

PRECIP Daily Science Report

0000 UTC 7 Aug 2022 - 0000 UTC 8 Aug 2022

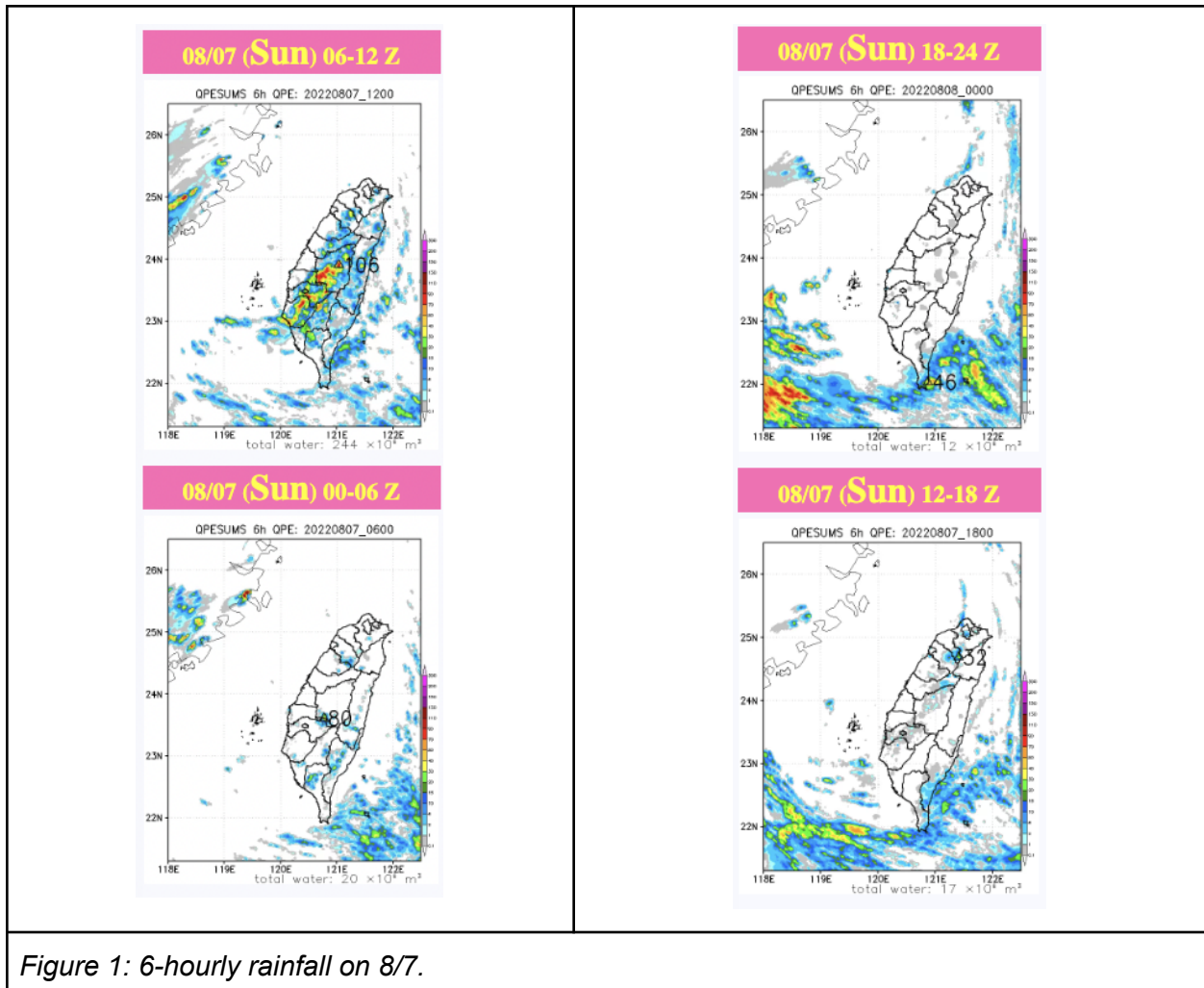
Authors: Alison Nugent, Ting-Yu Cha, Rosimar Rios-Berrios

**Summary:**

Ting-Yu said: "The weather was quite interesting today. We observed similar storms developing over the mountains as 8/6 (same strategy), but the location was more to the north. The storm in Chiayi was quite intense, and I thought that would be it for today. However, cells started to develop to the NE of Chiayi (Nantou), and those were quite intense (~7 pm LT). Taipei got intense showers around 8 pm as well. I don't think I saw any model forecast the showers in Taipei! so that was quite interesting."

Over the ocean on the east side, we saw primarily "garden variety" storms - single cell uplift and then fizzling out.

An interesting science question for today's rainfall would be: what triggered the intense rainfall over Taipei during the evening hours? Another question that keeps coming up during this weather regime is: why is the most intense precipitation happening over or near Chiayi almost every day?



**Day Zero Forecast (0-24 h; 00 UTC 7 Aug - 00 UTC 8 Aug)**

Today is expected to be another relatively dry day. Afternoon thunderstorms over the mountains are likely, but not much else is expected. The eastern side of Taiwan may be impacted by a monsoon trough, but the leeside, and near S-Pol is unlikely to see much activity. SEA-Pol is back up scanning PPIs and may be able to observe some showers coming from the southeast.

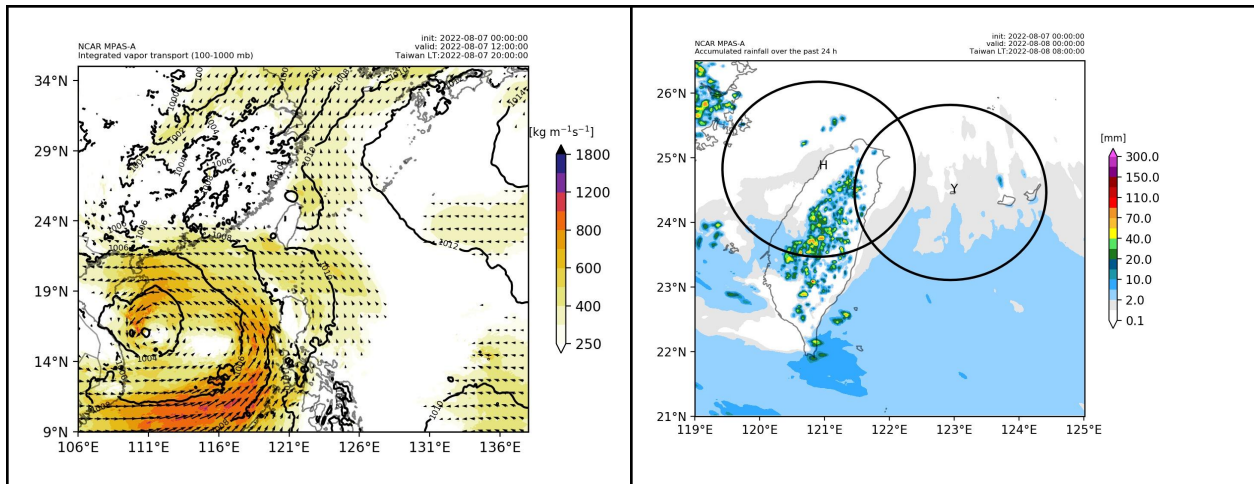


Figure 2: MPAS initialized 0z Aug 7 showing 24-hr accumulated rainfall at the end of Day 0, and IVT at 12z. (note that the Aug 6 MPAS run didn't run so I'm updating this a day later)

