



**International Civil Aviation Organization**

**NINTH MEETING OF THE  
COMMUNICATIONS/NAVIGATION/SURVEILLANCE AND  
METEOROLOGY SUB-GROUP OF APANPIRG  
(CNS/MET SG/9)**

Bangkok, Thailand, 11–15 July 2005

---

**Agenda Item 13: Review CNS/ATM systems planning and implementation**

**MET STRATEGY IN SUPPORTING  
THE CNS/ATM CONCEPT**

(Presented by Russian Federation)

**SUMMARY**

Review of the works has been made for determine meteorological component of CNS/ATM systems, working requirements to provision of meteorological information for ATC systems, facilities integration of the ATC and MET in Russian Federation

**1. Introduction**

1.1 During past several years ICAO, Eurocontrol and WMO have been working together for improving Air Traffic Management system (ATM) and determine meteorological component place in CNS/ATM systems for the EUR Region.

1.2 The fundamental changes in Air Navigation as an example the expected traffic growths in Europe, lengthening of air route have making CNS/ATM concept to be implemented. In the follow-up to the 10th Air Navigation Conference, the ICAO re-emphasized the important role of regions and States with regard to the planning, implementation and transition to CNS/ATM systems.

1.3 At 11th Air Navigation Conference in 2003 at Montreal the global ATM Operational Concept for CNS/ATM systems was approved. Global ATM Operational Concept should be the global framework and should be used as guidance for the further development of ICAO CNS/ATM related activities.

1.4 The development of the coordinated non-separable global to Air Traffic Management system allow to realize the technology of the CNS/ATM system and to improve the existing ATS systems. In other words the improvement of ATS system is making need for modernization of the aeronautical meteorological provisions.

**2. Meteorological component in the CNS/ATM concept for the EUR Region**

2.1 In the accepted Global ATM Operational Concept marked the importance for support of decision making, accurate and easily accessible meteorological information. Within the context of the future ATM system, it's necessary to take in the action weather influence to safety, traffic volume,

and efficiency and decrease aviation influence to surrounding environment. As the future ATM system evolves, the demands for MET component will require being improved.

2.2 In supporting CNS/ATM concept for the EUR Region made MET Strategy and presented to EANPG/46. The meeting considered strategy as well as prepared high quality document for the EUR Region and it was also considered to be a valuable contribution to development of the global MET requirements and strategies related to the ATM concept.

2.3 The Meeting recognized however an obvious need to raise the awareness of the impact of MET in the ATM system within the ATM community (including airspace users) through its active participation in the future developments. This active participation would enable a confirmation by the ATM community problems statements which already identified in the MET Strategy and identify and quantify the value of the expected benefits (via establishing a cost benefit analysis), prioritize efforts to achieve maximum and early benefits and define the best way ahead. "Means to achieve this" would be by the organization of a workshop on the impact of MET on the ATM system. It was agreed that this should be the responsibility of ICAO in co-ordination with Eurocontrol and WMO (Moscow, 2006).

2.4 MET Strategy in supporting the CNS/ATM concept for the EUR Region was endorsed as a basis for further development of regional ATM requirements for dedicated MET services and products and agreed on the following conclusion 46/27:

- a) ICAO invites Eurocontrol, WMO and United States to support in the development of regional ATM requirements for dedicated MET services and products;
- b) ICAO, in co-ordination with Eurocontrol, WMO and the United States, organize a workshop on the impact of MET on the ATM system, and
- c) ICAO considers the EUR MET strategy as a contribution to development of the global strategy and ATM related requirements on MET.

2.5 Today the world community made defined steps in a part of meteorological services strategy realization. Development of World Area Forecasting System (WAFS), which centralized the global map winds creation and altitude temperature температуры by two World Area Forecast Centers (WAFC) and SIGWX. Timely changes of meteorological information format for ATM and OPMET messages exchange OPMET.

2,6 During development phase of new ATM system the new requirements for meteorological information will make need to have new improved meteorological systems, to automated meteorological systems, their integration with CNS/ATM systems.

