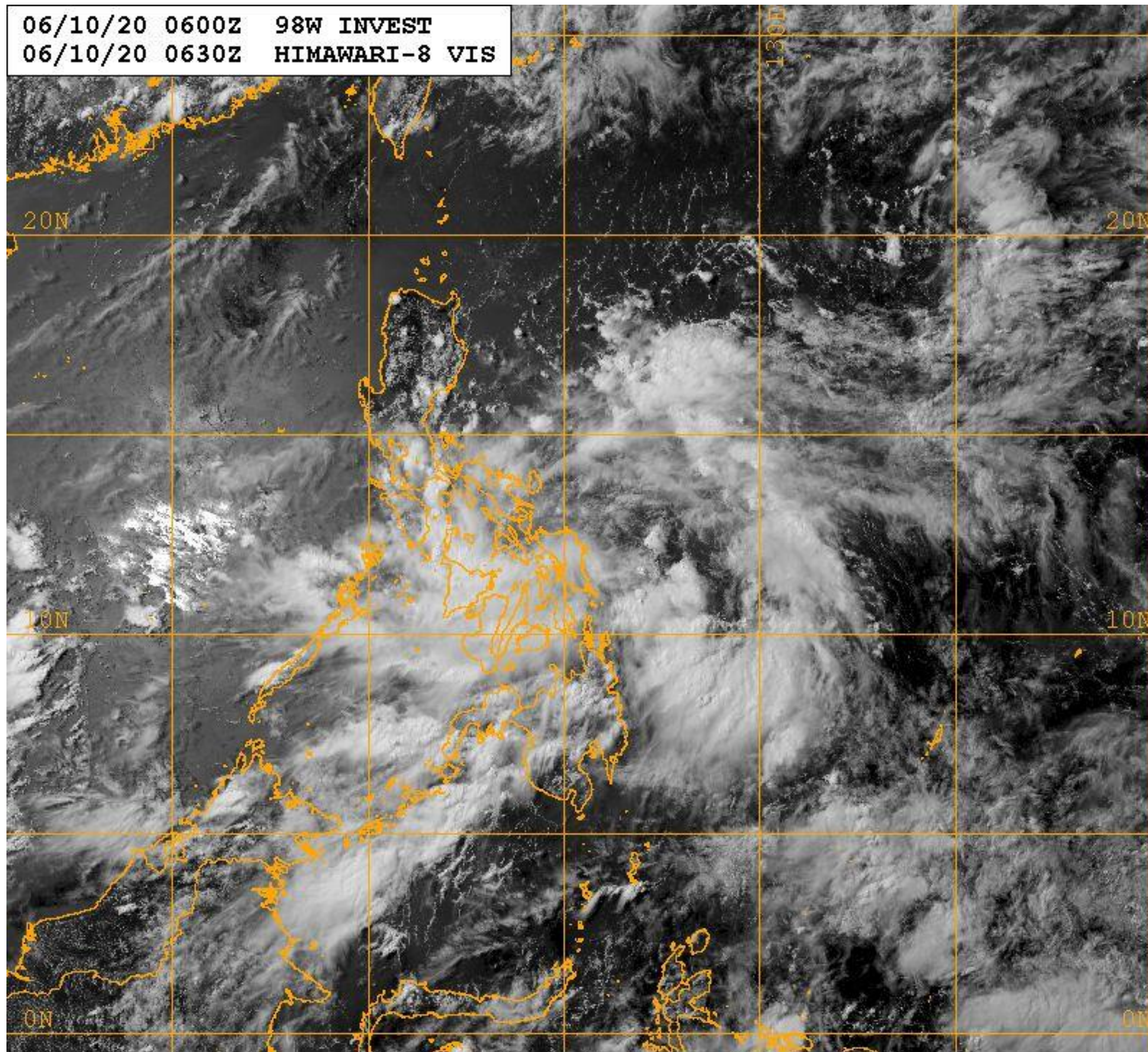


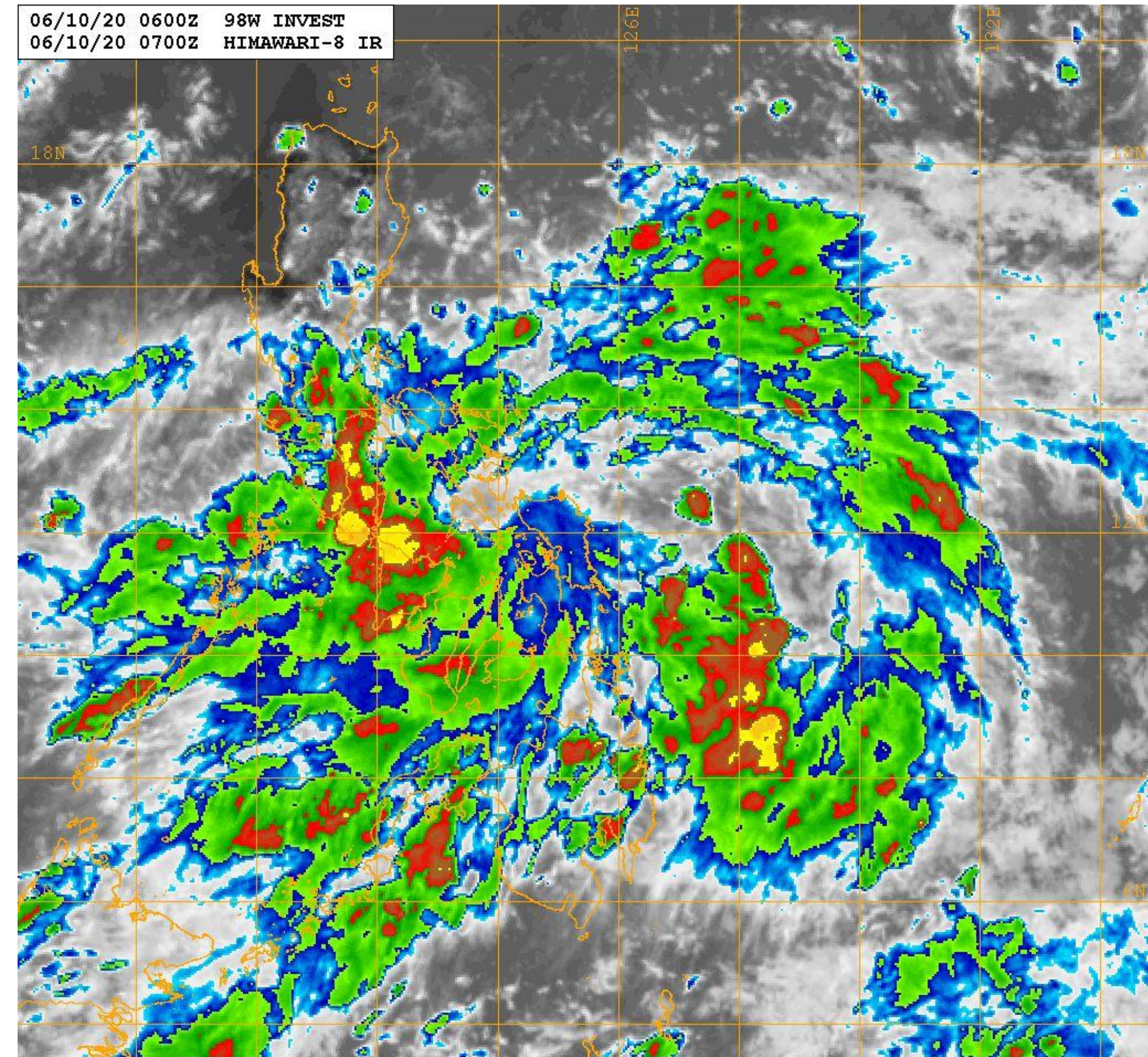
Weather Briefing (0611)

