

Let more polar orbiting satellite data available in regional NWP in CMA — DBNet data, its potential, application and questions

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Brightness Temperature Difference between DB Data and NESDIS Data

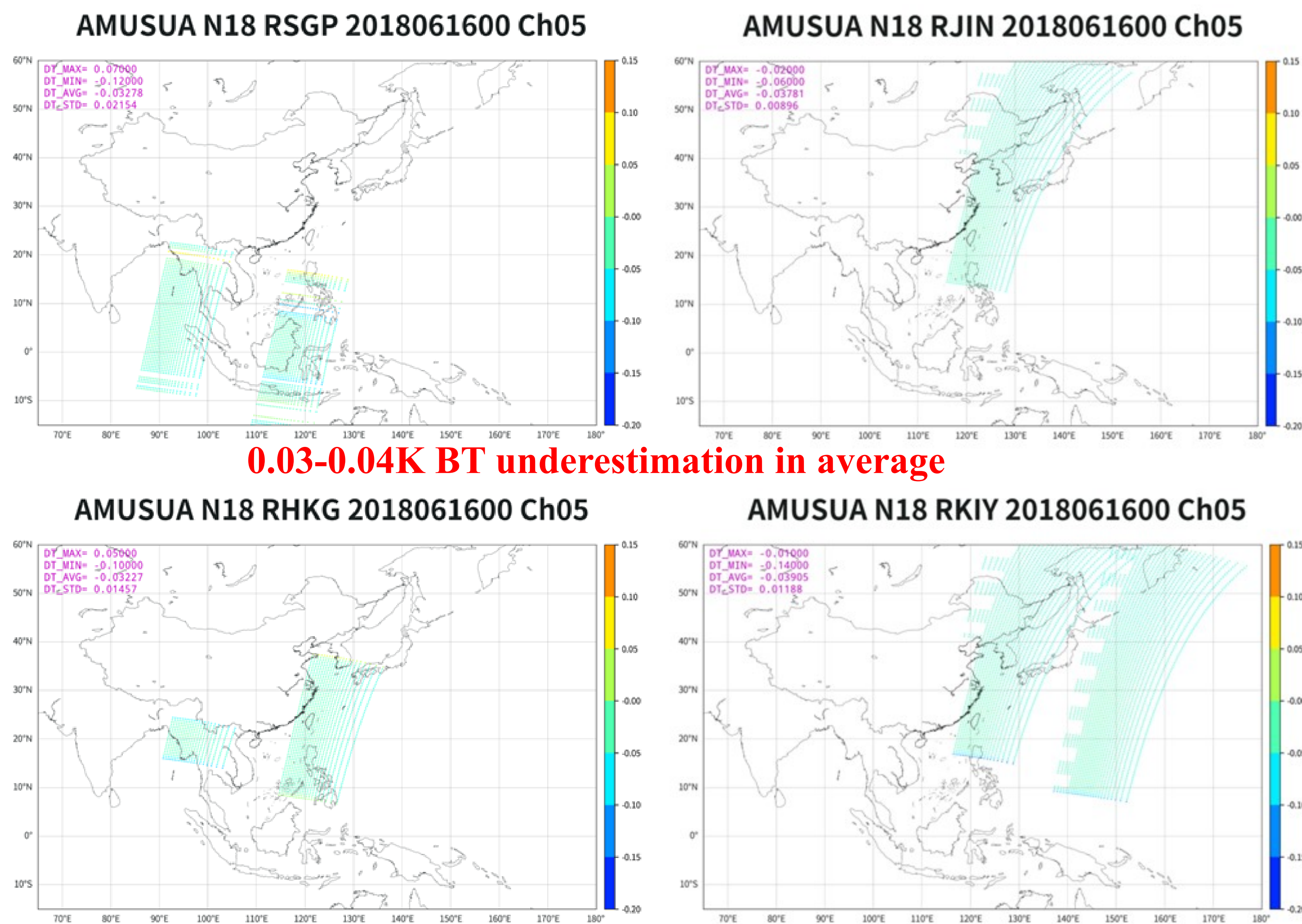


Figure1. UTC 2018062800, AMSU-A channel 5 brightness temperature difference between DBNet (taking four DB stations for examples) and NESDIS (unit: K)

