



International Civil Aviation Organization

The Fourth Meeting of ICAO Asia/Pacific Air Traffic Flow Management Steering Group (ATFM/SG/4)

Bangkok, Thailand, 1 – 5 December 2014

Agenda Item 5: Development of Regional ATFM Framework

METEOROLOGICAL PRODUCT REQUIREMENTS FOR ATFM

(Presented by Hong Kong, China)

SUMMARY

This paper presents a description of the Met services required to support ATFM and a suggested way forward for ATFM providers to collaborate with Met providers in providing products which enable simple but accurate interpretation of capacity-related weather phenomena.

1. INTRODUCTION

1.1 The ability to accurately perform pre-tactical demand-capacity assessment is reliant on the predictability of events that will impact capacity.

1.2 In the case of weather-related constraints, the traditional Annex 3 services in support of aerodrome operations and FIR/Global operations do not fully address the needs of ATFM.

1.3 While globally, MET authorities are working steadily towards the institutional provision of Met Services to support the Terminal Area (MSTA), there is a greater urgency for ATFM providers to collaborate closely with Met service providers to develop products that bridge the gap between the traditional products.

2. DISCUSSION

2.1 When predicting the capacity of an airport with regard to forecast meteorological conditions, it is important to not only consider the runway/s and immediate airport surroundings, which are covered by the Aerodrome Forecast (TAF) to a distance of 8km, but to also take into consideration the ability for air traffic to flow via the terminal area on the normal arrival routes and instrument approach procedures to that airport.

2.2 In particular, weather affecting the airspace in the vicinity of the primary holding areas and initial approach fixes can have a significant impact on the delivery of flights into the approach airspace and onto the runway.

2.3 The current Annex 3 provisions do not adequately cover such airspace with sufficient focus to enable an accurate determination of the impact on capacity. In particular, the intensity and spread of significant weather in such specific areas is insufficiently defined in terms of what is generally regarded as operationally acceptable for modern airline aircraft. It is also produced in a

largely coded format, which makes rapid interpretation difficult for ATM officers. What is required are “scenario” based forecasts which have a well-defined user impact.

2.4 To enable rational and quantifiable capacity determination, it is preferable that ATM providers collaborate closely with their respective MET authorities to enable weather products to be produced that enable decisions to be made based on specific impact to operations rather than interpretation of a broad weather forecast. To put it simply, Met service providers are not always aware what is and what is not, important to ATM in terms of airport/airspace capacity. This applies not only to new met products but existing products.

2.5 To enable such products to be produced, ATFM providers should identify and inform Met providers the key thresholds for various met criteria which have a quantifiable impact on airport and terminal airspace capacity. E.g. headwind, crosswind, visibility, ceiling, wind shear, convective weather at the IAF, convective weather in the vicinity of primary holding/sequencing areas. An example of the simple type of matrix that could be produced, with intuitive colour coding for quick recognition by ATM staff, is shown in **Figure 1**.

