IDENTIFICATION AND DEVELOPMENT OF
AERONAUTICAL METEOROLOGY PROJECTS

AFI Region	**Project Description**		
Programme	**Title of the Project**	**Start**	**End**
Aeronautical Meteorology ***(*B0-AMET PFF Project Facilitators:*** ***ICAO ROs/MET, Dakar & Nairobi)***	Implementation of information concerning en-route weather phenomena which may affect the safety of aircraft operations (SIGMET), Quality Management System for aeronautical meteorology (QMS/MET) service, in the AFI region **B0-AMET PFF-1** *Project-Team Coordinator: Name (State)* *12 Experts contributing to the* **B0-AMET PFF-1** *Project-Team: Name (State), Name (State), Name (State), Name (State), Name (State), Name (State), Name (State), Name (State), Name (State), Name (State) and Name (State)*	2015	2018
Objective	Assist States in the implementation of : a) SIGMET and standards and recommended practices of Annex 3 and Part V – MET of the AFI Air Navigation Plan (ANP), Volumes I, II, III concerning the issuance and distribution of en-route weather phenomena including volcanic ash clouds (WV), tropical cyclones (WC) and other phenomena (WS - thunderstorms, severe turbulence, icing, mountain waves, heavy sandstorms and duststorm), likely to affect the safety of aircraft operations, and the evolution of such phenomena in time and space (SIGMET WV, WC and WS); b) QMS/MET and certification where applicable, by developing a regional QMS/MET guide to assist States in the production of MET documentation under ISO 9001: 2008, enhancing the training of MET personnel in States that have not implemented QMS, encouraging States to institute cost recovery mechanism to support QMS maintenance in accordance with ICAO Annex 3 and Part V – MET of the AFI ANP, and conducting audit trials; c) An action plan to assist concerned States in their effort to remove air navigation deficiencies in the MET field listed in the APIRG report; and d) The transition plan from current aeronautical meteorological information to the future SWIM-enabled environment in the AFI region by encouraging AFI States to progressively develop capability of handling OPMET data in digital format (XML/GML) and to start using XML/GML codes in operational environment by 2018.		

AFI Region	**Project Description**		
Programme	**Title of the Project**	**Start**	**End**
Scope	a) The SIGMET part of the project will comprise all Meteorological Watch Offices (MWOs) listed in Table MET II-1 of the AFI ANP Volume II; b) QMS part of the project is related to all AFI aerodromes listed in the AFI ANP Table MET II-2 for the establishment and application of a duly organized quality system of MET service; c) The list of States having long lasting MET deficiencies, is listed in the last report of the APIRG meeting; and d) The Transition Plan part of the project is related to all AFI aerodromes listed in the AFI ANP Table MET II-2.		
Metrics	a) SIGMET metric: Number of MWOs listed in AFI ANP Table MET II-1, with SIGMET procedures implemented in December 2017 b) QMS metrics: Number of MET Provider States listed in AFI ANP Table MET II-2, with QMS/MET certified or recertified in December 2018 c) Deficiency metrics: Number of identified States in APIRG/20 report, with MET deficiencies removed in December 2018 d) d) Transition Plan metrics: Number of AFI States implemented OPMET data in digital format (XML/GML) in December 2018		
Strategy	All tasks will be carried out by MET experts nominated by AFI States participating in the project, led by the Project-Team Coordinator and under the supervision of the B0-AMET PFF Project Facilitators (ROs/MET, Dakar and Nairobi) through the "GoTo Meeting" tool. Upon completion of the tasks, the results will be sent to the B0-AMET PFF Project Facilitators as a final document for submission to, and if necessary approval by the APIRG Projects Coordination Committee (APCC). For the purpose of collaborative decision-making, meetings will be held with the areas involved.		