Observation Numbers Contribution of DBNet stations for model region

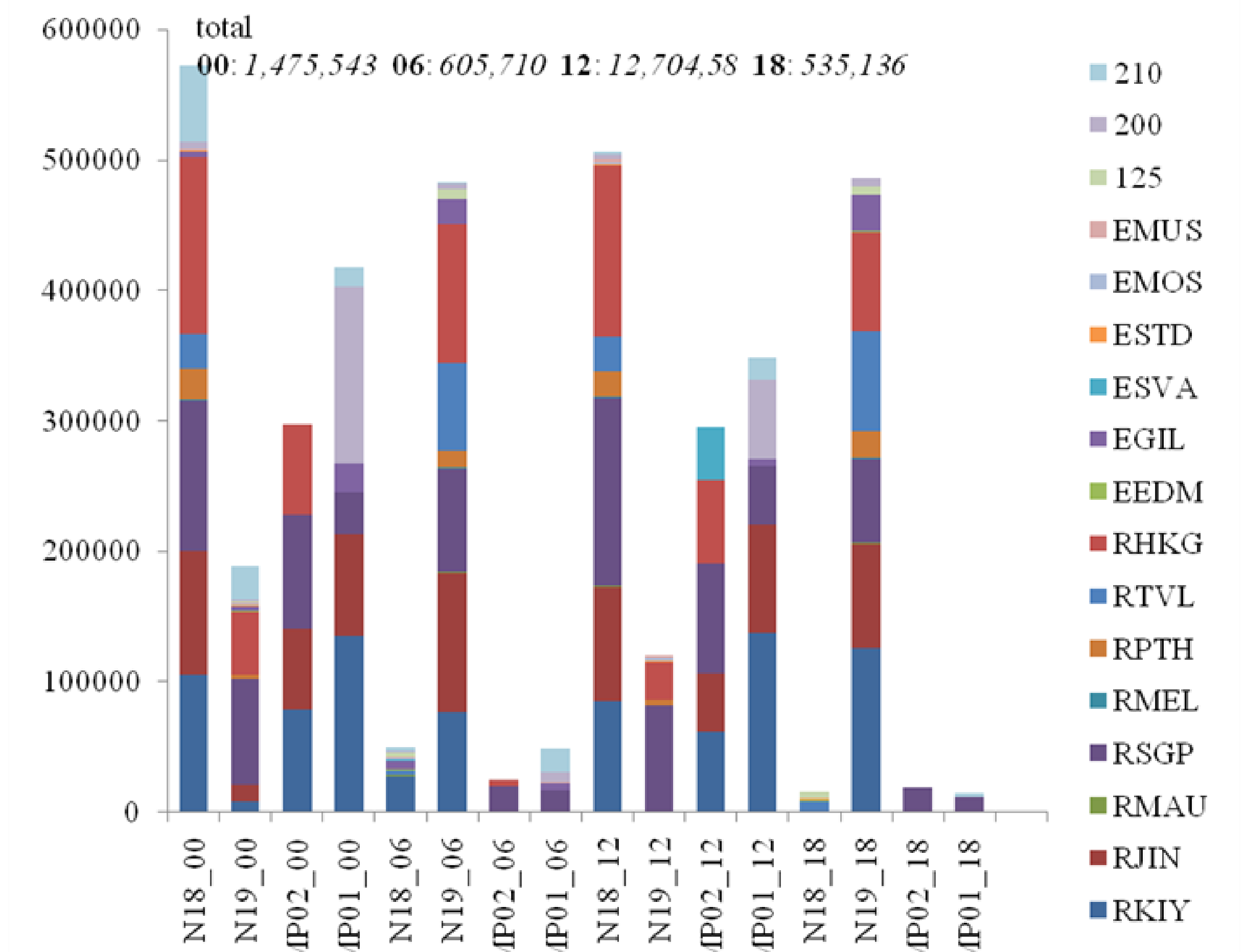


Figure 2. DBNet stations making the four greatest contribution in observation numbers : Kiyose, Hong Kong, Jincheon, Singapore.

