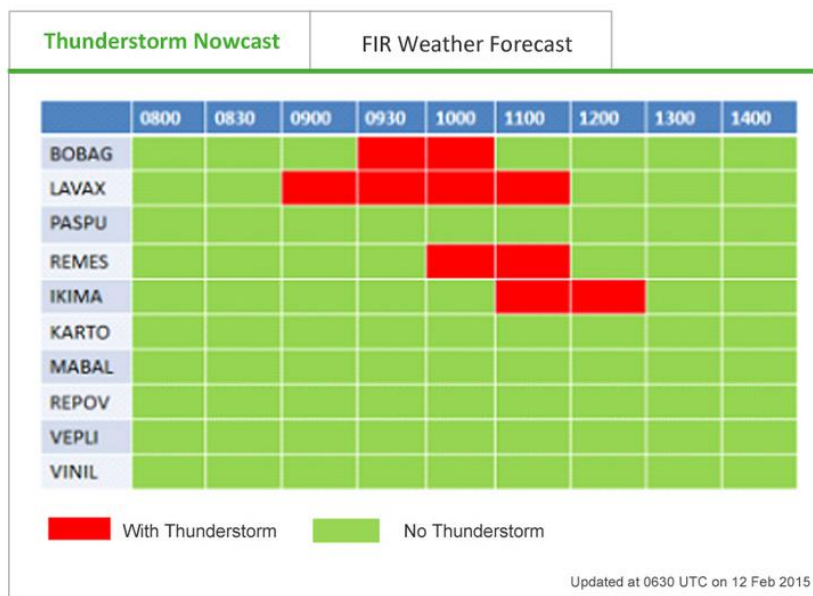
3.4 MSS has provided regular MET teleconference briefings to ATC since late 2014, augmented by displays of MET information from the MSS web-based weather portal (**Figure 1**) to enhance ATC situational awareness and support operational planning. User feedback provided the opportunity for further enhancement and improvement to the web portal.



**Figure 1:** Enhanced graphical representation incorporating air-routes, holding areas and weather information (graphical and textual information e.g. OPMET, graphical SIGMET etc.) overlaid onto a common base map and integrated into a single display.



3.5 CAAS has collaborated with other ANSPs, airlines and airport operators to conduct an operational trial based on the *distributed multi-nodal ATFM network* concept, which commenced on 29 June 2015. To support effective ATFM, existing MET products were tailored to match the ATFM planning horizon. MET forecasts are focused to cover the geographical areas that affect overall capacity, including approach and departure paths and holding areas. **Figure 2** provides an example of MSS web-portal enhancements supporting ATFM.



**Figure 2:** Customized thunderstorm forecast for the holding areas currently being developed for the ATFM operational trial

3.6 A MET-ATM collaboration roadmap was developed to progress MET elements of the ICAO ASBU methodology, enabling CAAS and MSS to commit resources. Singapore has progressed well with ASBU Block 0 module B0-AMET implementation. ASBU Block 1 module B1-AMET would be dependent on CAAS' implementation of System Wide Information Management (SWIM).

3.7 MSS has collaborated with the Met Office of the United Kingdom to improve Numerical Weather Prediction (NWP) capability for Singapore. The project aims to build a tropical convective-scale model with advanced data assimilation to provide improved weather forecasts for Singapore and the surrounding region. Singapore noted that the performance of the model could be constrained by the limited availability of necessary weather observation input data over the South East Asia region, but this could be addressed to some degree by the sharing of weather observation data between neighbouring States.

3.8 In response to a query, Singapore advised the meeting that it had conducted studies of existing examples of MET information supporting ATFM, both within and external to the Asia/Pacific Region, to support the development of its MET information program.

3.9 The meeting agreed that collaboration and information/data sharing between States' MET service providers would be a key initiative supporting the Regional collaborative ATFM program and other ATM operations. Future meetings of MET/R TF should, after the analysis of survey information on current MET information supporting ATM/ATFM, encourage collaboration, sharing of relevant MET data and harmonization of MET information.

3.10 In discussing the challenges relating to the exchange of MET data, the meeting acknowledged that there would be issues to be identified and managed relating to the sources, format and content of shared data.

#### **4. MET Required to Support End User Systems (CDM, AT/ATFM)**

##### Australian Aviation Weather Services for Air Traffic Management (IP/01)

4.1 The meeting was provided with information on aviation weather services and products provided to the Air Navigation Service Provider (Airservices Australia) by the Meteorological Service Provider (Australian Government Bureau of Meteorology). Information was also presented on the products and services that were planned to be provided in the future.

4.2 Information was provided on aviation observations and reports, aerodrome forecasts and briefings, forecasts for operations below 20,000 feet, forecasts for operations above 20,000 feet, meteorological watch and warning services, future services and future work on probabilistic weather forecasting techniques.

##### Collaborative Decision-Making (IP/02)

4.3 Australia provided an overview of options under consideration for Collaborative Decision Making (CDM) in support of Air Traffic Flow Management (ATFM) at major capital city aerodromes in Australia. Four trials had examined products and processes for MET CDM at Brisbane and Sydney airports through the National Operations Centre (NOC) of Airservices Australia. The latest trial had proven that the MET CDM capability would benefit Air Traffic Flow Management (ATFM) around these major airports.

4.4 Information was provided on issues identified, operational benefits, the MET CDM process, and stakeholder roles and responsibilities.

##### Meteorological Services in Support of Massive Delay Response System (IP/03)

4.5 China provided information on MET products supporting the Massive Delay Response System (MDRS) including (special) aerodrome warnings on thunderstorms/heavy precipitation, low visibility and low cloud, snow, freezing precipitation/frost, strong surface winds, wind shear, and other phenomena as agreed with users.

4.6 Information was also provided on weather consultation and briefing processes.

##### Development of Meteorological Services for the Terminal Area in China (IP/04)

4.7 The meeting was provided with information on the development of Meteorological Services for the Terminal Area (MSTA) in China in response to user requirements for new types of weather information to support operations in the terminal area and to bridge the gap between the traditional aerodrome forecast (in TAF code) and the en-route forecast information.

4.8 The MSTA was launched in 2010 by the Air Traffic Management Bureau of the Civil Aviation Authority of China (ATMB of CAAC), in cooperation with the Hong Kong Observatory. Progress had been made in 3 regional meteorological centres providing weather services for the 3 busiest airports in China: Beijing, Shanghai and Guangzhou.

4.9 MET information provided by the MSTA included convection forecasts and icing and wind forecasts. Future work would include the demonstration of products to users and soliciting the input of users to improve the MSTA.

MET Information to Support ATM and ATFM (WP/07)

4.10 The Secretariat provided information on outcomes from the Asia/Pacific Air Traffic Flow Management Steering Group (ATFM/SG) related to the provision of MET information to support ATFM. ATFM/SG/5 (Bangkok, Thailand, 30 March to 3 April 2015) had finalized the draft Regional Framework for Collaborative ATFM, which included among its performance objectives the implementation of meteorological information; in particular the so-called tailored MET products and information developed in a number of States in addition to traditional operational meteorological (OPMET) information.

4.11 The Asia/Pacific Seamless ATM Plan included the following performance objectives related to aviation meteorological services:

**Preferred ATM Service Levels (PASL) Phase I (expected implementation by 12 November 2015)**

*7.26 All high density aerodromes<sup>1</sup> should provide meteorological forecasts, aerodrome warnings and alerts that support efficient terminal operations*

*7.39 ATM systems should be supported by implementation of appropriate meteorological information reporting systems, providing, inter-alia, observations, forecasts, warnings and alerts, and also provide for information to meteorological authorities or offices where required.*

4.12 The performance objectives of the draft Regional Framework for Collaborative ATFM, which would be presented to the ATM Sub-Group of APANPIRG in August 2015, and subsequently to APANPIRG for endorsement in September 2015, were aligned with and where necessary expanded upon those of the Seamless ATM Plan. The Framework included inter alia the expectation of the development and delivery of meteorological information supporting ATFM. Background information on meteorological services to support ATFM was provided in the Framework, together with the following associated performance objectives:

**REGIONAL ATFM CAPABILITY PHASE IA**

**Expected implementation by 12 November 2015**

7.8 Daily pre-tactical airport and airspace capacity and demand analysis should be conducted for all ATFM Program Airports and associated terminal area airspace, and for all en-route ATC sectors supporting the busiest Asia/Pacific city pairs, including consideration of:

- i. expected runway and airspace configurations;
- ii. forecast meteorological phenomena;
- iii. ATC resources, facilities and equipment;

---

<sup>1</sup> The Asia/Pacific Seamless ATM Plan defined high density aerodromes as those with 100,000 scheduled movements per annum or more. The Plan stated that the 100,000 movement benchmark must not be viewed as lessening more stringent requirements or criteria established by the State.

- iv. other known or expected capacity constraints; and
- v. updated flight schedule and flight plan information.

## REGIONAL ATFM CAPABILITY PHASE II

### Expected implementation by 08 November 2018

7.31 Meteorological services for the terminal area (MSTA) should be implemented, including near-term or *now-casting* forecasts of convective weather activity at or affecting ATFM Program Airports and associated instrument approach procedures, terminal area ATS routes and holding points and other significant locations.

4.13 Both the Seamless ATM Plan and the draft Regional Framework for Collaborative ATFM are iterative in nature, and shall be updated at regular intervals or whenever a need for further update is identified. It is expected that the performance objectives of the Framework, in particular, shall be updated to extend the objective of near term (*now-casting*) forecasts of convective weather activity to en-route ATC sectors supporting high density major traffic flows (MTF)<sup>2</sup> (Figure 3) and the busiest Asia/Pacific city pairs (Figure 4), and to other en-route airspace where there is an identified need to support collaborative ATFM.

