



Sixth Meeting of CNS/MET Sub-Group of APANPIRG

Bangkok, Thailand, 15 – 19 July 2002

Agenda Item 14: Regional preparation for the MET Divisional Meeting

NEED FOR A TERRAIN INDUCED TURBULENCE FORECAST

(Presented by Australia)

SUMMARY

This paper proposes the development by the WAFCs of a terrain/mountain induced turbulence forecast.

1. Introduction

1.1 This is a copy of a working paper Australia will present under Agenda Item 1.3 at the MET Divisional Meeting. This paper proposes the development by the WAFCs of global, mountain/terrain induced forecasts of turbulence, for the air space in the vicinity of significant mountain ranges, such as the European Alps, the Rocky Mountains, the Andes, the Himalayan Mountains, etc.

2. Background

2.1 There is a requirement by airlines for more detailed forecasts of mountain induced turbulence, for both safety and passenger comfort. In 2001 Qantas Airways Limited began flying Route L-888, a new airway from London via Russia and China to Bangkok. The route involves several hours of flying over the Tibetan Plateau. Because of concerns at the prospects of encountering severe turbulence over this section of the route, additional forecast information is sought by Qantas at the planning and in-flight stages when using the airway. This is but one example of concerns about mountain induced turbulence, concerns that are shared by many airlines.

3. Requirement

3.1 There is a requirement for a global forecast product that provides advanced information of the possibility of mountain induced turbulence. The product needs to be more detailed than the information currently available on the significant weather forecast charts (SIGWX). It also needs to contain forecast information of expected intensity by time and space (i.e. duration, flight levels and areas effected). As a nil turbulence forecast would also be very valuable, the proposal is for a turbulence forecast rather than an event driven warning such as SIGMET.

3.2 Feedback received from airlines indicate the most appropriate format for the mountain turbulence forecast would be a product that uses a graphical presentation with elaborative text. The latter being used to explain expected intensity variations in time and space.

3.3 The information is required by the airlines at two stages - (i) the flight planning stage to determine which route to take, and (ii) for in-flight planning and decision-making.

3.4 To satisfy the planning requirements for long haul operations such as from London to Bangkok and Auckland to Buenos Aires, airlines need a mountain turbulence forecast that is valid 12 to 18 hours beyond issue time.

3.5 A mountain turbulence forecast with a shorter validity period could also be used very effectively during flight. In the case of dynamic routing, a 5 to 6 hours forecast of severe turbulence provides the pilot with opportunity to go round the offending volume of air. For less intense turbulence, a 5 to 6 hour advance notice can be used very effectively in planning meal services, etc.

4. Considerations

4.1 The SIGMET which is basically a short-term warning does not meet this requirement for a number of reasons. It has a short validity period, it contains limited information, it is event driven, and is FIR restricted. Also the distribution of SIGMET in different parts of the World, does not always adequately meet airline-planning requirements.

4.2 Another important consideration is that many of the World's mountain ranges are in States that are not equipped to produce forecasts of mountain induced turbulence.

5. Action for the MET Divisional Meeting

5.1 The meeting is invited to support the proposal that the WAFCs be requested to undertake development work that will lead to the development and production of forecasts of mountain induced turbulence for the major mountain ranges.