The Framework of Real-time Regional Satellite Assimilation

Back Ground	T639 Forecast /GRAPES Global Forecast
Forecast Model	WRFV3 with 15km horizontal resolution,28 levels and 10hPa top pressure.
DA System	WRFDA 3.4.1/3.5/3.7
Fast Transfer Model	CRTM/RTTOV
Validation	T639 Analysis, NCEP FNL

Observation Accesses	Observation Types	Case Study	Real-time Operation
	1. Conventional Observations	√	√
	2. ATOVS AMSU -A	√	√
	3. FY-3C MWHS-II	√	
	4. FY-3C MWTS	√	
	5. FY-3C GNOS	√	
	6. FY-2 AMV	√	
	7. HY-2 retrieval wind		

RMS with Global T639 Analysis

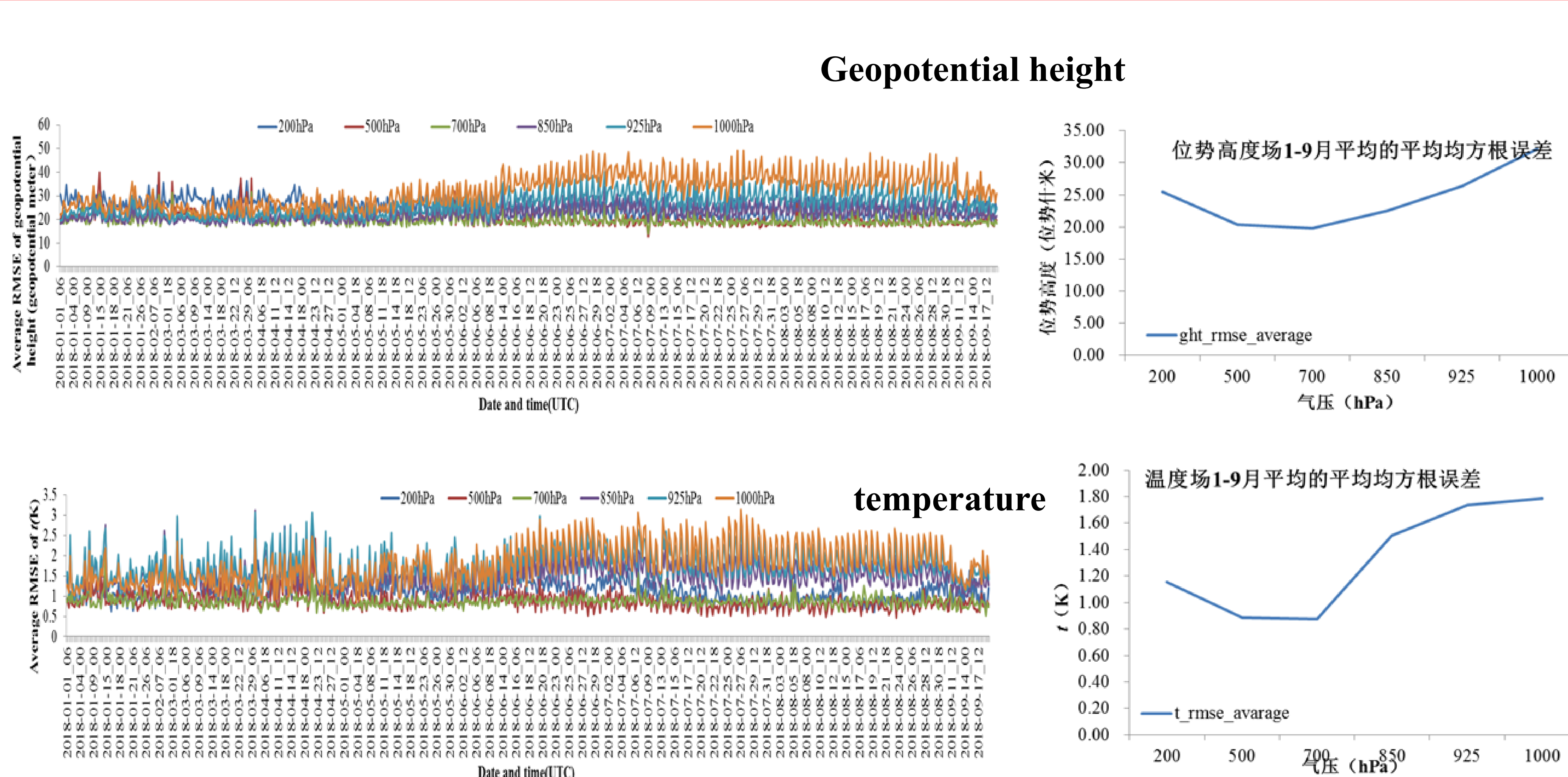


Figure 3. RMS of near real-time regional assimilation system and global T639 analysis (Geopotential height and temperature),at 6 standard pressure levels (200/500/700/850/925/1000hPa), from 2018 Jan. to 2018 Sep.

