National Meteorological Centre,
China Meteorological Administration

MICAPS System Introduction

Liu Pan（Senior Software Engineer of NMC/CMA）

Email: liupan@cma.gov.cn

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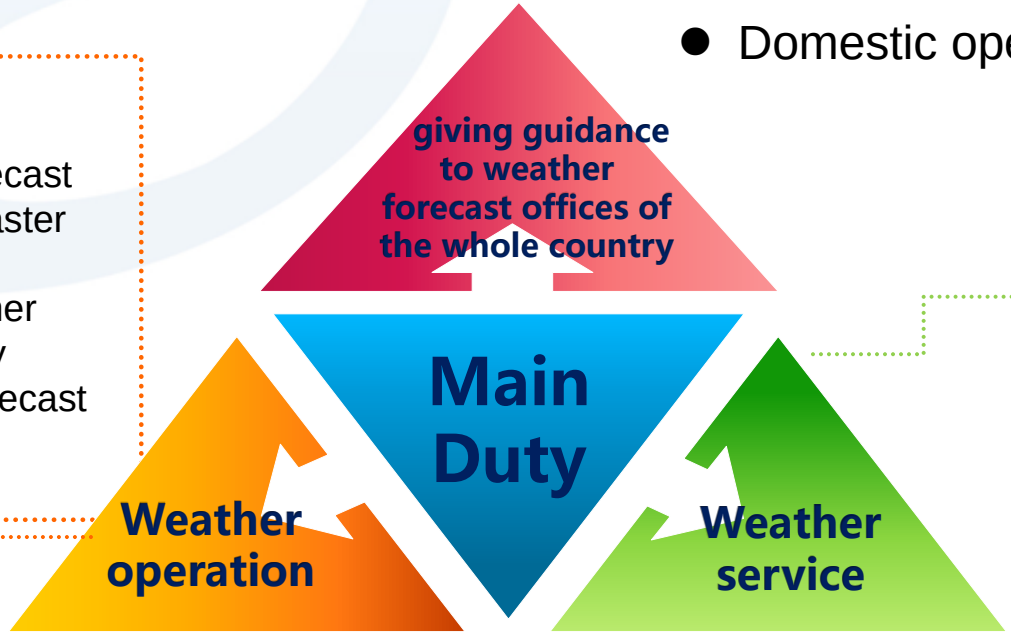
NMC

National Meteorological Centre of China

National weather forecast operational centre in CMA

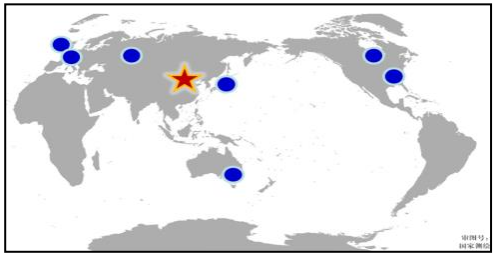
- 0-15 days weather monitoring and forecast
- Meteorological disaster warning release
- Research on weather forecast technology
- Development of forecast platform

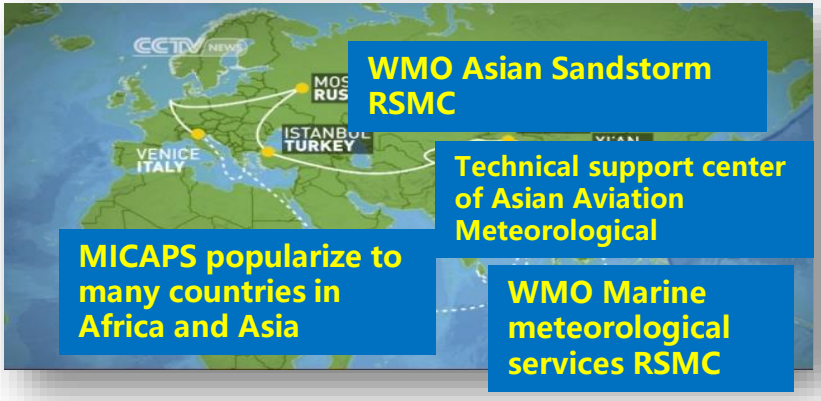
- Domestic operation



- public
- governments
- other departments

- Foreign operation





WMC-Beijing

WMO Regional Specialized Meteorological Center（RSMC）

WMO Environmental emergency response center（EERC）

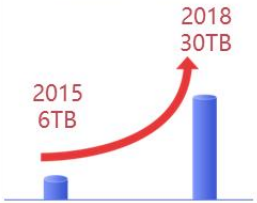
Meteorological support for international cooperation of the Belt and Road