Forecaster: Frederick Iat-Hin Tam (NTU)

Developing Tropical Disturbance (98W) near central Philippines (the Visayas)



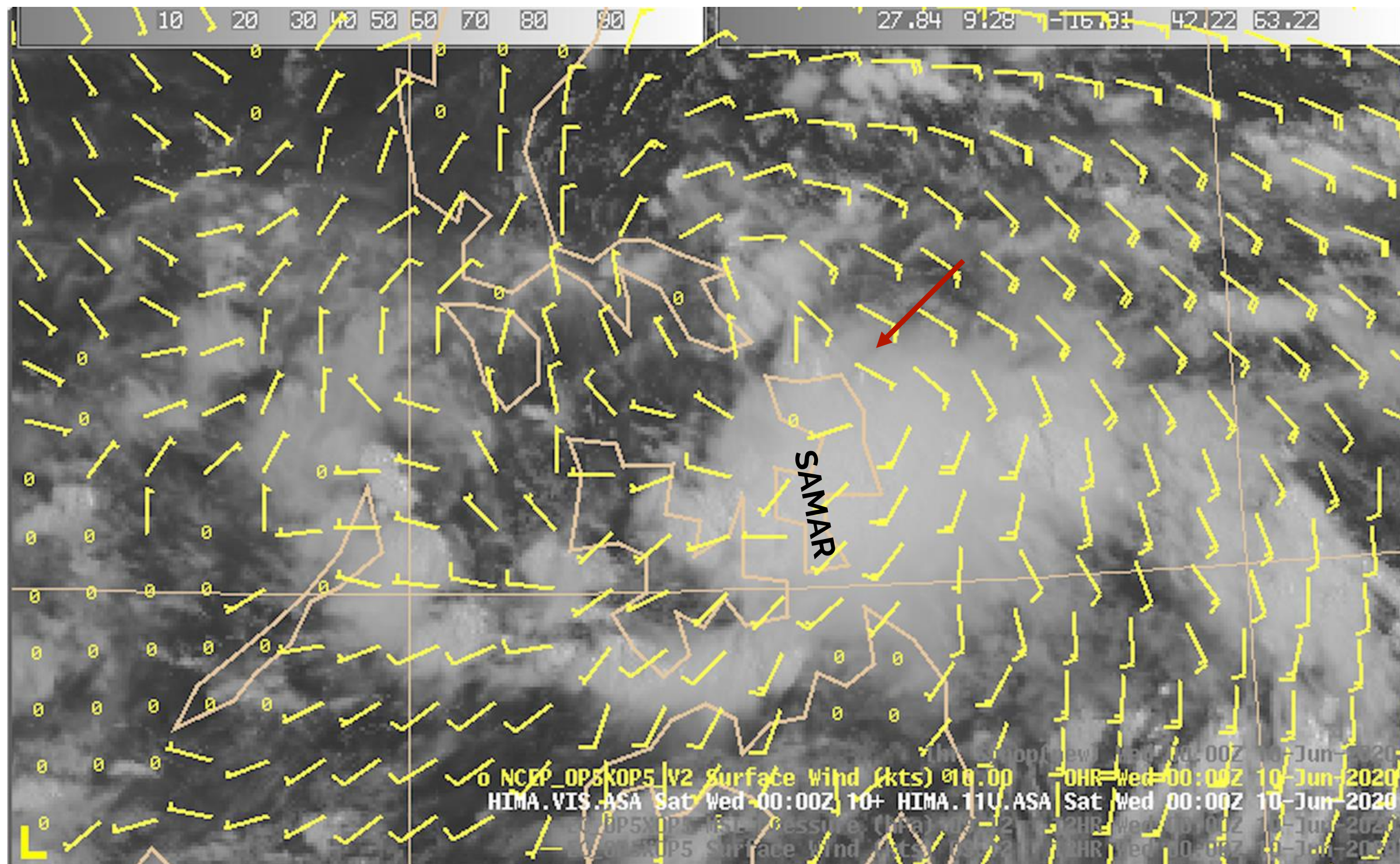
Naval Research Lab http://www.nrlmry.navy.mil/sat_products.html
<-- Visible (Sun elevation at center is 46 degrees) -->



Naval Research Lab http://www.nrlmry.navy.mil/sat_products.html
<-- IR Temperature (Celsius) -->