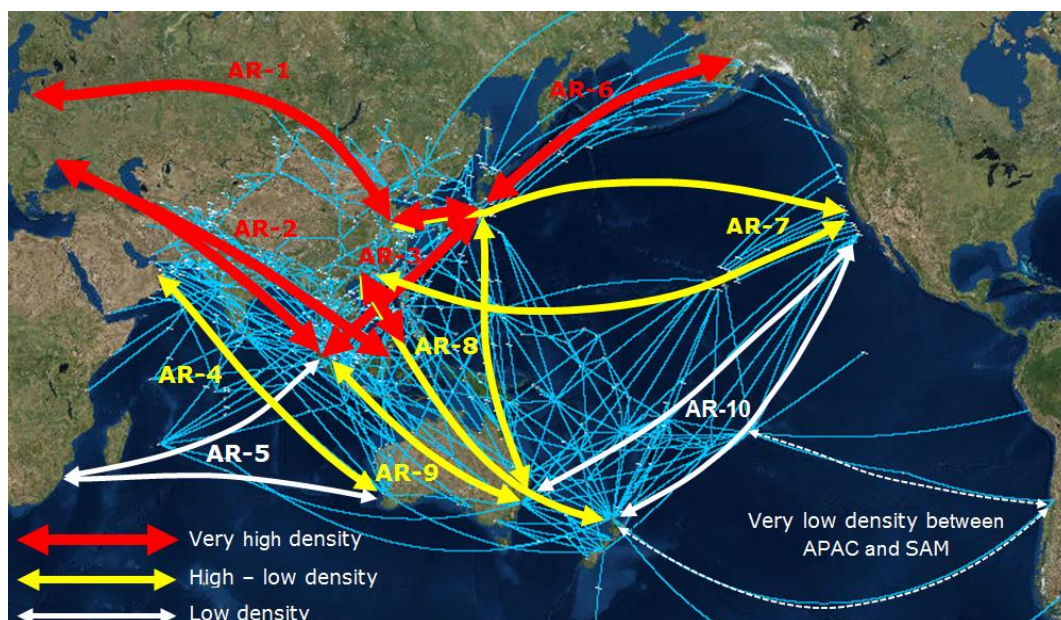
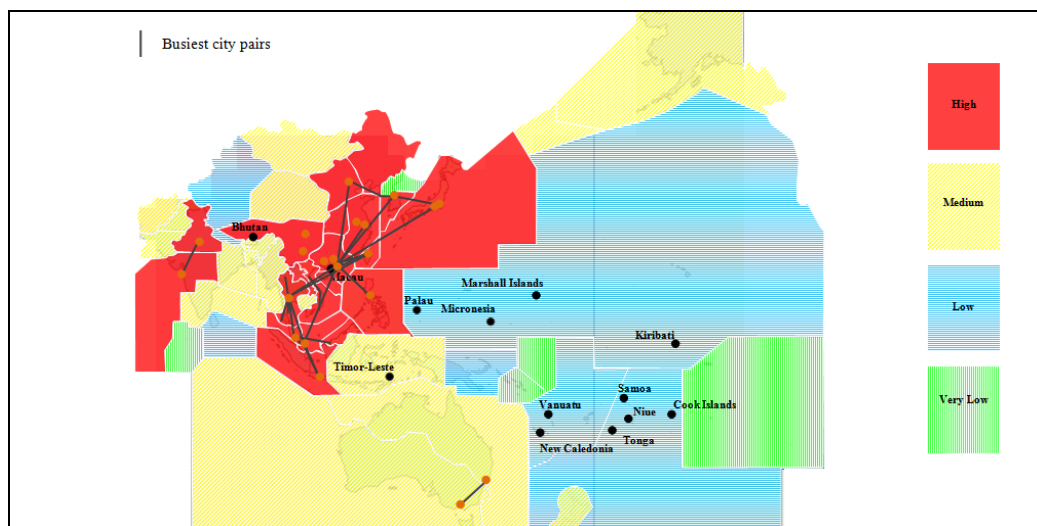


Figure 3: eANP Major Traffic Flow Depiction

<sup>2</sup> Major Traffic Flows (MTF), previously included in ICAO Doc. 9750 *Global Air Navigation Plan*, are currently under review before being included in the *Asia/Pacific Region Air Navigation Plan* on its transition to the online version (eANP).

MET/R TF/4  
Report on Agenda Items



**Figure 4:** Asia/Pacific High Density FIRs, showing Busiest City Pairs  
(Source: Asia/Pacific Seamless ATM Plan)

4.14 The meeting was informed that Framework’s performance objective of implementation of near-term convective weather forecasting does not specify forecast issuance times, lead times before the effective forecast period, specific content, or provisions for continuous review and amendment of forecasts and the automatic cancellation of any previously issued same-type forecast for the same location. It is proposed that Regional guidance in these matters should be developed to ensure harmonized practices, and to facilitate sharing of this forecast information between States (noting, however, that Annex 3 does require that States ensure the quality management of the meteorological information to be supplied to the users).

4.15 Several Administrations have implemented near-term forecasts of convective weather activity, including Hong Kong China, Japan and the United States, as demonstrated at the MET/ATM Seminar 2013. These implementations may be considered as examples for the development of regional guidance.

4.16 The proposal that MET/R TF/4 develop guidance material for ATM-tailored MET information supporting ATM and ATFM was further discussed under WP/08 (Japan).

4.17 Cross-FIR-boundary alignment of SIGMET information, as discussed at MET/R TF/3 (Agenda Item 2, WP/05) is also necessary to ensure optimized airspace capacity, harmonization of ATC tactical traffic management and ATFM measures, and improved operating efficiencies for airspace users.

4.18 The meeting was informed that, while the development of guidance material for meteorological information supporting ATFM was the primary theme of the working paper, alignment and harmonization of cross-boundary SIGMET information was also necessary to support future collaborative ATFM capability in en-route airspace, and was likely to be achievable considerably earlier than State infrastructure and capability for tailored meteorological information in that airspace.

4.19 It was further noted that airspace users had indicated that they were not confident in the quality of SIGMET information provided in some FIRs and that there were cases of States that did not promulgate SIGMET. The meeting agreed that the MET/H TF is the appropriate body to address issues such as the alignment and harmonization of cross-boundary SIGMET information and to improve States’ understanding of Annex 3 requirements for SIGMETs. Such work may require improvements to the Regional SIGMET Guide (Action Item 4 refers). The meeting also noted that other initiatives were being conducted by the MET/H TF to help improve the issuance of SIGMET in

the equatorial region of the Pacific. The alignment of cross-boundary SIGMET information was also discussed earlier in the meeting in paragraph 2.3 of this report.

Development of Regional Guidance for ATM-Tailored Meteorological Services (WP/08)

4.20 Japan informed the meeting that in the Asia/Pacific Region there had been a quite limited numbers of States which had implemented dedicated meteorological services in support of ATM. In response to continuously increasing air traffic demands in the Region, effective air traffic flow management and supporting specific MET services were keenly required. The development of regional guidance for implementation was proposed.

4.21 Following approval of the GANP, including the ASBU methodology, by the Assembly of ICAO in 2013, the ICAO Meteorology Divisional Meeting held in 2014 agreed to develop provisions for MET services in support of ATM in the terminal area for inclusion in ASBU Block 1 (**Recommendation 2/10 – Development of meteorological services for the terminal area**). ATM-tailored meteorological services supporting the goals of the Asia/Pacific Seamless ATM Plan should also be considered.

4.22 The JMA, through its Air Traffic Meteorology Centre (ATMetC), has provided dedicated meteorological information and services to the Air Traffic Management Centre (ATMC) of JCAB since 2005 (MET/ATM Seminar 2013, IP/3 refers). The ATMetC has developed and enhanced its services in consultation with ATMC, and through experience has identified and implemented MET information and services and consultation and briefing practices that are helpful in support of ATM. The Tokyo Metropolitan Area Team (TMAT) was established as a branch of ATMetC to support JCAB traffic management units (TMUs).

4.23 Japan recommended that, in consideration of the increasing requirement for the implementation and enhancement of ATM and supporting meteorological information in APAC Region, regional guidance for the implementation of ATM-tailored meteorological information and services should be developed in order to help States in the Region implement and operate effective ATM. Such guidance should include, but not be limited to:

- Procedures to determine the content and format of ATM-tailored meteorological information in close coordination between the MET and ATM service providers;
- Examples of technologies, systems and infrastructure necessary for providing ATM-tailored meteorological information;
- Methods to estimate the impacts of weather conditions on air traffic flow; and
- Collaborative operational procedures for MET and ATM service providers.

4.24 The meeting agreed to commence the development of regional guidance material to assist States in developing tailored MET information and services to support ATM and ATFM (Action Item 3 refers).

## **5. Sub-Regional Exchange of MET**

5.1 The meeting noted that previous discussions on the exchange of MET information tailored to support ATM, such as in WP/06 presented by Singapore, had already addressed this agenda item.

**6. Future Work Programme**

6.1 The MET/R TF Work Programme presented by the Secretariat in the attachment to WP/02 of MET/R TF/4 was updated by the meeting and is provided at **Appendix C** to this report.

**7. Any Other Business**

Breakout Group Outcomes

7.1 The meeting conducted further discussions in 4 breakout groups, addressing the following topics:

**Group 1:** Regional Survey for MET support to ATM including ATFM – Questions to be included in the Survey

**Group 2:** Regional Guidance on MET Supporting ATM – Contents to be included in Regional Guidance

**Group 3:** MET Data Exchange – Type of data to be shared between States and issues to be addressed

**Group 4:** MET/ATM Coordination – How MET and ATM can work closely together, and ATM requirements for MET

7.2 The results and recommendations of the breakout groups are included in **Appendix D** to this report.

7.3 The meeting was reminded of the existing ICAO standards, policies, procedures and guidance concerning issues such as the implementation of air-reports and the concept of cost recovery (for MET services) and noted that that the MET/R TF could assist States to identify and implement the appropriate standards, policies and procedures if not already done so (Action Item 6 refers).

Next Meeting of the MET/R TF

7.4 The next meeting was tentatively scheduled for March 2016 (dates TBC) at Bangkok, Thailand, possibly to be conducted back-to-back with the MET/H TF.

List of Actions

7.5 A list of actions agreed by the meeting is provided at **Appendix E** to this report.

Closing

7.6 The Chair thanked the meeting participants for their valuable contributions and productive discussions through the Seminar and the meeting.

