

航空氣象現代化作業系統汰換及更新計畫簡介及進程

Introduction and Progress of the Advanced Operational Aviation Weather System Renewal and Update

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摘 要

前一代航空氣象現代化系統 (AOAWS) 已運行超過20年，隨著ICAO對未來資料交換要求的提升，舊系統逐漸難以滿足需求。此外，航路和機場預報演算法的新技術發展遲緩，以及資料格式等問題與限制，自2021年至2024年，飛航服務總臺臺北航空氣象中心實施了航空氣象現代化系統的汰換及更新計畫 (AOAWS-RU)。該計畫包括建置資料中心、預報輔助系統、颱風作業及風力預報系統、監控系統和新一代航空氣象服務網等，並根據航空氣象預報需求進行設計，還建立測試評估平台用以評估未來新演算法或新功能擴充。演算法方面，持續與NCAR合作，導入新版本的亂流、積冰、雲頂高、能見度及雲霧演算法，其中新演算法AOAWS短時強降雨及回波預報 (ASPIRE) 及大洋對流指數 (CDO) 也被引入，期望能對未來的航空氣象預報、即時天氣監測及航空流量管理有所幫助。此外，計畫還加強與學界合作進行本土航空氣象研發，提升台灣的航空氣象研發能力。

關鍵字：航空氣象現代化系統的汰換及更新、預報輔助系統、亂流、積冰

Abstract

The previous generation of the Advanced Operational Aviation Weather System (AOAWS) had been in operation for over 20 years. With the ICAO's increasing requirements for future data exchange, the old system gradually became inadequate. Additionally, the development of new technologies for route and airport forecast algorithms was slow, and there were issues and limitations with data formats. From 2021 to 2024, the Taipei Aeronautical Meteorological Center of the Air Navigation and Weather Services implemented the project of Advanced Operational Aviation Weather System Renewal and Update (AOAWS-RU). This project includes the establishment of a data center, forecast support system, typhoon operation and wind forecasting system, monitoring system, and a new generation aviation meteorological service webpage, all designed according to aviation meteorology forecasting needs. A testing and evaluation platform was also established to assess new algorithms or feature expansions in the future.

In terms of algorithms, continuous collaboration with NCAR introduced new versions of turbulence, in flight icing, cloud top height, visibility, and ceiling algorithms. New algorithms such as AOAWS Short-term Prediction of Intense Rainfall and Echotops (ASPIRE) and the Convection Diagnosis Oceanic (CDO) were also integrated, aiming to improve future aviation weather forecasts, real-time weather monitoring, and flow control. Additionally, the project strengthened collaboration with academia for aviation meteorology research in Taiwan to enhance Taiwan's capabilities in aviation meteorology research.

Key words : AOAWS-RU, Forecast support system, Turbulence, In flight icing