

Assimilating AIRS Retrievals with the WRF-LETKF System

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1. Goals:

- Assimilate AIRS retrievals (T, q profiles) with the WRF-LETKF system (Miyoshi and Kunii 2011, *Pure Appl. Geophys.*)
- Improve adaptive inflation of Miyoshi (2011, *MWR*)

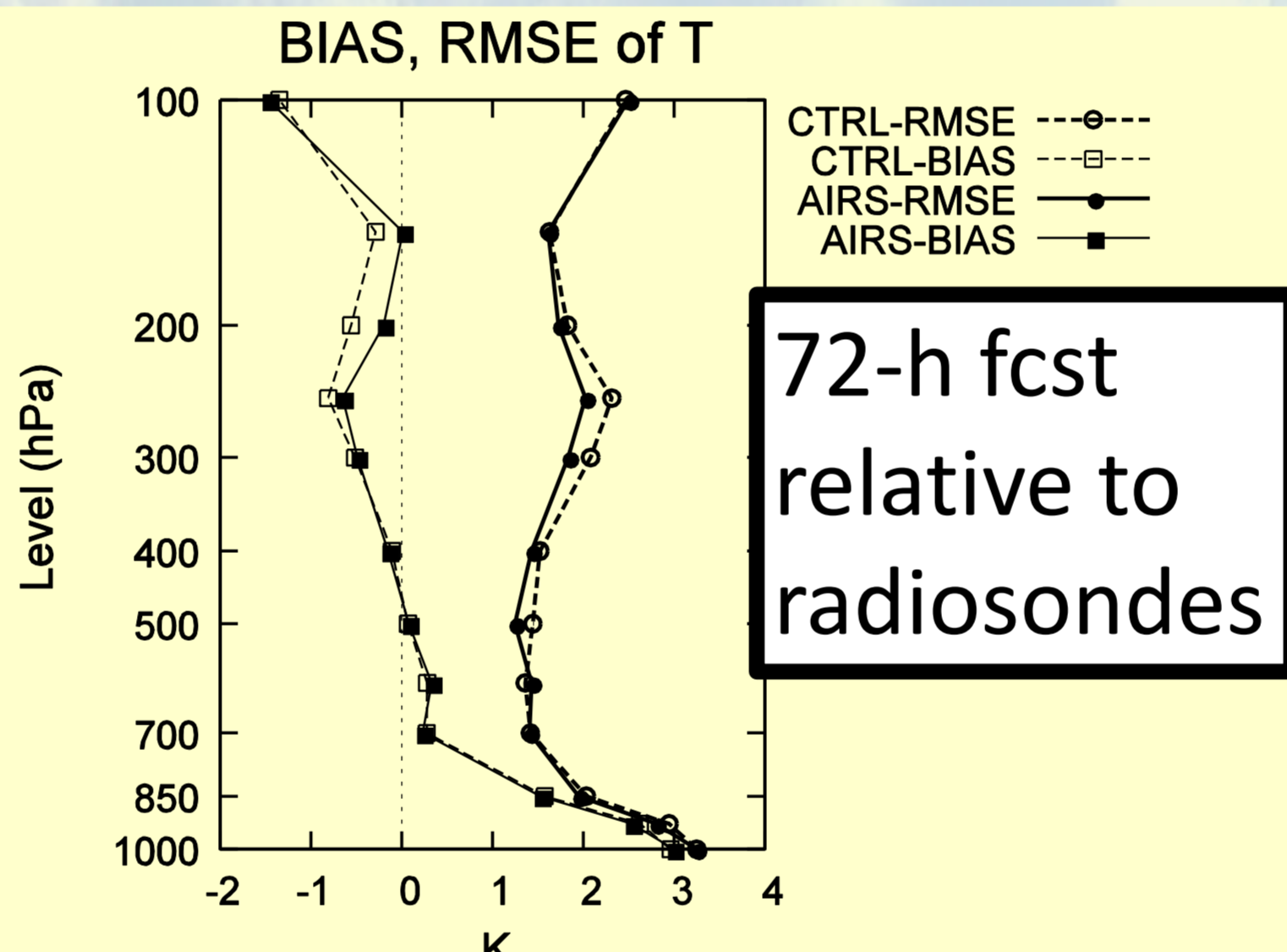
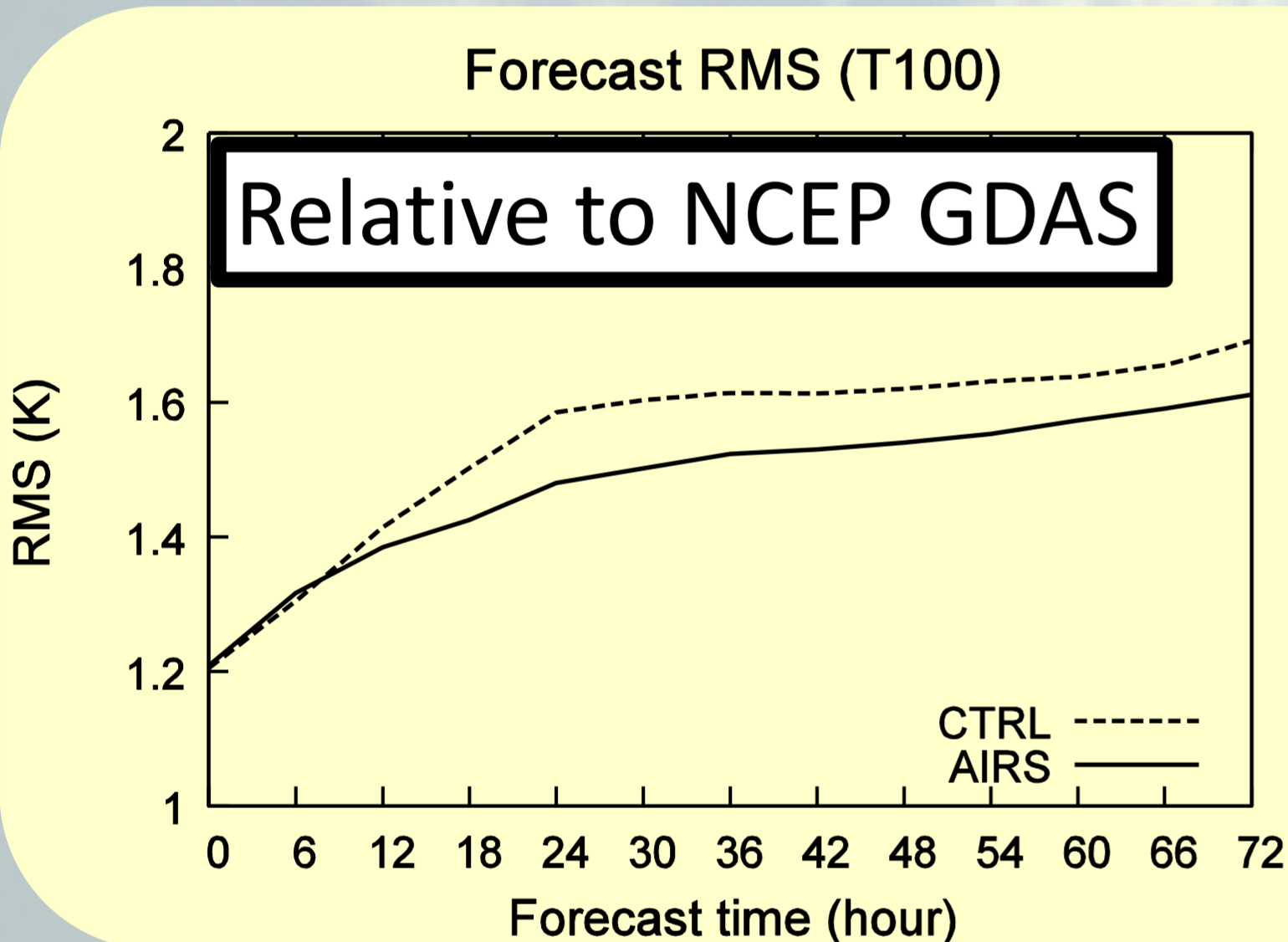
2. Experiments:

EXPT	OBS USED	INFLATION METHOD
CTRL	Conventional	Adaptive (Miyoshi 2011)
AIRS	Conv. + AIRS	Improved adaptive (new*)

*each step (00, 06, 12, 18 UTC) has its own inflation field (Kang et al.)