### **3. Meteorological service enhancement in uniform ATM system with CNS/ATM concept in Russian Federation**

3.1 Russian Federation is accomplishing works for enhancement the airspace structure and air navigation services. The transition to new CNS/ATM systems should be based on ATM system enhancement. The changes in ATM systems are making the need for restructure meteorological services.

3.2 This restructure should be started from analyses of current situation and this will be base for new programs and propositions. It's necessary to carry out analyses of current technical tools. Meteorological systems should be unified for future integration to one system. It's necessary to use new and long-term technologies, modern methods of meteorological data presentation, make transition to new height speed information channels. The operational features of technical tools for MET should be compatible with technical tools of ATM system. This can be reached by equipment level definition, which is necessary for defined tasks. Necessary to establish works for improvement and unification the calculation methods for meteorological information. The Russian Federation started works for analyses and improvement structure of meteorological services.

The works for improvement the communication lines are carried out. It's necessary of effective decision making to create systems of meteorological data management.

3.3 Further improvements in meteorological service for ATM in supporting the CNS/ATM concept for the EUR Region lead automatic meteorological service in the TCC and ACC ATM. Further improvements in MET facilities, applications, supporting infrastructure and quality of services are expected to lead to greater harmonization, integration and rationalization of existing or new support systems and services and to the further introduction of improved MET products tailored to user requirements.

3.4 Most of TCC and ACC ATM have been automated in Russian Federation. Big part of them has solved tasks of the automatic provision of meteorological information completely or partly. Integration of system ATC and MET has done.

3.5 The facility of system integration ATC and MET is depending from technical equipment. There are AWOS, radar, satellite, forecast systems and other receiving and processing meteorological systems.

3.6 The modernization and installing MET systems should be based on existing international and regional meteorological and telecommunication infrastructures.

It's very important to support in the development of regional ATM requirements for dedicated MET services and products, which will determine place for MET component in CNS/ATM systems concept.

3.7 Complex of the meteorological systems has made for provision of meteorological information to ATC systems, that can be used autonomous or interaction with ATC systems. Flexible configuration of system can be used to all airports. Considerable spectrum receiving and reflection data, difference type of the meteorological data have provided for controllers ATC, crew and other users.

3.8 ATC systems are receiving information about storm and warnings, meteorological data, and take into account system tasks during problem solving by ATC. Existing and expecting weather conditions are reflecting on controller working place together with aeronautical information.

3.9 Controllers notified about current and expected dangerous weather situation for flights by defined warning signals.

3.10 Cartographic information is reflecting together and on the back of aeronautical. Some systems have facility for reflecting vertical section of zone dangerous phenomena by defined route.

3.11 The elements of modernization meteorological service for aeronavigation should be developed and improving MET should be continued.

3.12 Creation and installation a new components for CNS/ATM systems and integration in world meteorological network should be step to step continued in according CNS/ATM concept and MET strategy, global and regional requirements, international standards and recommended practices of the ICAO.

3.13 Nowadays it's necessary to develop the regional ATM requirements for dedicated MET services and products, which ICAO determined for states. The regional ATM requirements should be determine, meteorological systems should be standardization, meteorological services should be installed MET systems and should have possibility be integrated in world meteorological net and CNS/ATM systems.

3.14 In future users and MET should working together for improving Air Traffic Management system (ATM) and determine meteorological component place in CNS/ATM for the EUR Region.