AFI Region	**Project Description**		
Programme	**Title of the Project**	**Start**	**End**
Rationale	a) SIGMET: The lack of implementation by about 21% of AFI MWO Provider States, of information concerning en-route weather phenomena which may affect the safety of aircraft operations (SIGMET), in the region and their repercussions on the provision of air navigation services call for tools to allow the personnel involved in the different air navigation areas to receive, properly use, and disseminate quality information related to such events. b) QMS: More accurate and timely meteorological information will optimize flight path planning and prediction, thus improving ATM safety and efficiency; improved aerodrome reports and forecasts will optimise the use of available aerodrome capacity; and meteorological information will minimize the environmental impact of air traffic. Performance management will be an important part of meteorological information quality assurance. c) Deficiencies: The decrease or removal of MET deficiencies listed in the APIRG meetings, will increase air navigation safety and efficiency in the region. d) d) Digital OPMET: progressive implementation of digital OPMET (SIGMET, METAR, SPECI and TAF) in the AFI region, will enable AFI States to be prepared for digital OPMET exchange in the future SWIM environment.		
Related projects	All APIRG specifically projects related to: ✓ Implementation of Improved Airport Operations through Airport-CDM (B0-ACDM) ✓ Implementation of Optimization of Approach Procedures including Vertical Guidance (B0-APTA) ✓ Implementation of Improved Operations through Enhanced En-Route Trajectories (B0-FRTO) ✓ Implementation of Improved Flexibility and Efficiency in Descent Profiles (CDO) (B0-CDO) ✓ Implementation of Improved Flexibility and Efficiency in Departure Profiles —Continuous Climb Operations (CCO) (B0-CCO)		

Project Deliverable		**Relationship with the performance - based regional plan (PFF)**	**Responsible Party**	**Status of Implementation**	**Date of Deliver**	**Comments**
SIGMET	updated AFI regional SIGMET Guide distributed and placed on ICAO website	**AFI B0-AMET PFF-1**	✓ AFI B0-AMET PFF Project Coordinators	New edition drafted	Before October 2015 (after APIRG/20)	Guide updated based on the regional SIGMET Guide Template
	Current level of implementation of SIGMET assessed through annual SIGMET trials	**AFI B0-AMET PFF-1**	✓ AFI B0-AMET PFF Project Coordinator ✓ AFI B0-AMET-1 Project Team Leader	Yearly SIGMET Tests	December 2015	Results of SIGMET Tests in November 2015 will update the level of implementation under the new edition of the Guide
	An updated list of States not compliant with SIGMET format, established	**AFI B0-AMET PFF-1**	✓ AFI B0-AMET PFF Project Coordinator ✓ AFI B0-AMET-1 Project Team Leader		December 2015	
	Details guidance to States not issuing SIGMET, distributed	**AFI B0-AMET PFF-1**	✓ AFI B0-AMET PFF Project Coordinator ✓ AFI B0-AMET-1 Project Team Leader		December 2016	
	A Regional QMS/MET guide to assist States in the production of MET documentation under ISO 9001: 2008, developed, distributed and placed on ICAO website	**AFI B0-AMET PFF-1**	✓ AFI B0-AMET PFF Project Coordinator ✓ AFI B0-AMET-1 Project Team Leader		June 2016	

QMS	An updated list of States not implementing or partially implementing QMS, established and placed on ICAO website	**AFI B0-AMET PFF-1**	✓ AFI B0-AMET PFF Project Coordinator ✓ AFI B0-AMET-1 Project Team Leader		December 2015	
	Training of MET personnel in States that have not implemented QMS, performed, and training workshop	**AFI B0-AMET PFF-1**	✓ AFI B0-AMET PFF Project Coordinator		December 2017	
	report distributed		✓ AFI B0-AMET-1 Project Team Leader			
	Training on cost recovery mechanism for MET performed; training workshop report encouraging Sates to institute cost recovery mechanism, distributed.	**AFI B0-AMET PFF-1**	✓ AFI B0-AMET PFF Project Coordinator ✓ AFI B0-AMET-1 Project Team Leader		December 2015	
	Report on QMS/MET Audit trials, distributed and placed on ICAO website	**AFI B0-AMET PFF-1**	✓ AFI B0-AMET PFF Project Coordinator ✓ AFI B0-AMET-1 Project Team Leader		December 2015	
Deficiencies	Current air navigation deficiencies in the MET field, assessed and confirmed	**AFI B0-AMET PFF-1**	✓ AFI B0-AMET PFF Project Coordinator ✓ AFI B0-AMET-1 Project Team Leader	MET deficiencies established by APIRG/19	December 2015	Updated MET deficiencies to be established by APIRG/20
	An updated list of MET deficiencies for remaining AFI States not listed in APIRG/19 report, established	**AFI B0-AMET PFF-1**	✓ AFI B0-AMET PFF Project Coordinator ✓ AFI B0-AMET-1 Project Team Leader		December 2016	