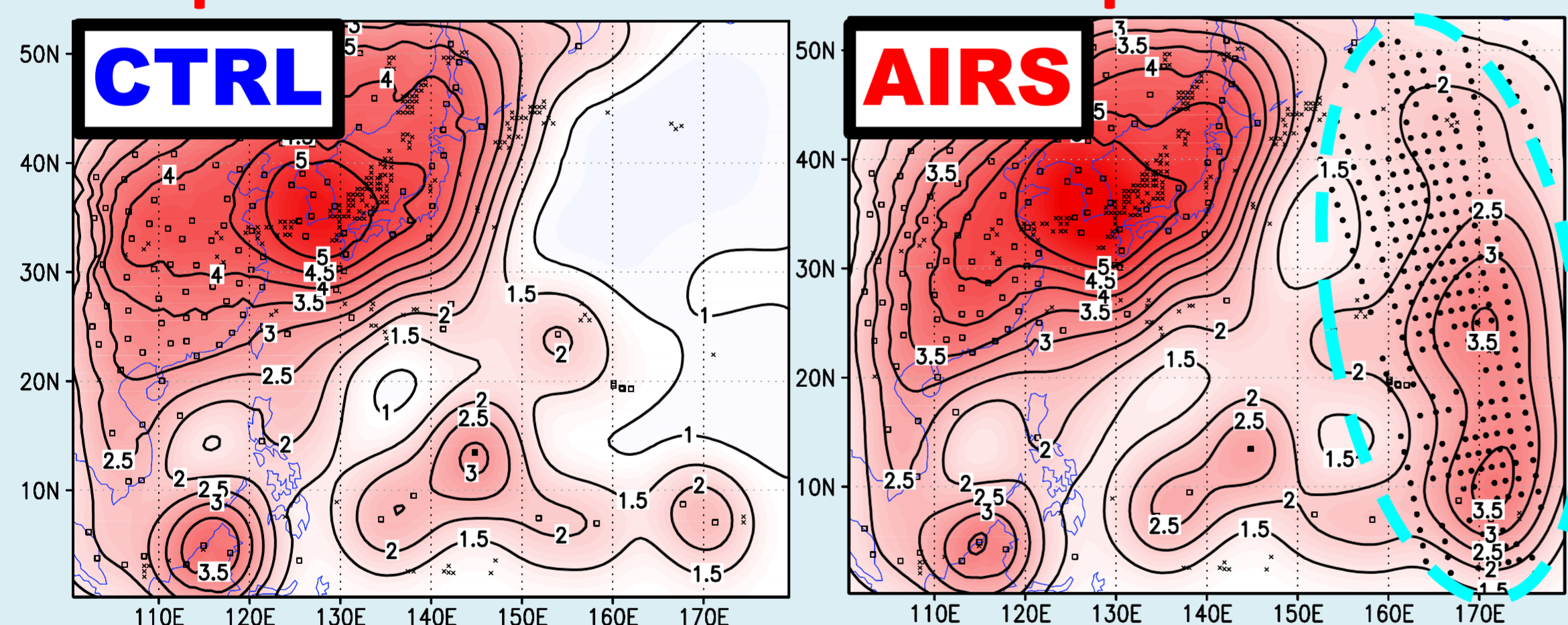
➤ August-September 2008, focusing on Typhoon Sinlaku

