W O R L D M E T E O R O L O G I C A L O R G A N I Z A T I O N

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

18 December 2024

Meeting minutes

Published January 2025.

1. OPENING OF THE MEETING

Piers and Chris opened the meeting by welcoming attendees and reviewing progress, highlighting that the project remains on track with no concerns raised during the recently held Aeronautical Meteorology Scientific conference. The importance of the upcoming major update in March was emphasized, alongside key agenda items, including updates on two airport pairs (London to Johannesburg and Hong Kong to Singapore), plans for a potential in-person meeting next fall, and other business. It was also noted that one year remains before the completion of the project.

The agenda for the meeting included:

1. Welcome – opening
2. HKG-SIN update
3. LHR-JBG update
4. In person meeting
5. AOB

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1. Updates on the demonstration products on the two airport routes (LHR-JNB and HKG-SIN)

Update on LHR-JNB pair (Piers & Morne)

The updates on the London to Johannesburg route focused on the progress of the development of prototype forecast products and the need for further refinement and integration of global and regional data sources to improve the usefulness of the products for this route.

- Piers noted that the current work involves producing prototype CB products, running optimal routing led by Jacob Cheung from the Met Office, and combining data from South Africa Weather Services and Met Office.
- He further noted that the optimal route work will start in January 2025. He further highlighted the urgent need to combine the regional and global data sources for the LHR-JNB route.
- The prototype visualizations for a global probabilistic CB forecast product were presented; the product uses a tool called EPOCH to provide probabilistic forecasts of CB top height.
- It was suggested that the two teams collaborate to compare the nowcast products developed for the LHR-JNB route with those created by Danice and her team. This comparison would help identify differences in methodology and outputs between the two nowcast products.

Update on HKG-SIN pair (Danice and Gerald)

- It was reminded that the action items from the previous meeting included identifying actual Hong Kong –to Singapore flight route data and gathering user feedback.
- Actual flight plots from September 2023 to October 2024 were analyzed, revealing:
    - A concentration of flights along specific routes.
    - A deviation range of approximately 2–3 degrees east/west.
- Feedback was gathered from Cathay Pacific pilots and air traffic controllers:
    - Pilots found the products helpful for identifying convection locations aligned with their flights.

    - Pilots preferred that the forecast be integrated into the electronic flight bag rather than being accessed via a separate webpage.
    - Air traffic controllers requested a combined risk product, merging dBZ and probability forecasts, displayed as contours on radar reflectivity imagery.
    - A need for more frequent and higher-resolution weather forecast products to improve convective weather avoidance.
    - A reliance on onboard weather radar for tactical decision-making by pilots.
    - Challenges encountered in integrating new weather products into existing systems.
- A comparison of cloud top heights from multiple satellite sources (JMA, CMA, HKO SAF) was conducted, and a discrepancy was found, particularly in low-level clouds. Plans were outlined to calculate the mean square error or mean absolute error of cloud top height estimates against satellite observations.
- The potential to present case studies from the rainy season at the AGU 2025 conference was mentioned.

2. AvRDP2 SSC 4th face-to-face meeting

The group discussed the venue for the final in-person meeting in 2025, agreeing on September 24-26 as the preferred dates. Three location options were considered: Hong Kong, Exeter, and Geneva. While Hong Kong was recognized as valuable for regional representation, it posed travel challenges for Piers. However, Piers will provide more updates in January. Exeter, hosted at the Met Office, was deemed feasible for most participants, and emerged as the preferred option, pending confirmation. Geneva was also considered convenient due to Chris's schedule. The group emphasized the importance of having Piers in personal attendance and decided to finalize the location in January 2025.

3. Next steps

- **Both airport pairs**: Compare the Nowcast product developed by Andrew for the London-Johannesburg route with the work done by Danice for the Hong Kong-Singapore route. This comparison will evaluate differences in methodologies and outputs. *Danice is assigned to lead this task*.
- **Both airport pairs:** Generate polygons for the probabilistic CB forecast product for the London-Johannesburg route and compare them with those from the Hong Kong-Singapore route. Assess similarities and differences in forecast outputs between the two route pairs. *The Met Office will work on this task*.
- **Piers and Chris:** Confirm the venue for the final SCC meeting on September 24–26, 2025. *Piers will follow up and provide an update.*
- Schedule the next online SSC meeting for March 11, 2025, at 12 UTC.
- Explore the optimal temporal resolution and update frequency of forecast products to align with user requirements *(Danice).*
- Continue integrating global and regional data sources to enhance the utility of forecast products (*team of the LHR-JNB route*)
- Begin preparation for the final in-person meeting in September 2025 to summarize and present the project's outcomes and findings *(Piers and Chris leading)*

2. **NEXT ONLINE MEETING:** 11th March 2025 at 12 UTC

AvRDP2-SSC-actions	**Who/Due date**
○ Confirmation of the F2F meeting	Chris and Piers
○ Comparison of the products (LHR-JNB and HKG-SIN) and generation of probabilistic polygons	Both pairs

○ Next online meeting	Hellen
○ Integrating global and regional data	Piers leading, Morne in support
○ Explore the optimal temporal resolution and update frequency of forecast products to align with user requirements	Danice
○ The summation of Jacob Cheung's initial trajectory prediction work	Piers
○ preparation for the final in-person meeting in September 2025 to summarize and present the project's outcomes and findings	Piers and Chris

LIST OF ATTENDEES

1. SSC members

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2. WMO Secretariat

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3. List of apologies/absentees

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			WMO Secretariat
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4. Invitees

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