-----

ICAO/WMO ASIA/PACIFIC METEOROLOGY/AIR TRAFFIC MANAGEMENT  
(MET/ATM) SEMINAR AND

4<sup>TH</sup> MEETING OF THE ASIA/PACIFIC METEOROLOGICAL REQUIREMENTS  
TASK FORCE (MET/R TF/4)

(Tokyo, Japan 29 June - 3 July 2015)

\*\*\*\*\*

LIST OF PARTICIPANTS

STATE/INTERNATIONAL ORGANIZATION/NAME	DESIGNATION/ADDRESS	TELEPHONE/FAX/E-MAIL
<b>AUSTRALIA (2)</b>		
Mr. Michael Berechree (Meeting & Seminar)	National Manager Aviation Weather Services Australian Bureau of Meteorology GPO Box 1289 Melbourne VIC 3001 <b>AUSTRALIA</b>	Tel: +61 (3) 9669 4586 Mobile: +61 4345 1672 Fax: +61 (3) 9669 4695 E-mail: <a href="mailto:m.berechree@bom.gov.au">m.berechree@bom.gov.au</a>
Mr. Ashwin Naidu (Meeting & Seminar)	Manager Regional Aviation Weather Services (NSW, VIC & TAS) Australian Bureau of Meteorology P.O. Box 413 Darlinghurst NSW 1300 <b>AUSTRALIA</b>	Tel: +61 (2) 9296 1503 Mobile: +61 434 076 585 Fax: +61 (2) 9296 1611 E-mail: <a href="mailto:a.naidu@bom.gov.au">a.naidu@bom.gov.au</a>
<b>BANGLADESH (2)</b>		
Mr. Manzurul Haque Khan (Meeting & Seminar)	MET Inspector and Consultant Flight Safety Division Civil Aviation Authority of Bangladesh Headquarters Office Kurmitola, Dhaka 1229 <b>BANGLADESH</b>	Tel: +880 (2) 890 1406 Mobile: +880 171 6 75 4192 Fax: +880 (2) 890 1418 E-mail: <a href="mailto:mhkhan1953@gmail.com">mhkhan1953@gmail.com</a>
Mr. Kazi Nazmul Hoque (Meeting & Seminar)	Assistant Director Civil Aviation Authority of Bangladesh Headquarters Office Kurmitola, Dhaka 1229 <b>BANGLADESH</b>	Tel: +880 (1) 5523 12146 Fax: +880 (2) 890 1860 E-mail: <a href="mailto:nazmul_hque@yahoo.com">nazmul_hque@yahoo.com</a>
<b>CHINA (3)</b>		
Ms. Zou Juan (Meeting & Seminar)	Meteorologist Air Traffic Management Bureau of CAAC East San-huan Road Middle Chaoyang District Beijing 100022 <b>PEOPLE'S REPUBLIC OF CHINA</b>	Tel: +86 (10) 8778 6826 Fax: +86 (10) 8778 6820 E-mail: <a href="mailto:zoujuan@atmb.net.cn">zoujuan@atmb.net.cn</a> <a href="mailto:juan_zou@yahoo.com">juan_zou@yahoo.com</a>



MET/ATM SEMINAR & MET/R TF/4  
Appendix A to the Report

STATE/INTERNATIONAL ORGANIZATION/NAME	DESIGNATION/ADDRESS	TELEPHONE/FAX/E-MAIL
Mr. Wang Jun (Meeting & Seminar)	Engineer Air Traffic Control Division Air Traffic Management Bureau of CAAC #12 East San-huan Road Middle Chaoyang District Beijing 100022 <b><u>PEOPLE'S REPUBLIC OF CHINA</u></b>	Tel: +86 (10) 8778 6819 Mobile: +86 138 1795 4 654 Fax: +86 (10) 8778 6810 E-mail: <a href="mailto:junwang@atmb.net.cn">junwang@atmb.net.cn</a>
Ms. Liu Jiaying (Meeting & Seminar)	Teacher Civil Aviation University of China #2898 Jinbei Road Dongli District Tianjin 300300 <b><u>PEOPLE'S REPUBLIC OF CHINA</u></b>	Tel: +86 1582 251 2365 Fax: +86 (22) 2409 2504 E-mail: <a href="mailto:jy_liu@cauc.edu.cn">jy_liu@cauc.edu.cn</a>
<b>HONG KONG, CHINA (1)</b>		
Mr. Luen-On Li (Meeting & Seminar)	Chief Experimental Officer (Airport Meteorological Office) Hong Kong Observatory 134A Nathan Road Tsim Sha Tsui Kowloon <b><u>HONG KONG, CHINA</u></b>	Tel: +852 2926 8209 Mobile: +852 9169 8381 Fax: +852 2375 2645 E-mail: <a href="mailto:loli@hko.gov.hk">loli@hko.gov.hk</a> <a href="mailto:liluenon.hko@gmail.com">liluenon.hko@gmail.com</a>
<b>INDIA (2)</b>		
Mr. Sh. N. Nigam (Meeting & Seminar)	Scientist 'E' India Meteorological Department AMSS, Meteorological Watch Office, ATC IGI Airport, New Delhi 110037 <b><u>INDIA</u></b>	Tel: +91 (11) 2565 2398 Mobile: +91 098 114 2625 Fax: +91 (11) 2565 2398 E-mail: <a href="mailto:narendra.nigam@imd.gov.in">narendra.nigam@imd.gov.in</a> <a href="mailto:amssdelhi@yahoo.co.in">amssdelhi@yahoo.co.in</a>
Mr. Sulakshan Chadha (Meeting & Seminar)	General Manager (ATM) Airports Authority of India Rajiv Gandhi Bhawan Safdarjunt Airport New Delhi 110003 <b><u>INDIA</u></b>	Tel: +91 (11) 2462 9012 Mobile: +91 981 024 4204 Fax: +91 (11) 2462 9012 E-mail: <a href="mailto:gmatschq@aai.aero">gmatschq@aai.aero</a>
<b>JAPAN (36)</b>		
Mr. Takayuki Arai (Seminar only)	Special Assistant to the Director Operations and Flight Inspection Division Air Navigation Service Department Japan Civil Aviation Bureau 2-1-3 Kasumigaseki, Chiyoda-ku Tokyo 100-8918 <b><u>JAPAN</u></b>	Tel: +81 (3) 5253 8751 Fax: +81 (3) 5253 1644 E-mail: <a href="mailto:arai-t2m8@mlit.go.jp">arai-t2m8@mlit.go.jp</a>
Mr. Takako Sakamoto (Seminar only)	Special Assistant to the Director Air Traffic International Affairs Office Japan Civil Aviation Bureau 2-1-3 Kasumigaseki, Chiyoda-ku Tokyo 100-8918 <b><u>JAPAN</u></b>	Tel: +81 (3) 5253 8740 Fax: +81 (3) 5253 1664 E-mail: <a href="mailto:sakamoto-t41zd@mlit.go.jp">sakamoto-t41zd@mlit.go.jp</a>

MET/ATM SEMINAR & MET/R TF/4  
Appendix A to the Report

STATE/INTERNATIONAL ORGANIZATION/NAME	DESIGNATION/ADDRESS	TELEPHONE/FAX/E-MAIL
Mr. Takao Ueki (Seminar only)	Director for Future Air Traffic Systems Air Navigation Services Department Japan Civil Aviation Bureau 2-1-3 Kasumigaseki, Chiyoda-ku Tokyo 100-8918 <b><u>JAPAN</u></b>	Tel: +81 (3) 5253 8739 Fax: +81 (3) 5253 1663 E-mail: <a href="mailto:ueki-t2mv@mlit.go.jp">ueki-t2mv@mlit.go.jp</a>
Mr. Tsuyoshi Soejima (Seminar only)	Senior Air Traffic Management Officer Air Traffic Management Center 1302-17, Kosenuki Nata, Higashi-ku Fukuoka 811-0204 <b><u>JAPAN</u></b>	Tel: +81 (92) 607 71111 Fax: E-mail: <a href="mailto:soejima-t07a5@cab.mlit.go.jp">soejima-t07a5@cab.mlit.go.jp</a>
Mr. Yasunori Watanabe (Seminar only)	Senior Air Traffic Management Officer Air Traffic Management Center 3-3-1, Heneda Airport Ota-ku, Tokyo 144-0041 <b><u>JAPAN</u></b>	Tel: +81 (3) 5757 3016 Fax: E-mail: <a href="mailto:watanabe-y10n2@cab.mlit.go.jp">watanabe-y10n2@cab.mlit.go.jp</a>
Mr. Tetsuya Watanabe (Seminar only)	Senior Air Traffic Management Officer Air Traffic Management Center (Tokorozawa TMU) 1-12, Namiki, Tokorozawa Saitama, 359-0042 <b><u>JAPAN</u></b>	Tel: +81 (4) 2997 5331 Fax: E-mail: <a href="mailto:watanabe-t03rb@cab.mlit.go.jp">watanabe-t03rb@cab.mlit.go.jp</a>
Atsunori Suzuki (Seminar only)	Senior Air Traffic Management Officer Air Traffic Management Center (Tokorozawa TMU) 1-12, Namiki, Tokorozawa Saitama, 359-0042 <b><u>JAPAN</u></b>	Tel: +81 (4) 2997 5331 Fax: E-mail: <a href="mailto:suzuki-1a036y@cab.mlit.go.jp">suzuki-1a036y@cab.mlit.go.jp</a>
Ms. Tomoko Ishikawa (Meeting & Seminar)	Chief, Operation Section Japan Civil Aviation Bureau 2-1-3 Kasumigaseki, Chiyoda-ku Tokyo 100-8918 <b><u>JAPAN</u></b>	Tel: +81 (3) 5253 8749 Fax: +81 (3) 5253 1664 E-mail: <a href="mailto:ishikawa-t07p2@mlit.go.jp">ishikawa-t07p2@mlit.go.jp</a>
Mr. Masahiro Nakakubo (Seminar Only)	Chief, Air Traffic International Affair Office Japan Civil Aviation Bureau 2-1-3 Kasumigaseki, Chiyoda-ku Tokyo 100-8918 <b><u>JAPAN</u></b>	Tel: +81 (3) 5253 8740 Fax: +81 (3) 5253 1664 E-mail: <a href="mailto:nakakubo-m44ij@mlit.go.jp">nakakubo-m44ij@mlit.go.jp</a>
Ms. Kiyoko Mochizuki (Seminar Only)	Deputy Chief AIS Officer Japan Civil Aviation Bureau 133 Komemae, Furugome Narita-shi, Chiba <b><u>JAPAN</u></b>	Tel: +81 476 33 5507 Fax: +81 476 33 5509 E-mail: <a href="mailto:mochizuki-k4634@cab.mlit.go.jp">mochizuki-k4634@cab.mlit.go.jp</a>