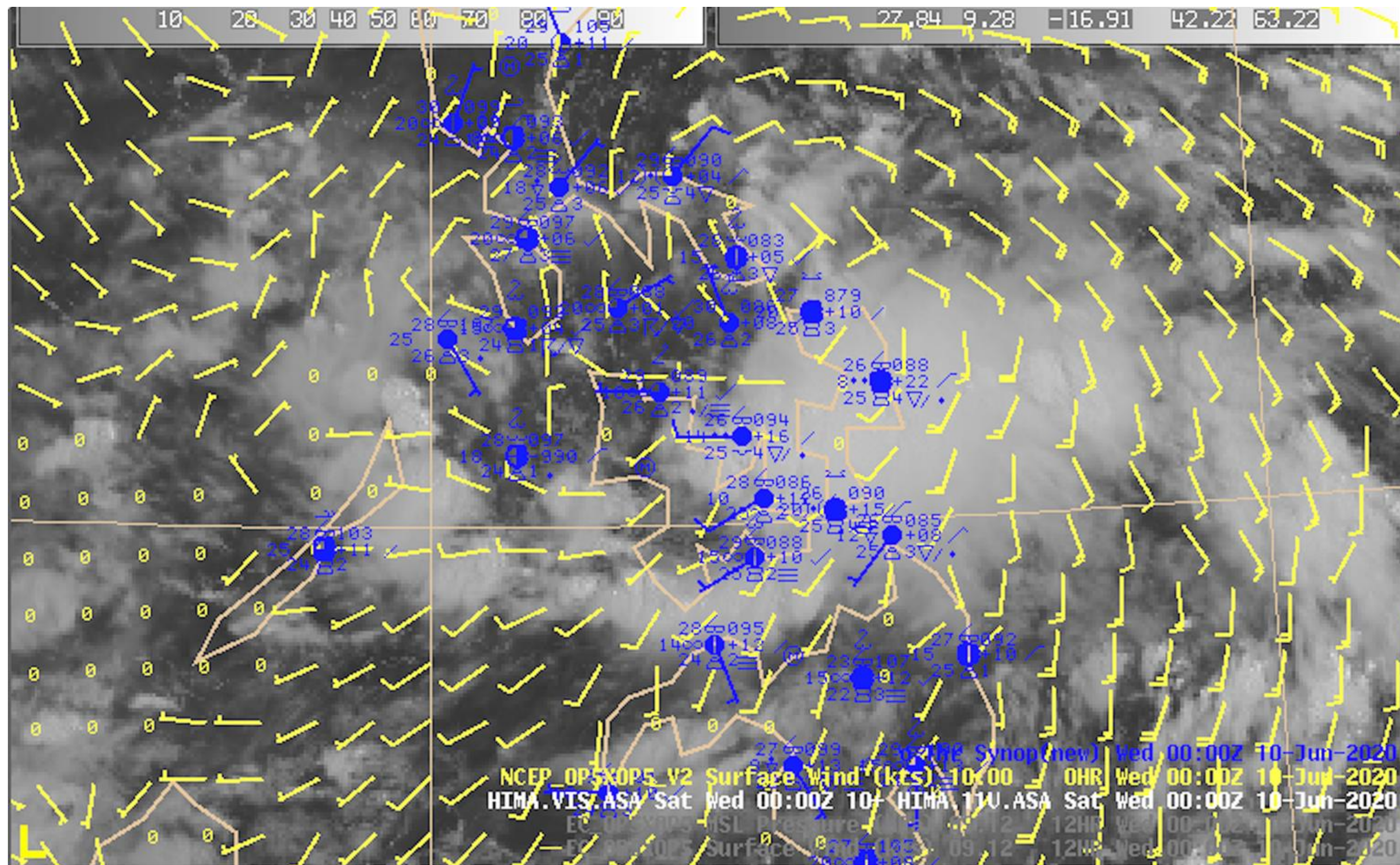
Consolidating but weak low-level circulation



Shading: **Himarawi-8 IR channel imagery**
Vector: **NCEP surface wind analysis field, 10 June 00Z**

- 98W formed an elongated, weak low-level circulation, location of this circulation is close to northern Samar Island

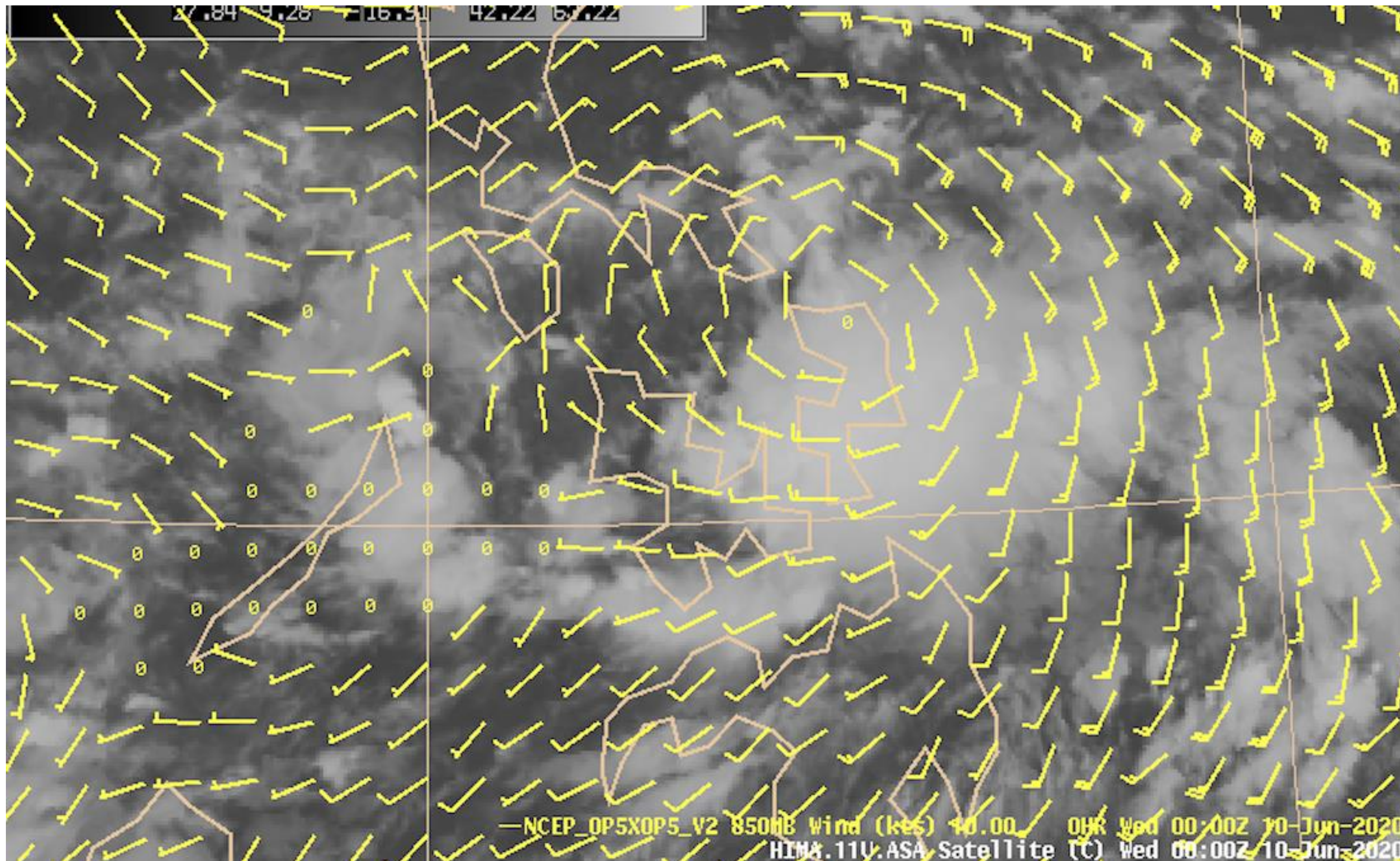
Consolidating but weak low-level circulation (LLC)



Shading: **Himarawi-8 IR channel imagery**
Vector: **NCEP surface wind analysis field, 10 June 00Z (Yellow), surface observation (blue)**

- NCEP surface wind analysis is close to reality, in terms of equatorial inflow intensity and location of LLC centre