	An updated list of deficiencies including States not compliant with SIGMET format, established	**AFI B0-AMET PFF-1**	✓ AFI B0-AMET PFF Project Coordinator ✓ AFI B0-AMET-1 Project Team Leader		December 2015	
	List of States having develop action plans to eliminate Terminal Area Warnings deficiencies, distributed	**AFI B0-AMET PFF-2**	✓ AFI B0-AMET PFF Project Coordinator ✓ AFI B0-AMET-2 Project Team Leader		December 2018	
	Reports on Specific training workshops in French and English to assist States concerned to address deficiencies related to the implementation of the AMBEX scheme and for the provision of further advice and awareness, issued and distributed	**AFI B0-AMET PFF-2**	✓ AFI B0-AMET PFF Project Coordinator ✓ AFI B0-AMET-2 Project Team Leader		December 2016 and June 2018	
Deficiencies	An action plan to assist concerned States to remove long lasting MET deficiencies, established	**AFI B0-AMET PFF-1**	✓ AFI B0-AMET PFF Project Coordinator ✓ AFI B0-AMET-1 Project Team Leader		December 2017	
Digital OPMET	Dakar and Pretoria RODBs Provider States developed capability of handling digital OPMET (SIGMET, METAR, SPECI, TAF) and provided technical assistance as required to other AFI States	**AFI B0-AMET PFF-1**	✓ AFI B0-AMET PFF Project Coordinator ✓ AFI B0-AMET-1 Project Team Leader		December 2016	In accordance with the AFI digital OPMET transition plan
	Dakar and Pretoria RODBs Provider Sates assisted AFI States including BCC and NOC Provider States, in developping capability of handling digital OPMET	**AFI B0-AMET PFF-1**	✓ AFI B0-AMET PFF Project Coordinator ✓ AFI B0-AMET-1 Project Team Leader		December 2017	In accordance with the AFI digital OPMET transition plan

	AFI States implemented digital OPMET in BCC and NOCs in accordance with Amendment 77 to ICAO Annex 3	**AFI B0-AMET PFF-1**	✓ AFI B0-AMET PFF Project Coordinator ✓ AFI B0-AMET-1 Project Team Leader		December 2018	In accordance with the AFI digital OPMET transition plan
✓ Funds to conduct the meetings, missions and to translate reports, regional guides and manuals. Likewise, participants must be given facilities to participate in Go To Meetings. ✓ Funds to conduct audit trials. States could cover the cost of trials by their lead auditors, since the experience obtained will contribute to improve the system. Likewise, participants must be given facilities to participate in GoTo Meetings.						

AFI Region	**Project Description**		
Programme	**Title of the Project**	**Start**	**End**
Aeronautical Meteorology ***(*B0-AMET PFF Project Facilitators: *ICAO ROs/MET,***	Implementation of Terminal Area Warnings and Forecasts, Provision of WAFS Forecasts and Optimization of OPMET data exchanges in the AFI Region **B0-AMET PFF-2** *Project-Team coordinator: Name (State)* *9 Experts contributing to the* **B0-AMET PFF-2** *Project-Team: Name (State), Name (State), Name (State), Name (State), Name (State), Name (State), Name (State), Name (State) and Name (State)*	2015	2018
Objective	Assist States in the implementation of : a) Aerodrome warnings and forecasts (AD WRNG) and wind shear warnings and alerts (WS WRNG) in accordance with ICAO Annex 3, Tables A6-2 and A6-3, concerning the preparation, issuance and distribution at the terminal area, of concise information of meteorological conditions which could adversely affect aircraft on the ground, including parked aircraft, and the aerodrome facilities and services. For aerodromes where wind shear is considered a major safety factor, wind shear warnings will give concise information on the observed or expected existence of wind shear which could adversely affect aircraft on the approach path or take-off path or during circling approach between runway level and 500 m above that level and aircraft on the runway during the landing roll or take-off run. Where local topography has been shown to produce significant wind shears at heights in excess of 500 m above runway level, then 500 m will not be considered restrictive. b) the world area forecast system (WAFS) in the standards and recommended practices of Annex 3 and Part V – MET of the AFI, Volumes I, II and III with regard to the use of WAFS products, by which the world area forecast centre (WAFC) in London provides aeronautical meteorological en-route forecasts in uniform standardized formats and disseminated in the AFI region through the Satellite Distribution System for information relating to air navigation (SADIS). States will be also assisted in the implementation of the International Airways Volcano Watch (IAVW) including the implementation of the operational procedures in ICAO Doc 9766 and the AFI Volcanic Ash Contingency Plan (VACP) activities; c) AFI OPMET data Exchange Management and OPMET databanks (RODBs) described in the AFI Meteorological Bulletin Exchange (AMBEX) Handbook in accordance with the provisions in ICAO Annexes 3 and 10 and AFI ANP Volumes I, II and III part V- Meteorology, for the preparation, issuance, distribution and monitoring of OPMET information (METAR, SPECI, SIGMET, TAF, AIREP, Volcanic Ash and tropical cyclones advisories).		