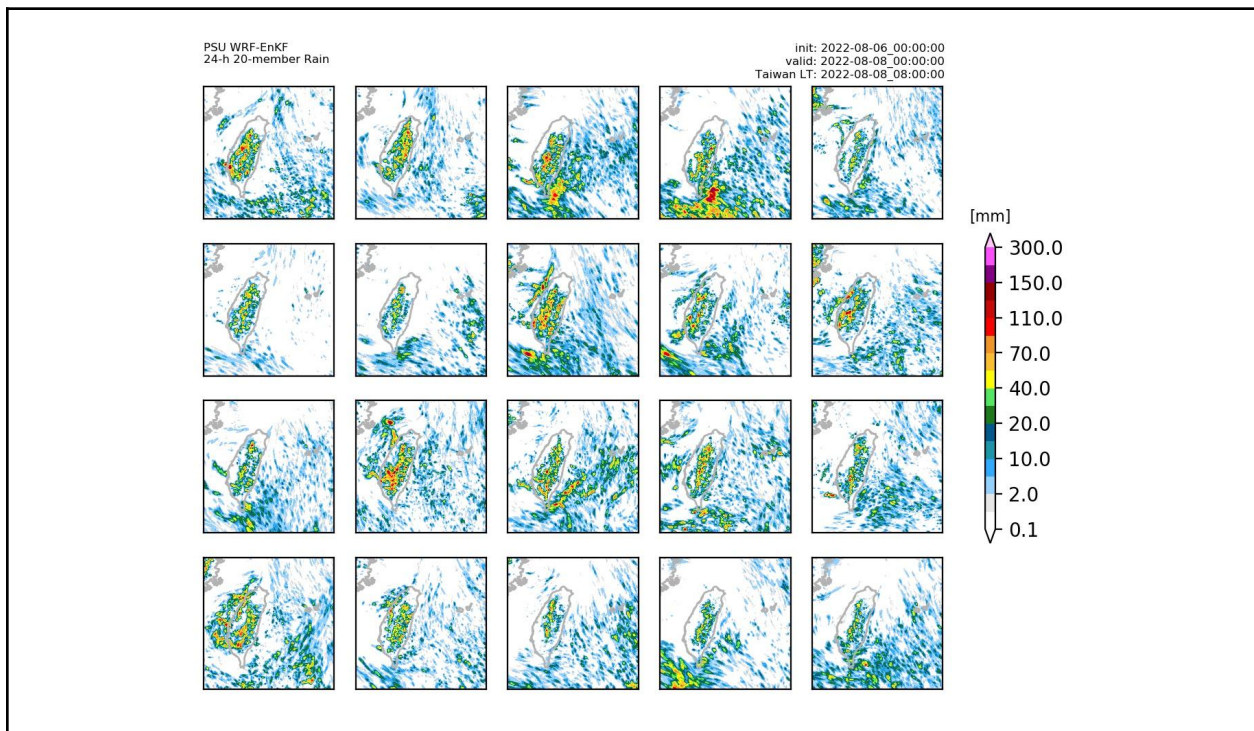


Figure 3: PSU WRF ensemble initialized 0z Aug 6, valid at the end of Day 0 at 0z Aug 8.

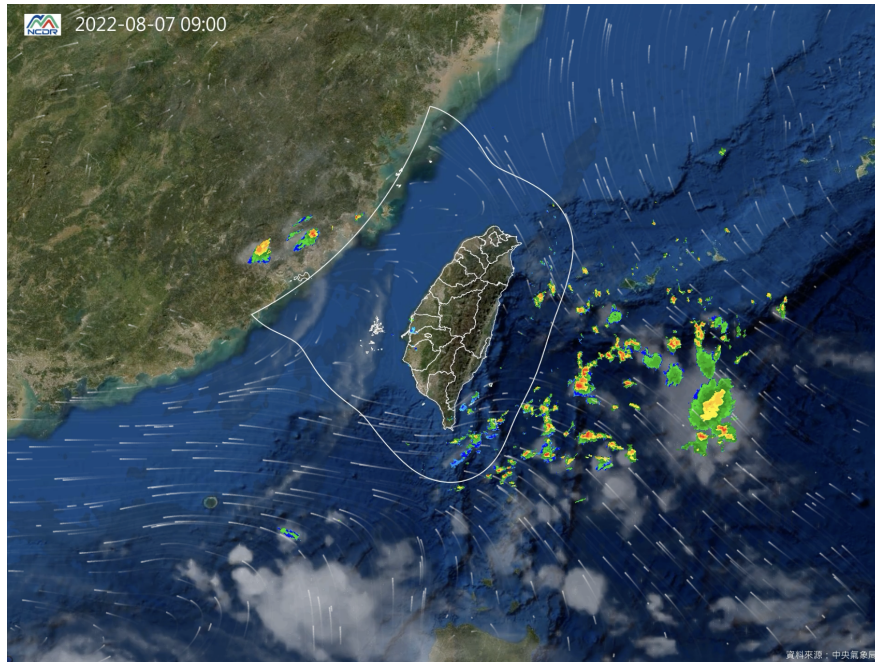


Figure 4: Satellite and radar image from 9:00 am LT on Aug 7.

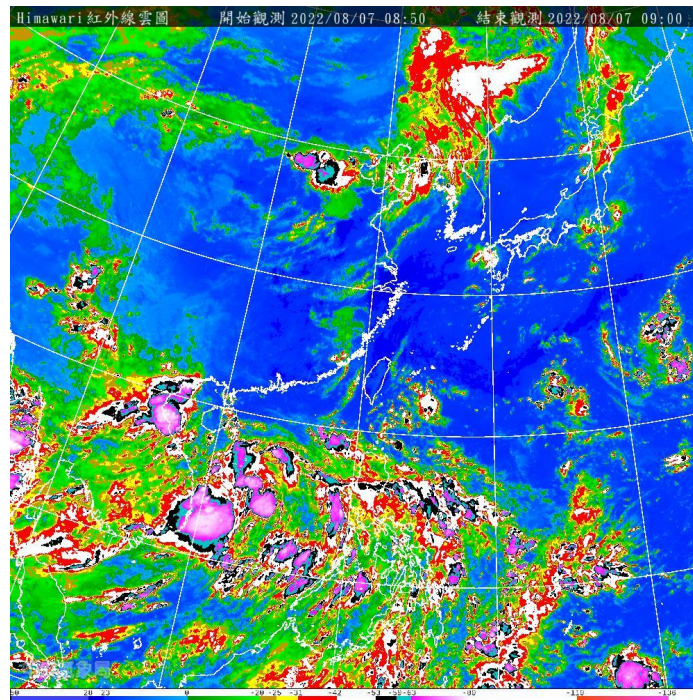


Figure 5: Himawari satellite Color IR image from 8:50 am LT on Aug 6.

