

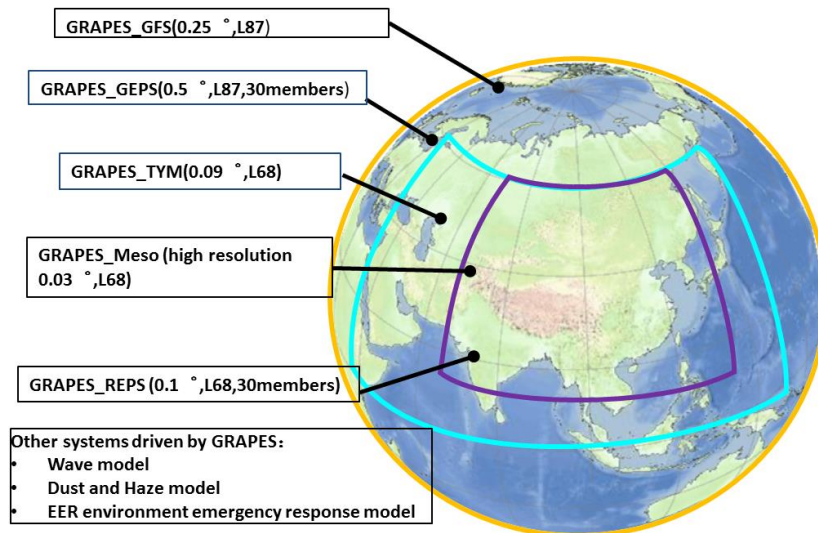
## **Overview of National NWP Development of China**

On April 28, 2010, Numerical Weather Prediction Center of China Meteorological Administration (CMA) was established. During a ten-year period, a suite of national numerical weather prediction systems, based on independent technology, has been developed and put into operation.

### **Development of GRAPES system**

In 2000, under the support of the Scientific and Technological Support Project of Ministry of science and technology of China, CMA started to develop next generation NWP system—Global-Regional Assimilation and PrEdiction System(GRAPES).

With the establishment of NWPC in 2010, the operation-oriented R&D was enhanced. Several core techniques were developed including physical processes optimization, 4D-var data assimilation, multi-platform and multi-sensor satellite data assimilation, high performance computing etc. .



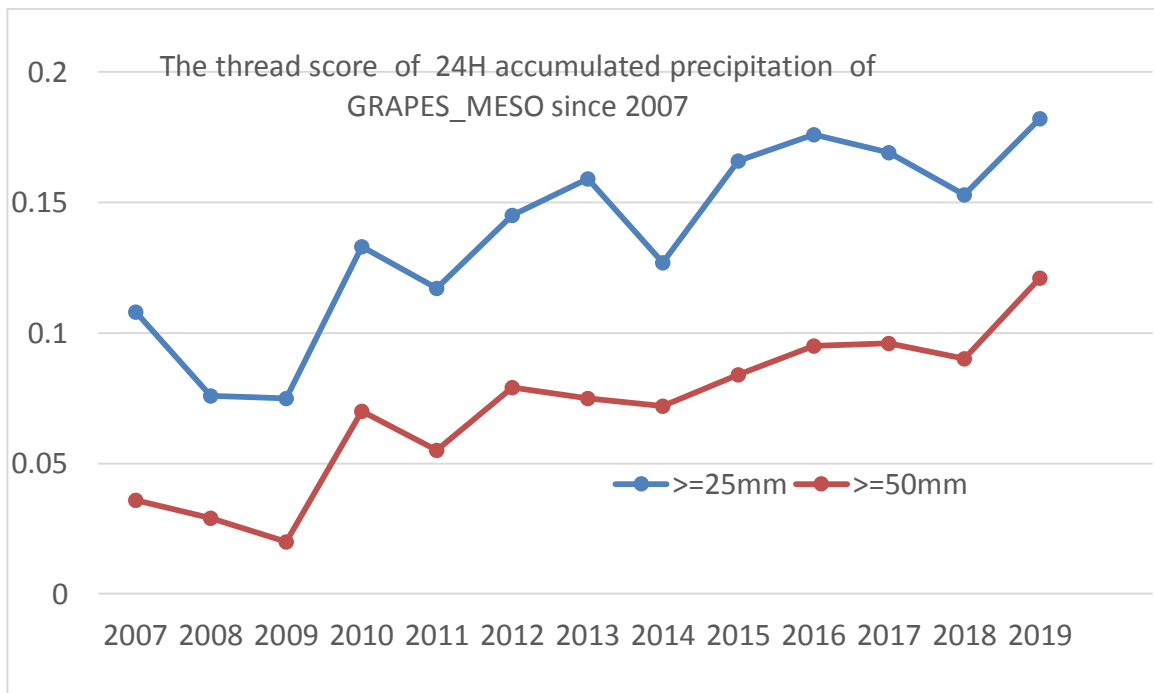
The current national NWP operation system

## Milestone of NWPC

**In 2010**, establishment of NWPC.

**In 2013**, NWP innovation team was approved in the Innovative Teams of Key Fields of National Innovation Talent Promotion Plan by the Ministry of Science and Technology.