Weather Forecast Enters a New Era in the Challenge of Climate Change

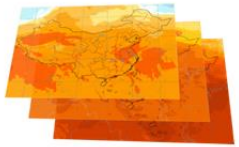
Natural Disaster Increase Over Time

- It is necessary to meet the needs of the government and the public for high forecasting accuracy

Highly Efficient Use of Data

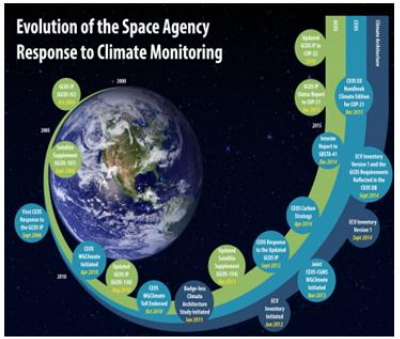


High spatiotemporal resolution data



- Need to take full advantage of massive amounts of data

the Need of Early warning and Accurate forecast Data

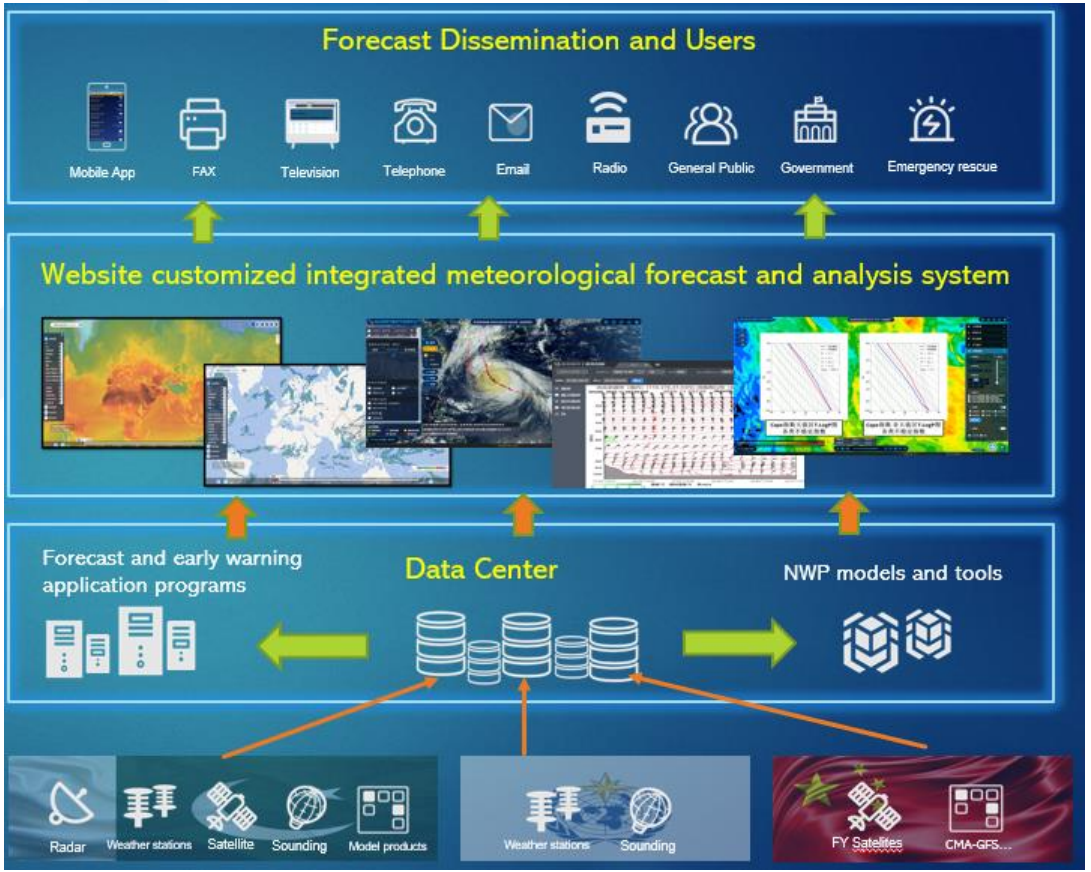


- Refined quantitative site forecast at a desired time
- Seamless continuity from nowcasting (0-2 hours) to the medium-term forecast (10 days)
- Special weather services, including typhoon forecast

Necessary to have a powerful Weather Forecasting and Early Warning Supporting Platform

Cloud-based architecture

CMA adopts the “Cloud+End" architecture to establish a set of mature operational platforms including observation monitoring application, interactive forecasting platform and early warning platforms.