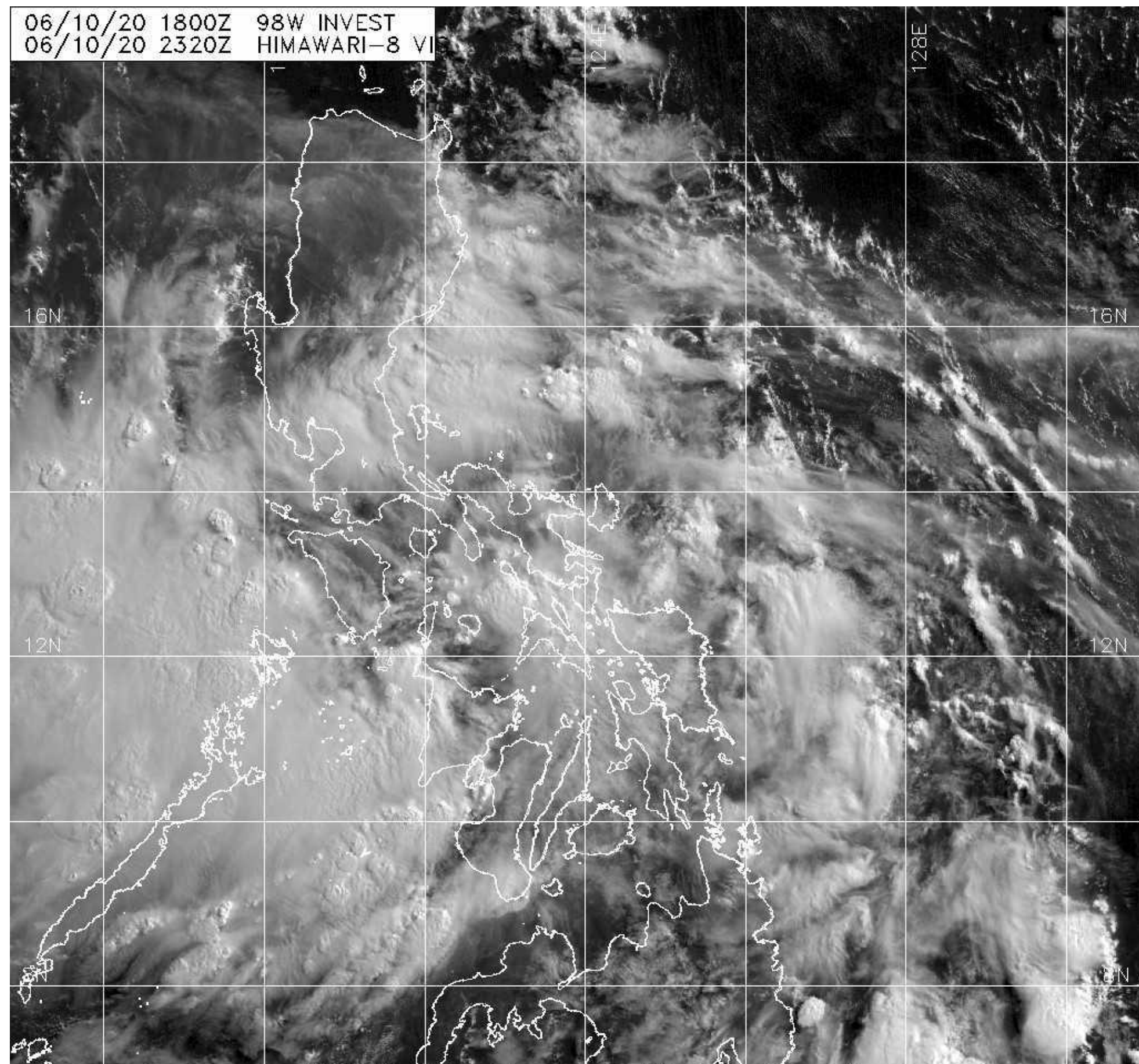
Consolidating but weak low-level circulation (LLC)



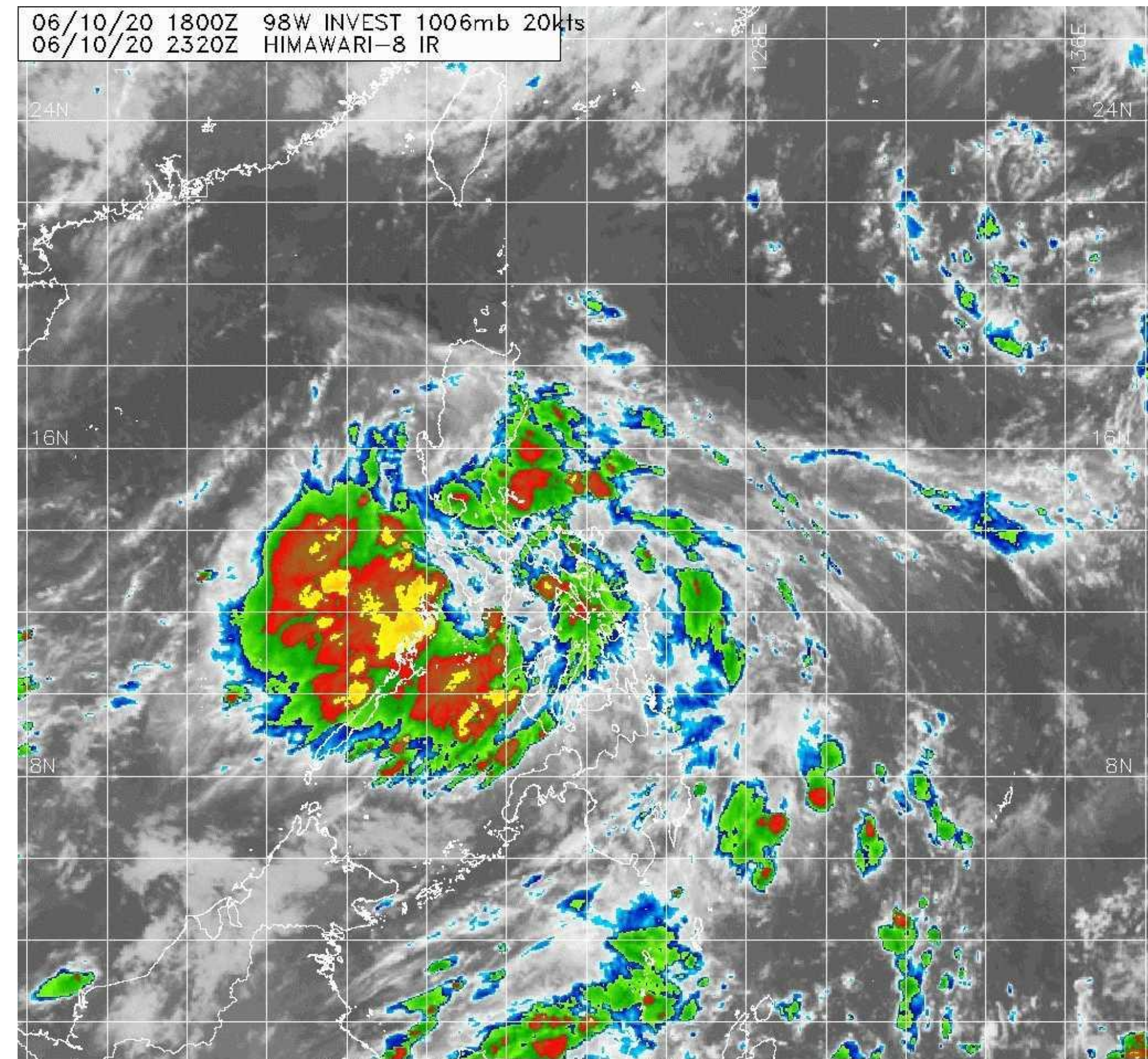
Shading: **Himarawi-8 IR channel imagery**
Vector: **NCEP 850 hPa wind analysis field, 10 June 00Z (Yellow)**