#### **4. Action by the meeting**

4.1 The meeting is invited to note the content of this paper

-----

*Russian Federation*

# MET Strategy in supporting the CNS/ATM concept for the EUR Region



**ICAO / WMO**

**Eurocontrol**

***Regional structure RF***

**Ministry of Transport /  
Rosgidromet**

**Global operating ATM concept**

**Global installation plan for CNS/ATM systems**

**Transition plan to CNS/ATM systems**

**Regional strategy for aeronavigation**

**Regional aeronautical plan ICAO for CNS/ATM  
systems**

**Regional transition plan to CNS/ATM systems**

**MET component in concept CNS/ATM**

**MET Strategy for aeronavigation**

**Regional ATM requirements for dedicated  
MET services and products**

**Regional MET strategy for ATM**

**Regional plan of the changes to MET  
systems for ATM**



## **Conclusion 46/27 EANPG ICAO**

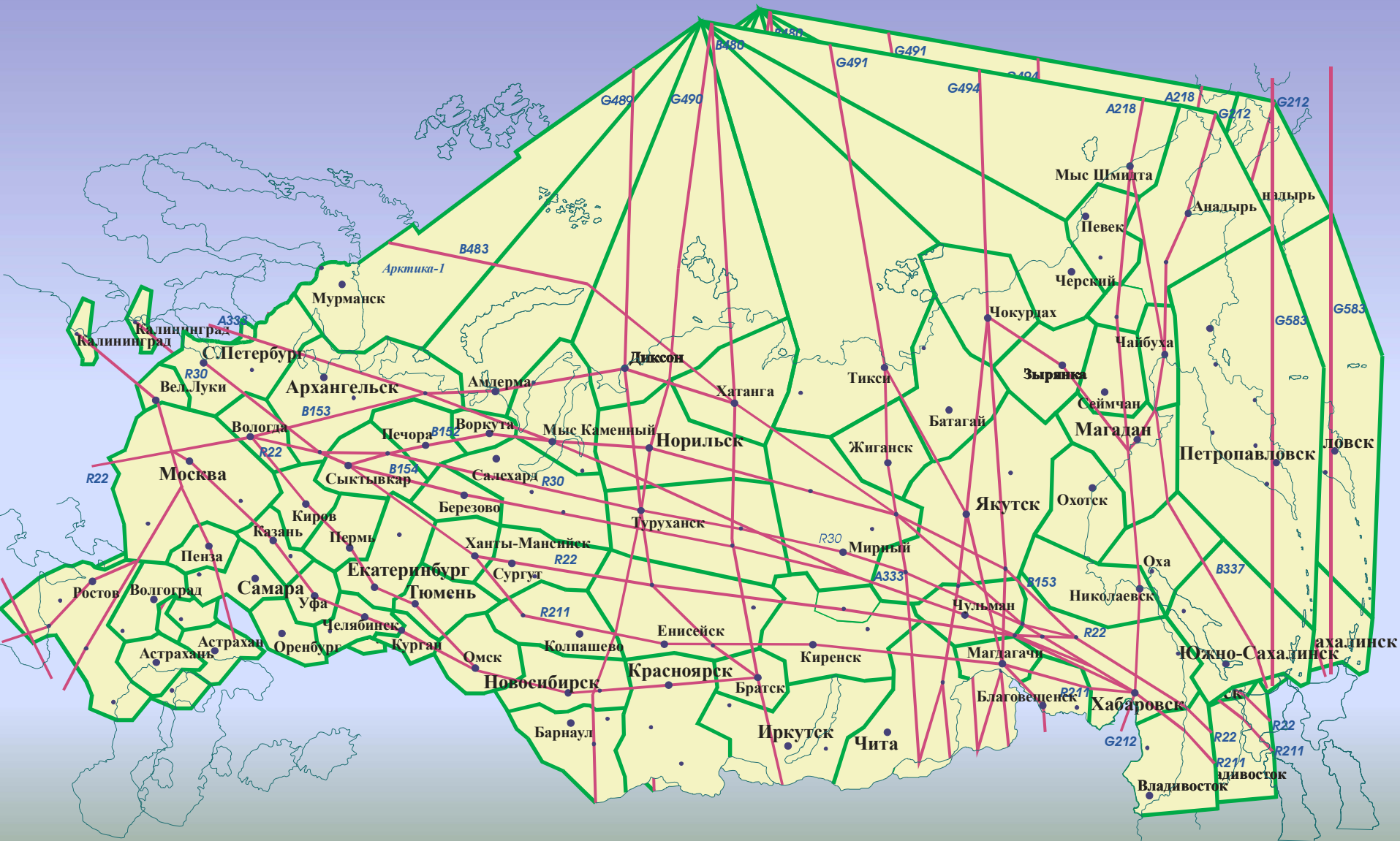
**ICAO invites Eurocontrol, WMO and the US**

