



*International Civil Aviation Organization*

**NINETEENTH MEETING OF THE METEOROLOGY  
SUB-GROUP (MET SG/19) OF APANPIRG**

Bangkok, Thailand, 3 – 6 August 2015

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**Agenda Item 6: Research, development and implementation issues in the MET field**

**6.3) Forecasts, advisories and warnings (including MET/H TF Report)**

**REPORT ON MET/H TF/5**

(Presented by the Secretariat on behalf of the Chairman of the MET/H TF)

**SUMMARY**

This paper presents a summary of the Fifth Meeting of the Meteorological Hazards Task Force, held in Seoul, Republic of Korea, from 18 to 20 March 2015.

**1. Introduction**

1.1 The Fifth Meeting of the Asia/Pacific (APAC) Meteorological Hazards Task Force (MET/H TF/5) was held in Seoul, Republic of Korea, from 18 to 20 March 2015. Participation by 40 experts from 14 States and Special Administrations and 3 International Organizations provided the group the opportunity to coordinate on initiatives to improve the quality of meteorological advisories and warnings and implementation of the international airways volcano watch (IAVW) and the tropical cyclone warning system.

1.2 A conjoint session with the Thirteenth Meeting of the APAC Regional Operational Meteorological (OPMET) Bulletin Exchange Working Group (ROBEX WG/13) was held on 18 March 2015 to address issues common to both groups related to the implementation of SIGMET and advisory information.

1.3 A copy of the report from MET/H TF/5, as well as the report from the conjoint session of MET/H TF/5 and ROBEX WG/13, and all related meeting documentation, is available at the following website: <http://www.icao.int/APAC/Meetings/Pages/2015-MET-H-TF5.aspx>.

**2. Discussion**

2.1 MET/H TF meetings have been held once every twelve months (approx.) since the first meeting (METWARN/I TF/1)<sup>1</sup> in March 2011. They necessarily serve as an integral part of the MET/H TF coordination and work programme where progress against tasks is facilitated, monitored and reported.

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<sup>1</sup> APAC Meteorological Advisories and Warnings Implementation Task Force. *Note: METWARN/I TF was renamed MET/H TF at the third meeting in 2013 in accordance with CNS/MET SG/16 Decision 16/34.*

2.2 With reference to the MET/H TF/5 discussions, agenda items 1 and 2 addressed meeting organizational matters and follow-up to previous meetings; agenda item 3 principally addressed guidance material; agenda item 4 addressed contingency plans; agenda item 5 principally addressed aerodrome warnings; agenda item 6 addressed the MET/H TF work programme including the composition of the group and description of its benefits; and agenda item 7 addressed other business including icing and special air-reports, meteorological satellite imagery and space weather services.

2.3 A copy of the MET/H TF work plan, revised by MET/H TF/5, is provided at **Attachment 1** to this paper.

2.4 With reference to the conjoint (MET/H TF/5 and ROBEX WG/13) session, agenda item 1 principally addressed volcanic ash advisory centre backup tests; and agenda item 2 addressed other SIGMET and advisory information issues including annual SIGMET tests, a proposal for a SIGMET workshop, initiatives to improve SIGMET messages, the Regional SIGMET Guide, volcanic ash advisory and tropical cyclone advisory information, volcanic ash exercises and the importance of special air-reports.

2.5 Outcomes from MET/H TF/5 discussions included a total of 4 Decisions that relate solely to matters dealing with the internal working arrangements of the MET/H TF. For easy reference, these are copied below:

**Decision 5/1 – Regional guidance material: SIGMET pamphlets**

That, in order to enhance the guidance available to States for the production of SIGMET:

- a) The draft pamphlets presented in WP/4, intended as a quick reference guide for the preparation of [WC and WS] SIGMET, be further developed and a new draft pamphlet be developed for [WV] SIGMET and promulgated through the MET SG to APANPIRG, ICAO HQ and WMO for final review and further action;
- b) Arrangements be proposed for the appropriate publication/distribution of the (approved) SIGMET pamphlets in electronic form; and
- c) Future revisions are to be developed to realign all the SIGMET pamphlets with Amendment 77 to ICAO Annex 3 for final review and approval in time for applicability in November 2016.