Scope	a) The terminal area warnings part of the project will comprise all AFI International aerodromes listed in Table MET II-2 of the AFI ANP Volume II and aerodromes affected by wind shear events; b) The WAFS and IAVW part of the project is related to all AFI aerodromes listed in the AFI ANP Table MET II-2 and meteorological watch offices listed in column 7 of Table MET II-1 of the AFI ANP. c) The AMBEX part of the project will include AFI aerodromes listed in Table MET II-2 of the AFI ANP including Dakar and Pretoria RODBS, Bulletin Compiling Centres (BCCs), National OPMET Centres (NOCs), AFI volcanic ash advisory centre (VAAC) in Toulouse, tropical cyclone advisory centre (TCAC) in La Reunion and WAFC in London.
Metrics	a) Terminal area warnings metric: Number of international aerodromes listed in AFI ANP Table MET II-1, with Aerodrome warnings and wind shear implemented in December 2017 b) WAFS and IAVW metrics: Number of MET Provider States listed in AFI ANP Table MET II-2, with SADIS 2G/secure SADIS FTP implemented in December 2016 – and - Number of MET Provider States listed in AFI ANP Table MET II-1 having volcanoes, with Doc 9766 procedures implemented in December 2016. c) AMBEX metrics: Number of international aerodromes/MOs with AMBEX procedures implemented in December 2015
Strategy	All tasks will be carried out by MET experts nominated by AFI States participating in the project, led by the Project-Team Coordinator and under the supervision of the B0-AMET PFF Project Facilitators (ROs/MET, Dakar and Nairobi) through the "GoTo Meeting" tool. Upon completion of the tasks, the results will be sent to the B0-AMET PFF Project Facilitators as a final document for submission to, and if necessary approval by the APIRG Projects Coordination Committee (APCC). For the purpose of collaborative decision-making, meetings will be held with the areas involved.

Rationale	a) Terminal area warnings: The lack of implementation by a number of AFI States in International aerodromes, of information concerning weather phenomena which could adversely affect aircraft on the ground, including parked aircraft, and the aerodrome facilities and services; and aircraft on the approach path or take-off path or during circling approach and their repercussions on the provision of air navigation services call for tools to allow the personnel involved in the different air navigation areas to receive, properly use, and disseminate quality information related to such events. b) WAFS and IAVW: The introduction of the new gridded WAFS forecasts is an improvement to the WAFS in terms of improved accuracy, timely distribution, and usefulness of forecasts to facilitate airspace optimisation. The volcanic events with ash dispersion in the AFI Region and their repercussions on the provision of air navigation services call for tools to enable the personnel involved in the different air navigation areas to receive, properly use, and disseminate quality information related to such events. c) AMBEX: the full implementation of the AMBEX scheme will increase the availability of quality OPMET in International aerodromes and also enable AFI States to be prepared for digital OPMET exchange in the future SWIM environment.
Related projects	All APIRG specifically projects related to: ✓ Implementation of Improved Airport Operations through Airport-CDM (B0-ACDM) ✓ Implementation of Optimization of Approach Procedures including Vertical Guidance (B0-APTA) ✓ Implementation of Improved Operations through Enhanced En-Route Trajectories (B0-FRTO) ✓ Implementation of Improved Flexibility and Efficiency in Descent Profiles (CDO) (B0-CDO) ✓ Implementation of Improved Flexibility and Efficiency in Departure Profiles —Continuous Climb Operations (CCO) (B0-CCO)