MET/ATM SEMINAR & MET/R TF/4  
Appendix A to the Report

STATE/INTERNATIONAL ORGANIZATION/NAME	DESIGNATION/ADDRESS	TELEPHONE/FAX/E-MAIL
Mr. Kinuko Hayashi (Seminar Only)	Assistant Chief Air Traffic Management Officer Air Traffic Management Center 3-3-1, Hanedakuko, Ota-ku Tokyo 144-0044 <b><u>JAPAN</u></b>	Tel: +81 (3) 6672 3989 Fax: E-mail: <a href="mailto:hayashi-k2qy@cab.mlit.go.jp">hayashi-k2qy@cab.mlit.go.jp</a>
Mr. Keiji Niwa (Seminar Only)	Deputy Director Flight Dispatch & Meteorology Operation Control Center Japan Airlines Co., Ltd. 2-4-11 Higashi-shinagawa Shinagawa-ku Tokyo 140-8637 <b><u>JAPAN</u></b>	Tel: +81 (3) 5460 6846 Fax: E-mail: <a href="mailto:keiji.niwa@jal.com">keiji.niwa@jal.com</a>
Mr. Kenichi Ura (Seminar Only)	Deputy Director Flight Dispatch & Meteorology Operation Control Center Japan Airlines Co., Ltd. 2-4-11 Higashi-shinagawa Shinagawa-ku Tokyo 140-8637 <b><u>JAPAN</u></b>	Tel: +81 (3) 5460 6846 Fax: E-mail: <a href="mailto:kenichi.ura@jal.com">kenichi.ura@jal.com</a>
Mr. Satoshi Shindo (Seminar Only)	Senior Manager Operation Control Center Planning Japan Airlines Co., Ltd. 2-4-11 Higashi-shinagawa Shinagawa-ku Tokyo 140-8637 <b><u>JAPAN</u></b>	Tel: +81 (3) 5796 1954 Fax: +81 (3) 5460 5954 E-mail: <a href="mailto:satoshi-shindo@jal.com">satoshi-shindo@jal.com</a>
Mr. Masami Ichikawa (Seminar Only)	Captain Flight Crew B777 Japan Airlines Co., Ltd. 2-4-11 Higashi-shinagawa Shinagawa-ku Tokyo 140-8637 <b><u>JAPAN</u></b>	Tel: +81 (3) 5460 6846 Fax: E-mail: <a href="mailto:masami.ichikawa@jal.com">masami.ichikawa@jal.com</a>
Mr. Kakuya Abe (Meeting & Seminar)	Manager All Nippon Airways (ANA) 3-3-2 Haneda Airport Ota-ku Tokyo 144-8515 <b><u>JAPAN</u></b>	Tel: +81 (80) 7977 2843 Fax: +81 (3) 6700 5036 E-mail: <a href="mailto:kak.abe@ana.co.jp">kak.abe@ana.co.jp</a>
Mr. Kei Sakamoto (Meeting & Seminar)	Assistant Manager All Nippon Airways (ANA) 3-3-2 Haneda Airport Ota-ku Tokyo 144-8515 <b><u>JAPAN</u></b>	Tel: +81 (80) 7977 2761 Fax: +81 (3) 6700 5036 E-mail: <a href="mailto:kei.sakamoto@ana.co.jp">kei.sakamoto@ana.co.jp</a>

MET/ATM SEMINAR & MET/R TF/4  
Appendix A to the Report

STATE/INTERNATIONAL ORGANIZATION/NAME	DESIGNATION/ADDRESS	TELEPHONE/FAX/E-MAIL
Mr. Takayuki Yoshihara (Seminar Only)	Chief Researcher Electronic Navigation Research Institute 7-42-23 Jindaiji-Higashi-machi, Chofu Tokyo 182-0012 <b><u>JAPAN</u></b>	Tel: +81 422 41 3181 Fax: +81 422 41 3199 E-mail: <a href="mailto:yosihara@enri.go.jp">yosihara@enri.go.jp</a>
Mr. Atsushi Senoguchi (Seminar Only)	Senior Researcher Electronic Navigation Research Institute 7-42-23 Jindaiji-Higashi-machi, Chofu Tokyo 182-0012 <b><u>JAPAN</u></b>	Tel: +81 422 41 3185 Fax: +81 422 70 8952 E-mail: <a href="mailto:senoguchi@enri.go.jp">senoguchi@enri.go.jp</a>
Mr. Katsutoshi Saika (Seminar Only)	AIS Officer Aeronautical Information Service Center 133 Komemae, Furugome Narita-shi, Chiba <b><u>JAPAN</u></b>	Tel: +81 476 33 5507 Fax: +81 476 33 5509 E-mail: <a href="mailto:saika-k46cw@ais.mlit.go.jp">saika-k46cw@ais.mlit.go.jp</a>
Mr. Yosuke Hayashi (Seminar Only)	Assistant Scientific Officer/Volcanology Division Seismology and Volcanology Department Japan Meteorological Agency 1-3-4 Otemachi, Chiyoda-ku Tokyo 100-8122 <b><u>JAPAN</u></b>	Tel: +81 (3) 3284 1749 Fax: +81 (3) 3212 3648 E-mail: <a href="mailto:you-hayashi@met.kishou.go.jp">you-hayashi@met.kishou.go.jp</a>
Ms. Yohko Igarashi (Seminar Only)	Seismology and Volcanology Department Japan Meteorological Agency 1-3-4 Otemachi, Chiyoda-ku Tokyo 100-8122 <b><u>JAPAN</u></b>	Tel: +81 (3) 3284 1749 Fax: +81 (3) 3212 3648 E-mail: <a href="mailto:y_igarashi@met.kishou.go.jp">y_igarashi@met.kishou.go.jp</a>
Mr. Hirofumi Ikeda (Seminar Only)	Head, Air Traffic Meteorology Center Office of Aviation Weather Forecasting Forecast Division, Forecast Department Japan Meteorological Agency 1302-17, Aza-kosenuki Oaza-Nata, Higashi-ku Fukuoka 811-0204 <b><u>JAPAN</u></b>	Tel: +81 (92) 608 8191 Fax: +81 (92) 608 8193 E-mail: <a href="mailto:hikeda@met.kishou.go.jp">hikeda@met.kishou.go.jp</a>
Ms. Michiko Ikeda (Seminar Only)	Scientific Officer, Tokyo Metropolitan Area Team Air Traffic Meteorology Center Office of Aviation Weather Forecasting Forecast Division, Forecast Department Japan Meteorological Agency 3-3-1 Heneda Airport, Ota-ku Tokyo 144-0041 <b><u>JAPAN</u></b>	Tel: +81 (3) 3747 0771 Fax: +81 (3) 3747 0773 E-mail: <a href="mailto:michi-ikeda@met.kishou.go.jp">michi-ikeda@met.kishou.go.jp</a>

MET/ATM SEMINAR & MET/R TF/4  
Appendix A to the Report

STATE/INTERNATIONAL ORGANIZATION/NAME	DESIGNATION/ADDRESS	TELEPHONE/FAX/E-MAIL
Mr. Koichiro Kakihara (Meeting & Seminar)	Senior Coordinator for International Aeronautical Meteorology Aeronautical Meteorology Division Administration Department 1-3-4 Otemachi, Chiyoda-ku Tokyo 100-8122 <b><u>JAPAN</u></b>	Tel: +81 (3) 3212 8968 Fax: +81 (3) 3212 8968 E-mail: <a href="mailto:k-kakihara@met.kishou.go.jp">k-kakihara@met.kishou.go.jp</a> <a href="mailto:kakihara516@gmail.com">kakihara516@gmail.com</a>
Mr. Yoshifumi Kanai (Meeting & Seminar)	Senior Scientific Officer Office of Aviation Weather Forecasting Forecast Division, Forecast Department Japan Meteorological Agency 1-3-4 Otemachi, Chiyoda-ku Tokyo 100-8122 <b><u>JAPAN</u></b>	Tel: +81 (3) 3212 8377 Fax: +81 (3) 3212 8377 E-mail: <a href="mailto:kanai@met.kishou.go.jp">kanai@met.kishou.go.jp</a>
Mr. Jyun Kawaguchi (Seminar Only)	Assistant Scientific Officer Air Traffic Meteorology Center Office of Aviation Weather Forecasting Forecast Division, Forecast Department Japan Meteorological Agency 1302-17, Aza-kosenuki Oaza-Nata, Higashi-ku Fukuoka 811-0204 <b><u>JAPAN</u></b>	Tel: +81 (92) 608 8191 Fax: +81 (92) 608 8193 E-mail: <a href="mailto:jun_kawaguchi@met.kishou.go.jp">jun_kawaguchi@met.kishou.go.jp</a>
Ms. Naoko Komatsu (Meeting & Seminar)	Scientific Officer Office of Aviation Weather Forecasting Forecast Division, Forecast Department Japan Meteorological Agency 1-3-4 Otemachi, Chiyoda-ku Tokyo 100-8122 <b><u>JAPAN</u></b>	Tel: +81 (3) 3212 8377 Fax: +81 (3) 3212 8377 E-mail: <a href="mailto:n-komatsu@met.kishou.go.jp">n-komatsu@met.kishou.go.jp</a>
Mr. Noriyuki Miyakoshi (Seminar Only)	Group Leader, Tokyo Metropolitan Area Team Air Traffic Meteorology Center Office of Aviation Weather Forecasting Forecast Division, Forecast Department Japan Meteorological Agency 3-3-1 Heneda Airport, Ota-ku Tokyo 144-0041 <b><u>JAPAN</u></b>	Tel: +81 (3) 3747 0771 Fax: +81 (3) 3747 0773 E-mail: <a href="mailto:miyakoshi@met.kishou.go.jp">miyakoshi@met.kishou.go.jp</a>
Mr. Hideharu Ogishima (Seminar Only)	Scientific Officer, Tokyo Metropolitan Area Team Air Traffic Meteorology Center Office of Aviation Weather Forecasting Forecast Division, Forecast Department Japan Meteorological Agency 3-3-1 Heneda Airport, Ota-ku Tokyo 144-0041 <b><u>JAPAN</u></b>	Tel: +81 (3) 3747 0771 Fax: +81 (3) 3747 0773 E-mail: <a href="mailto:h.ogishima@met.kishou.go.jp">h.ogishima@met.kishou.go.jp</a>

