

[Home](#) > Numerical Weather Prediction

Numerical Weather Prediction

Updated: 17-11-2023

Source: CMA

NWP

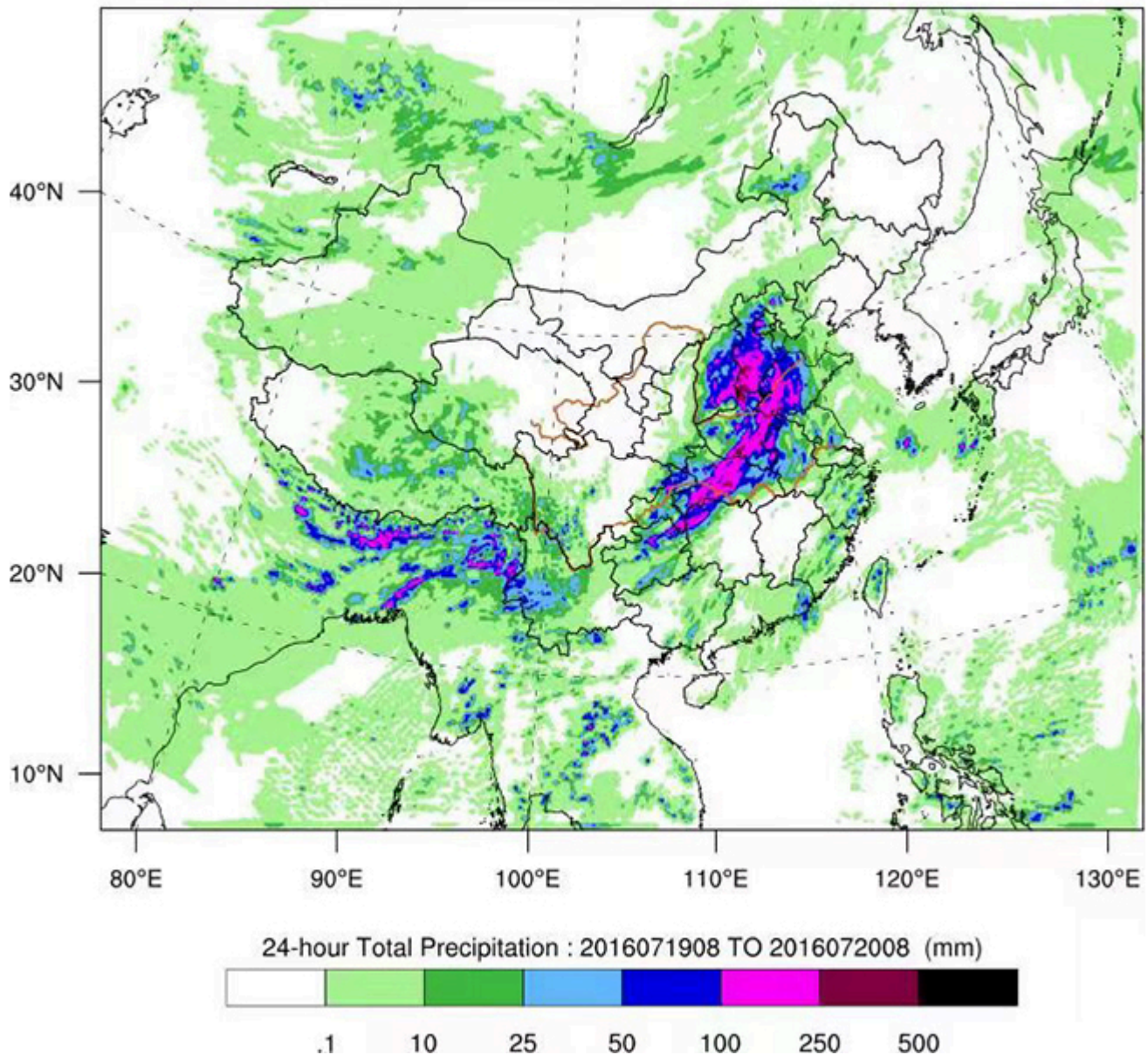
Through continuous research and development of core technologies, China Meteorological Administration (CMA) has steadily improved the performance of its numerical weather prediction (NWP) models, and has completed the research and development of the CMA Global Assimilation Forecasting System (CMA-GFS) with a resolution of 12.5 kilometers, the CMA Regional Numerical Forecasting Model with a resolution of 1 kilometer and a one-hour update (CMA-MESO), and has established an ensemble forecasting system with a resolution of 50 kilometers for the whole world, and a resolution of 10 kilometers for the Chinese region. It has established a global ensemble forecast system with 50 km resolution and a Chinese regional ensemble forecast system with 10 km resolution, a first-generation global atmospheric reanalysis system with 34 km resolution, and specialized NWP systems for sand, dust, haze and typhoon, and has developed a scientific and technological innovation platform for coordinating the research and development of NWP.

At present, it has developed the domestically produced Advanced Radiative Transfer Modeling System (ARMS), with a ratio of more than 80% for the assimilation of satellite data into NWP models, of which the proportion of FENGYUN satellite is increased to 14%, and the available forecast days are 8.0 days in the Northern Hemisphere and 8.5 days in East Asia. Heavy precipitation forecast better solves the problem of refined forecasting and early warning service of catastrophic weather, and becomes an important scientific and technological support for CMA's strong weather forecasting business for meteorological stations at all levels. It is capable of detecting and forecasting tropical cyclones in global waters, and plays an important role in global navigation operations, monitoring and forecasting of marine meteorological disasters in the north-west Pacific Ocean and the northern Indian Ocean, as well as the "Belt and Road" meteorological service. In addition, the continuous upgrading of NWP systems for sandstorms, fog-haze and ocean waves has significantly enhanced China's meteorological support capabilities in areas such as disastrous weather response and serving local economic and social development. At the same time, it has successfully provided meteorological support for some major events like Beijing 2022 Olympic and Paralympic Winter Games.

SMS-WARMS (2nd) Prediction

Init: 2016071908
Valid: 2016072008

24-hour Total Precipitation : 2016071908 TO 2016072008 (mm)



Climate model

Climate models have been developing in CMA since 1995. The first-generation climate model was developed from 1995 to 2004, namely Beijing Climate Center ocean-atmosphere Coupled Model BCC-CM1.0. This model was used for seasonal climate prediction in China. During 2005-2011, a new fully-coupled climate (BCC-CSM) was developed. Two versions of the BCC-CSM model were released in 2012, namely, BCC-CSM1.1 with a coarse horizontal resolution T42 (~280km) and BCC-CSM1.1m with a medium horizontal resolution T106 (~110km). Both versions performed CMIP5 experiments. The released data have been widely used. The models are further developed with three versions during 2012-2020, including a

median-resolution model BCC-CSM2-MR (~110km), a high-resolution model BCC-CSM2-HR (~45km) . These models all participated in CMIP6 and released the simulation data in 2018-2019. Climate models BCC-CSM1.1m and BCC-CSM2-HR are also used in S2S and climate prediction in China. CMA has been developing the third-generation models since 2016, including BCC-CSM3 (~30km) , which will participate in CMIP7.

FOLLOW US



Copyright© 2011 China Meteorological Administration All Rights Reserved