- Cyclonic circulation is even more apparent at 850 hPa

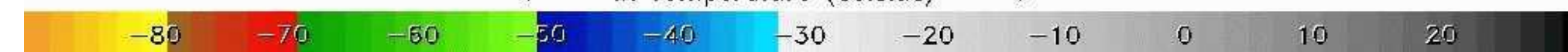
A more recent look of 98W



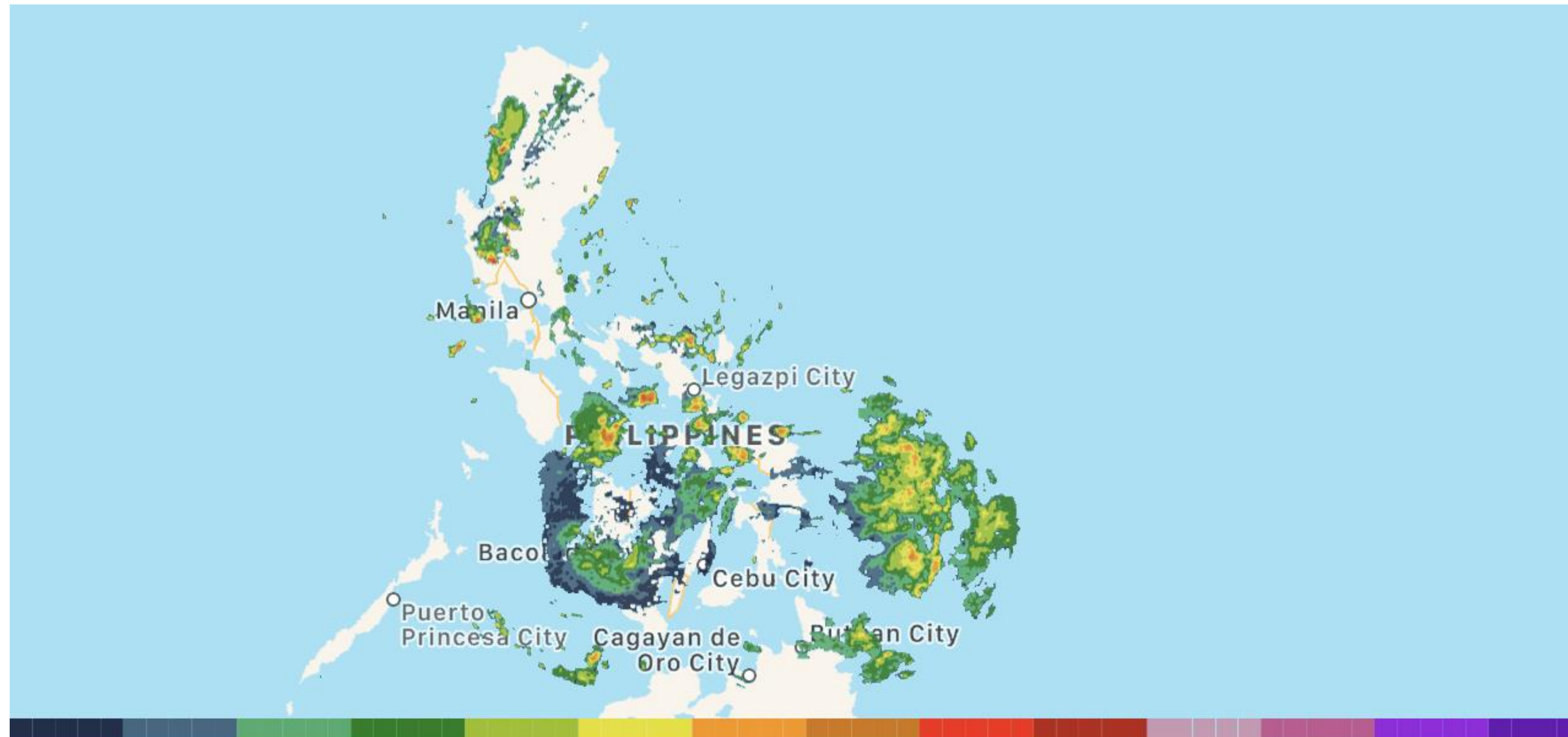
FNMOC http://tcweb.fnmoc.navy.mil/tc-bin/tc_home.cgi
← Visible (Sun elevation at center is 28 degrees) →



FNMOC http://tcweb.fnmoc.navy.mil/tc-bin/tc_home.cgi
← IR Temperature (Celsius) →



Philippines radar mosaic (1020Z 10 Jun - 2220Z, 10 Jun)