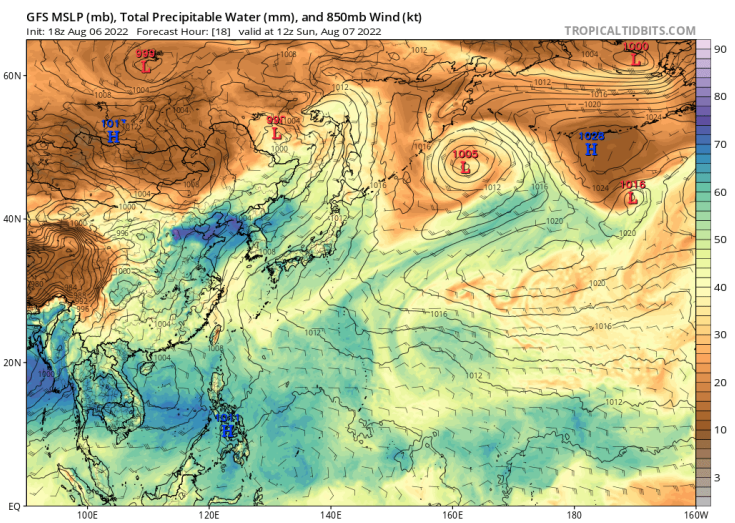
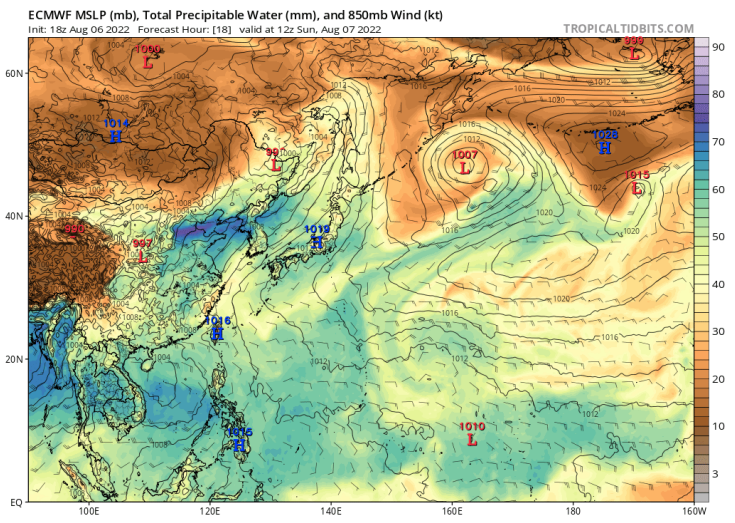


Figure 6: EC & GFS, initialized 18z Aug 6, showing PWAT and 850 mb Wind for the whole Pacific at 12z Aug 7.

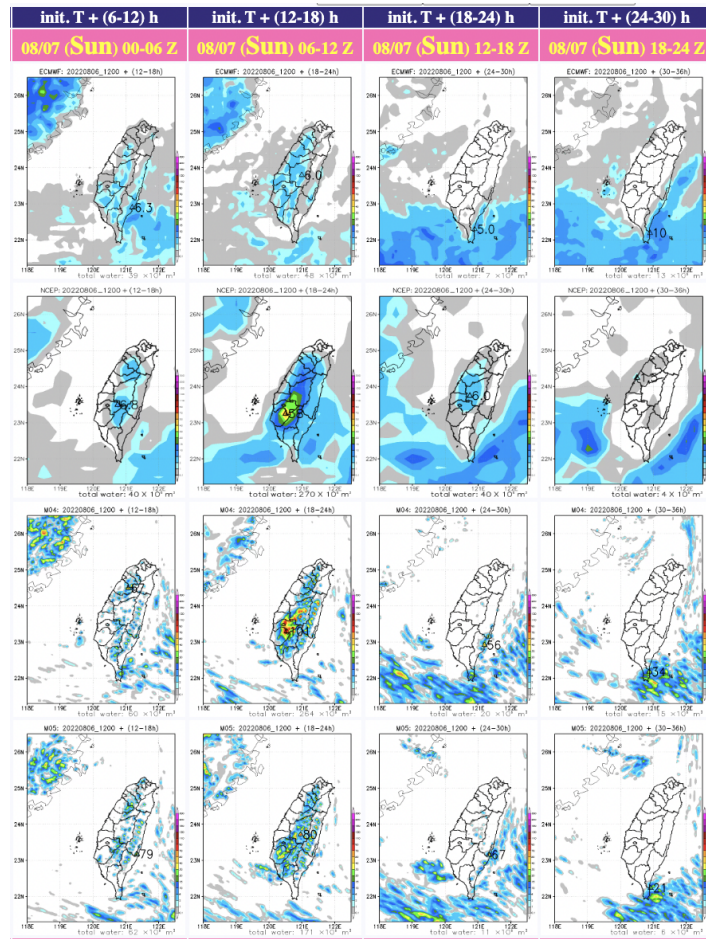


Figure 7: 6-hourly QPF on Day 0 from (top to bottom) EC, NCEP, WRFD and TWRF initialized 18z August 6th.

## Discussion

Some of the scan strategies we used are below, along with some of the images of the thunderstorms over Chiayi.

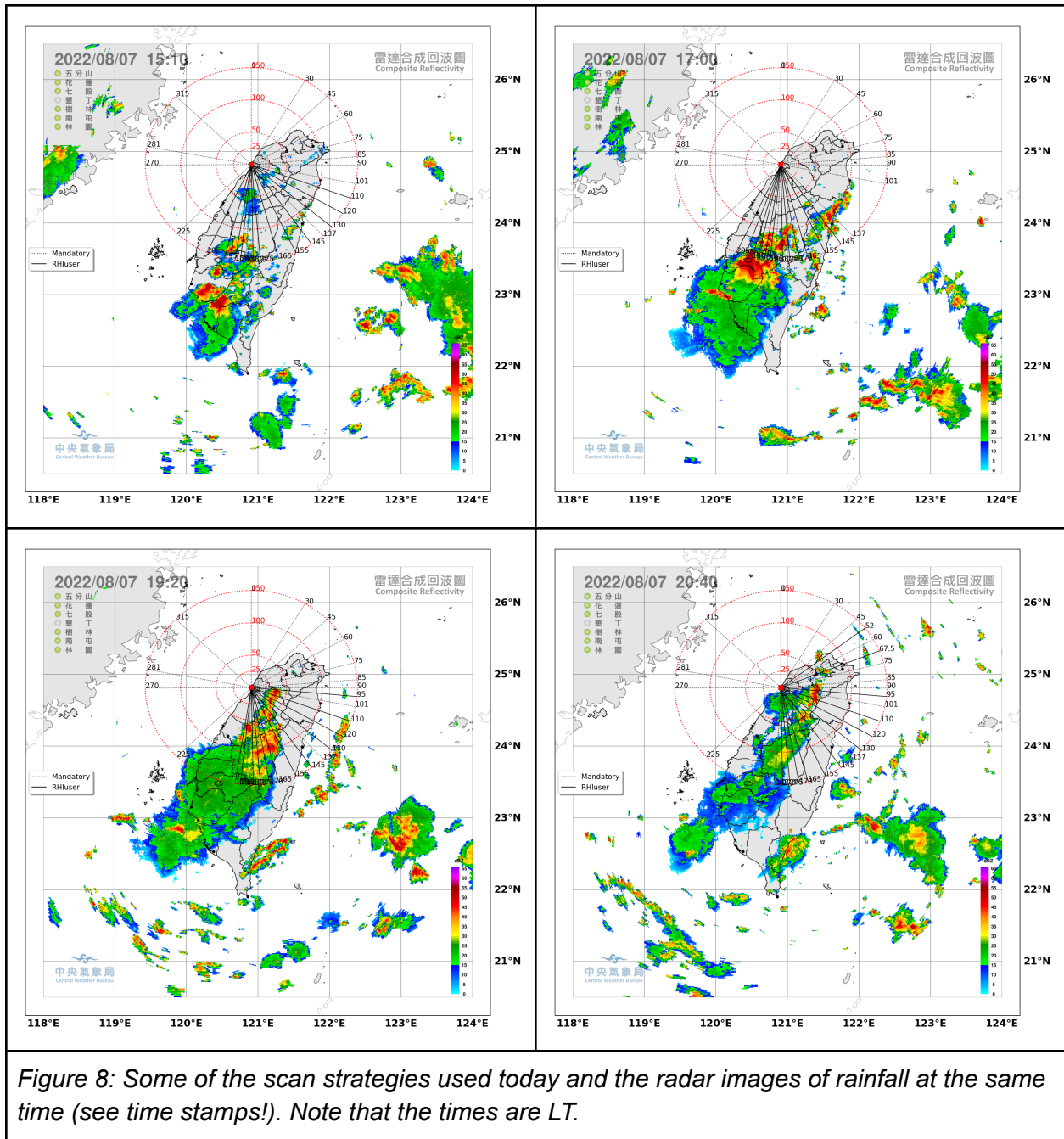


Figure 8: Some of the scan strategies used today and the radar images of rainfall at the same time (see time stamps!). Note that the times are LT.