MET/ATM SEMINAR & MET/R TF/4  
Appendix A to the Report

STATE/INTERNATIONAL ORGANIZATION/NAME	DESIGNATION/ADDRESS	TELEPHONE/FAX/E-MAIL
Mr. Jun Ryuzaki (Meeting & Seminar)	Senior Scientific Officer Administration Division Forecast Department Japan Meteorological Agency 1-3-4 Otemachi, Chiyoda-ku Tokyo 100-8122 <b><u>JAPAN</u></b>	Tel: +81 (3) 3212 8302 Fax: +81 (3) 3284 0180 E-mail: <a href="mailto:jryuzaki@met.kishou.go.jp">jryuzaki@met.kishou.go.jp</a>
Mr. Sadamichi Shiozawa (Seminar Only)	Senior Forecaster Office of Aviation Weather Forecasting Forecast Division, Forecast Department Japan Meteorological Agency 1-3-4 Otemachi, Chiyoda-ku Tokyo 100-8122 <b><u>JAPAN</u></b>	Tel: +81 (3) 3212 8377 Fax: +81 (3) 3212 8377 E-mail: <a href="mailto:s-siozawa@met.kishou.go.jp">s-siozawa@met.kishou.go.jp</a>
Mr. Katsumasa Yagi (Seminar Only)	Head, Office of Aviation Weather Forecasting Forecast Division, Forecast Department Japan Meteorological Agency 1-3-4 Otemachi, Chiyoda-ku Tokyo 100-8122 <b><u>JAPAN</u></b>	Tel: +81 (3) 3212 8377 Fax: +81 (3) 3212 8377 E-mail: <a href="mailto:katsumasa_yagi-a@met.kishou.go.jp">katsumasa_yagi-a@met.kishou.go.jp</a>
Mr. Yukihiro Kumagai (Seminar Only)	Senior Scientific Officer Satellite Programme Division, Observation Department Japan Meteorological Agency 1-3-4 Otemachi, Chiyoda-ku Tokyo 100-8122 <b><u>JAPAN</u></b>	Tel: +81 (3) 3201 8677 Fax: +81 (3) 3217 1036 E-mail: <a href="mailto:kumagai_y@met.kishou.go.jp">kumagai_y@met.kishou.go.jp</a>
Mr. Kentaro Yamamoto (Seminar Only)	Scientific Officer Observation Division Observation Department Japan Meteorological Agency 1-3-4 Otemachi, Chiyoda-ku Tokyo 100-8122 <b><u>JAPAN</u></b>	Tel: +81 (3) 3211 6019 Fax: +81 (3) 3212 1742 E-mail: <a href="mailto:k_yamamoto@met.kishou.go.jp">k_yamamoto@met.kishou.go.jp</a>
Ms. Erika Hayami (Meeting & Seminar)	Scientific Officer Aeronautical Meteorology Division Administration Department Japan Meteorological Agency 1-3-4 Otemachi, Chiyoda-ku Tokyo 100-8122 <b><u>JAPAN</u></b>	Tel: +81 (3) 3212 8968 Fax: +81 (3) 3212 8968 E-mail: <a href="mailto:e-hayami@met.kishou.go.jp">e-hayami@met.kishou.go.jp</a>

**MALAYSIA (2)**

MET/ATM SEMINAR & MET/R TF/4  
Appendix A to the Report

STATE/INTERNATIONAL ORGANIZATION/NAME	DESIGNATION/ADDRESS	TELEPHONE/FAX/E-MAIL
MD. Nastain Bin Mahazur	Principal Assistant Director Air Traffic Management Sector Department of Civil Aviation Malaysia No. 27 Persiaran Perdana Level 1-4 Podium Block Lot 4G4 Precint 4, 62618 Putrajaya <b><u>MALAYSIA</u></b>	Tel: +603 8871 4272 Fax: +603 8881 0530 E-mail: <a href="mailto:mdnas70@dca.gov.my">mdnas70@dca.gov.my</a>
Mr. Asmadi Abdul Wahad (Meeting & Seminar)	Principal Assistant Director National Aviation Meteorological Department Kuala Lumpur International Airport Sepang, Salangor <b><u>MALAYSIA</u></b>	Tel: +603 8787 2307 Fax: +603 8787 1020 E-mail: <a href="mailto:asmadi@met.gov.my">asmadi@met.gov.my</a>
<b>PHILIPPINES (2)</b>		
Ms. Marianne O. Mamuao (Meeting & Seminar)	Air Traffic Management Officer Civil Aviation Authority of the Philippines B23 Lot 6, Viuar Street PH3 Avida Residences – STA Catauna Dasmariñas <b><u>PHILIPPINES</u></b>	Tel: +63 922 8773093 Fax: +63 (2) 879 9181 E-mail: <a href="mailto:ianne_control@yahoo.com">ianne_control@yahoo.com</a>
Ms. Helen Grace G. Cabuyadao (Meeting & Seminar)	ATMO, Acting Assistant FIC Manila Aerodrome Control Tower Civil Aviation Authority of the Philippines Manila Control Tower NAIA, Terminal 1, Old Mia Road Pasay City <b><u>PHILIPPINES</u></b>	Tel: +63 (2) 879 9265 Fax: +63 (2) 879 9265 E-mail: <a href="mailto:juliet_golf@yahoo.com">juliet_golf@yahoo.com</a>
<b>REPUBLIC OF KOREA (2)</b>		
Mr. Haeseong Ha (Meeting & Seminar)	Senior Meteorologist /Observation & Forecast Division Korea Aviation Meteorological Agency 272 Gonghang-ro Joong-gu, Incheon 400-720 <b><u>REPUBLIC OF KOREA</u></b>	Tel: +82 (32) 740 2811 Fax: +82 (32) 740 2847 E-mail: <a href="mailto:eland126@korea.kr">eland126@korea.kr</a>
Ms. Yeji Park (Meeting & Seminar)	Assistant Officer/Air Navigation Meteorological Team Korea Aviation Meteorological Agency 272 Gonghang-ro Joong-gu, Incheon 400-720 <b><u>REPUBLIC OF KOREA</u></b>	Tel: +82 (32) 740 2812 Fax: +82 (32) 740 2808 E-mail: <a href="mailto:yeji@korea.kr">yeji@korea.kr</a>
<b>RUSSIAN FEDERATION (2)</b>		
Ms. Anna Ivanova (Meeting & Seminar)	Weather Forecaster Russia/FBSE “AVIAMETTELECOM OF ROSHYDROMET” Russia, Irkutsk, 664009 Index Street Omulyovskogo, house 20 <b><u>RUSSIAN FEDERATION</u></b>	Tel: +8 (3952) 223 104, 266 164 Fax: +8 (3952) 280 282, 266 138, 223 104 E-mail: <a href="mailto:meteoirk@inbox.ru">meteoirk@inbox.ru</a> <a href="mailto:meteoirk@bk.ru">meteoirk@bk.ru</a>

MET/ATM SEMINAR & MET/R TF/4  
Appendix A to the Report

STATE/INTERNATIONAL ORGANIZATION/NAME	DESIGNATION/ADDRESS	TELEPHONE/FAX/E-MAIL
Ms. Irina Veretennikova (Meeting & Seminar)	Main Specialist MWO/Weather Forecaster Kamchatka Branch of FSBE “AVIAMETTELECOM OF ROSHYDROMET” Yelizovo AMC (Airport Meteorological Center and MWO 51 Ryabikova Street, Apt. 5 Yelizovo, Kamchatka Region, 684010 <b><u>RUSSIAN FEDERATION</u></b>	Tel: +791 402 68704 Fax: E-mail: <a href="mailto:arrow.ir@mail.ru">arrow.ir@mail.ru</a>
<b>SINGAPORE (3)</b>		
Ms. Yap Kar Lin (Meeting & Seminar)	Executive Meteorologist Meteorological Service Singapore P.O. Box 8 Singapore Changi Airport <b><u>SINGAPORE</u></b> 918141	Tel: +65 6542 5059 Fax: +65 6542 5026 E-mail: <a href="mailto:yap_kar_lin@nea.gov.sg">yap_kar_lin@nea.gov.sg</a>
Mr. Edmund Heng (Meeting only)	Deputy Chief Air Traffic Control Officer (Planning) Civil Aviation Authority of Singapore Singapore Changi Airport P.O. Box 1 <b><u>SINGAPORE</u></b> 918141	Tel: +65 6541 2485 Fax: +65 6441 0221 E-mail: <a href="mailto:edmund.heng@caas.gov.sg">edmund.heng@caas.gov.sg</a>
Mr. Hermizan Jumari (Meeting only)	Head (Air Traffic Management Operations Planning) Civil Aviation Authority of Singapore Singapore Changi Airport P.O. Box 1 <b><u>SINGAPORE</u></b> 918141	Tel: +65 6595 6064 Fax: +65 6441 0221 E-mail: <a href="mailto:hermizan_jumari@caas.gov.sg">hermizan_jumari@caas.gov.sg</a>
<b>THAILAND (3)</b>		
Dr. Phuwieng Prakhmintara (Meeting & Seminar)	Director of Bureau of Aeronautical Meteorology Thai Meteorological Department ATC Complex Building Suvarnabhumi International Airport 99, Mu 10, Bangna-trad Road Km. 15, Bangpli Samutprakarn 10540 <b><u>THAILAND</u></b>	Tel: +66 (2) 134 0011-14 Ext. 216 Fax: +66 (2) 134 0009-10 E-mail: <a href="mailto:phuwiengj@yahoo.com">phuwiengj@yahoo.com</a>
Mr. Somchai Yimsricharoenkit (Meeting & Seminar)	Director of Aeronautical Meteorology Forecast Division Bureau of Meteorological Meteorology 6 <sup>th</sup> Floor ATC Complex Suvarnabhumi International Airport Bang Pli, Samutprakarn 10540 <b><u>THAILAND</u></b>	Tel: +66 (2) 134 0011 Ext. 214 Fax: +66 (2) 134 0009-10 E-mail: <a href="mailto:somchai_yim@tmd.go.th">somchai_yim@tmd.go.th</a>