3. Results:

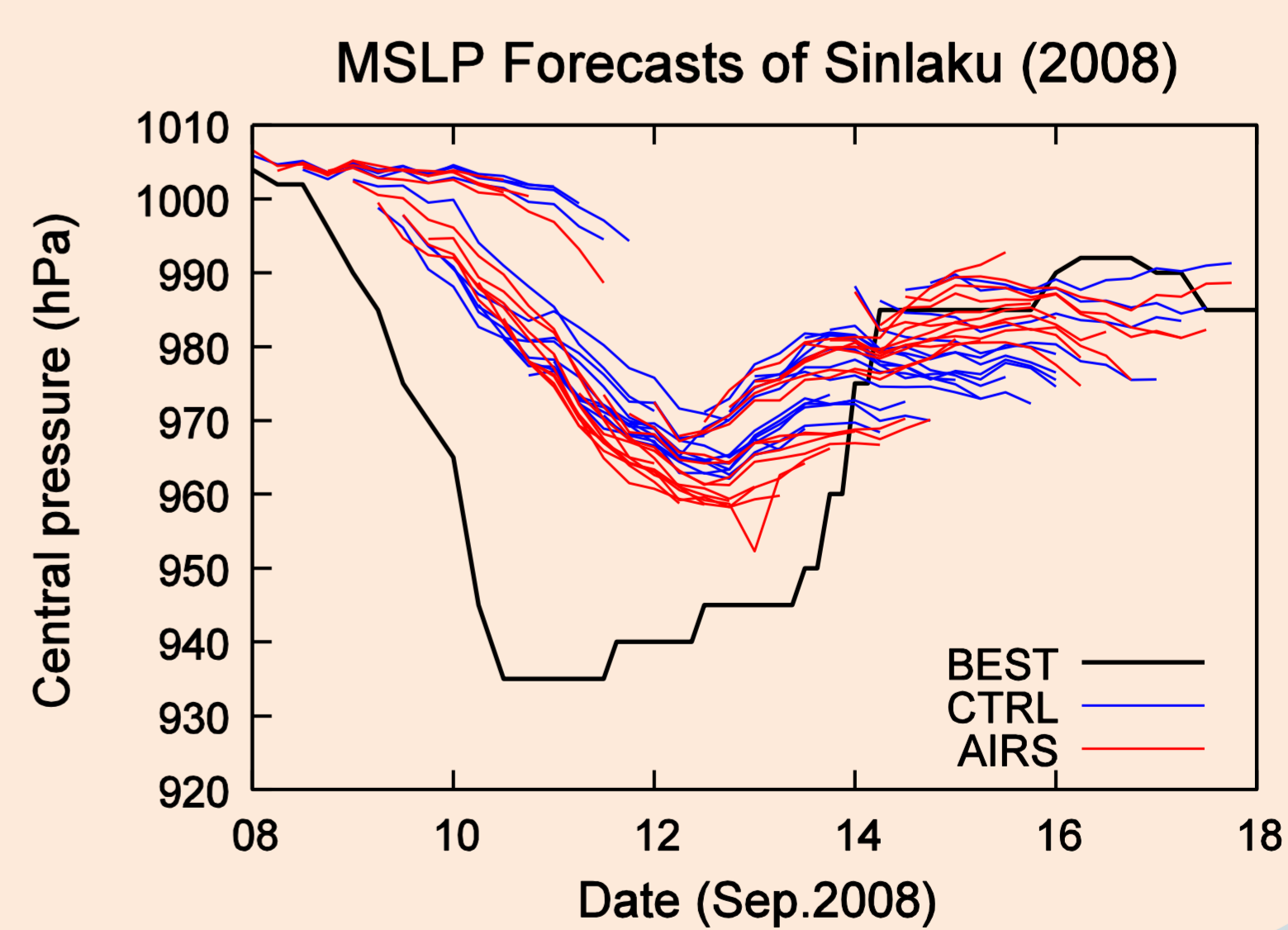
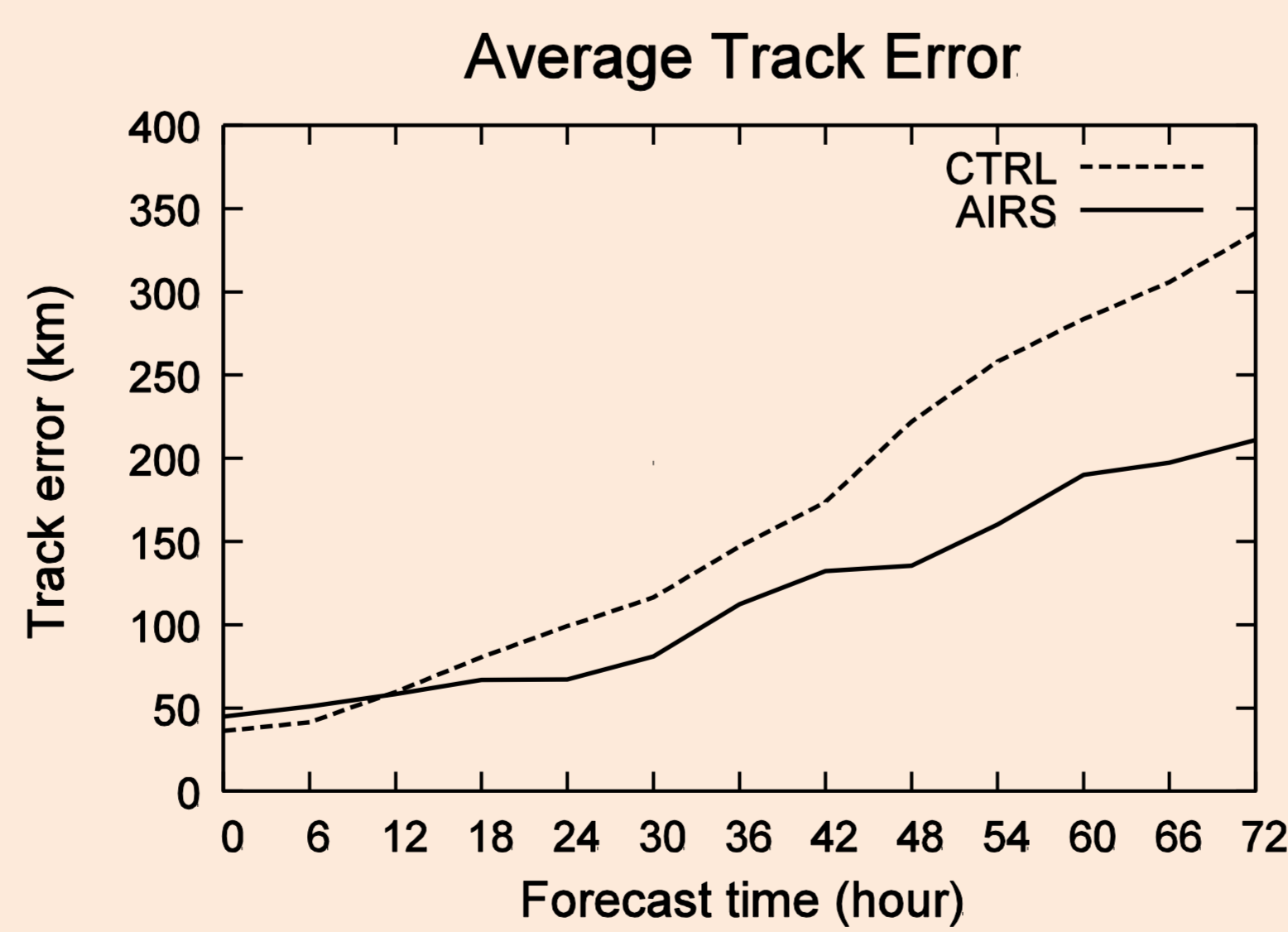
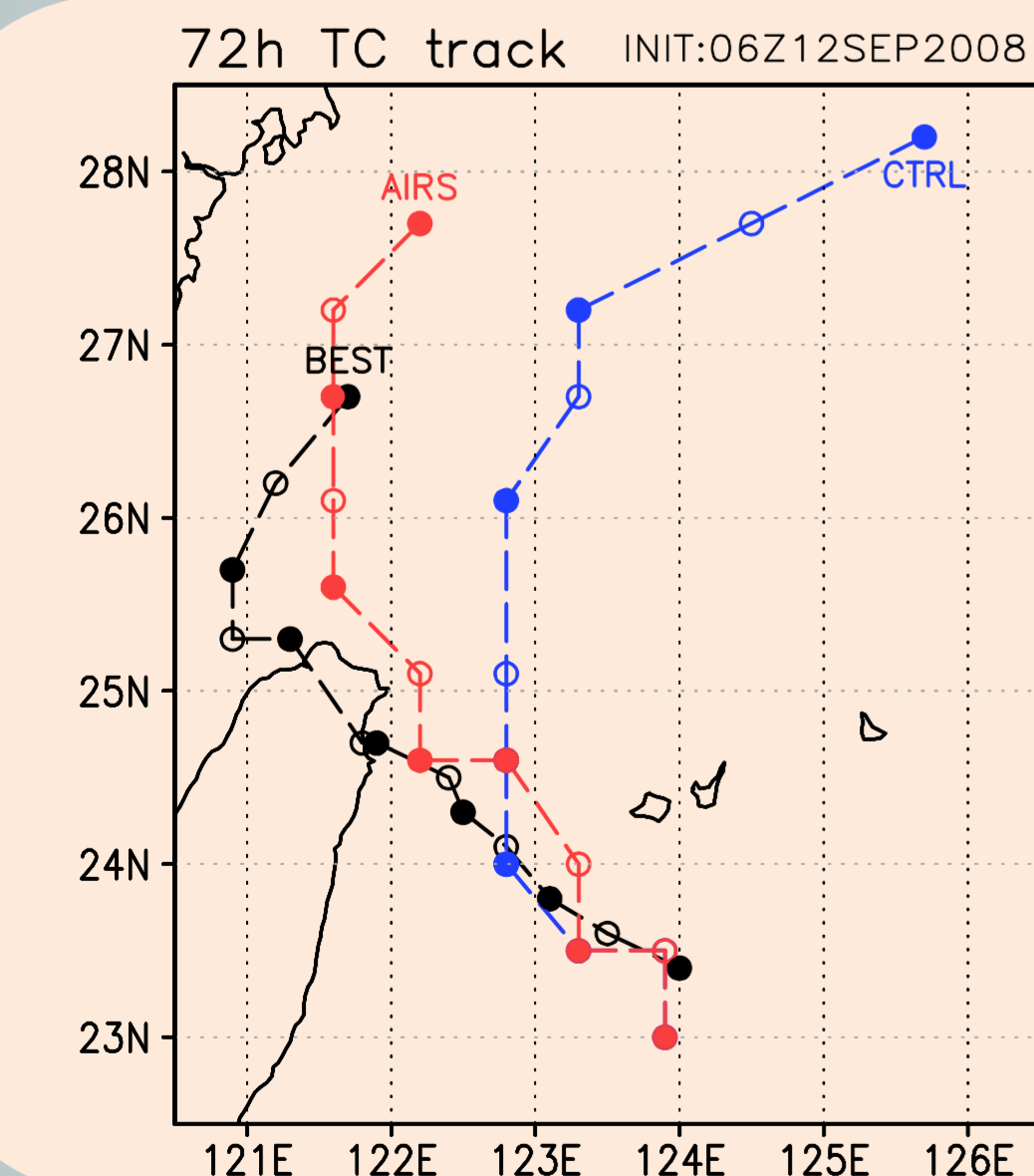


Forecast RMSE (relative to NCEP analysis and radiosondes) is improved more in longer leads.

Adaptive inflation responds well.



Typhoon Sinlaku (2008)'s forecast is greatly improved.



4. Conclusion:

With the improved adaptive inflation, AIRS improved forecasts significantly.

- AIRS improved longer-lead forecasts better.
- AIRS improved Typhoon Sinlaku (2008) forecasts.