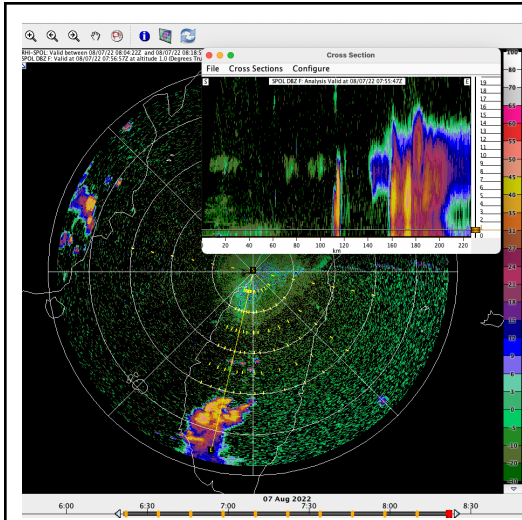


Figure 9: Deep convection to the south!

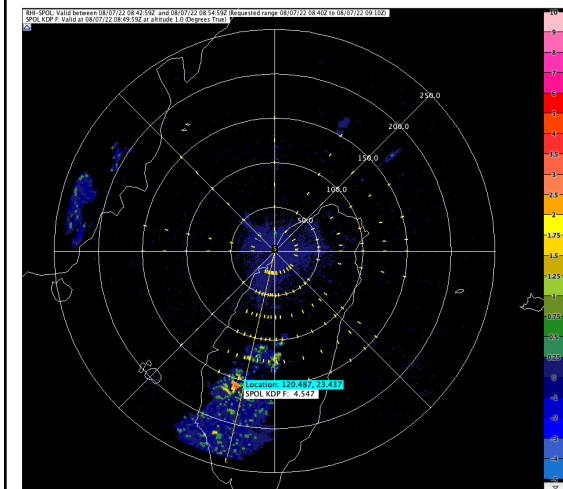
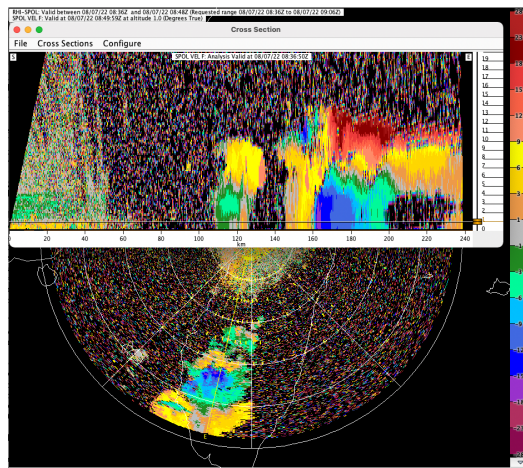
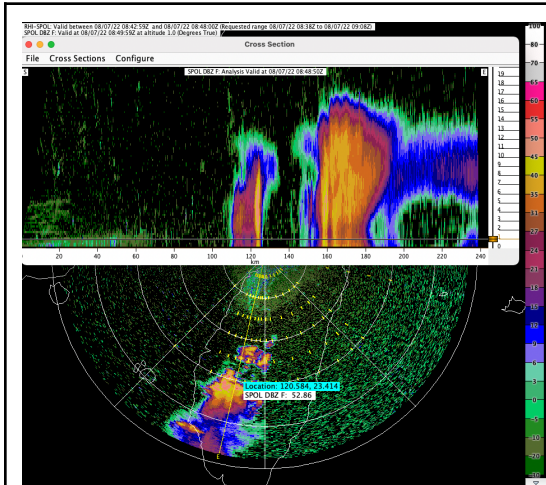


Figure 10: More deep convection to the south!

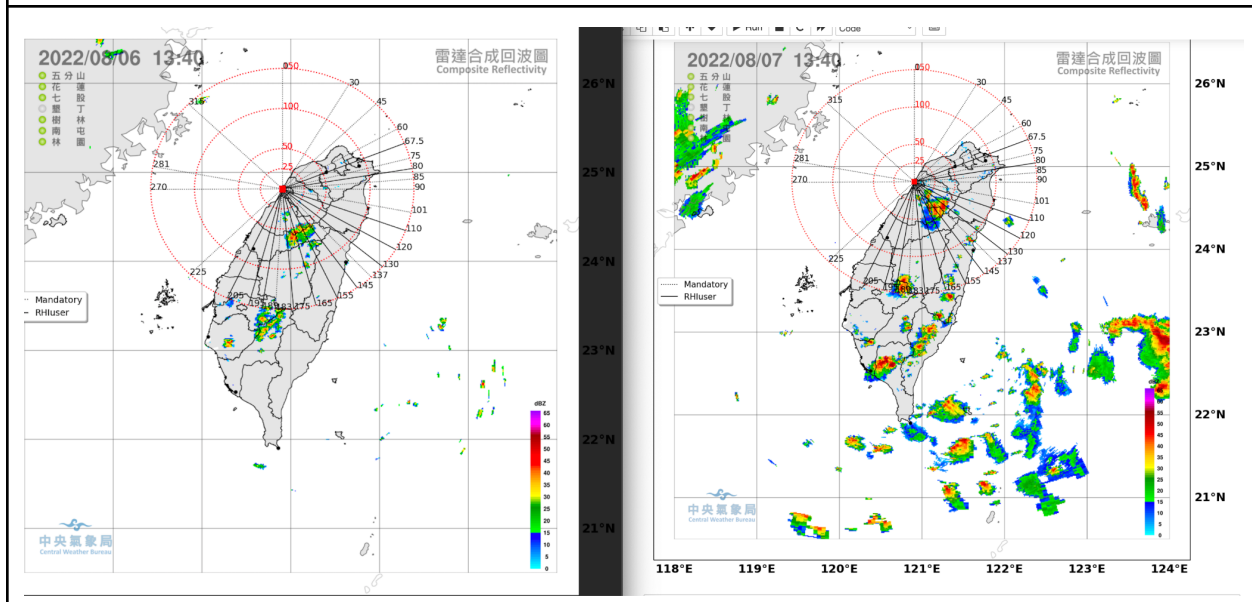
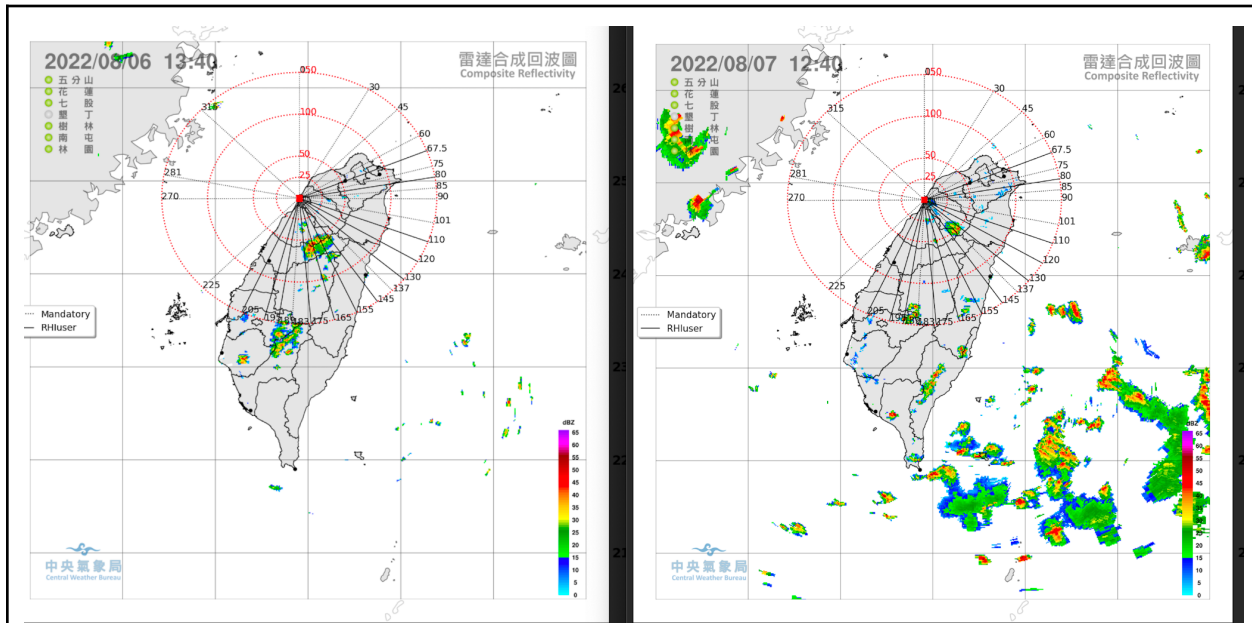