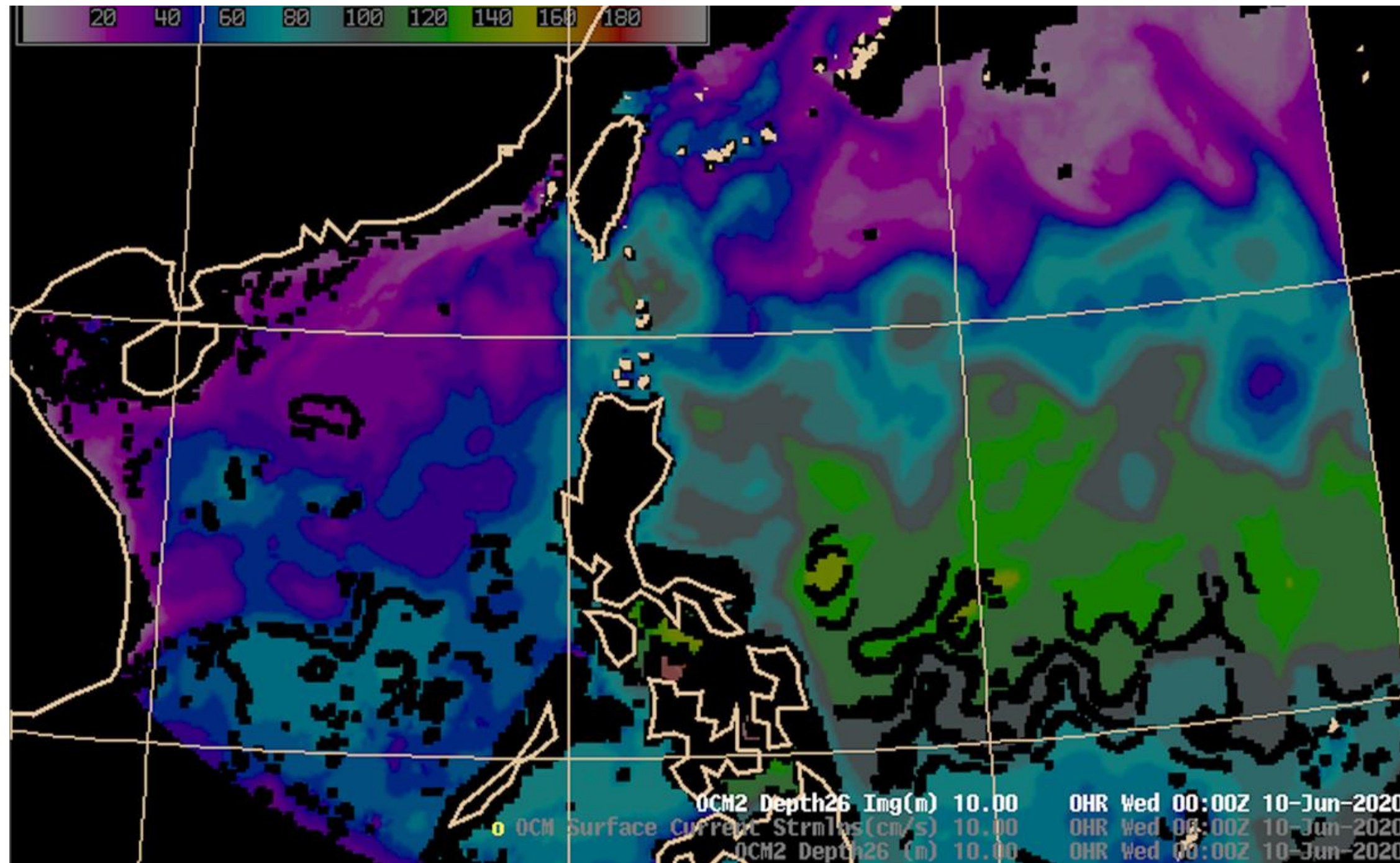
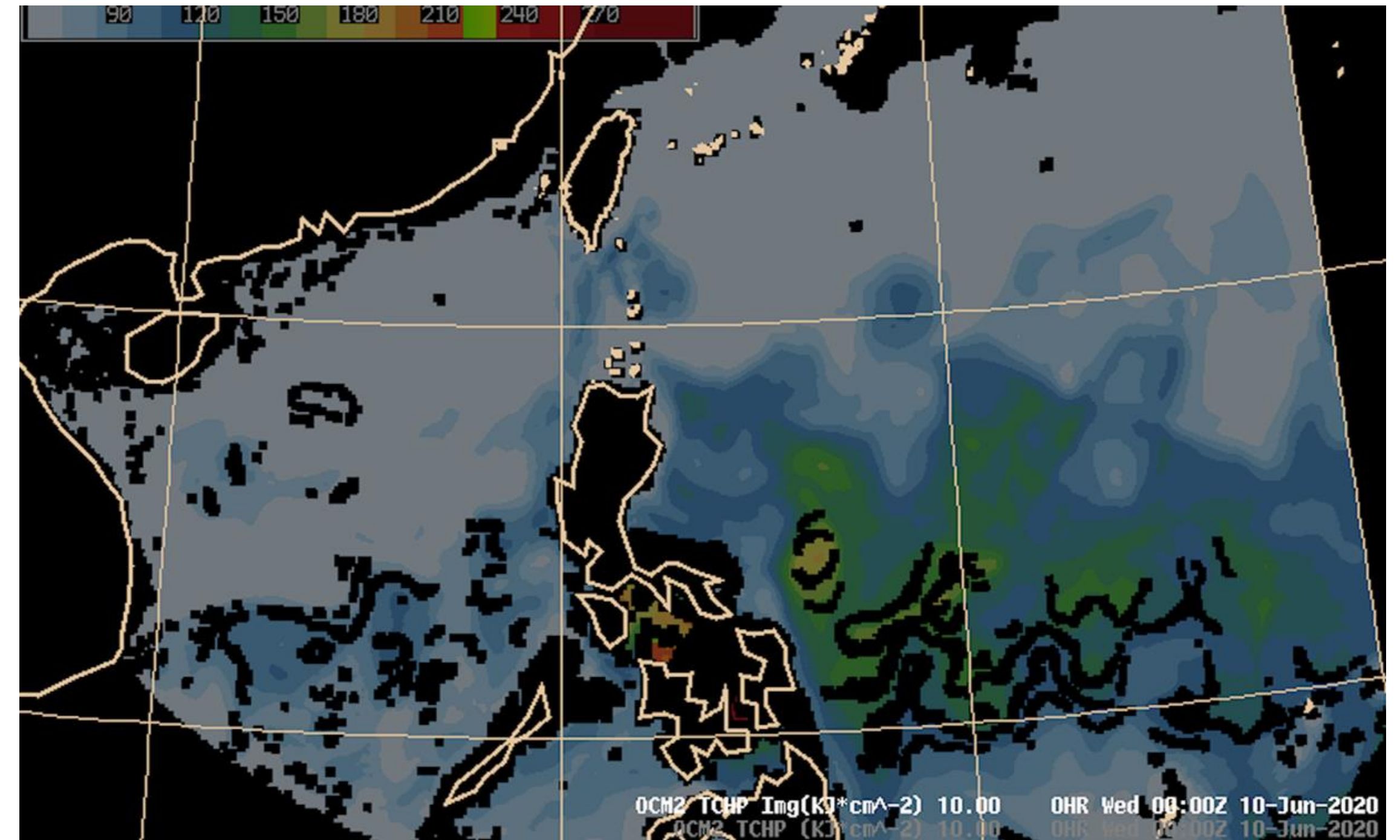