**Decision 5/2 – Regional guidance material: aerodrome tsunami warning**

That, in order to progress the development of regional guidance material on the issuance of aerodrome tsunami warning information:

- a) Additional comments be sought from the MET/H TF with respect to the draft tsunami warning guidance provided in WP/5 before submission of the guidance to MET SG/19 for review and consideration of further action; and
- b) End user consultation is to be included as a key recommendation in the guidance material, especially with respect to the integration of an aerodrome tsunami warning service into a national tsunami warning system.

**Decision 5/3 – Regional guidance material: SIGMET for radioactive clouds**

That, in order to enhance the regional guidance material on SIGMET for radioactive clouds, additional comments be sought from the MET/H TF with respect to the draft guidance material provided in IP/3, and the draft guidance be revised and developed further as necessary, before submission for review by MET SG/19 and consideration of further action.

**Decision 5/4 – MET/H TF membership details**

That, the current details of members of the MET/H TF, as listed in the work programme, be confirmed and IATA and IFALPA be invited to nominate experts for membership on MET/H TF.

2.6 With respect to MET/H TF/5 Decision 5/1, progress on the development of SIGMET pamphlets is discussed further under MET SG/19 agenda item 7, in WP/19.

2.7 With respect to MET/H TF/5 Decision 5/2, progress on the development of regional guidance material for aerodrome tsunami warnings is discussed further under MET SG/19 agenda item 7, in WP/20.

2.8 With respect to MET/H TF/5 Decision 5/3, progress on the development of regional guidance material on SIGMET for radioactive clouds is discussed further under MET SG/19 agenda item 7, in WP/21.

2.9 With respect to MET/H TF/5 Decision 5/4, the Secretariat is still to confirm all contact details for MET/H TF members and to invite IATA and IFALPA to nominate experts for membership on MET/H TF.

2.10 The status of action on the task list from MET/H TF/5 is provided in the **Attachment 2** to this paper.

2.11 Outcomes from the conjoint MET/H TF/5 and ROBEX WG/13 discussions included a total of 8 Decisions that relate solely to matters dealing with the internal working arrangements of the MET/H TF and ROBEX WG. For easy reference, these are copied below:

**Decision (ROBEX WG/13-MET/H TF/5)/1 – Distribution of documentation for VAAC back-up tests**

That, the distribution list for the VAAC back-up test State letter invitations and supporting documentation be reviewed and updated, as necessary, to facilitate the participation of all intended operational units in future VAAC back-up tests.

**Decision (ROBEX WG/13-MET/H TF/5)/2 – MWO and ACC location and AFTN address list(s) for VAAC back-up tests**

That, the list(s) of MWO and ACC locations and AFTN addresses used by VAACs in VAAC back-up tests be reviewed and updated, as necessary, to facilitate the participation of all intended operational units in future VAAC back-up tests, including those in the area of responsibility of VAAC Wellington.

**Decision (ROBEX WG/13-MET/H TF/5)/3 – Follow-up with States/MWOs on SIGMET tests**

That, the detailed data in Appendices 1 and 2 in WP/C2, Tables 1 and 2 in WP/C3 and Tables 1 and 2 in WP/C4 be used to highlight problems in test-SIGMET issuance to the States/MWOs concerned in order to facilitate improved participation-rates and resolution of errors in SIGMET tests.

**Decision (ROBEX WG/13-MET/H TF/5)/4 – SIGMET workshop in Japan**

That, in order to facilitate improved issuance of SIGMET in the Asia/Pacific, the feasibility of a collaborative effort, between ICAO, Japan and the WMO, with respect to a possible SIGMET workshop (in 2016), be further investigated.

**Decision (ROBEX WG/13-MET/H TF/5)/5 – Draft Regional SIGMET Guide updates**

That, the draft Regional SIGMET Guide including the additional changes provided in the revised Attachments 1 and 2 in WP/C5 be adopted and forwarded to the ad-hoc group comprising Australia (Rapporteur), Hong Kong-China, Japan and New Zealand, to ensure completeness before the final approval process and dissemination to States for use as Regional guidance.

**Decision (ROBEX WG/13-MET/H TF/5)/6 – Use of social media sites for sharing VONA information**

That, the feasibility of the use of social media sites to make the VONA information accessible to users be further investigated.