MICAPS: An advanced interactive weather forecast production system

MICAPS (Meteorological Information Comprehensive Analysis and Process System) is a modern full-purpose forecaster workstation system for processing and displaying meteorological data. It is designed for modern “completing forecasting process” operations, from nowcasting to medium-range forecasting.

Since it’s implementation in CMA weather forecasting operations in 1997, MICAPS has resulted in a significant "revolution" in forecasting operations at all levels in CMA weather forecasting centers and offices.

Fully Support Forecasting Cycle:

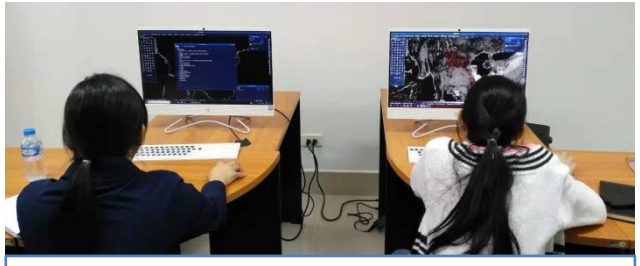
Analysis-> Diagnosis-> Prognosis-> Verify

Global Implementation and Application

MICAPS has been registered in WMO and has become a key scientific and technological product that promoted by CMA.

MICAPS International Edition has been promoted and applied to 22 Asian countries, as well as 6 African countries and 2 Oceanian countries.

Solomon Islands



The Lao People's Democratic Republic

The Republic of Namibia

Feature 1: Open System Architecture

- A typical client-server application

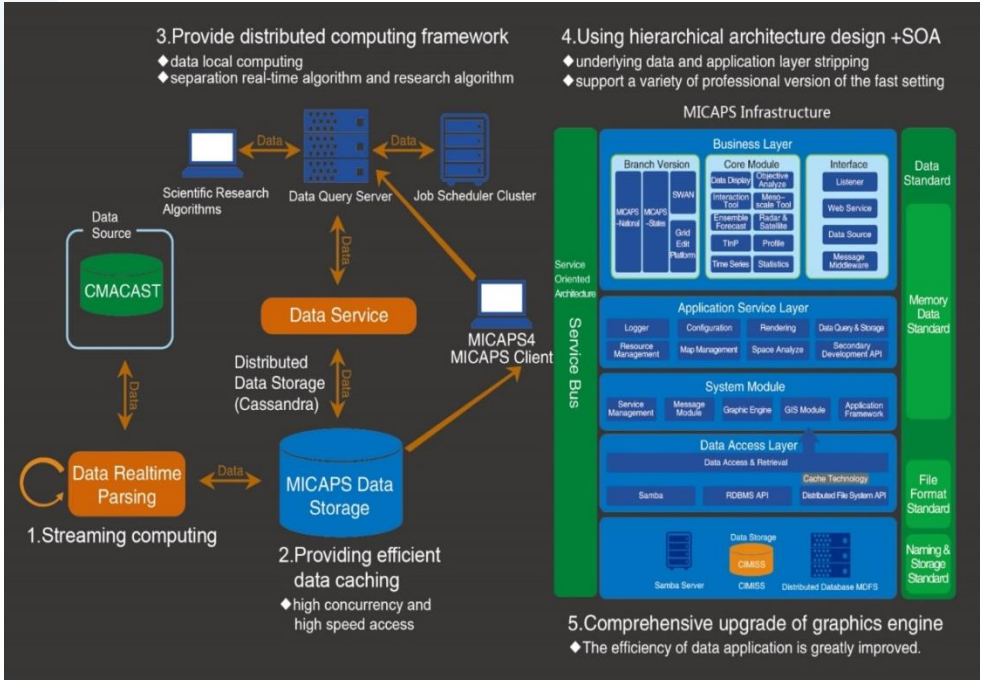
  Server:

  1. Parsing and storing data;
  2. Store huge amount of data;

  Client:

  1. Visualize data;
  2. Data calculation;

- Open architecture
  1. Parse/Store **CMACast EUMETCast** raw data
  2. Parse/Store **local observation data**
  3. Use **local geospatial data**
- The server is capable of being deployed to the cloud

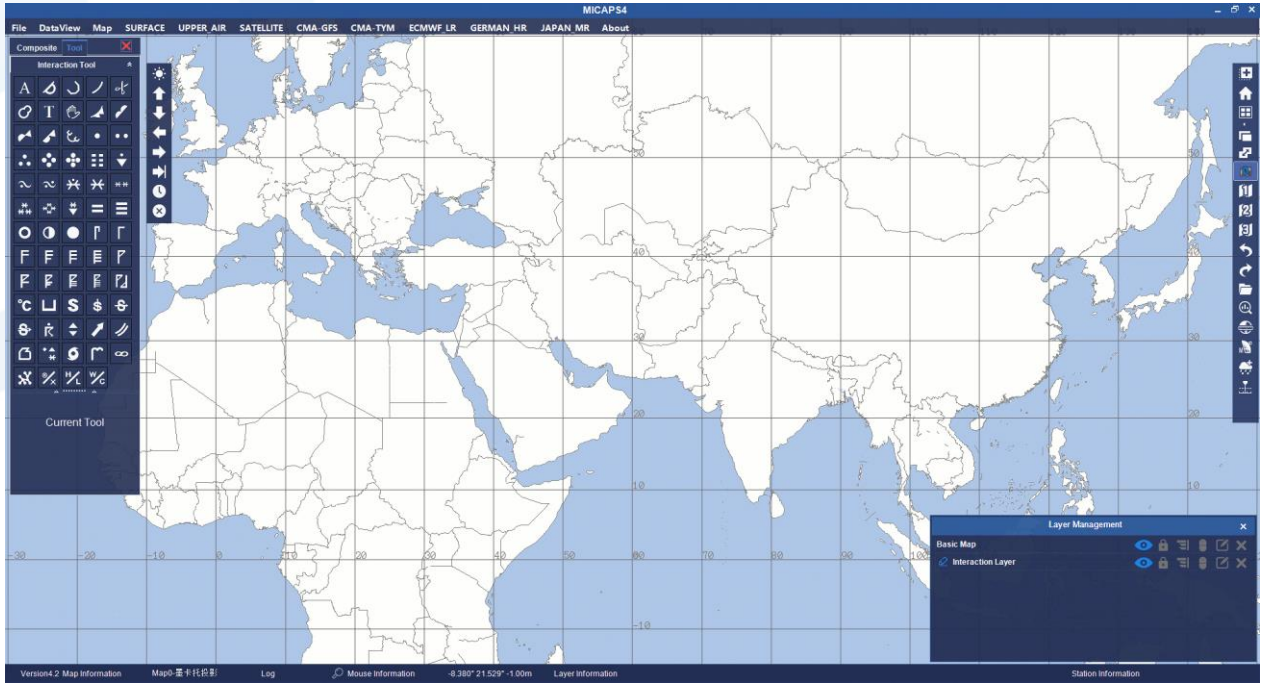


Feature 2: Supported Data Categories

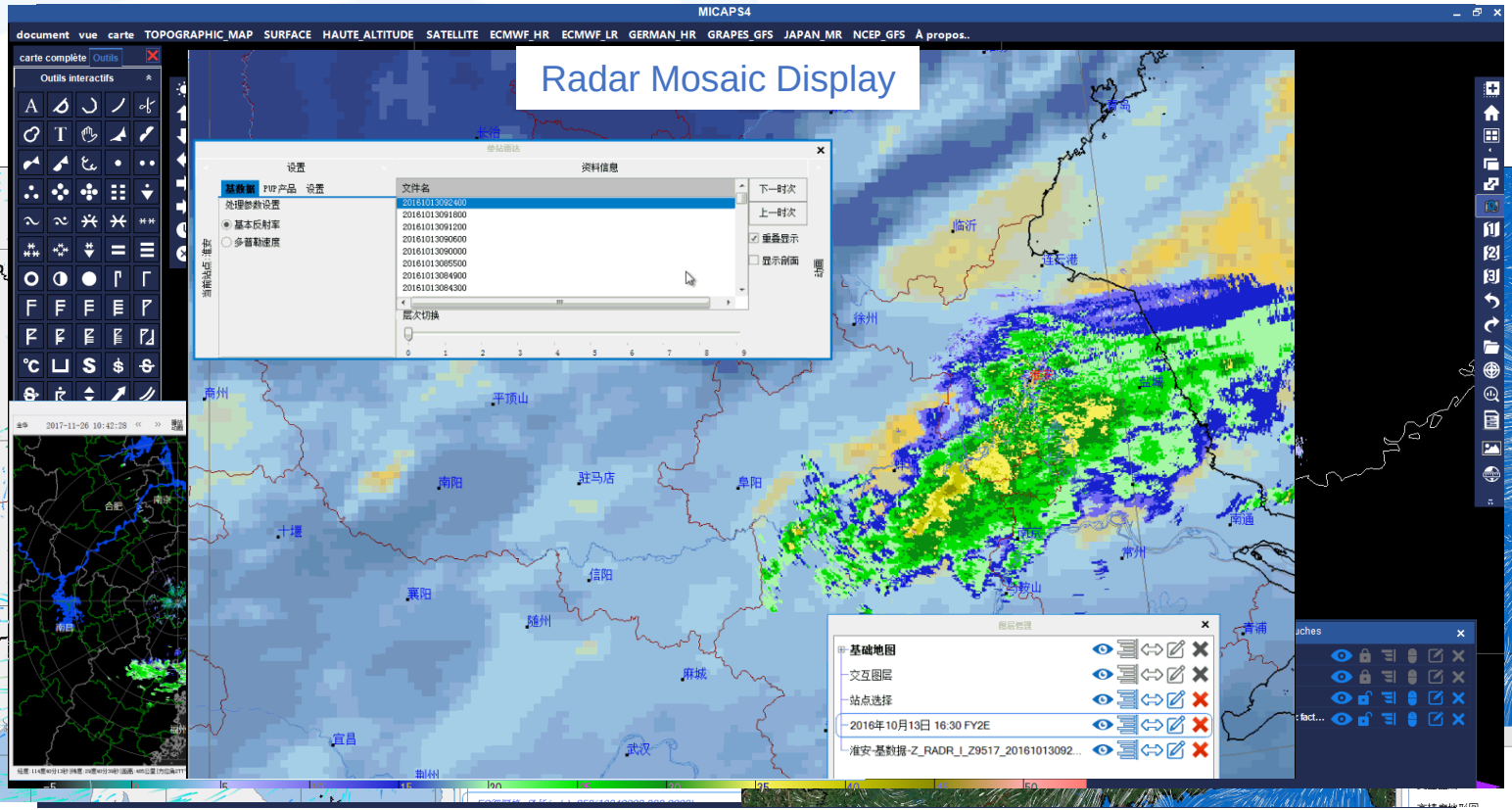
- **Numerical Model data:** ECMWF(0.125/0.5), ECMWF_Wave, NCEP_GFS(0.25/0.5/1), NCEP_WAVE, GERMAN(0.5), JAPAN(0.25/0.5/2.5), ECMWF simulated satellite
- **Ensemble Model data:** ECMWF, ECMWF extented ensemble, ECMWF_Wave, NCEP_GEFS
- **Satellite:** FY2, FY4, Meteosat10, Himawari9, GOES19
- **Surface:** Global stations, Objective analysis , Local Observation station
- **Upper-air:** Global stations, Global TlnP, Objective analysis
- **Marine:** Ship, Buoy
- **Aeronautical:** METAR, AMDAR
- **Global Tropical Cyclones**

Feature 3: Main Interface of MICAPS Client

- All data can be loaded from menu
- Displayed in vectorized style
- Data overlapped unlimited
- Zoom in/out infinitely
- Support human-machine interaction