Figure 11: A comparison to the rainfall yesterday...very similar!

SEAPOL 2022-08-07 12:08:05 PPI DZQC volume

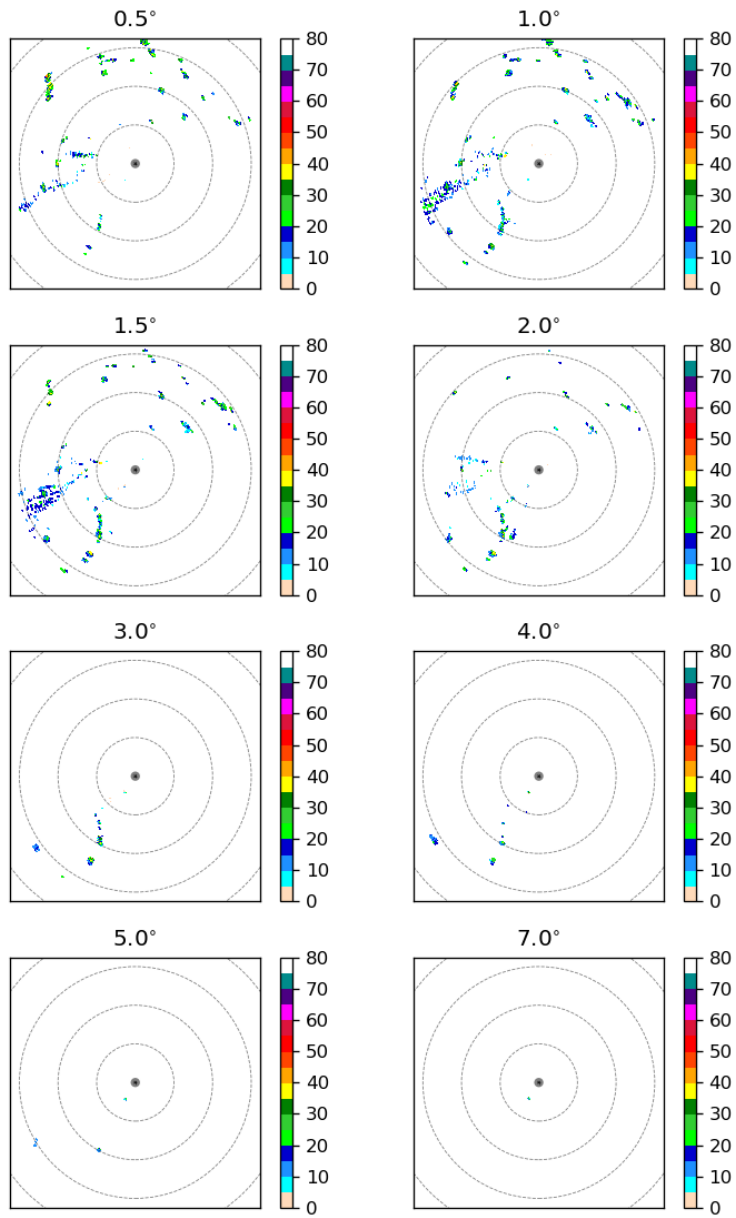


Figure 12: SEA-Pol captured some cells today too!