**Decision (ROBEX WG/13-MET/H TF/5)/7 – Review guidance for tropical cyclone advisory and SIGMET information**

That, an ad-hoc group, comprising Australia (rapporteur), Hong Kong-China and Japan (note: Secretariat to invite India), in consultation with IATA and/or IFALPA, develop a working paper for MET SG/19 (highlighting the issues raised in WP/C8 and WP/C5) with proposal(s) for the improvement of guidance material supporting clarity and consistency of information within tropical cyclone advisory and SIGMET messages in the Region.

**Decision (ROBEX WG/13-MET/H TF/5)/8 – Promote the implementation of special air-reports**

That, consideration be given to the promotion of the issuance of special air-reports to support information sharing, especially with respect to hazardous phenomena, in a consistent manner as required throughout the Region.

2.12 With respect to Decision (ROBEX WG/13-MET/H TF/5)/4, discussion is underway between the ICAO Secretariat, Japan and the WMO Secretariat with respect to conducting a SIGMET workshop in 2016.

2.13 With respect to Decision (ROBEX WG/13-MET/H TF/5)/7, progress on the development of proposals for the improvement of guidance to support clarity and consistency of information within tropical cyclone advisory and SIGMET messages in the Region is discussed further under MET SG/19 agenda item 6.3, in WP/08.

2.14 With respect to progress on the remaining Decisions from the ROBEX WG/13 and MET/H TF/5 conjoint session, action is yet to commence and will be coordinated by the Secretariat.

2.15 The status of action on the task list from the ROBEX WG/13 and MET/H TF/5 conjoint session is provided in the **Attachment 3** to this paper.

2.16 The next meeting (MET/H TF/6) was tentatively agreed to be held during the week commencing 7 March 2016, back-to-back with, and including a conjoint session with ROBEX WG/14.

**3. Action by the Meeting**

3.1 The meeting is invited to note the information contained in this paper.

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**ATTACHMENT 2**

MET SG/19 - IP/12  
Agenda Item 6.3  
31/07/15

**MET/H TF/5 Task List**

<b>ACTION ITEM</b>	<b>DESCRIPTION</b>	<b>TIME FRAME</b>	<b>RESPONSIBLE PARTY</b>	<b>STATUS</b>	<b>REMARKS</b>
5/1	Submit paper including draft [WC and WS] SIGMET pamphlets and a proposal for appropriate publication/distribution of the (approved) pamphlets in electronic form through MET SG/19 to APANPIRG/26 and/or ICAO HQ and WMO for adoption as regional guidance material.	July 2015	Ad-hoc group, comprising Australia, Hong Kong-China and New Zealand (Rapporteur)	Completed	Related to MET/H TF/5 Decision 5/1 (MET SG/19 WP/19)
5/2	Develop a draft [WV] SIGMET pamphlet for review and approval (include in 5/1 if possible).	MET/H TF/6 (2016)	Ad-hoc group, comprising Australia, Hong Kong-China and New Zealand (Rapporteur)	In progress	Related to MET/H TF/5 Decision 5/1 (MET SG/19 WP/19)
5/3	Revise all SIGMET pamphlets as necessary, and submit drafts for approval, to align with, in time for the applicability of, Amendment 77 to ICAO Annex 3.	August 2016	Ad-hoc group, comprising Australia, Hong Kong-China and New Zealand (Rapporteur)	In progress	Related to MET/H TF/5 Decision 5/1 (MET SG/19 WP/19)
5/4	Obtain further comments on the draft tsunami warning guidance in WP/5 and the draft regional guidance material on SIGMET for radioactive clouds in IP/3.	July 2015	Secretariat and MET/H TF	Completed	Related to MET/H TF/5 Decision 5/2 and 5/3 (MET SG/19 WP/20) (MET SG/19 WP/21)
5/5	Revise the draft guidance material on tsunami warning as necessary, and ensure that end user consultation is a key component during the integration of aerodrome tsunami warning service into national tsunami warning systems, and submit a paper to MET SG/19	July 2015	Ad-hoc group comprising Indonesia and Japan	Completed	Related to MET/H TF/5 Decision 5/2 (MET SG/19 WP/20)
5/6	Revise the draft guidance material on SIGMET for radioactive clouds as necessary and submit a paper to MET SG/19.	July 2015	Ad-hoc group comprising China (rapporteur), Hong Kong-China and Japan	Completed	Related to MET/H TF/5 Decision 5/3 (MET SG/19 WP/21)
5/7	Confirm the MET/H TF membership contact details and invite IATA and IFALPA to nominate relevant experts for membership.	MET/H TF/6 (2016)	Secretariat	To commence	Related to MET/H TF/5 Decision 5/4

