

# Overview of "CARATS" and Recent activities related to aeronautical meteorology

**Collaborative Actions for Renovation of Air Traffic Systems** 

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# Consideration of long-term vision

CARATS \*

• <u>2009~2010</u> <u>Development of long-term vision</u>

Establishment of "Study group for Promoting Renovation of the Air Traffic System"
Development and promulgation of "Collaborative Actions for Renovation of Air Traffic Systems" (CARATS)

- <u>2010~2011</u> Development of roadmap for each measures
  - -Establishment of "Committee for Promoting Renovation of the Air Traffic System"
  - -Consideration of concrete measures and development of roadmap
- <u>2011 ~</u> Implementation Phase



# Working Framework





\*ATM: Air Traffic Management, PBN: Performance Based Navigation, RNAV: aRea NAVigation

➤There are four working groups (ATM, PBN,MET and IM) and relevant ad-hoc groups and sub groups.

➢All of the groups carry out collaborative activities between airlines, research institutes, manufactures, JCAB, JMA and other government organizations.

>Assessments with cost-benefit analysis are required before implementation of each measure.



Development of indicators for checking the status of implementation of the CARATS measures Progressing CARATS measures steadily and monitoring and analyzing them continuously

Objective and Numerical target	Outline of indicator
1 Enhancing safety (Increase safety level by 5 times)	The number of aircraft accident and important incident resulting from ATC (the average number for the past five years)
2 Responding to the increase in air traffic volume (Double the air traffic control capacity in congested airspace)	(Under consideration)
3 Improving user conveniences (Improve services level by 10%)	Punctuality :
	The rate of the arrival delay flights exceeding 15 minutes
	Actual operation rate :
	The flight cancellation rate by the influence of the whether (the average
	Panidrosay
	Rapidness: Elight time of Coto to Coto of main routes
	Thight time of Gate-to-Gate of main routes.
(Reduce fuel consumption per flight by 10%)	The amount of the fuel consumption per flight in main routes
5 Improving productivity of air traffics services (Improve productivity of air traffic services by 50% or more)	The flight plan operation number of each air traffic controller
	The flight plan operation number to the maintenance expense (the average number for the past three years)
6 Responding to environmental issues (Reduce CO2 emissions per flight by 10%)	The amount of the CO2 emissions per flight in main routes
7 Enhancing the international presence of Japan in the aviation field	(Qualitative objective)

## Direction of renovation in CARATS





meteorological phenomena

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# Measures of aviation weather in CARATS

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CARATS RoadMap

operational improvements: OI (improve operation)

enablers: EN (technology for enabling OI)

Measures of aviation weather

ALL Measures of aviation weather are enablers (EN)

Improved weather observation capabilities

• Provision of weather observation information to aircraft via data uplink system

Integration of observation data around aerodrome and air spaces

### Improved weather forecast capabilities

- •Development of NWP model with high frequency and resolution
- Expansion of forecast elements

Quantification of the impact of severe weather on capacity and other aircraft operations

- Estimation of impact on ATM using MET information
- Translation from MET data to airport/airspace capacity

### MET information sharing infrastructure

Sharing of weather information with standardized format on SWIM environment

• Development of Common Meteorological Database which includes weather observation and forecast information

### Examples of the recent activities on MET in CARATS

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#### Improved weather forecast capabilities

#### Development of high resolution NWP model



#### Probabilistic forecast using NWP



Use of aircraft data via data-link



%DAPs : Downlink Aircraft Parameters

### Examples of the recent activities on MET in CARATS



### MET integration into ATM decision suppoert system

#### Current ATMet Category Forecast





### Advanced product using Himawari-8