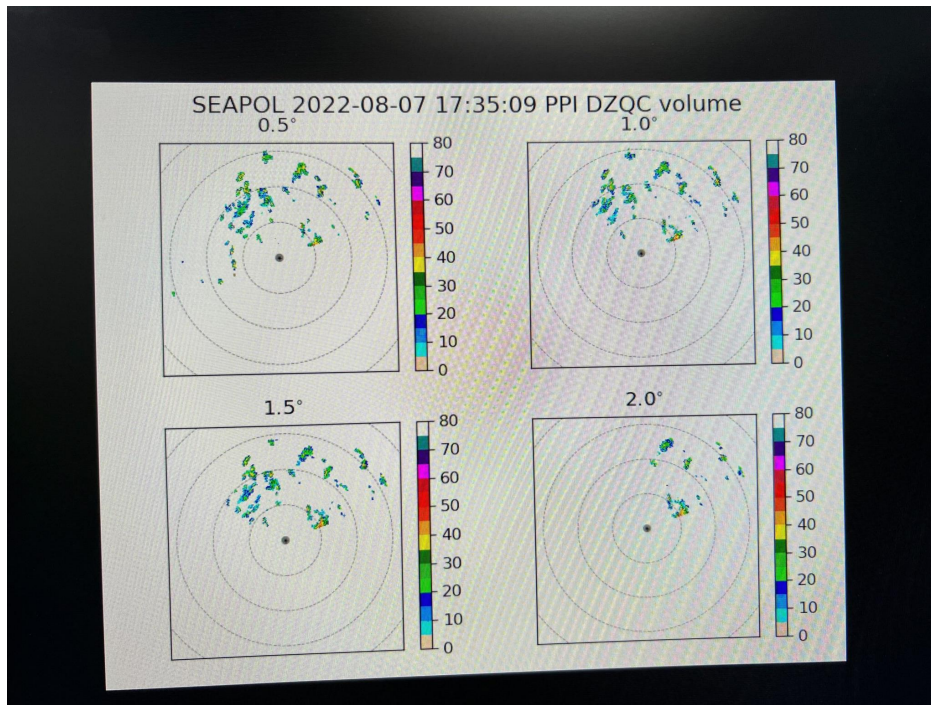
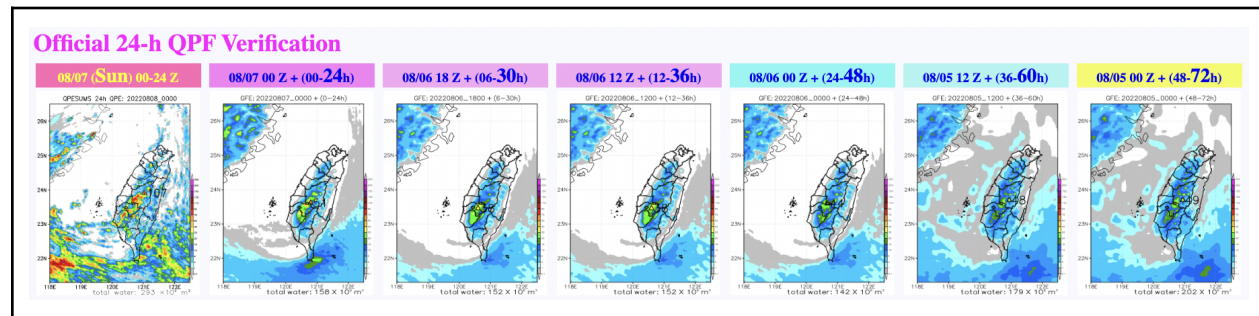
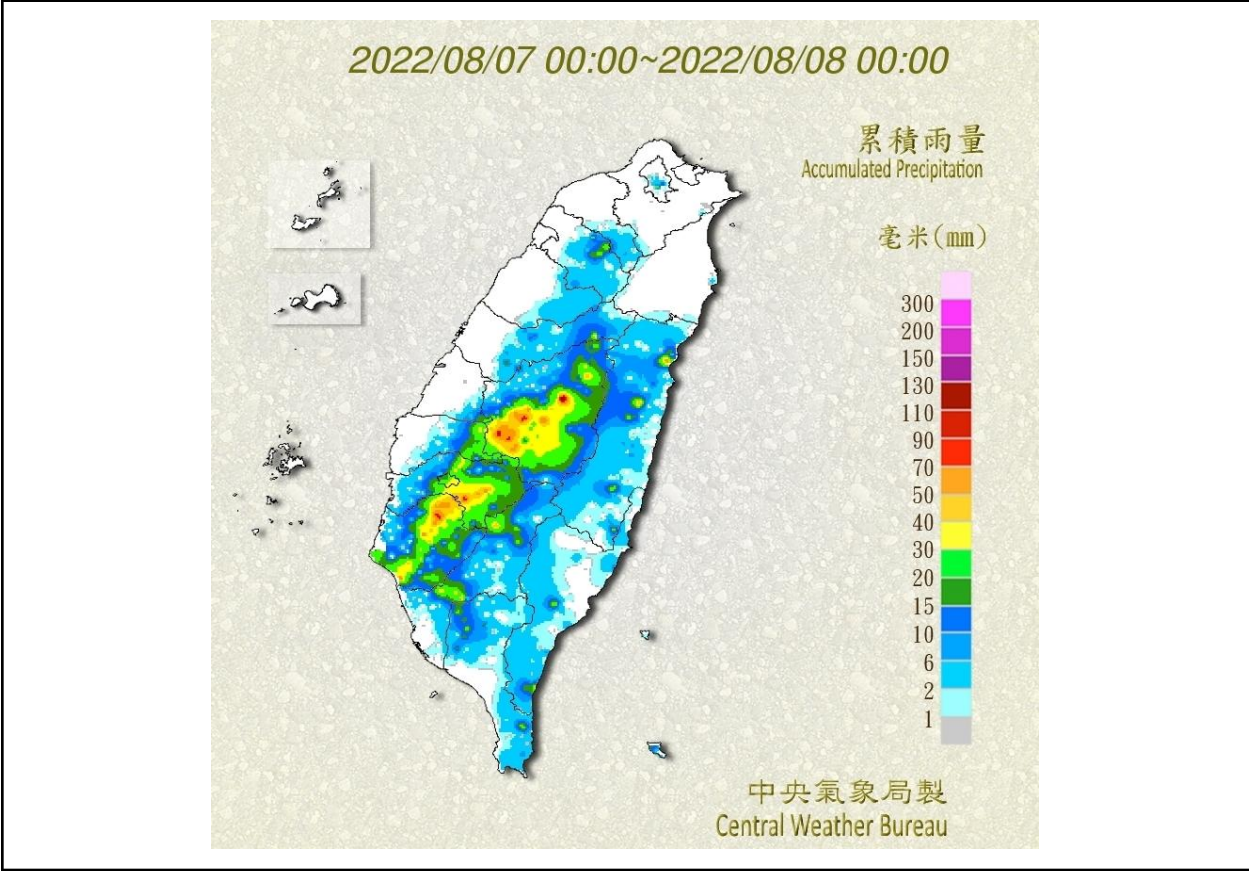
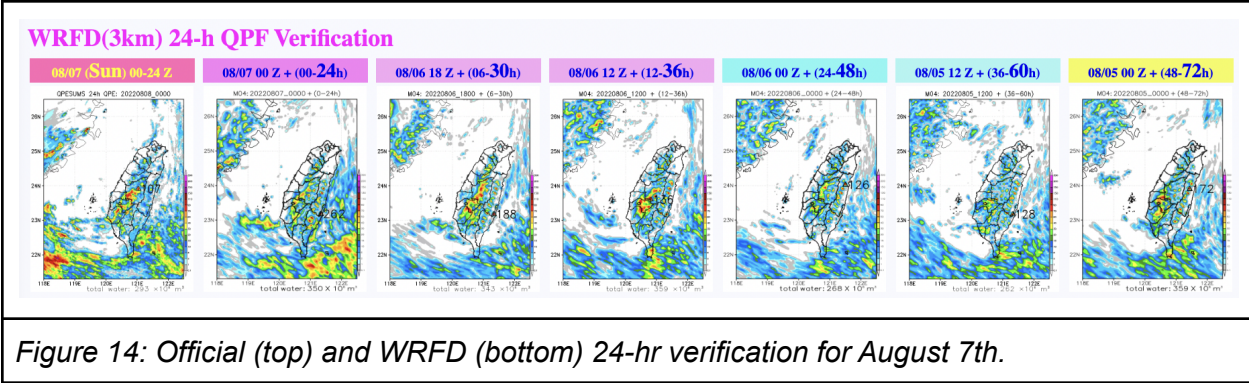


Figure 13: Students saw some in-cloud lightning around SEA-pol.

**Verification** (how well did the models do for this event?)

The TAHOPE weather briefing students suggested that the models did a good job capturing the spatial distribution of rainfall (“rainfall area”), but the intensity was often overestimated in regional models. We felt the models did not show rainfall over Taipei basin and yet there was a storm that formed over Taipei...