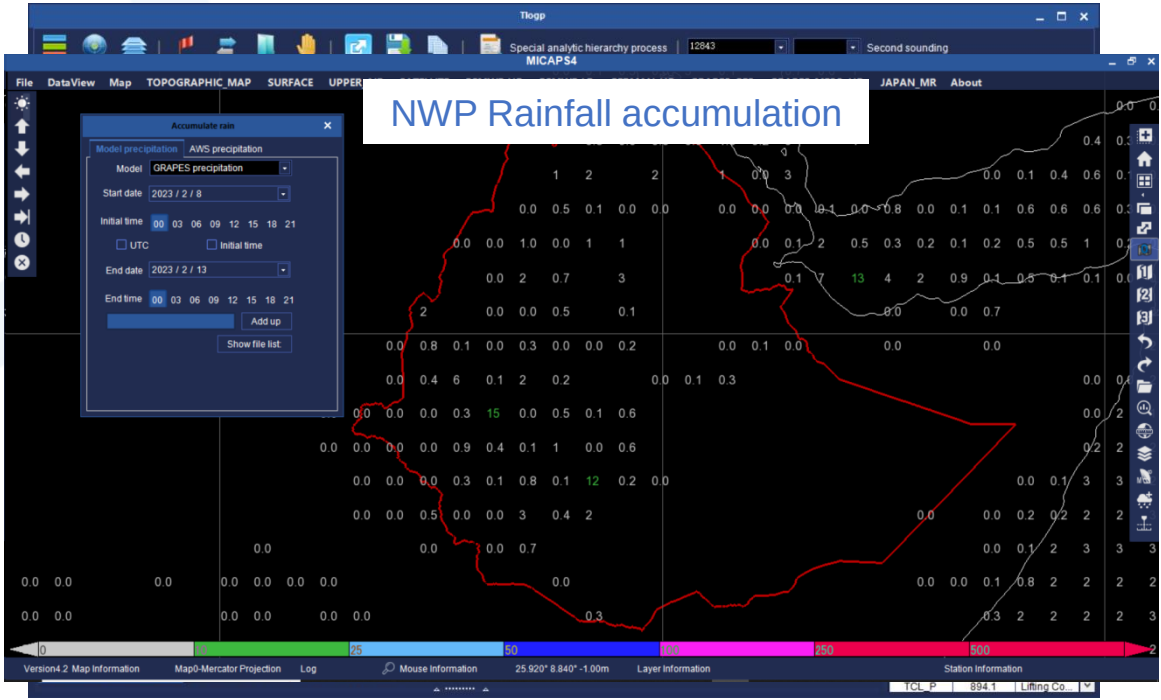


Feature 4: Display of Diverse Met. Data



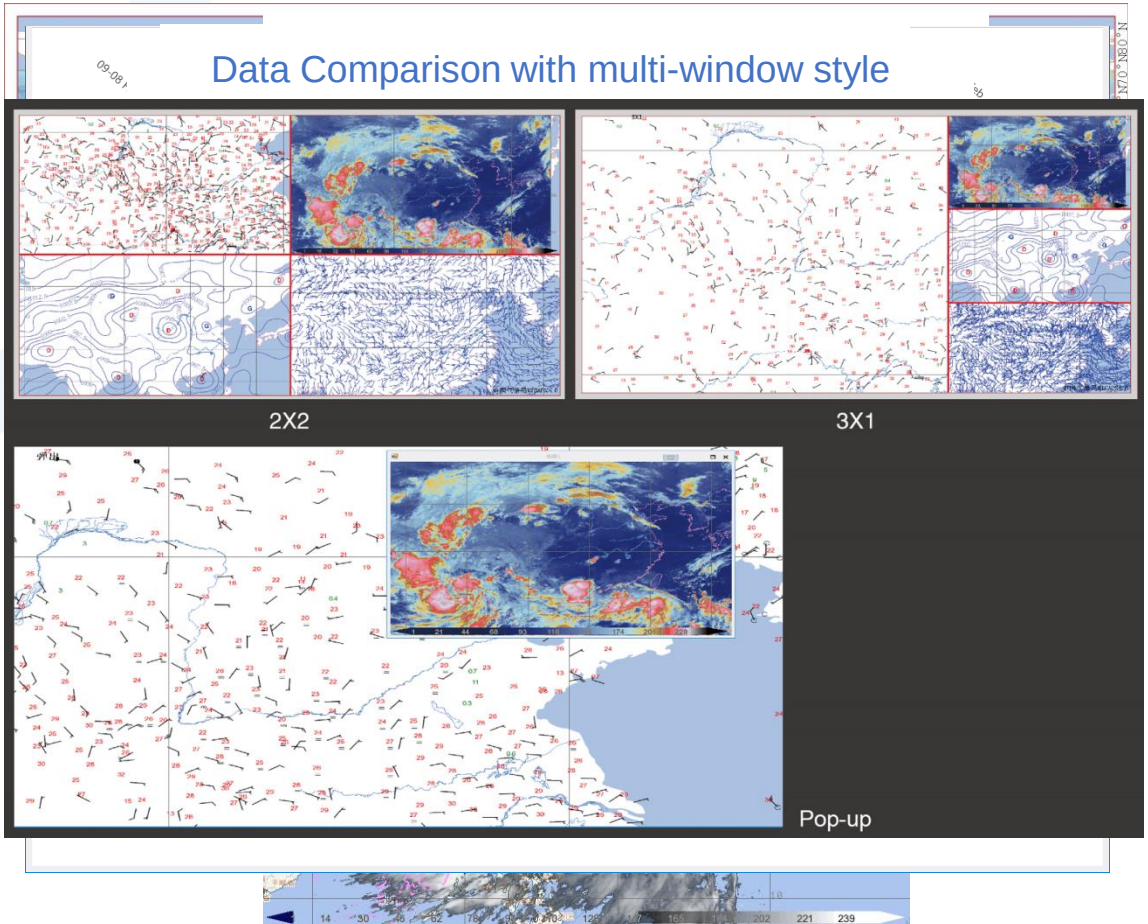
Feature 5:Rich products for weather analysis and forecast