**In 2014**, upgrade of GRAPES\_Meso, GRAPES\_TYM and GRAPES\_REPS

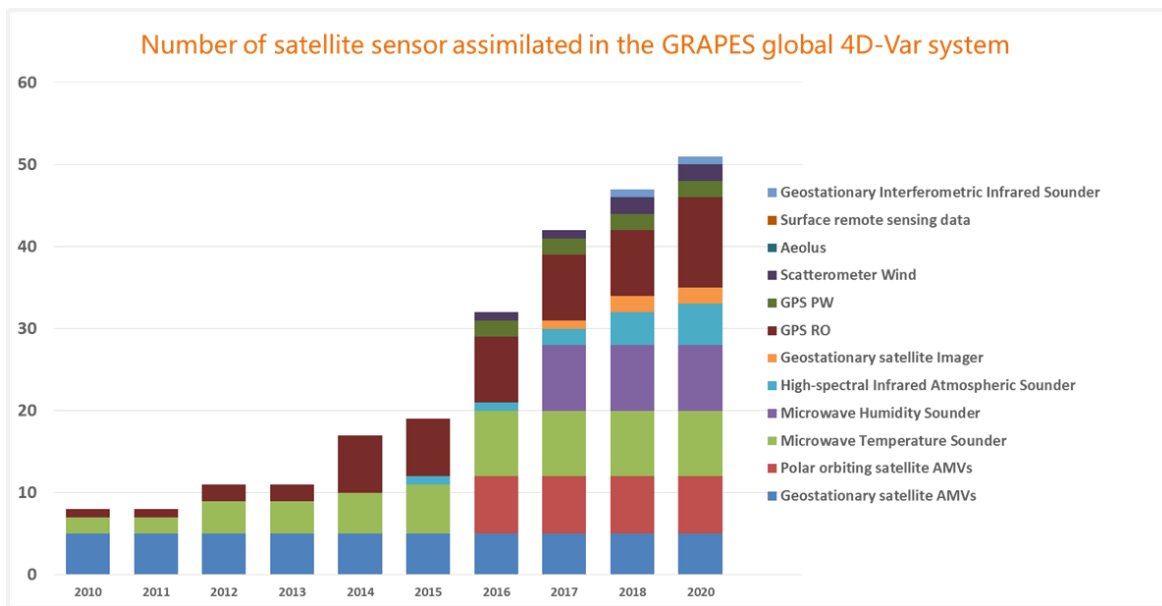


GRAPES\_MESO has been strongly supporting the weather forecast and service since 2007

**In 2015**, establishment of International Scientific Steering Committee of NWPC, and held the first meeting.

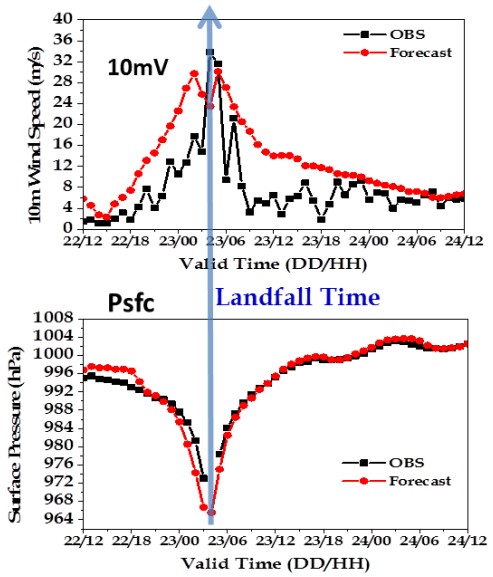
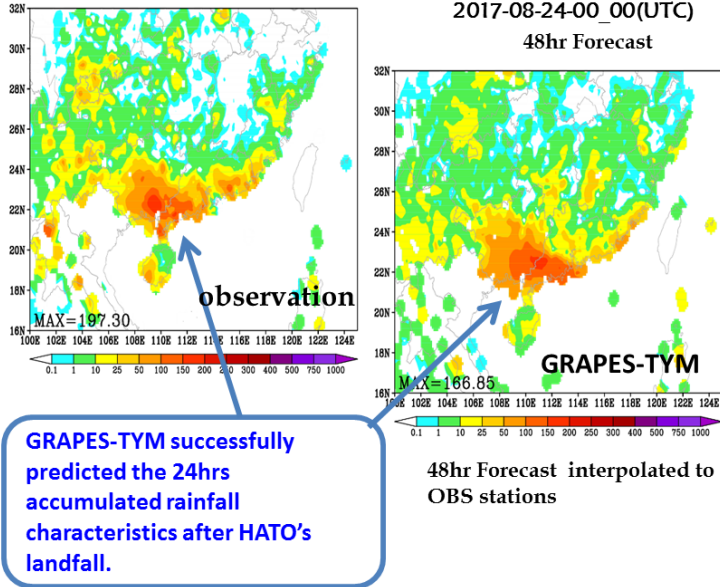
**In 2016**, GRAPES global forecast system was put into full operation. Product dissemination and guidance to all weather offices in China.

**In 2018**, GRAPES 4D-var and GRAPES\_GEPS were put into operation.



In 2019, GRAPES regional model with 3-kilometer resolution began to provide products in support of severe weather forecast. Application of geostationary satellite FY-4 Hyperspectral infrared radiance in GRAPES system.

2017-08-23 00UTC—08-24 00UTC 24h Accumulated Precipitation Valid: 2017-08-24-00\_00(UTC)



Evolution of 10 m wind and surface pressure at Zhuhai station before and after typhoon landing

Case: GRAPES\_TYM gave a good forecast to 1713 Typhoon” HATO “ that had brought Macao huge damages

(22-23, August, 2017)

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