MET/ATM SEMINAR & MET/R TF/4  
Appendix A to the Report

STATE/INTERNATIONAL ORGANIZATION/NAME	DESIGNATION/ADDRESS	TELEPHONE/FAX/E-MAIL
Ms. Sujin Promduang (Meeting & Seminar)	Director, Aeronautical Information and Flight Data Management Centre Aeronautical Radio of Thailand Ltd. 102 Soi Ngamduplee Tungmahamek Sathon, Bangkok 10120 <b><u>THAILAND</u></b>	Tel: +66 (2) 285 9083 Fax: +66 (2) 287 8645 E-mail: <a href="mailto:sujin.pr@aerothai.co.th">sujin.pr@aerothai.co.th</a>
<b>VIET NAM (5)</b>		
Mr. Nguyen Trung Kien	Civil Aviation Authority of Viet Nam 119 Nguyen Son Street Long Bien District Hanoi <b><u>VIET NAM</u></b>	Tel: Fax: E-mail:
Mr. Bui Thanh Ha	Viet Nam Air Traffic Corporation (VATM) 6/200 Nguyen Son Long Bien District Hanoi <b><u>VIET NAM</u></b>	Tel: Fax: E-mail: <a href="mailto:bui Thanhhaatc@yahoo.com">bui Thanhhaatc@yahoo.com</a>
Ms. Nguyen Lan Oanh	Viet Nam Air Traffic Corporation (VATM) 6/200 Nguyen Son Long Bien District Hanoi <b><u>VIET NAM</u></b>	Tel: Fax: E-mail: <a href="mailto:nglanoanh@yahoo.com">nglanoanh@yahoo.com</a>
Mr. Nguyen Duc Chinh	Deputy Director of Noi Bai Operation Control Centre Airports Corporation of Viet Nam Noi Bai International Airport Socson, Hanoi <b><u>VIET NAM</u></b>	Tel: +84 (4) 3584 4444 Fax: +84 (4) 3886 6825 E-mail: <a href="mailto:ndchinh@vietnamairport.vn">ndchinh@vietnamairport.vn</a>
Ms. Tran Thi Khanh Huong	Forecaster Tan Son Nhat Airport Authority <b><u>VIET NAM</u></b>	Tel: Fax: E-mail: <a href="mailto:kh_huong@yahoo.com">kh_huong@yahoo.com</a>
<b>IATA (1)</b>		
Mr. Zhang Wei (Meeting & Seminar)	Manager, Safety and Flight Operations, North Asia International Air Transport Association 3F, China Digital Harbor No. 1 Wangjing North Road Beijing 100102 <b><u>PEOPLE'S REPUBLIC OF CHINA</u></b>	Tel: +86 (10) 8571 9060 Fax: E-mail: <a href="mailto:zhangw@iata.org">zhangw@iata.org</a>
<b>IFALPA (1)</b>		
Capt. Jaffar Hassan (Meeting & Seminar)	Regional Vice President Asia/East International Federation of Air Line Pilots' Associations 52 West Coast Crescent Singapore <b><u>SINGAPORE</u></b>	Tel: +65 943 00747 Fax: E-mail: <a href="mailto:jaffar747@gmail.com">jaffar747@gmail.com</a>
<b>ICAO (2)</b>		

MET/ATM SEMINAR & MET/R TF/4  
Appendix A to the Report

---

<b>STATE/INTERNATIONAL ORGANIZATION/NAME</b>	<b>DESIGNATION/ADDRESS</b>	<b>TELEPHONE/FAX/E-MAIL</b>
Mr. Peter C. Dunda <a href="#">(Meeting &amp; Seminar)</a>	Regional Officer MET International Civil Aviation Organization Asia and Pacific Office 252/1, Vibhavadi Rangsit Road Ladyao, Chatuchak Bangkok 10900 <b><u>THAILAND</u></b>	Tel: +66 (2) 537 8189 Ext. 153 MB: +086 529 5216 Fax: +66 (2) 537 8199 E-mail: <a href="mailto:PDunda@icao.int">PDunda@icao.int</a>
Mr. Shane Sumner <a href="#">(Meeting &amp; Seminar)</a>	Regional Officer ATM International Civil Aviation Organization Asia and Pacific Office 252/1, Vibhavadi Rangsit Road Ladyao, Chatuchak Bangkok 10900 <b><u>THAILAND</u></b>	Tel: +66 (2) 537 8189 Ext. 159 Fax: +66 (2) 537 8199 E-mail: <a href="mailto:SSumner@icao.int">SSumner@icao.int</a>

-----

**ICAO/WMO ASIA/PACIFIC METEOROLOGY/AIR TRAFFIC MANAGEMENT  
(MET/ATM) SEMINAR AND  
4<sup>TH</sup> MEETING OF THE ASIA/PACIFIC METEOROLOGICAL REQUIREMENTS  
TASK FORCE (MET/R TF/4)**

(Tokyo, Japan 29 June - 3 July 2015)

\*\*\*\*\*

**LIST OF WORKING, INFORMATION PAPERS AND PRESENTATIONS**

<b>WP/IP/SP No.</b>	<b>Agenda</b>	<b>Subject</b>	<b>Presented by</b>
<b>MET/ATM SEMINAR INFORMATION PAPERS</b>			
IP/1	1	Recent Activities on Aeronautical Meteorological in the CARATS Project of Japan	Japan
IP/2	2	Utilization of Volcanic Ash Advisories for Safe Air Traffic Management	Japan
IP/3	2	Importance of Advance Information Exchange when Conducting Cross-border ATFM	Japan
IP/4	3	Aeronautical Meteorological Service Provision in Support of Future one Sky Concept and the WMO Aviation Research Demonstration Project Initiative	Hong Kong, China
IP/5	2	Different Air Traffic Management Unit has Different Needs for Aeronautical Meteorological Service	China
IP/6	3	Weather Phenomena Affecting Air Traffic Management Operations	Japan
IP/7	3	Meteorological Services for the Terminal Area	Japan
IP/8	3	Improvement of Low-level Wind Information of JMA	Japan
IP/9	2	Meteorological Service for Air Navigation in the Kamchatka Branch FSBE Aviamettelecom Roshydromet: Real Action and Exercise VOLKAM	the Russian Federation
<b>PRESENTATIONS</b>			
SP/01		Introduction to Asia/Pacific MET/ATM Seminar	Secretariat
SP/02		Overview of ICAO Provisions for MET Supporting ATM	Secretariat

MET/R TF/4  
Appendix B to the Report

---

<b>WP/IP/SP No.</b>	<b>Agenda</b>	<b>Subject</b>	<b>Presented by</b>
SP/03		Overview of “CARATS” and Recent activities related to Aeronautical Meteorology	Japan
SP/04		Utilization of Volcanic Ash Advisories for Safe Air Traffic Management	Japan
SP/05		Importance of Information Exchange when conducting Cross-Border ATFM	Japan
SP/06		Weather Phenomena Affecting Air Traffic Management Operations	Japan
SP/07		Meteorological Services for the Terminal Area	Japan
SP/08		Improvement of Low-Level Wind Shear Information of JMA	Japan
SP/09		CMATS – The Civil Military ATM System OneSKY Australia Program Update	Australia
SP/10		Strategic Radar Enhancement Project (SREP) Forecast Demonstration Project (FDP) the future is here and now	Australia
SP/11		Himawari-8: JMA’s Next-Generation Geostationary Meteorological Satellite	Japan
SP/12		DAPs Potential and an Analysis on Weather Uncertainty for TBO	Japan
SP/13		ENRI’s R&D Topics on Space Weather, Extreme Weather and Evaluation Study of Weather Impacts on ATM near Airport	Japan
SP/14		Airport Weather Matrix (AWM)	Australia
SP/15		Australian Graphical Products	Australia
SP/16		Meteorological Service for Air Navigation in the Kamchatka Branch FSBE Aviamettelecom Roshydromet: Real Action and Exercise VOLKAM	Russian Federation
SP/17		Overview of WMO Activities Supporting MET/ATM	Secretariat
SP/18		ICAO Asia/Pacific Region Seamless ATM Plan and Draft Framework for Collaborative ATFM	Secretariat
SP/19		Global developments towards MET supporting ATM	Secretariat

MET/R TF/4  
Appendix B to the Report

<b>WP/IP/SP No.</b>	<b>Agenda</b>	<b>Subject</b>	<b>Presented by</b>
SP/20		Summary of Presentations and Outcomes	Secretariat
SP/21		Collaborative Decision Making (MET-CDM)	Australia
SP/22		Aeronautical Meteorological Service Provision in Support of Future One Sky Concept and the WMO Aviation Research Demonstration Project (AvRDP) Initiative	Hong Kong, China
SP/23		Different Air Traffic Management Unit has Different Demands for Aeronautical Meteorology Service	China