6:30 PM GMT+08:00
Jun 10, 2020



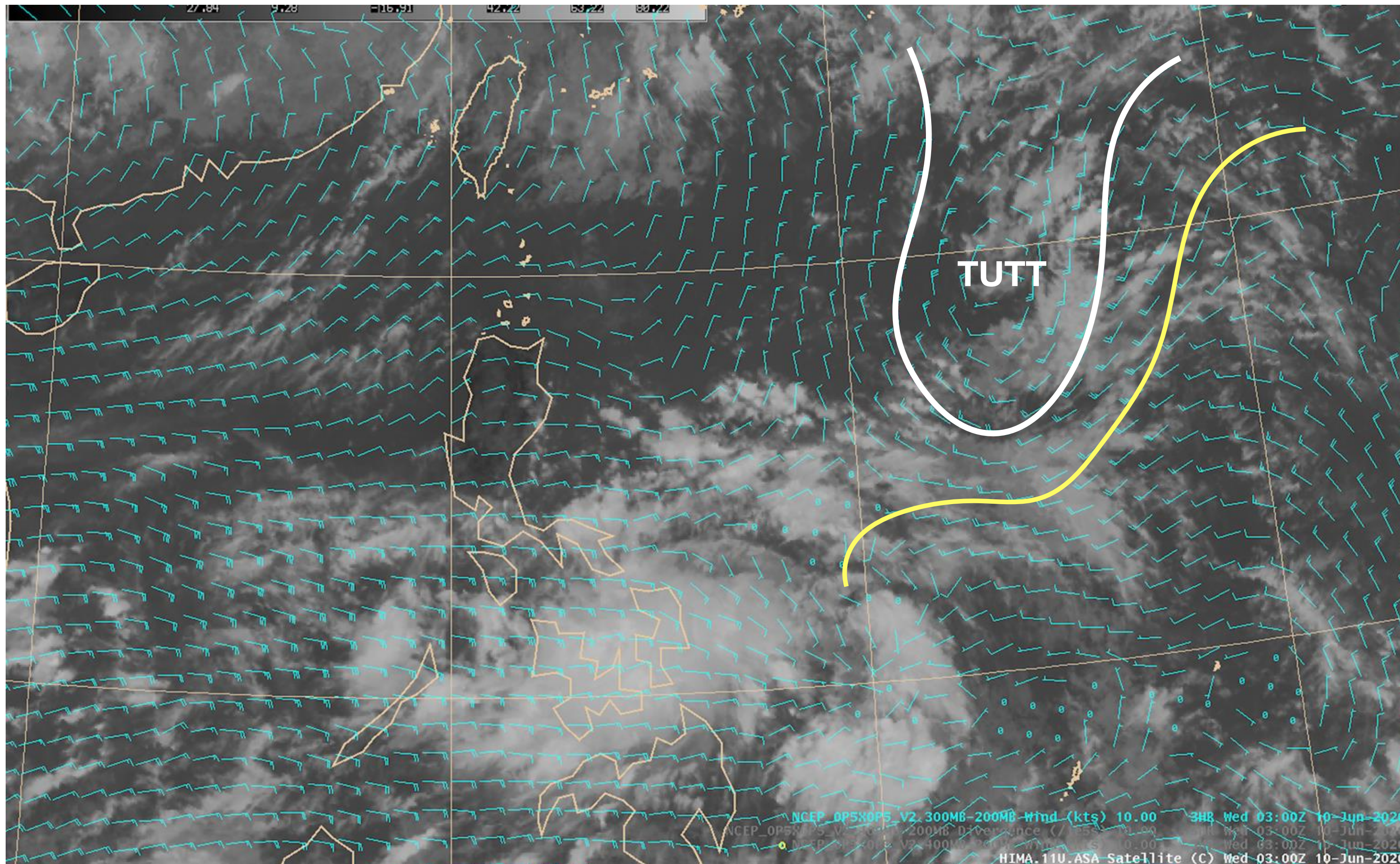
RainViewer
for iOS

Environmental conditions near 98W

Shading: **OCM2 Depth of 26°C isotherm (m)**Shading: **OCM2 Tropical Cyclone Heat Potential (kJ cm⁻²)**

- 98W is located in an area with large warm water depth and high TCHP -> conducive to TC development

Environmental conditions near 98W



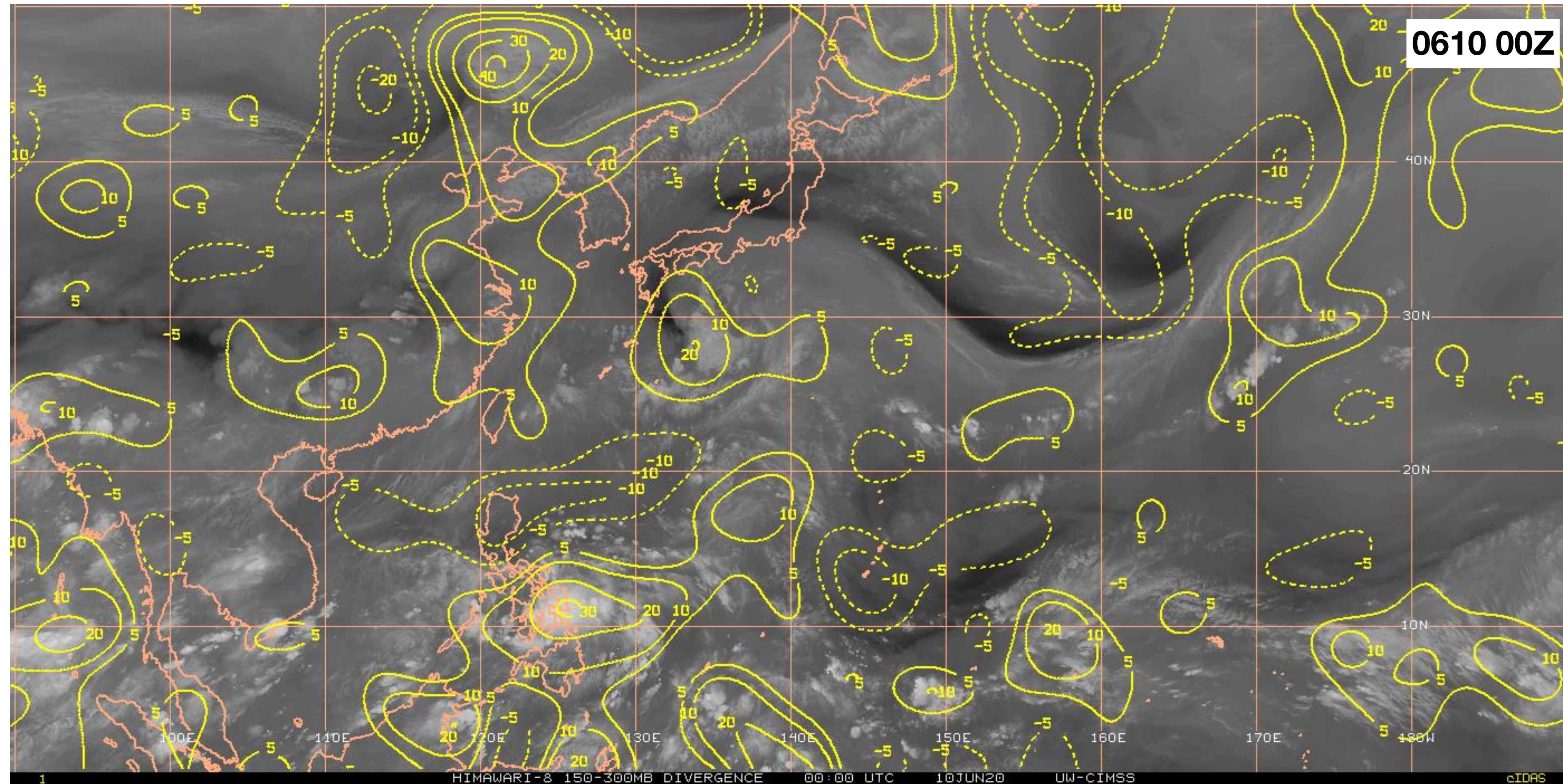
Vector: **Upper-level (300-200 hPa) wind**

- A TUTT to the northeast of the tropical disturbance
- Enhanced poleward outflow for 98W's northeast quadrant
- Deep convection northeast of 98W centre