Figure 4. Average RMS from 2018 Jan. to 2018 Sep. at the same levels as Figure3: Geopotential height < 350 geopotential meters; Temperature <2K .

Track analysis For typhoon Maria in 2018

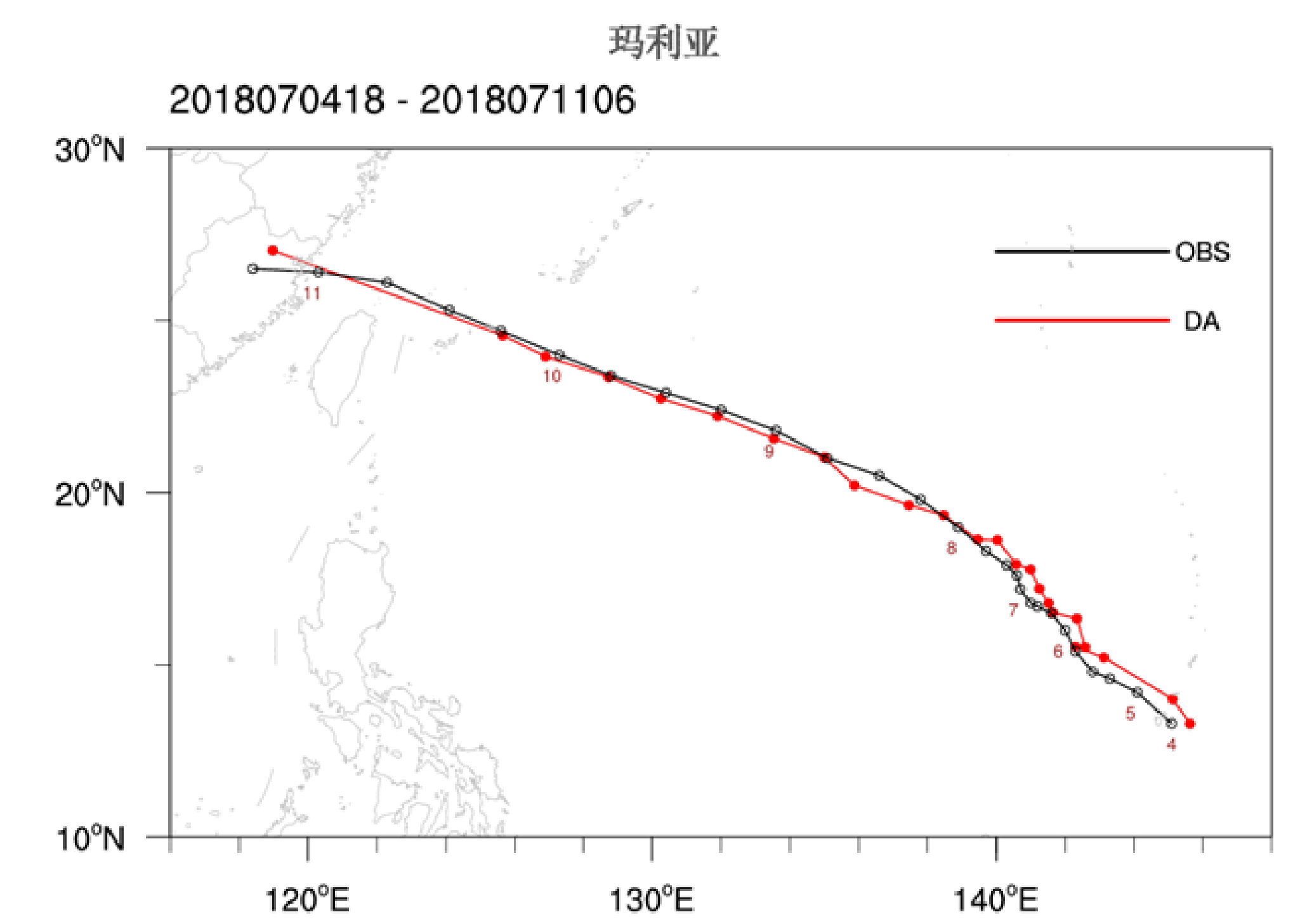


Figure 5. Track analysis at the analysis time

DA (red points): typhoon center of real-time regional satellite assimilation at the analysis time,

OBS (black points): typhoon center announced later by National Meteorological Center with lots of observations.