**MET/R TF/4  
WORKING PAPERS**

WP/1	-	Adoption of Agenda	Secretariat
WP/2	1	Review the Terms of Reference of the Meteorological Requirements Task Force	Secretariat
WP/3	2	Review of the Third Meeting of the Meteorological Requirements Task Force	Secretariat
WP/4	2	Review of MET/ATM Seminar 2015	Secretariat
WP/5		Not available	
WP/6	3	Meteorological and Air Traffic Management Collaboration in Singapore	Singapore
WP/7	4	MET Information to support ATM and ATFM	Secretariat
WP/8	4	Development of Regional Guidance for ATM-tailored Meteorological Services	Japan

**INFORMATION PAPERS**

IP/1	4	Australian Aviation Weather Services for Air Traffic Management	Australia
IP/2	4	Collaborative Decision Making	Australia
IP/3	4	Meteorological Services in Support of Massive Delay Response System	China
IP/4	4	Development of Meteorological Services for the Terminal Area in China	China

<b>WP/IP/SP No.</b>	<b>Agenda</b>	<b>Subject</b>	<b>Presented by</b>
-------------------------	---------------	----------------	---------------------

**PRESENTATIONS**

SP/1	Meteorological and Air Traffic Management Collaboration in Singapore	Singapore
------	--	-----------

-----

**WORK PROGRAMME OF THE METEOROLOGICAL REQUIREMENTS  
TASK FORCE (MET/R TF)**

<b>1. TASK TEAM</b>		
<b>Secretariat</b>	<b>Address</b>	<b>Contact</b>
Peter Dunda RO MET	International Civil Aviation Organization 252/1, Vibhavadee Road Ladyao, Chatuchak Bangkok 10900 Thailand	Tel: +66 (2) 537 8189 Ext. 153 Fax: +66 (2) 537 8199 E-mail: <a href="mailto:pdunda@icao.int">pdunda@icao.int</a>
Shane Sumner RO ATM		Tel: +66 (2) 537 8189 Ext. 159 Fax: +66 (2) 537 8199 E-mail: <a href="mailto:ssumner@icao.int">ssumner@icao.int</a>
<b>Chair</b>	<b>Address</b>	<b>Contact</b>
Mr Jun Ryuzaki  JAPAN	Senior Scientific Officer, Administration Division, Forecast Department Japan Meteorological Agency 1-3-4 Otemachi, Chiyoda-ku Tokyo 100-8122 Japan	Tel: +81 (3) 3212 8341 Ext. 3351 Fax: +81 (3) 3284 0180 E-mail: <a href="mailto:jryuzaki@met.kishou.go.jp">jryuzaki@met.kishou.go.jp</a>
<b>Members</b>	<b>Address</b>	<b>Contact</b>
Mr. Michael I. Berechree  AUSTRALIA	National Manager Aviation Weather Services Australian Bureau of Meteorology GPO Box 1289 Melbourne VIC 3001 Australia	Tel: +61 (3) 9669 4586 Fax: +61 (3) 9669 4695 E-mail: <a href="mailto:srav@bom.gov.au">srav@bom.gov.au</a>
Ms Zou Juan  CHINA	Meteorologist Meteorology Division Air Traffic Management Bureau, CAAC No.12, East Sanhuan Rd. Middle, Chaoyang District Beijing 100022, China	Tel: +86 (10) 8778 6826 Fax: +86 (10) 8778 6820 E-mail: <a href="mailto:zoujuan@atmb.net.cn">zoujuan@atmb.net.cn</a> <a href="mailto:juan_zou@yahoo.com">juan_zou@yahoo.com</a>
Mr. Li Luen On  HONG KONG, CHINA	Chief Experimental Officer Hong Kong Observatory 134A, Nathan Road Tsim Sha Tsui, Hong Kong	Tel: +852 2926 8209 Fax: +852 2375 2645 E-mail: <a href="mailto:loli@hko.gov.hk">loli@hko.gov.hk</a>
Mr. Peter Lechner  NEW ZEALAND	Chief Meteorological Officer Civil Aviation Authority of New Zealand Asteron House, 55 Featherston Street Wellington New Zealand	Tel: +64 (4) 560 9593 Fax: +64 (4) 569 2024 E-mail: <a href="mailto:peter.lechner@caa.govt.nz">peter.lechner@caa.govt.nz</a>
TBC  RUSSIAN FEDERATION	TBC	TBC
Mr. Chow Kwok Wah  SINGAPORE	Senior Meteorological Officer Main Meteorological Office Meteorological Service Singapore	Tel: +65 6542 4715 Fax: +65 6545 7192 E-mail: <a href="mailto:chow_kwok_wah@nea.gov.sg">chow_kwok_wah@nea.gov.sg</a>
Mr. Steven Albersheim  UNITED STATES	Federal Aviation Administration Senior Meteorologist, Programme Lead International, FAA Headquarters 800 Independence Ave, S.W. Washington, D.C. 20591 United States	Tel: +1 (202) 385 7185 Fax: +1 (202) 385 7240 E-mail: <a href="mailto:steven.albersheim@faa.gov">steven.albersheim@faa.gov</a>

2. DESCRIPTION	
Objective	Improve safety, efficiency and sustainability of ATM and operators by providing MET information needed to meet current and future requirements.
Benefits	Increase efficiency – save time and fuel as well as reduce carbon emissions
Terms of Reference	<p>Under guidance from ICAO Secretariat:</p> <ul style="list-style-type: none"> <li>a) Obtain and evaluate the current and future requirements for MET (including space weather) in support of ATM (includes ATFM), as well as ATM in support of MET, in the ASIA/PAC Region and update Regional Air Navigation Plan accordingly and provide guidance material to assist States to develop MET services to meet these requirements;</li> <li>b) Assess aeronautical meteorological services, systems and architecture in the region and how they can integrate weather information into ATM, airspace user systems and decision support tools;</li> <li>c) Investigate sub-regional exchange of MET information (including digital) and associated agreements that facilitate ATM operations particularly over busy routes that overlap different FIRs;</li> <li>d) Promote coordination between MET and ATM communities in the ASIA/PAC Region to enhance the level of understanding of MET requirements and capabilities in support of ATM;</li> <li>e) To study the successful involvement of MET in the development of CDM/ATFM in other regions with a view to future application in ASIA/PAC;</li> <li>f) Monitor regional implementation of global policies associated with source data and delivery of MET information for ATM;</li> <li>g) <del>Coordinate with MET/H TF on framework for</del> Provide support to other appropriate bodies under the MET Sub-Group and ATM Sub-Group on the development of ATM contingency plan for specific phenomenon including volcanic ash, radioactive cloud, tropical cyclone and tsunami with reference to developments made by the global ICAO groups and WMO developments;</li> <li>h) <del>Coordinate with the ATFM/SG to</del> Provide expertise on MET services and information to assist appropriate bodies under the ATM Sub-Group in the establishment of sub-regional ATFM and to identify what kind of MET services/information can be considered as the most important for it;</li> <li>i) Enhance regional implementation of MET services in support of ATM in line with the priorities defined in the ASIA/PAC Seamless ATM Plan, closely referring to the Global Air Navigation Plan (GANP) and the Aviation System Block Upgrades (ASBUs); and</li> <li>j) Report to the MET Sub-group of APANPIRG for further co-ordination through the ICAO Secretariat with other relevant bodies (ATM/SG, APSAPG, CNS/SG).</li> </ul>



MET/R TF/4  
Appendix C to the Report

3. COMMUNICATION STRATEGIES				
Description	Target Audience	Delivery Method	Frequency / Date	Responsibility
Work Plan	Task Force Members	Document via email	As required but reviewed at least quarterly	Chair
General correspondence	Task Force Members	Email	As required	Task Force Members
Task Force Meeting	Task Team Members	Meeting	As required, supplemented by teleconference	Chair
Status & Milestone Reports	ICAO Secretariat and Task Team Members	Report via email	At least half-yearly	Chair
Task Force Report	MET SG	Working Paper	Yearly	Chair

4. PERFORMANCE FRAMEWORK FORM (PFF)				
Tasks	Time Frame	Responsibility	Status	Milestone
Task 1: Conduct MET/R TF meeting <del>to obtain regional MET requirements to support ATM</del>	2016 (Mar)	Chair, secretariat	To commence	1
Task 2: Conduct survey on regional ATM requirements for MET information	2016 (Mar)	Chair, secretariat, Ad hoc group	to commence	1
Task 3: Conduct MET/ATM seminar in coordination with WMO to promote regional implementation of MET to support ATM	2016 or 2017	Chair, secretariat	To commence	1
Task 4: Assess aviation meteorological services, systems and architecture in the region and how they can integrate weather information into ATS/aircraft operator decision support tools	2015-2016	MET/R TF ATFM/SG	In progress	2
Task 5: Investigate sub-regional exchange of MET information and associated agreements that facilitate ATM operations particularly over busy routes that overlap different FIRs	2015-2016	MET/R TF ATFM/SG	In progress	3
Task 6: Facilitate implementation of MET services to support ATM in the terminal area in accordance with current and evolving ICAO and WMO standards, procedures and policies	2015-2016	MET/R TF	In progress	4
Task 7: Monitor regional implementation of global policies associated with source data and delivery of MET information for ATM	2015-2016	MET/R TF	Future	5

MET/R TF/4  
Appendix C to the Report

5. MILESTONES			
Milestone	Accountability	Dates	Status
Milestone 1: Determine regional MET requirements for ATM	MET/R TF	2016	To begin
Milestone 2: Develop guidance material on how to provide/use weather information in support of ATM decision making tools	MET/R TF	2016	To begin
Milestone 3: Implement sub-regional exchange of MET information to facilitate ATM operations in busy routes	MET/R TF	TBD	To begin
Milestone 4: Develop regional implementation plan for the Meteorological Services for the Terminal Area	MET/R TF	TBD	future
Milestone 5: Implement global policies associated with source data and delivery of MET products for ATM	MET/R TF	TBD	To begin

