

WORLD METEOROLOGICAL ORGANIZATION



**WORLD WEATHER RESEARCH PROGRAMME
(WWRP)**

**STANDING COMMITTEE ON SERVICES FOR AVIATION
(SC-AVI)**

A subsidiary body of WMO's Commission for Weather, Climate, Water and Related Environmental Services and Applications (SERCOM)

**ONLINE MEETING OF THE AVIATION RESEARCH AND
DEVELOPMENT PROJECT – PHASE 2 (AvRDP2)
SCIENTIFIC STEERING COMMITTEE**

15 February 2023

Meeting minutes

Published 24 February 2023

0. OPENING OF THE MEETING

Chris Davis and Piers Buchanan welcomed everyone to the meeting. The list of attendees can be found at the end of this report.

The agenda for the meeting includes:

1. ICAO request (request sent by SW for inputs by the SSC)
2. Report on Airport pair 1 (London-Johannesburg)
3. Report on Airport pair 2 (Hong Kong-Singapore)
4. Secure dates/venue for AvRDP phase 2 meeting f2f in Sep 2023
5. Next online meeting.

1. INPUTS AND ADVICE ON HWIS DEFINITION & METRICS

- On 24 Jan SW sent a request to AvRDP2 SSC colleagues for advice, feedback and comments on HWIS definition & metrics that have been under discussion by the ICAO METP WG-MRAD HWIS work stream.
- Many SSC experts replied, for which SW was very grateful. The meeting briefly went through feedback and comments received.
- Main key points from the discussion are as follows:
 - Convection: experts agreed that a definition based on Cb cloud is a good choice. Spatial density of Cb could be a useful information for pilots. However, as individual/isolated Cbs can be much smaller than 0.25 degrees, it was deemed important to recommend to the HWIS works stream to agree on what a product with this grid represents (probability that a Cb is in the box, fraction of the box experiencing a Cb?). SSC members also made comments on means of identifying convection (Cb)
 - Turbulence: some suggestions of detection techniques/equipment were made. Moreover, SSC experts discussed the potential origins of turbulence at aircraft altitudes, in particular gravity wave breaking and deformation area of the upper flow. Existing detection and forecasting capabilities for gravity wavs were also considered and experts concurred that high-resolution regional NWP models might be able to capture the breaking of gravity waves, but it remains difficult to localize turbulence generated by this breaking.

2. REPORT ON AIRPORT PAIR 1 – LONDON TO JOHANNESBURG (PIERS B)

- Global models which can be used: MOGREPS (20km), ECMWF (9km later in 2023), UKMO (5 km)
- Regional models which can be used: 4.5km ensemble (SAWS), 4 km tropical model (UKMO), 2.2km ensemble (UKMO), 333m for specific cases, 333m London ensemble (later in 2025)
- Nowcasting globally: Met Office overshooting tops product, MIT Global Synthetic weather radar
- Nowcasting Regionally: Met Office nowcasting, SAWS nowcasting, SESAR Convective nowcasting (W Europe), Nowcasting SAF (southern Africa)
- We would have to define a minimum of what we need, e.g. probabilistic, global, possibility to generate local products and some nowcasting (this will determine which NWP we use). Then we need to address this minimum level first, and see what else can be done within the scope of the project.
- Possible Masters student at the University of Reading, perhaps focussing on HAIC or other convective hazards
- Next steps:
 - Generate raw and potentially blended products
 - Define at least one case study and do analysis

- Approach airlines (BA)
- Questions and suggestions:
 - Clarify OLR (and units) on slide 4
 - Scale up/down (or blend) between 1h and 6h products – statistical methods, or perhaps using ML techniques? Make sure there is no “over-counting”

3. REPORT ON AIRPORT PAIR 2 – HONG KONG TO SINGAPORE (XIAOMING S)

- Airlines on this route are willing to test new products and give feedback
- New products will be nowcasting as well as some blended products
- Testing synthetic radar product will be considered
- Questions and suggestions:
 - Is the synthetic radar products for flight planning (before a flight) or in-flight too?
 - Could we consider a Hong Kong – Sydney airport pair as well? Only if we have good contacts there and someone from that route can be added to this group. At the moment we are not aware of any specific contact to approach
 - Could other partners from NMHSs along the flight route be asked to join? Perhaps Spain or Kenya for Pair 1?
- Next steps:
 - Piers will contact Ping for slides similar to what was presented for Pair 1 in this meeting

4. SECURE DATES/VENUE FOR AVRDP PHASE 2 MEETING F2F IN SEP 2023

- Week of 25th September 2023
- Three-day meeting
- Monday to Wednesday
- NCAR offers to host
- Budget will be shared by WWRP and AVI

5. NEXT ONLINE MEETING: 19 APRIL 14 UTC

AvRDP2-SSC-actions	Who/Due date
Pair 1 will work on more details of products and a case study	Pair 1 experts/April 2023
Piers will follow up with Ping for more details on Pair 2	Piers B/ASAP
Next SSC meeting will be online on 19 April 2023	WMO Secretariat to send invitations/n.a
In-person meeting will be 25-27 Sep 2023 in Boulder, Colorado	WMO Secretariat to secure budget and send invitations/by next call

LIST OF ATTENDEES

1. SSC members

COUNTRY	NAME	E-MAIL	WMO AFFILIATION
UNITED STATES OF AMERICA	Fanglin YANG	fanglin.yang@noaa.gov	WCRP/WGNE
HONG KONG, CHINA	SHI, Xiaoming	shixm@ust.hk	WWRP
JAPAN	IKEDA, Michiko	michi-ikeda@met.kishou.go.jp	SC-AVI

SOUTH AFRICA	GIJBEN, Morné	morne.gijben@weathersa.co.za	SC-AVI
UNITED KINGDOM	BUCHANAN, Piers ^[1]	piers.buchanan@metoffice.gov.uk	SC-AVI
UNITED KINGDOM	METHVEN, John	j.methven@reading.ac.uk	WWRP
UNITED STATES OF AMERICA	DAVIS, Chris ^[1]	cdavis@ucar.edu	WWRP
SOUTH AFRICA	LANDMAN, Stephanie	stephanie.landman@weathersa.co.za	WWRP

^[1] Co-chair of AvRDP-SSC

Apologies from Ping Cheung

2. WMO Secretariat

NAME	POSITION	E-MAIL
WIGNIOLLE, Stéphanie	Scientific Officer, Services for Aviation Division, Services Department	swigniolle@wmo.int
DE CONING, Estelle	Head, World Weather Research Division, Science and Innovation Department	edeconing@wmo.int