Project Deliverable		**Relationship with the performance - based regional plan (PFF)**	**Responsible Party**	**Status of Implementation**	**Date of Deliver**	**Comments**
Terminal Area Warnings (AD WRNG & WS WRNG)	Current level of implementation of facilities at aerodromes for monitoring hazardous meteorological conditions, assessed	**AFI B0-AMET PFF-2**	✓ AFI B0-AMET PFF Project Coordinators		December 2016	
	Report on Mission to States not compliant with terminal area warning facilities stipulated in Annex 3 and the AFI ANP, distributed	**AFI B0-AMET PFF-2**	✓ AFI B0-AMET PFF Project Coordinator ✓ AFI B0-AMET-2 Project Team Leader		December 2017	
	Detailed guidance provided to States not issuing terminal area warnings and forecasts	**AFI B0-AMET PFF-2**	✓ AFI B0-AMET PFF Project Coordinator ✓ AFI B0-AMET-2 Project Team Leader	✓	December 2015	✓
	List of States implemented aerodrome warnings, wind shear warnings/alerts and water thickness measurement on the runway to support runway safety plans, distributed	**AFI B0-AMET PFF-2**	✓ AFI B0-AMET PFF Project Coordinator ✓ AFI B0-AMET-2 Project Team Leader	✓	December 2018	✓
WAFS and IAVW	Training seminars in French and English on new WAFS gridded forecasts, conducted and related report placed on ICAO website	**AFI B0-AMET PFF-2**	✓ AFI B0-AMET PFF Project Coordinator ✓ AFI B0-AMET-2 Project Team Leader	✓	December 2015	✓
	a) An updated list of States not receiving WAFS products and areas of constraints in implementing SADIS VSAT and FTP service, established; and	**AFI B0-AMET PFF-2**	✓ AFI B0-AMET PFF Project Coordinator ✓ AFI B0-AMET-2 Project Team Leader	✓	a) 2015/Annually b) December 2017	✓

WAFS and IAVW	b) Remedial action plans developed by concerned States					
	a) An updated list of States with active volcanos not implementing IAVW (volcano observatories and VONA), established and b) Remedial action plans developed by the concerned States	**AFI B0-AMET PFF-2**	✓ AFI B0-AMET PFF Project Coordinator ✓ AFI B0-AMET-2 Project Team Leader	✓	c) 2015/Annually d) December 2016	✓
	Report of AFI volcanic ash contingency plan (AFI VACP) exercises distributed and placed on the ICAO website	**AFI B0-AMET PFF-2**	✓ AFI B0-AMET PFF Project Coordinator ✓ AFI B0-AMET-2 Project Team Leader		December 2015	✓
AMBEX	a) A report on annual assessment of the availability and quality of OPMET data in the region, issued, distributed and placed on ICAO website and b) Remedial action plans developed by the concerned States	**AFI B0-AMET PFF-2**	✓ AFI B0-AMET PFF Project Coordinator ✓ AFI B0-AMET-2 Project Team Leader	✓	e) 2015/Annually f) December 2018	✓
	Two seminars in French and English on the implementation of AMBEX procedures including RODBs, conducted and the report distributed	**AFI B0-AMET PFF-2**	✓ AFI B0-AMET PFF Project Coordinator ✓ AFI B0-AMET-2 Project Team Leader	✓	December 2016	✓

✓ Funds to conduct the meetings, missions and to translate reports, regional guides and manuals. Likewise, participants must be given facilities to participate in Go To Meetings.

✓ Funds for meetings with project Team Members in order to assess the results and propose corrective actions. States could use their human resources to conduct the foreseen OPMET tests and monitoring, and, if necessary, cover the financial costs, since the experience gained will result in an improvement of their own systems. Likewise, participants must be given facilities to participate in GoToMeetings.