## Days One and Two Outlook (24-72 h; 00 UTC 8 Aug - 00 UTC 10 Aug)

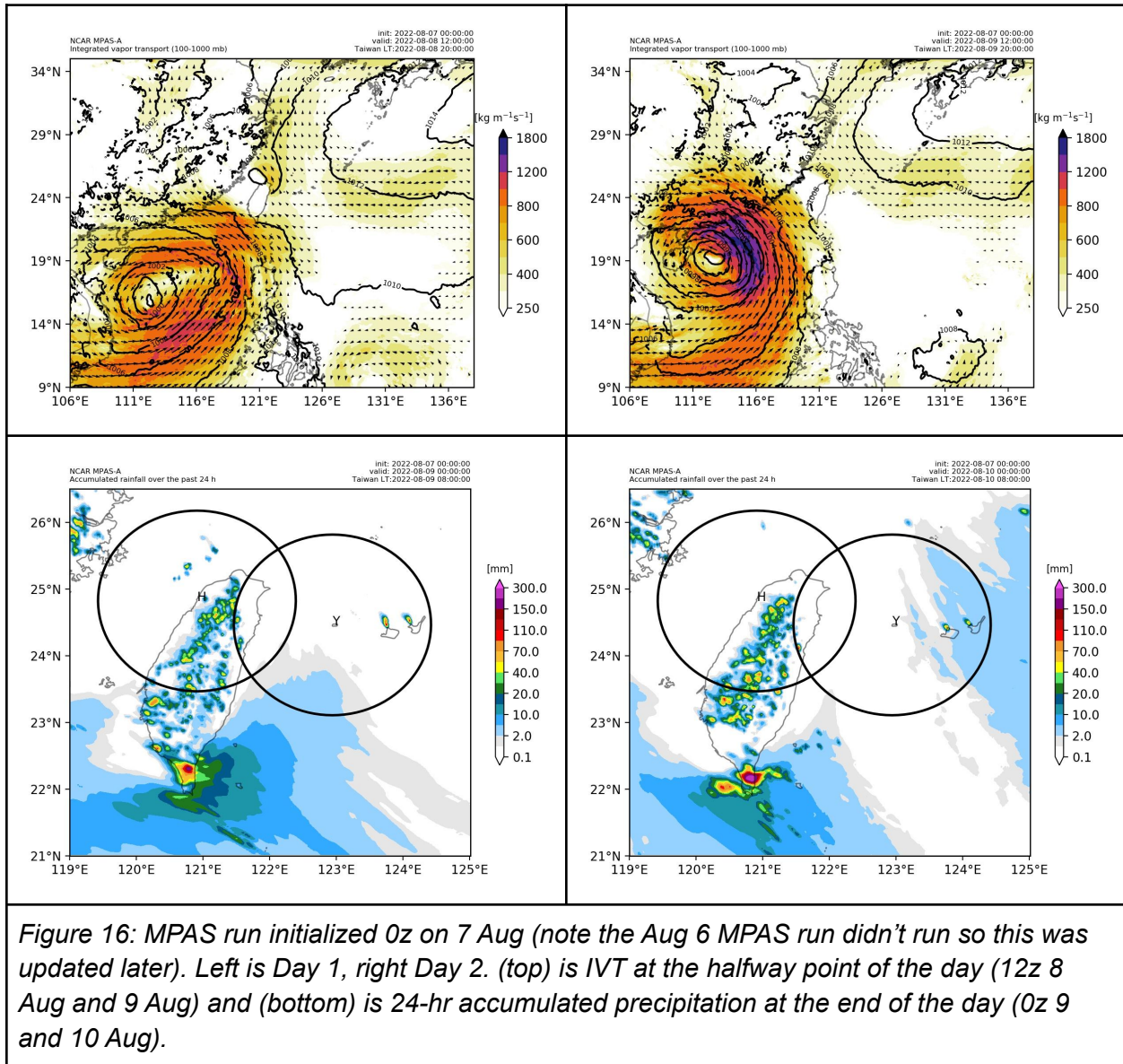


Figure 16: MPAS run initialized 0z on 7 Aug (note the Aug 6 MPAS run didn't run so this was updated later). Left is Day 1, right Day 2. (top) is IVT at the halfway point of the day (12z 8 Aug and 9 Aug) and (bottom) is 24-hr accumulated precipitation at the end of the day (0z 9 and 10 Aug).

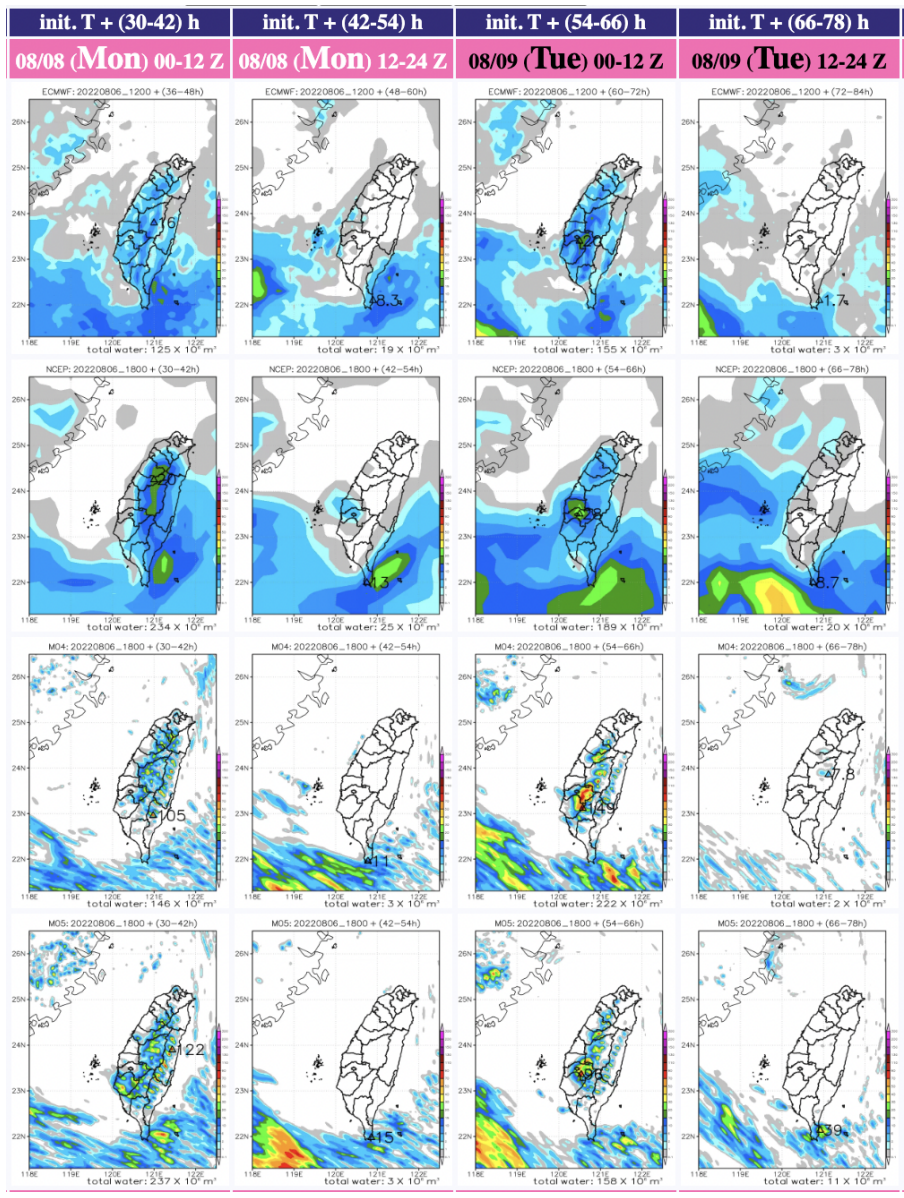


Figure 17: Initialized 18z Aug 6, for Day 1 and 2 in 12-hourly increments.