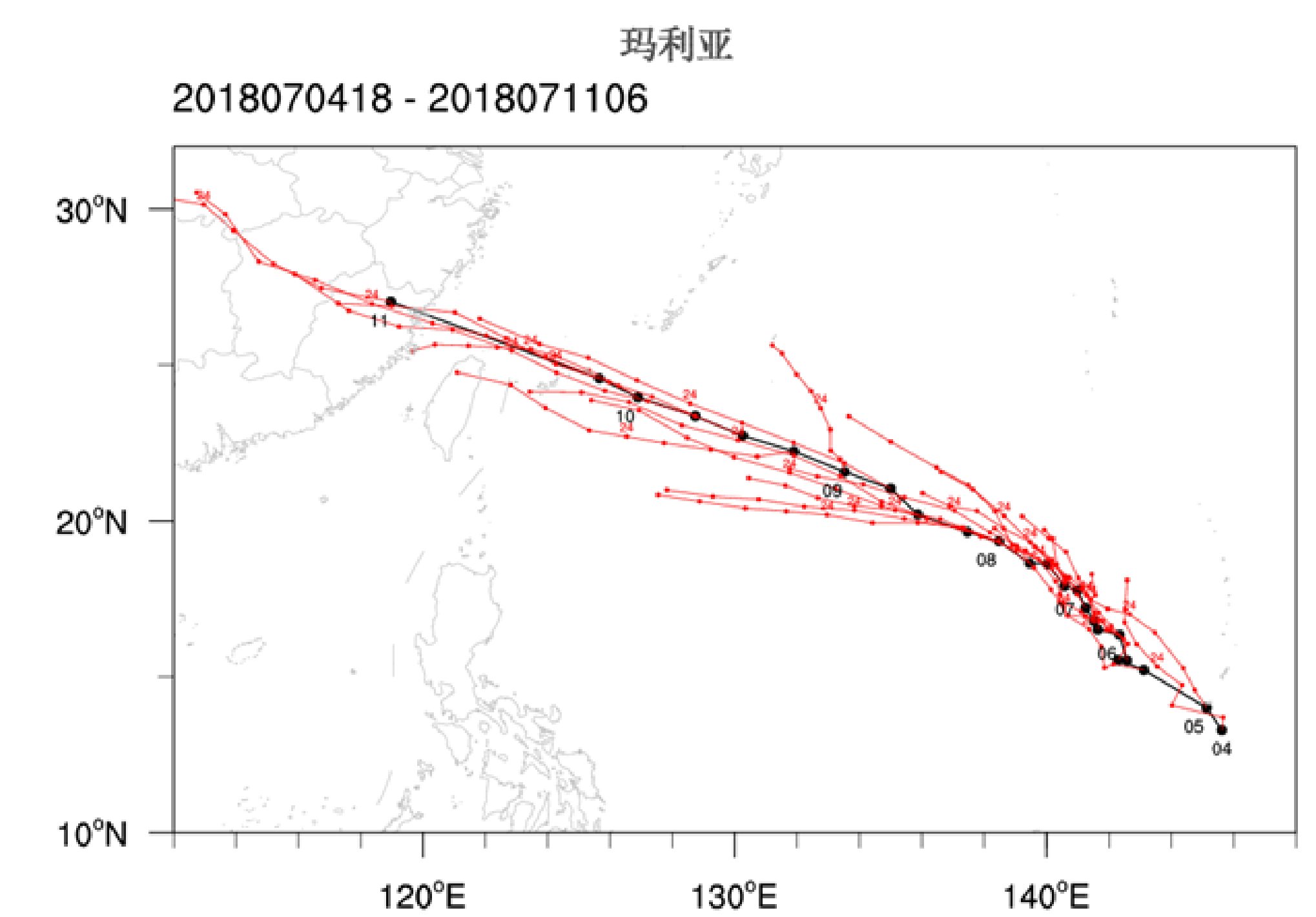


Figure 6. Track analysis for every 48hr-forecast

DA Forecast (red points): typhoon center of every 48hr-forecasts after real-time regional satellite assimilation restarting every 6 hours,

DA analysis (black points): typhoon center of real-time regional satellite assimilation at the analysis time.