**ATTACHMENT 3**

MET SG/19 - IP/12  
Agenda Item 6.3  
31/07/15

**Conjoint session of ROBEX WG/13 and MET/H TF/5 Task List**

<b>ACTION ITEM</b>	<b>DESCRIPTION</b>	<b>TIME FRAME</b>	<b>RESPONSIBLE PARTY</b>	<b>STATUS</b>	<b>REMARKS</b>
<b>1</b>	Review and update, as necessary, the distribution list for the VAAC back-up test State letter invitations and supporting documentation.	August 2015	Secretariat in consultation with VAACs and States	To commence	Related to Decision (ROBEX WG/13-MET/H TF/5)/1
<b>2</b>	Review and update the lists of AFTN addresses used for MWOs and ACCs in VAAC back-up tests, including in VAAC Wellington's area of responsibility.	August 2015	Secretariat in consultation with VAACs and States	To commence	Related to Decision (ROBEX WG/13-MET/H TF/5)/2
<b>3</b>	Promulgate the detailed data in Appendices 1 and 2 to WP/C2, Tables 1 and 2 in WP/C3 and Tables 1 and 2 in WP/C4 to highlight problems in test SIGMET issuance to the States/MWOs concerned.	August 2015	Secretariat	To commence	Related to Decision (ROBEX WG/13-MET/H TF/5)/3
<b>4</b>	Investigate and report (to MET SG/19) on the feasibility of collaboration between ICAO, Japan and WMO with respect to a proposed SIGMET workshop (hosted by Japan in 2016) to facilitate improved issuance of SIGMET in the Asia/Pacific.	July 2015	Secretariat in consultation with Japan	In progress	Related to Decision (ROBEX WG/13-MET/H TF/5)/4
<b>5</b>	Review the draft Regional SIGMET Guide provided in the revised Attachments 1 and 2 in WP/C5 then submit for final approval process and dissemination to States for use as Regional guidance.	August 2015	Secretariat and ad hoc group comprising Australia (Rapporteur), Hong Kong-China, Japan and New Zealand	In progress	Related to Decision (ROBEX WG/13-MET/H TF/5)/5
<b>6</b>	Further investigate the feasibility of the use of social media sites to make the VONA information accessible to users.	August 2015	Secretariat in consultation with VAACs	To commence	Related to Decision (ROBEX WG/13-MET/H TF/5)/6
<b>7</b>	Develop a working paper for MET SG/19 (highlighting the issues raised in WP/C8 and IP/C5) with proposal(s) for the improvement of guidance supporting clarity and consistency of information within tropical cyclone advisory and SIGMET messages in the Region.	July 2015	Ad hoc group, comprising Australia (rapporteur), Hong Kong-China and Japan (note: Secretariat to invite India), in consultation with IATA and/or IFALPA	Completed	Related to Decision (ROBEX WG/13-MET/H TF/5)/7 (MET SG/19 WP/20)

<b>ACTION ITEM</b>	<b>DESCRIPTION</b>	<b>TIME FRAME</b>	<b>RESPONSIBLE PARTY</b>	<b>STATUS</b>	<b>REMARKS</b>
<b>8</b>	Consider the promotion of the issuance of special air-reports to support information sharing, especially with respect to hazardous phenomena, in a consistent manner as required throughout the Region.	August 2015	Secretariat in consultation with IFALPA	To commence	Related to Decision (ROBEX WG/13-MET/H TF/5)/8



## ICAO APAC METEOROLOGICAL HAZARDS TASK FORCE (MET/H TF) WORKPLAN

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2.DESCRPTION	
Objective	Improve the quality of meteorological advisories and warnings and implement the International Airways Volcano Watch (IAVW) and International Tropical Cyclone Watch (ITCW) in support of the Global Air Navigation Plan framework and the aviation system block upgrade (ASBUs) methodology.