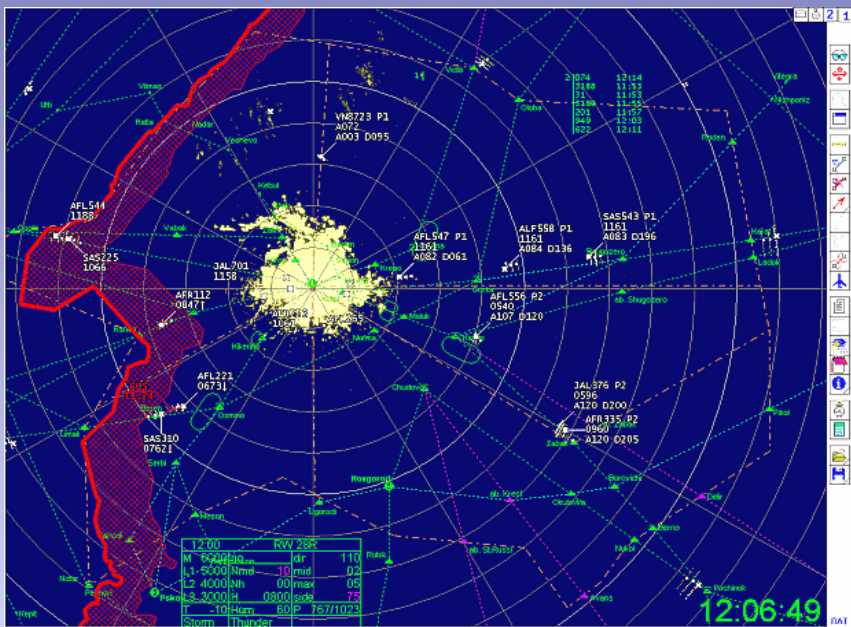
**to support in the development of regional ATM requirements  
for dedicated MET services and products**

**to organize a workshop on the impact of MET on the ATM system**

**to consider the EUR MET strategy as a contribution to development of the  
global strategy and ATM related requirements on MET**

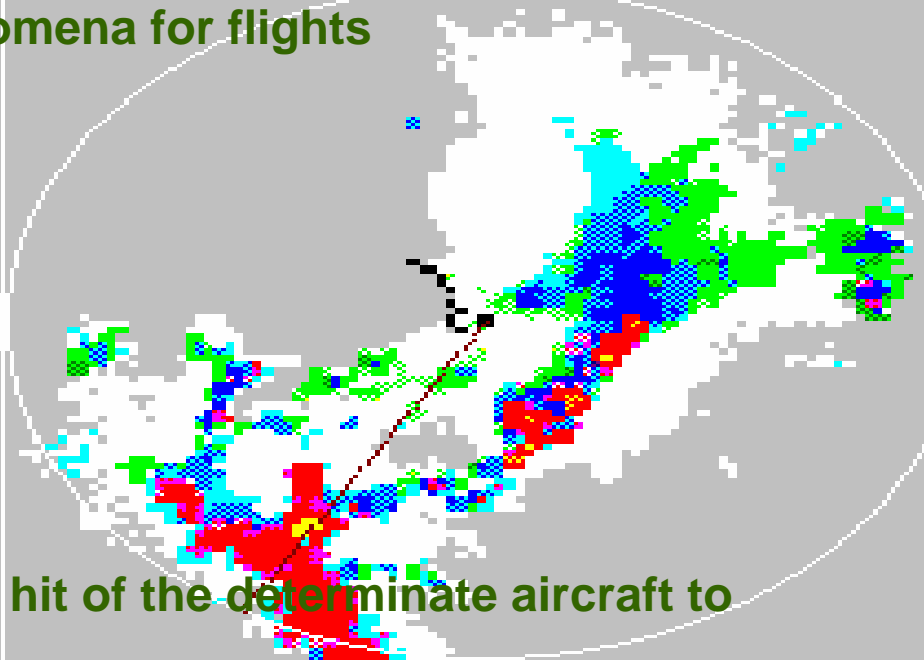
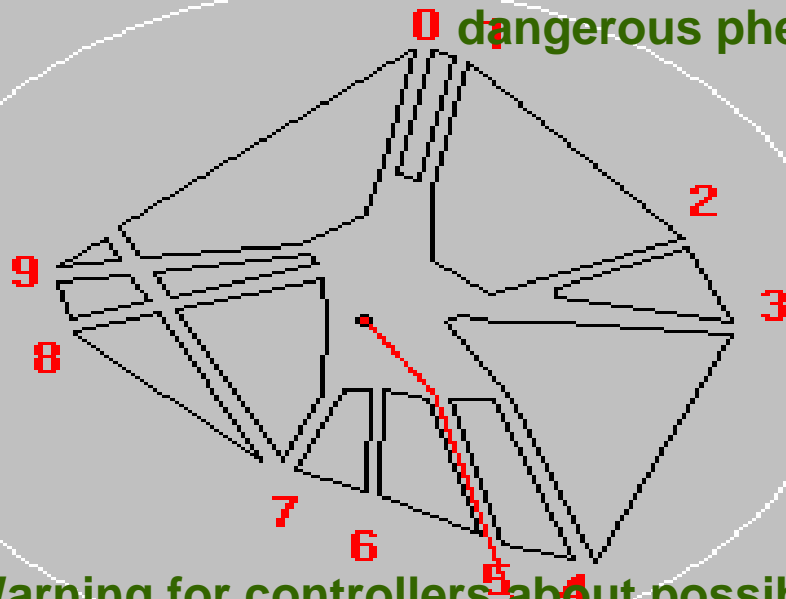
# Airspace under uniform ATC system