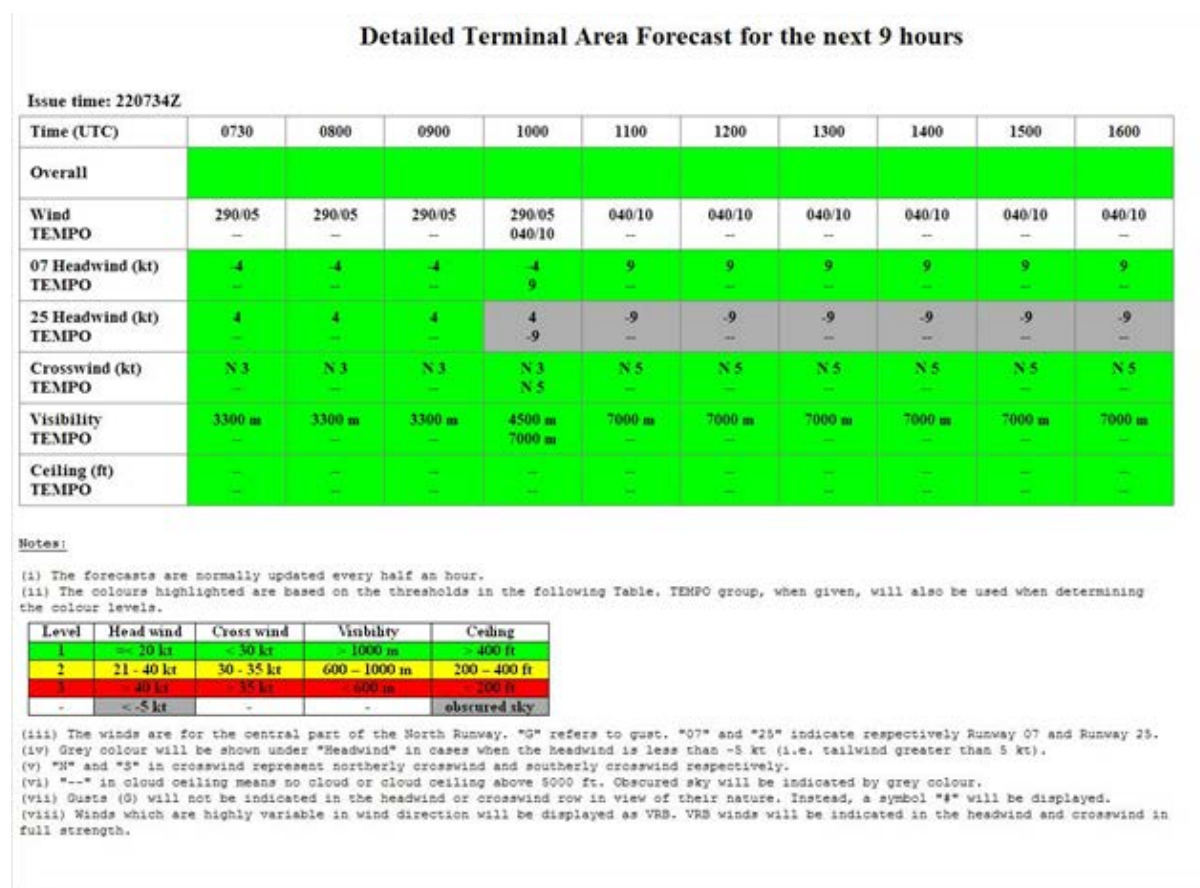


Figure 1: Example Colour-Coded Matrix of Met Information

2.6 In terms of the wider Terminal area, similar defined criteria, thresholds and colour coding can enable rapid interpretation of impact on operations. **Figure 2** shows an example of IAF and holding stack prediction based on weather intensity and coverage area.

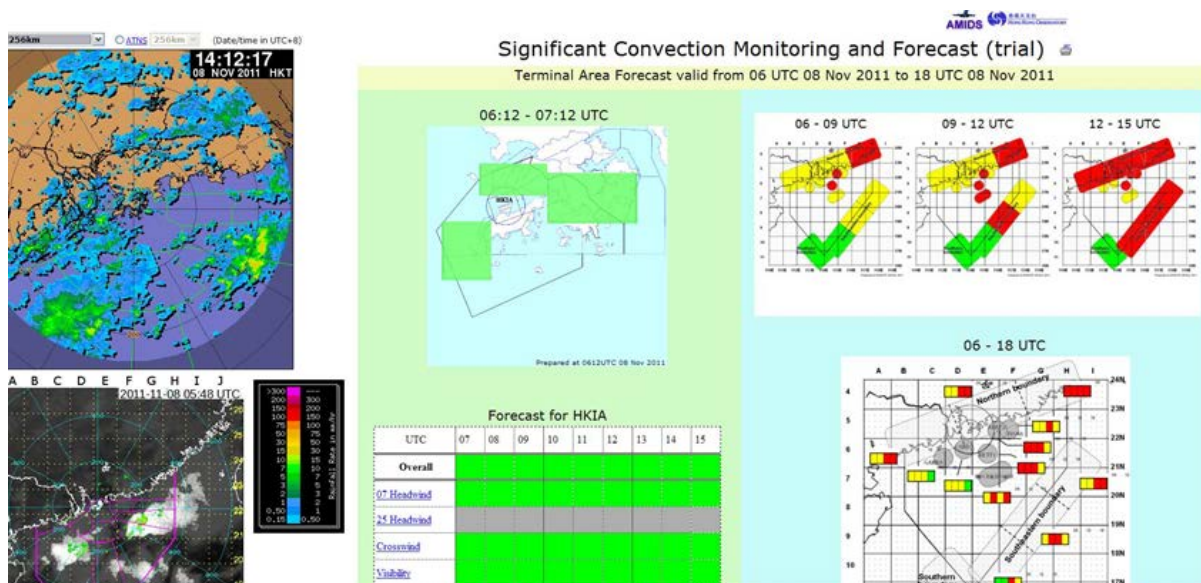


Figure 2.

2.7 When identifying these criteria, ATM providers should consider thresholds that, for example, dictate a change in runway operating mode, a change in runway dependency, a change in inter-arrival spacing, a change in nominal aircraft approach speeds, an exceedence of a large proportion of aircraft operating limitations (eg maximum crosswind component), an inability to commence an approach via the IAF, or an inability to hold in the primary published holding areas, etc.

2.8 All of these factors will assist in a rational quantification of an Airport's Acceptance Rate.

2.9 When considering the lead time requirements for such forecast products, it is necessary to strike a balance between the desired probability and accuracy and the target ATFM aircraft population.

2.10 Given the direction towards Regional ATFM through ground delay programs, it is therefore desirable that the forecast period cover at least 6-8 hours ahead to encompass the majority of regional length flights with notification of ATFM measures an acceptable time before EOBT.

2.11 ATFM providers should also closely collaborate with Met providers on these requirements so that specific products can be formulated rather than, for example, a simple truncation of an existing longer term forecast which have insufficient accuracy.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) note the information contained in this paper; and
- b) discuss any relevant matters as appropriate.

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