Benefits	<ul style="list-style-type: none"> <li>• <del>Improve in flight safety by providing information on volcanic ash, tropical cyclone and other hazardous weather.</del></li> <li>• <del>Improve pre flight planning by optimizing flight routes with respect to volcanic ash, tropical cyclone and other hazardous weather.</del></li> <li>• Improve the safety and efficiency of flight and ground operations with respect to volcanic ash, tropical cyclone and other hazardous weather [review the wording for consistency with other ICAO definitions].</li> </ul>
Terms of Reference	<p>Under guidance from ICAO Secretariat:</p> <ul style="list-style-type: none"> <li>• Maintain awareness of current and future requirements with respect to the issuance of meteorological advisories and warnings in support of the aviation system block upgrades (ASBUs);</li> <li>• Maintain awareness of the implementation of meteorological advisories and warnings within the ASIA/PAC Region and any deficiencies;</li> <li>• Continually seek ways to improve the operational effectiveness of the meteorological advisory and warning system; and</li> <li>• Provide advice to the MET Sub-group on the above issues.</li> </ul>
Work Program	<p>The work to be addressed by the ASIA/PAC MET/H TF includes:</p> <ul style="list-style-type: none"> <li>• Review procedures for the issuance of meteorological advisories and warnings in the region and propose actions for their improvement to related performance objectives;</li> <li>• In conjunction with ROBEX WG, investigate the deficiencies in the format and dissemination of meteorological advisories and warnings and propose remediation plans;</li> <li>• Respond to the needs of the States for guidance and/or training related to the implementation of meteorological advisories and warnings and inform ROBEX WG of changes required to the SIGMET guide;</li> <li>• In conjunction with MET/R TF and in support of the ASBUs, provide meteorological input for operational planning for specific phenomenon including Volcanic Ash, Radioactive Cloud, Tropical Cyclone, Tsunami and Space Weather;</li> <li>• Follow the developments in the States related to the improvement of meteorological advisories and warnings and provide regional input on these matters to relevant ICAO and WMO groups and to gather user requirements from ANSPs, IATA, IFATCA and IFALPA;</li> <li>• Investigate options for removal of SIGMET deficiencies in APAC States;</li> <li>• Provide support for the APAC Volcanic Ash Exercises;</li> <li>• Report on its work to the MET Sub-group of APANPIRG; and</li> <li>• Maintain a link to the Regional ATM Contingency Plan Task Force (RACP/TF).</li> </ul>

### 3. COMMUNICATION STRATEGIES

Description	Target Audience	Delivery Method	Frequency/ Date	Responsibility
Work Plan	Task Force Members	Document via email and posted on ICAO Bangkok website	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 in conjunction with ROBEX WG	Yearly in March	Chair
Status & Milestone Reports	ICAO Secretariat and Task Team Members	Report via email	Quarterly	Chair
Task Force Report	MET/H TF and ROBEX WG	Working Paper	Yearly	Chair
Task Force Report	MET SG	Working Paper	Yearly	Secretariat

4. PERFORMANCE FRAMEWORK FORM (PFF)				
Tasks	Time Frame	Responsibility	Status	Milestone
Task 1: Monitor and provide assistance to the regional implementation of meteorological warnings and advisories that include volcanic ash (VA) and tropical cyclone (TC) advisories and meteorological warnings and advisories based on current and future requirements	2015-2019	MET/H TF	In progress	1
Task 2: Track and investigate deficiencies in the format and dissemination of meteorological advisories and warnings and propose remediation plans and provide information to ICAO and WMO groups for possible assistance	2015-2018	MET/H TF and ROBEX WG	In progress	1,2
Task 3: Review WC, WV & WS SIGMET test results and implement improvements.	2015-2018	MET/H TF	In progress	1
Task 4: Provide guidance and/or training related to the implementation of meteorological advisories and warnings, including input to the Regional SIGMET Guide as they relate to the Annex 3 amendment cycle.	2015-2016	R/O, MET/H TF and ROBEX WG	In progress	1,3
Task 5: Provide input into regional-operational plans as required for specific phenomenon, including VA, radioactive cloud, TC, Tsunami and Space Weather, with consideration to global ICAO groups and WMO developments.	2015-2018	MET/H TF and MET/R TF	In progress	3
Task 6: Investigate, and implement as appropriate, options to assist States in resolving SIGMET deficiencies.	2015-2016	MET/H TF	In progress	4