6. WORK PLAN				
Activity / Milestone	Accountability	Predecessors	Date	Status
<b>Activity 1: Develop regional MET requirements for ATM</b>				
Activity 1.1: Conduct MET/R TF meetings and MET/ATM seminars to contribute in developing MET requirements for ATM	MET/R TF	-	Nov 13-completed (at least every 18 months)	In progress
Activity 1.2: Analyse existing surveys (e.g. ATFM survey) and develop new surveys, when necessary, to determine regional ATM requirements for MET	MET/R TF	-	2016	To commence
Activity 1.4: Recommend regional MET requirements for ATM to MET SG <del>and AMOFSG (through direct membership)</del> meetings	MET/R TF	-	Annual <del>(AMOFSG —18 months)</del>	To begin
Milestone 1: Determine regional MET requirements for ATM				
<b>Activity 2: Developing methods to use weather information in decision support tools</b>				
Activity 2.1: Develop a list to guide States on the MET information or services necessary to support implementation of each element of the APAC Seamless ATM Plan, and report to the next meeting of the MET/R TF. Note: this should include requirements for aircraft reporting	Ad hoc group (Australia, China, Hong Kong, China, and Japan)	-	2016	To begin
Activity 2.2:		-		
Activity 2.3:		-		
Milestone 2: Develop guidance material on how to provide/use weather information in support of ATM decision making tools				

<b>Activity 3: Developing sub-regional exchange of MET information to facilitate ATM operations</b>				
Activity 3.1: develop a proposal in close collaboration with other appropriate bodies and assisted by the Secretariat, for capacity building activities in the APAC region to foster the implementation of digital MET information exchange, and report to MET SG	Ad hoc group (Australia, Hong Kong, China, New Zealand and Singapore) <b>ROBEX-WG</b>	-	July 2015	In progress
Activity 3.2: States develop agreements on the exchange of MET information that provides benefits to ATM operations on sub-regional level	States ATFM/SG	-		To begin In progress
Activity 3.3: States report developments to MET/R TF and MET SG meetings	States/ MET/R TF	3.2		To begin
Milestone 3: Implement sub-regional exchange of MET information to facilitate ATM operations in busy routes				To begin
<b>Activity 4: Developing regional implementation plan for Meteorological Services for the Terminal Area</b>				
Activity 4.1: Monitor developments of Meteorological Services for the Terminal Area	MET/R TF	-	Annual	In progress
Activity 4.2: Monitor Annex 3 relevant ICAO provisions developments	MET/R TF	4.1		future
Activity 4.3: Develop regional implementation plan for Meteorological Services for the Terminal Area	MET/R TF	4.2		future
Activity 4.4: Monitor regional implementation of Meteorological Services for the Terminal Area	MET/R TF	4.3		future
Activity 4.5: Report implementation progress to MET SG	MET/R TF	4.4		future
Milestone 4: Develop regional implementation plan for the Meteorological Services for the Terminal Area				future
<b>Activity 5: Implementing global policies associated with source data and delivery of MET products for ATM</b>				
Activity 5.1: Implement global policies associated with source data and delivery of MET products for ATM	MET/R TF	-		To begin
Activity 5.2: Report results to MET/R TF and MET SG meetings	MET/R TF	5.1		future
Milestone 5: Implement global policies associated with source data and delivery of MET products for ATM				

## Summary of Discussions – Breakout Groups

<b>Group 1</b>	
<b>Regional Survey for MET support to ATFM- Questions to be included in the Survey</b>	
<b>Survey Question</b>	<b>Secretariat Comment</b>
Q1. Provide the specific meteorological products and/or websites that your administration (and/or State) has available to support ATFM. Include all applicable MET products, e.g. TAF, TREND, SIGMET, etc., <del>(write manually)</del> and any tailored MET information other than OPMET products defined in Annex 3?.	Modified by Secretariat
Q2. What are the methods you use to <del>receive</del> distribute meteorological information, e.g. AFTN, AMHS, telephone, internet portal, web/video conferencing, etc...	Modified by Secretariat to reflect that the survey will be directed towards the MET service provider, through the State
Q3. List the MET products your <del>facility</del> State considers operationally valuable (in order of the most importance) to ATFM	Modified by Secretariat to reflect that the survey will be directed towards the MET service provider, through the State. DISCUSS (ANSP may be the most appropriate to answer this)
Q4. Does your <del>facility</del> State use automated processing of gridded MET data in ATM automation and/or ATFM systems for the calculation of flight trajectories and flight plan updates? <del>(There is a need to provide a short explanation of what these data are, if you require a further detailed explanation please seek guidance from your met service provider).</del>	Modified by Secretariat. Discuss.
Q5. If you answered YES to Q4, what gridded data is currently being used, e.g. wind, temp, etc?	
Q6. If you answered NO to Q4, does your facility plan to implement <del>automated</del> ATM/AFTM automation system processes <del>of</del> using gridded data, and if so by what date?	Modified by Secretariat as per Q4. DISCUSS
Q7. What are your expectations of the MET service provider in the provision of MET services in support of ATFM?	
Q8. What efforts are you presently undertaking to improve MET service provision in support of ATFM in your State?	

MET/R TF/4  
Appendix D to the Report

<b>Group 1</b>	
<b>Regional Survey for MET support to ATFM- Questions to be included in the Survey</b>	
<b>Survey Question</b>	<b>Secretariat Comment</b>
Q9. Has your State enacted primary legislation and supporting regulations for the provision of MET services under Annex 3 to the Convention on International Civil Aviation.	<ol style="list-style-type: none"> <li>1. Added by Secretariat</li> <li>2. Should be the first question asked; <u>but</u></li> <li>3. May result in non-responses from some key States, if they do not have adequate legislation or regulation in place</li> </ol>
Q10. Does your State have regulations in place requiring that MET service providers, air navigation service providers and other stakeholders enter into formal agreements defining roles and responsibilities of all parties, and the MET information to be provided by all parties?	Added by Secretariat

<b>Group 2</b>	
<b>Regional Guidance on MET supporting ATM/ATFM – Contents to be included</b>	
<b>Item</b>	<b>Secretariat Comment</b>
Define the policy, administration and technical aspect: <ul style="list-style-type: none"> <li>• Policy: <ul style="list-style-type: none"> <li>○ ANSP should define the high level requirements;</li> <li>○ MET services should be supported by ATM;</li> <li>○ Define higher level requirements for cost recovery</li> </ul> </li> </ul>	Need to check whether we can include this in ICAO guidance material.
Establish plans for regular engagement	
Establish a service level agreement (SLA) to ensure there is a longer term commitment between MET and ATM authorities/service providers to support ATFM and ATS	
Define strategic plans and longer term roadmaps	
Define best practice	
Continuous engagement	
Guidance on key routes, airspace and other significant points to be considered for tailored MET information supporting ATFM	Added by Secretariat. DISCUSS
Guidance on forecast horizon, lead times, amendment/update cycles and forecast cancellation procedures for tailored MET information supporting ATFM	
Guidance on tailored MET information that may be provided from different technology/infrastructure/capability levels	
Guidance on information display/presentation formats for ANSPs/ATFMUs.	

<b>Group 3</b>	
<b>MET Data Exchange – Type of data to be shared between MET service providers, and concerns to be addressed</b>	
<b>Item</b>	<b>Secretariat Comment</b>
Type of data to be shared: takeoff data/takeoff forecast, local forecast, radar information, satellite information, LIDAR information if available	
Mechanisms for data exchange in cases where AFTN may not be available (data/products already or potentially distributed by AFTN, in accordance with Annex 10 requirements)	Additional words by Secretariat
Guidance communications media for data transfer and data formats/protocols for information that may not be transferred via AFTN	Added by Secretariat

<b>Group 4</b>	
<b>MET/ATM Coordination – How MET and ATM can work closely together, and ATM requirements for MET</b>	
<b>Item</b>	<b>Secretariat Comment</b>
ATM Requirements for MET: <ul style="list-style-type: none"> <li>• Improve accuracy of MET forecast info:               <ul style="list-style-type: none"> <li>○ TREND forecast</li> <li>○ Timely update of TAF, SIGMET</li> <li>○ SIGWX Chart – coverage of phenomena, height range</li> </ul> </li> <li>• Make MET products more visual, easier to use and visualize, use more graphical products rather than text</li> <li>• Integrate different information to make one graphical product (e.g. satellite image, CB area, CB height, movement, ATS route map, areas of turbulence, etc.</li> </ul>	



MET/R TF/4  
Appendix E to the Report

**LIST OF ACTION ITEMS**

	<b>ACTION ITEM</b>	<b>TIME FRAME</b>	<b>RESPONSIBLE PARTY</b>	<b>STATUS</b>	<b>REMARKS</b>
1.	Invite CANSO to join the task force	After adoption of revised TOR by MET SG/19	Secretariat	<b>To commence</b>	Letter of invitation and inclusion on list of invitees
2.	Develop and conduct the Regional Survey of MET information provided to support ATM/ATFM	Results to be available for review by the next MET/R TF meeting (Mar 2016)	Chair, secretariat	<b>In progress</b>	Meeting report material to be used as starting point; related to MET/R TF Decision 3/6 and Draft Conclusion MET/R TF 4/2
3.	Develop regional guidance for tailored MET information supporting ATM and ATFM	Initial draft to be available for review by the next MET/R TF meeting (Mar 2016)	Ad hoc group (Australia, China, Hong Kong, China, Japan*, Republic of Korea, Singapore, Thailand and Viet Nam) *Rapporteur	<b>To commence</b>	Meeting report material to be used as starting point
4.	Coordinate with MET/H TF and MET SG on possible improvements to the SIGMET Guide to assist States in aligning cross-boundary SIGMET information	Submit information to MET SG/19 (Aug 2015) and MET/H TF/6 (Mar 2016)	Secretariat	<b>To commence</b>	Promulgate information on relevant discussion from the meeting; related to MET/R TF Decision 3/4
5.	Progress work in identifying MET information needed to support the elements of the APAC Seamless ATM Plan	Progress report to the next MET/R TF meeting (Mar 2016)	Ad-hoc group (Australia, China, Hong Kong, China, and Japan)	<b>In progress</b>	Continue from work done in WP/07; related to MET/R TF Decision 3/5
6.	Identify and promote existing provisions related to air-reports and cost recovery for MET services	Report to next meeting of MET/R TF	Secretariat	<b>To commence</b>	