

# WORLD METEOROLOGICAL ORGANIZATION



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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

**07 August 2023**

**Meeting minutes**

**30 August 2023**

## 0. OPENING OF THE MEETING

The meeting was led by Piers and Chris. The meeting aimed to hear and contribute to the case study presentations for airport pairs 1 and 2. Pair 1 had two MSc students present their research on identifying enroute convective weather including ice crystals, while Pair 2 presented a prototype product that could be used during flight planning. The agenda for the meeting included:

1. Airport pair 1: LONDON to JOHANNESBURG
  - Progress reporting by the 2 MSc students
  - Discussion and next steps
2. Airport pair 2: HONG KONG to SINGAPORE
  - Progress reporting by the Danice and Ping
  - Discussion and next steps
3. Discussion on agenda and plans for Boulder in person / remote meeting.

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

- Two University of Reading Master students, presented their case studies for their thesis as follows:
- **Victoria Vetrees: Title:** Using ensemble weather forecasts to reduce the risk of aircraft encountering convection. Her study focuses on three parameters.
  - Convective Available Potential Energy (CAPE)
  - 3-hours Precipitation accumulation from the convection parameterization
  - Outgoing Long Wave Radiation (LWR)
- Conclusion was the method could improve forecasting for aviation and avoid convective hazard, however further research work is needed.
- **Yui Wang Ying: Title:** Using probabilistic information to reduce the risk of aircraft encountering high-altitude ice crystals. The aim of her study was as follows:
  - To estimate the probability of HAIC along LHR-JNB route
  - To evaluate the HAIC nowcast product developed by the Met Office
  - To examine how the probabilistic information would be useful for flight planning.
- Conclusion was that the:
  - HAIC nowcasts can capture the HAIC-prone regions at short lead times (3-4 hours), However, its usefulness to nowcast depends on the initialisation time.
  - HAIC nowcasts offer values for flight planning and can be provided as en-route updates. HAIC data can be translated into an integrated probability along different route options.

### 2. REPORT ON AIRPORT PAIR 2 – HONG KONG TO SINGAPORE (PING C)

- Danice presented a prototype product, a case study that was developed using Blending Model techniques. The blending was done using NWP Global and regional products, real-time airline route planning, satellite data, and radar data. The products were then shared with the airline for verification. The quantification of the impacts was done by looking at flight time in two categories.
  - Flight time within the convective area
  - Estimation required deviation.
- Next steps:

- Airport pairs will continue to work on the prototype products and case studies and present technical details in the Boulder meeting.
- More work needs to be done on convective generated turbulence (potential solution from NCAR experts' session). Also, from the ongoing study of the convection induced turbulence from the HKUST and HKO.

### 3. AVRDP2 SSC 2ND F2F MEETING IN SEP 2023

- Face to face meeting will be on the 26<sup>th</sup> –28<sup>th</sup> September 2023 at NCAR premises in Boulder, Colorado, USA
- The meeting will be hybrid (zoom link - to be confirmed by Chris if it is Zoom or Teams)
- Draft program and logistics information need to be shared with the participants by Secretariat.
- Host invitation letter is need for USA visa application process for some experts. Chris could supply this.

### 4. NEXT ONLINE MEETING: TBC

AvRDP2-SSC-actions	Who/Due date
<ul style="list-style-type: none"> <li>• Pair 1 and Pair 2 teams to submit progress report to co-chairs.</li> </ul>	15 <sup>th</sup> September 2023
<ul style="list-style-type: none"> <li>○ Draft agenda and logistics information</li> </ul>	Piers/Chris by 15 September 2023
<ul style="list-style-type: none"> <li>○ Verification methods for the products for Pair 1and potentially Pair 2.</li> </ul>	Stephanie L 26th Sep
<ul style="list-style-type: none"> <li>○ Meeting links for online participants</li> </ul>	Chris by when?

## LIST OF ATTENDEES

### 1. SSC members

#### Add list of apologies/absentees

COUNTRY	NAME	E-MAIL	WMO AFFILIATION
UNITED STATES OF AMERICA	Fanglin YANG	<a href="mailto:fanglin.yang@noaa.gov">fanglin.yang@noaa.gov</a>	WCRP/WGNE
HONG KONG, CHINA	SHI, Xiaoming	<a href="mailto:shixm@ust.hk">shixm@ust.hk</a>	WWRP
JAPAN	IKEDA, Michiko	<a href="mailto:michi-ikeda@met.kishou.go.jp">michi-ikeda@met.kishou.go.jp</a>	SC-AVI
SOUTH AFRICA	GIJBEN, Morné	<a href="mailto:morne.gijben@weathersa.co.za">morne.gijben@weathersa.co.za</a>	SC-AVI
UNITED KINGDOM	BUCHANAN, Piers <sup>[1]</sup>	<a href="mailto:piers.buchanan@metoffice.gov.uk">piers.buchanan@metoffice.gov.uk</a>	SC-AVI
UNITED STATES OF AMERICA	DAVIS, Chris <sup>[1]</sup>	<a href="mailto:cdavis@ucar.edu">cdavis@ucar.edu</a>	WWRP

<sup>[1]</sup> Co-chair of AvRDP-SSC

**2. WMO Secretariat**

NAME	POSITION	E-MAIL
WIGNIOLLE, Stéphanie	Scientific Officer, Services for Aviation Division, Services Department	<a href="mailto:swigniolle@wmo.int">swigniolle@wmo.int</a>
DE CONING, Estelle	Head, World Weather Research Division, Science and Innovation Department	<a href="mailto:edeconing@wmo.int">edeconing@wmo.int</a>
MSEMO, Hellen	Scientific Officer, World Weather Research Division, Science and Innovation Department	<a href="mailto:hmsemo@wmo.int">hmsemo@wmo.int</a>

**3. List of apologies/absentees**

NAME	POSITION	E-MAIL	WMO AFFILIATION
UNITED KINGDOM	METHVEN, John	<a href="mailto:j.methven@reading.ac.uk">j.methven@reading.ac.uk</a>	WWRP
SOUTH AFRICA	LANDMAN, Stephanie	<a href="mailto:stephanie.landman@weathersa.co.za">stephanie.landman@weathersa.co.za</a>	WWRP

**4. Invitees**

NAME	POSITION	E-MAIL
Victoria Vetrees	University of Reading MSc student	
Yui Wang Ying	University of Reading MSc student	
Claire Bartholomew	Met Office (UK) Senior Scientist Aviation Applications Team	
Natalie Harvey	University of Reading Research Scientist	