5. MILESTONES			
Milestone	Accountability	Dates	Status
<i>Milestone 1: Report on SIGMET test results and regional performance-MET SG</i>	<i>Chair</i>	<i>Annually</i>	
<i>Milestone 2: Guidance and educational material available</i>	<b>Chair</b>	<b>Aug 2015-2016</b>	
<i>Milestone 3: MET input provided for ASIA/PAC Regional ATM Contingency Plans</i>	<i>ad-hoc group</i>	<i>Next meeting</i>	
<i>Milestone 4: Reduction in SIGMET deficiencies.</i>	<i>States</i>	<i>2015<del>6</del></i>	

6. WORK PLAN				
Task / Milestone	Accountability	Predecessors	Date	Status
<b>Activity 1: SIGMET TESTS</b>				
Task 1.1: Review SIGMET tests (conjoint session with ROBEX WG)	<b>Task force</b>	-	Annually	
Task 1.2: Develop action plan to fix identified deficiencies	Chair in conjunction with the Task Force	conjoint session with ROBEX WG	During meeting	

<b>6. WORK PLAN</b>				
<b>Task / Milestone</b>	<b>Accountability</b>	<b>Predecessors</b>	<b>Date</b>	<b>Status</b>
Task 1.3 Report back to MET SG on regional performance and action plan	Chair		Annually	
<i>Milestone 1: Report on SIGMET test results and regional performance to MET SG</i>	Chair	-	<i>Annually</i>	
<b>Activity 2: GUIDANCE AND EDUCATIONAL MATERIAL</b>				
Task 2.1: a) Review current SIGMET poster information b) Publish information in pamphlet form c) Review with future Annex 3 amendments	Australia, Hong Kong, China and New Zealand (Rapporteur) in conjunction with ICAO HQ and WMO	-	a) Apr 2015 b) Aug 2015 c) Aug 2016	
Task 2.2: Review radioactive cloud survey results and develop guidance for inclusion in the SIGMET Guide (2 <sup>nd</sup> draft of paper for MET SG/18)	China (Rapporteur), Hong Kong, China, Japan	-	Aug 2015	
Task 2.3: Review tsunami survey results and develop guidance in line with proposal for Amendment 77 to Annex 3 (2 <sup>nd</sup> draft of paper for MET SG/18)	Japan (rapporteur), Indonesia		Aug 2015	
Task 2.4: Forward proposed amendments to the SIGMET Guide template to appropriate expert group determined by MET Panel	Secretariat		TBC	
Task 2.5: Consider the requirement for seminars/workshops (coordinate with Japan concerning possible SIGMET workshop in APAC in 2016)	Secretariat		2015	
<i>Milestone 2: Guidance and educational material available</i>	Chair		2015-2016	
<b>Activity 3: REGIONAL CONTINGENCY PLANS</b>				
Task 3.1: Get a list of requirements from RACP/TF	Secretariat	-	Next RACP/TF	
Task 3.2: Provide information on hazardous meteorological phenomena to ATM group for inclusion in the ATM contingency plan, if required (after outcome of RACPTF is known)	ad-hoc group (TBC)	-	Next meeting	
<i>Milestone 3: MET input provided for ASIA/PAC Regional ATM Contingency Plans</i>	Secretariat ad-hoc group	3.1-3.2	Next meeting	
<b>Activity 4 – SIGMET Deficiencies</b>				
Task 4.1: Investigation options to eliminate SIGMET deficiencies.	ad hoc group New Zealand (rapporteur), Australia, New Zealand, China, Japan, Indonesia		Oct 2014	Complete
Task 4.2: Assist the ICAO Secretariat in the facilitation of discussion of viable options with relevant States.	ad hoc group	4.1	Aug 2015	
Task 4.3: Monitor the implementation of the solution/s to remove deficiencies.	ad hoc group	4.2	Ongoing	

<b>6. WORK PLAN</b>				
<b>Task / Milestone</b>	<b>Accountability</b>	<b>Predecessors</b>	<b>Date</b>	<b>Status</b>
Task 4.4: Monitor global development on the establishment of a regional advisory system for hazardous weather.	ad hoc group		Ongoing	
Task 4.5: Report progress to MET SG	Ad hoc group rapporteur	4.3	Jul 2015	
<i>Milestone 4: Reduction in SIGMET deficiencies.</i>	<i>States</i>		2016	

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