



## ISSUE 21

# PURSuing SAFER SKIES THROUGH ENHANCED AERONAUTICAL METEOROLOGICAL INFORMATION

Weather conditions greatly affect air traffic management (ATM) operations. Variations in head and tail-wind direction, changes in pressure and temperature at airports, coupled with low visibility can severely disrupt ATM systems. These result in disturbed flow rates, lost capacity, and ultimately increased costs for airlines and airports.

With the aim of overcoming these challenges, the International Civil Aviation Organization (ICAO) has been working with the World Meteorological Organisation (WMO) on a number of new initiatives geared towards providing enhanced meteorological information.

One such programme was the development of a new terminal forecast system that provides microclimate meteorological information specific to a terminal's airspace – a feature that is currently lacking globally. Another initiative requires all meteorological service providers to implement a quality management system. This seeks to ensure the integrity and reliability of meteorological information provided to aviators; the requirement became applicable worldwide on 15 November 2012.

At its 12th Air Navigation Conference held in November last year, ICAO launched a further initiative that uses intelligent decision support tools to assess the impact of weather forms on aircraft operations. Such tools will support air traffic routing and flight profile solutions. The new technology will also alleviate the need of pilots and air traffic controllers to interpret weather information, which is often not easy to understand. Thus, both parties will be able to make informed decisions based on easily digestible information that details the impact of forecasted weather on their flight operations.

Other new initiatives addressed in ICAO's recent strategy include increased use of airborne capabilities to detect and report meteorological parameters, and better cockpit displays of meteorological information to enhance the situational awareness of flight crew.

However, despite the great advances in meteorology over the last half-century, no automatic model-based forecasting system has replaced the role of human forecasters. For example,

local thunderstorms experienced in Singapore are small-scale weather systems that have proved difficult for the computer models to predict. Therefore, much still depends on the quality of operational weather forecasters to provide accurate, timely and reliable forecasts.

**Towards greater collaboration**

In a bid to meet this challenge, both WMO and ICAO will require all aeronautical meteorological personnel to meet new stringent competency standards by December 2013. CAAS, as the regulator of aeronautical meteorological services in Singapore, will oversee Meteorological Service Singapore's compliance with the new standards.

Meteorological technology won't single-handedly alleviate the challenges associated with volatile and ever-changing weather conditions; indeed, close collaboration between all relevant stakeholders is equally as important.

On one hand, air navigation service providers and pilots must specify what meteorological information they require. On the other, aeronautical meteorologists must gain a better understanding into the complexity of flight operations and how aviators use weather forecasting.

It is for this reason that CAAS hopes to bring together all relevant stakeholders to collaborate in the important role of enhancing air traffic efficiency and safety through improved integration and better use of aeronautical meteorological information.