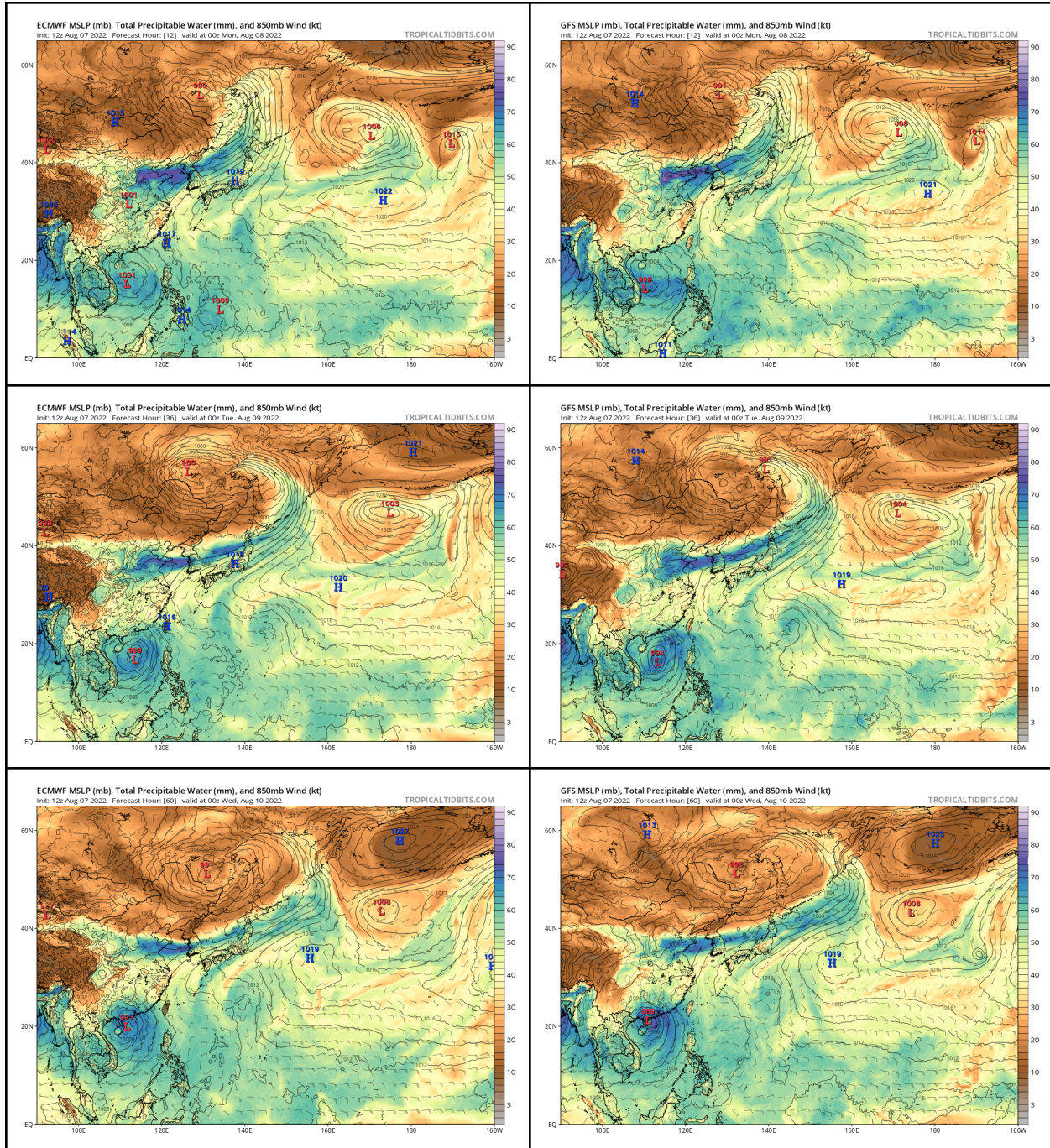


Figure 18: EC (left) and GFS (right) initialized 12z Aug 7, showing 0z on Aug 8, 9, and 10th.

**Extended Outlook (Days 3-5; 00 UTC 10 Aug - 00 UTC 13 Aug)**

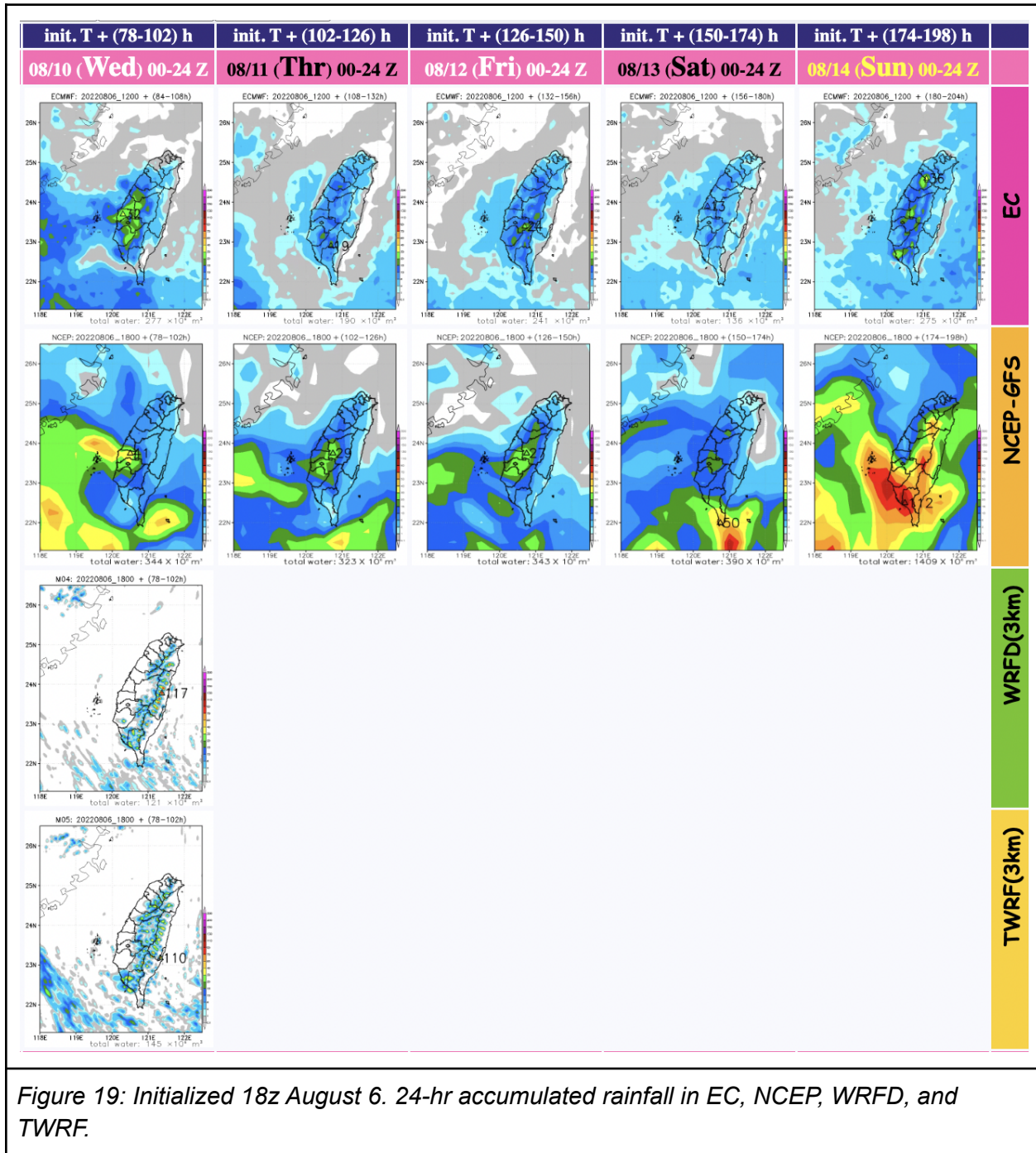


Figure 19: Initialized 18z August 6. 24-hr accumulated rainfall in EC, NCEP, WRFD, and TWRF.