- Developed and integrated more than 200 objective analysis, physical quantity diagnosis and forecasting methods
- Provides forecasters with an extremely rich variety of products needed for weather analysis and forecasting

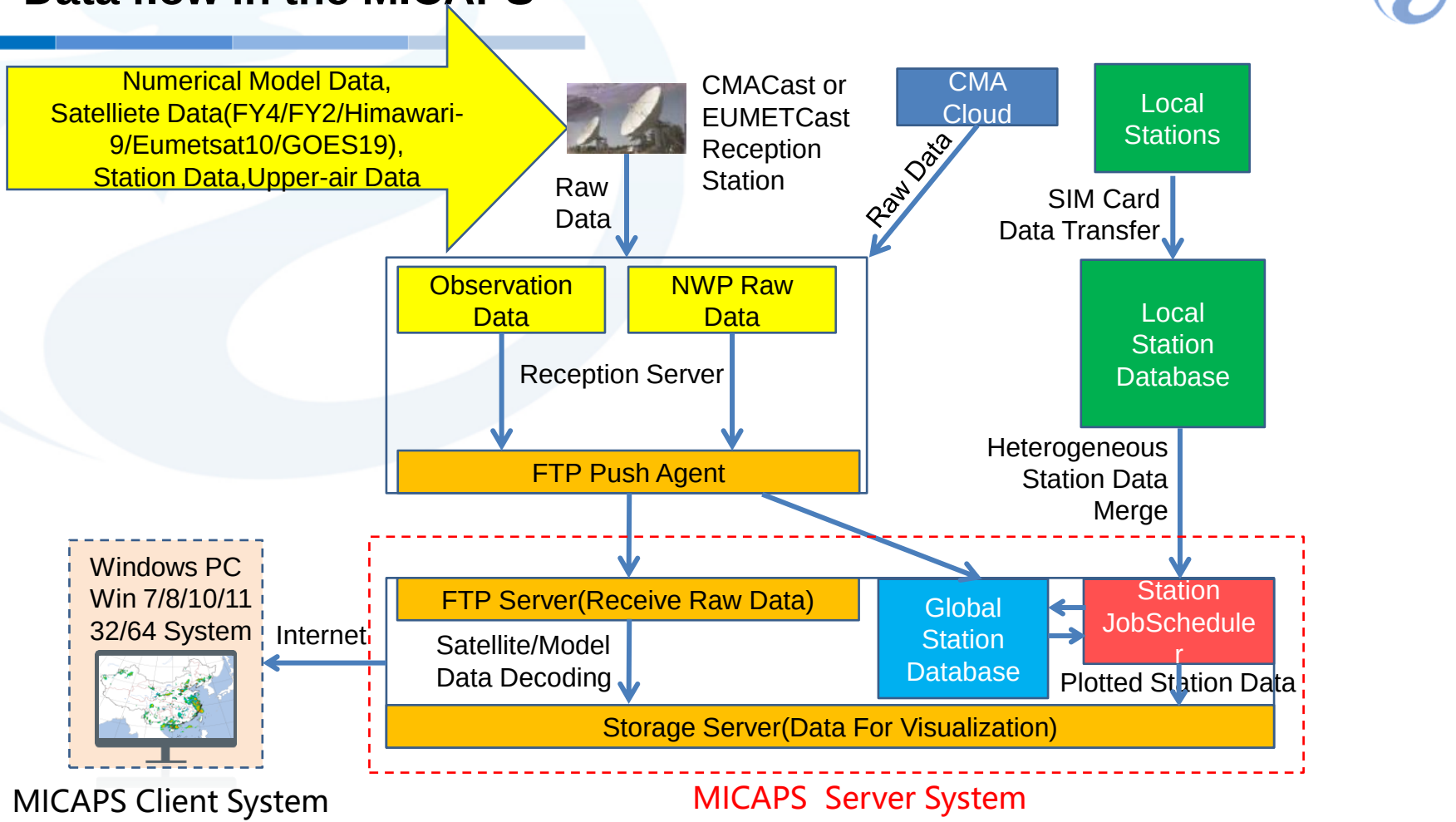


Feature 6: Advanced weather charts and interactive technology

- Quickly generate charts and tables needed by weather analysis and forecast
- Allows forecasters to view atmospheric structures and motions from different angles
- Multi-window technology, more convenient to compare data

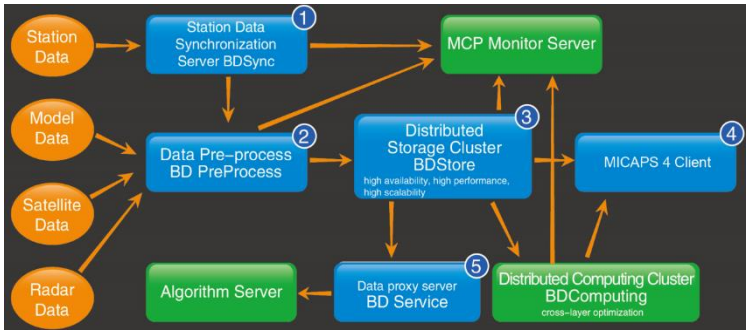


Data flow in the MICAPS



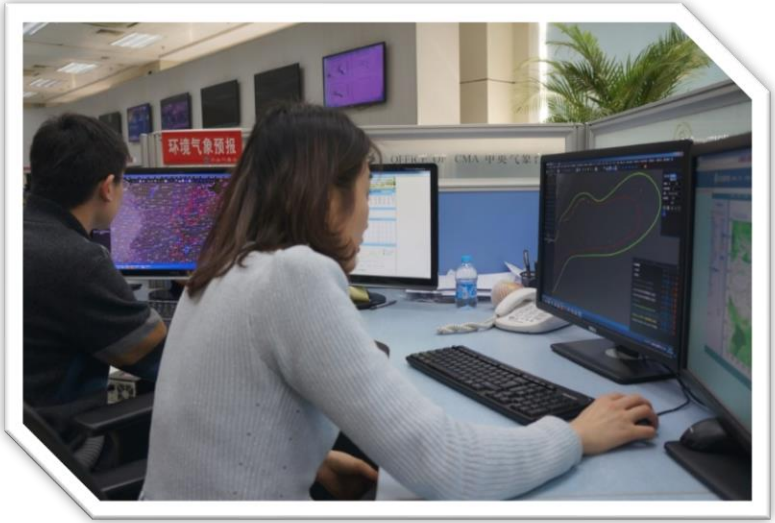
MICAPS Server requirements

- Developed by Java
- Integrated with CMACast, Eumetcast, GEOCast or other local data dispatching systems
- One or More Linux Servers: 128GB RAM Recommended, minimal 64GB RAM, 12 TB SATA/SAS, 2 network adapters
- A 24 ports switch
- At least 10 days NWP realtime data storage
- At least one month satellite data storage
- At least one year surface and upper-air data storage
- Over TCP/IP, the MICAPS server can be accessed from different offices even if they are hundreds of kilometers away from each other



MICAPS Client requirements

- Developed by C#.Net
- Win7/8/10/11: 32/64 bit operating system
- OpenGL4.0 or above
- .NetFramework 4.7 or above recommended
- 4GB RAM or above
- 2GB disk free space



A typical MICAPS Workstation on the forecaster’s desktop uses two screens

Contact us

- If you are interested in the MICAPS workstation, need further product and licensing information, please do not hesitate to contact us.
  - Mr. Gao Song: National Meteorological Center of CMA
  - Email: gaos@cma.gov.cn

MICAPS

THANKS

Спасибо

Merci

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Email: liupan@cma.gov.cn