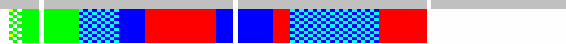


Storm and warning for controllers about origin and forecast of

dangerous phenomena for flights

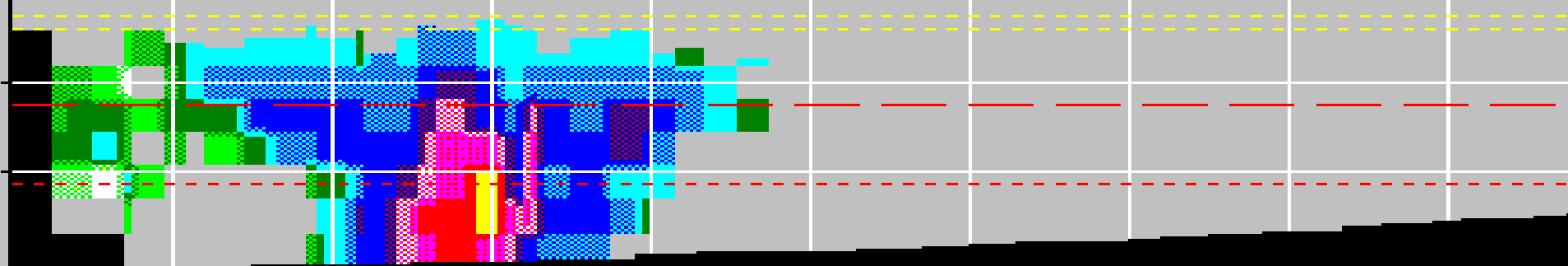


Warning for controllers about possible hit of the determinate aircraft to dangerous phenomena



Change of pressure

Discharge of radiosonde



# **Different type of the meteorological data provided for controllers ATC**

- 1. Local Meteorological reports and Special reports**
- 2. Current and expected dangerous weather situation for flights**
- 3. Maps of dangerous weather situation for flights**
- 4. Design trajectory of radiosonde**
- 5. METAR, SPECI, TAF, TAF AMD information for airdromes, alternative airdromes and other possible place for landing**
- 6. SIGMET, AIRMET, GAMET information in FIR area**
- 7. Wind and temperature values**
- 8. Volcanic ash information, radioactive waste release and other information**

**Thank you for attention**