Environmental conditions near 98W

Contour: **Upper-level (150-300 hPa) divergence**

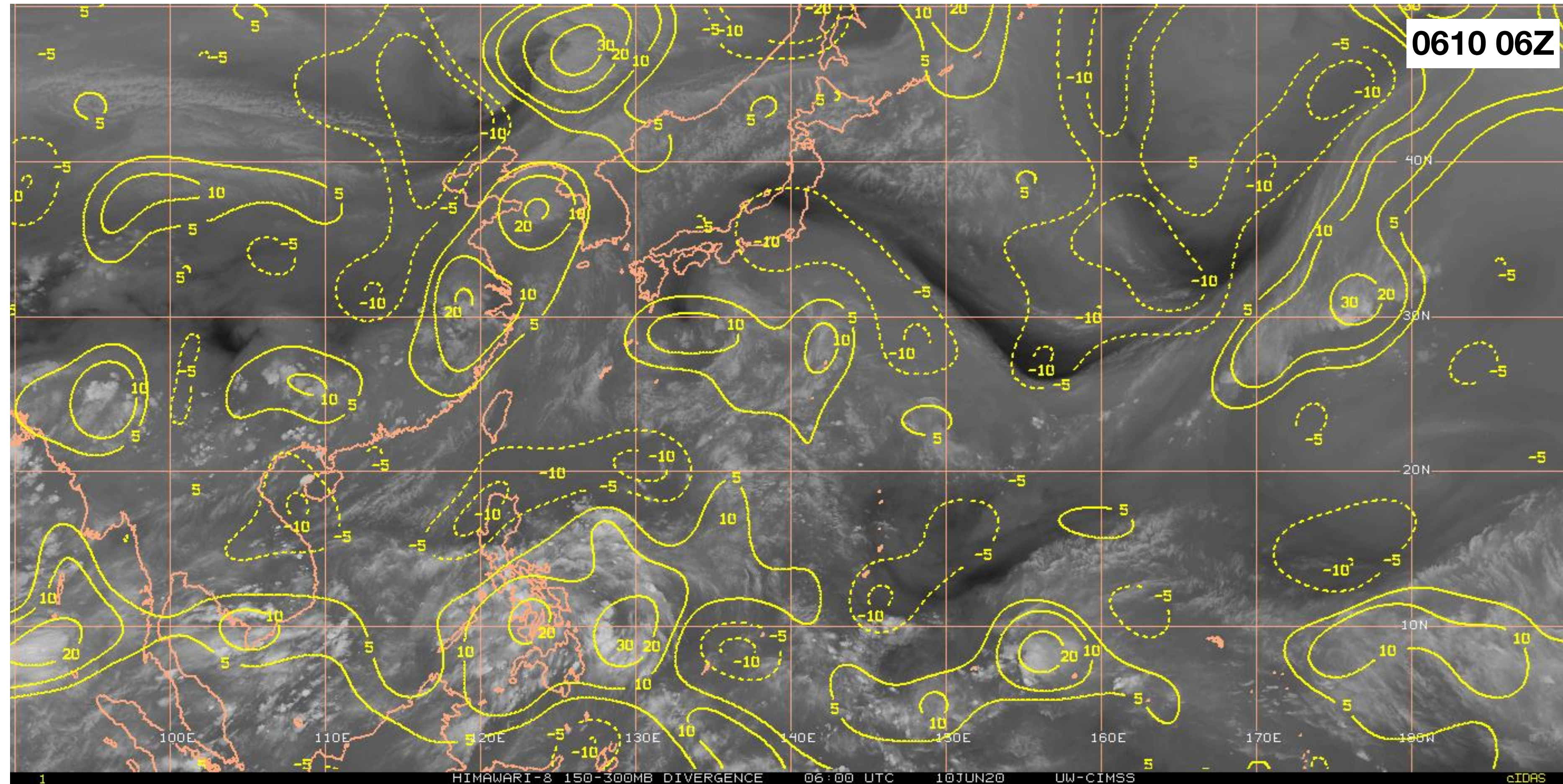
Source: UW CIMSS Tropical Cyclone Page



Environmental conditions near 98W

Contour: **Upper-level (150-300 hPa) divergence**

Source: UW CIMSS Tropical Cyclone Page

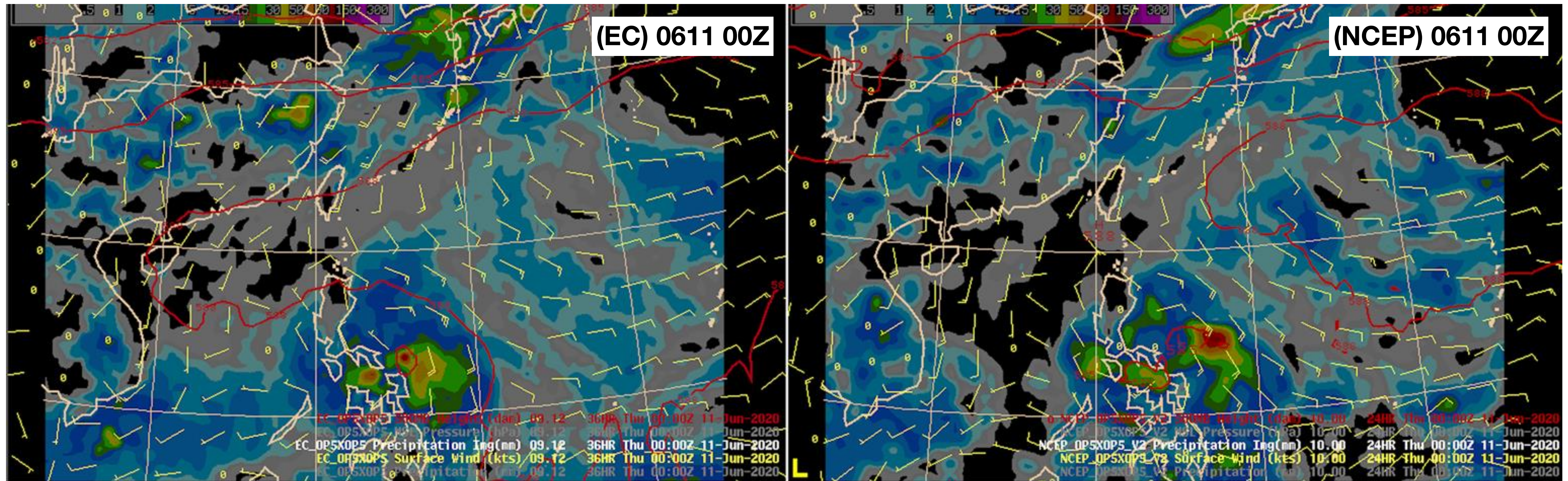


Short summary on 98W

- NCEP analysis field shows an organizing, weak low-level circulation near Samar Island
- Inter-comparison with surface observations suggests the NCEP centre location is close to reality
- Strongest convection is shifted to the west of the LLC centre -> 98W remains rather disorganized
- Oceanic conditions are broadly favorable to tropical cyclone development
- Healthy outflow near the disturbance could support continued convective development
- Low shear near disturbance centre should allow system to organize further

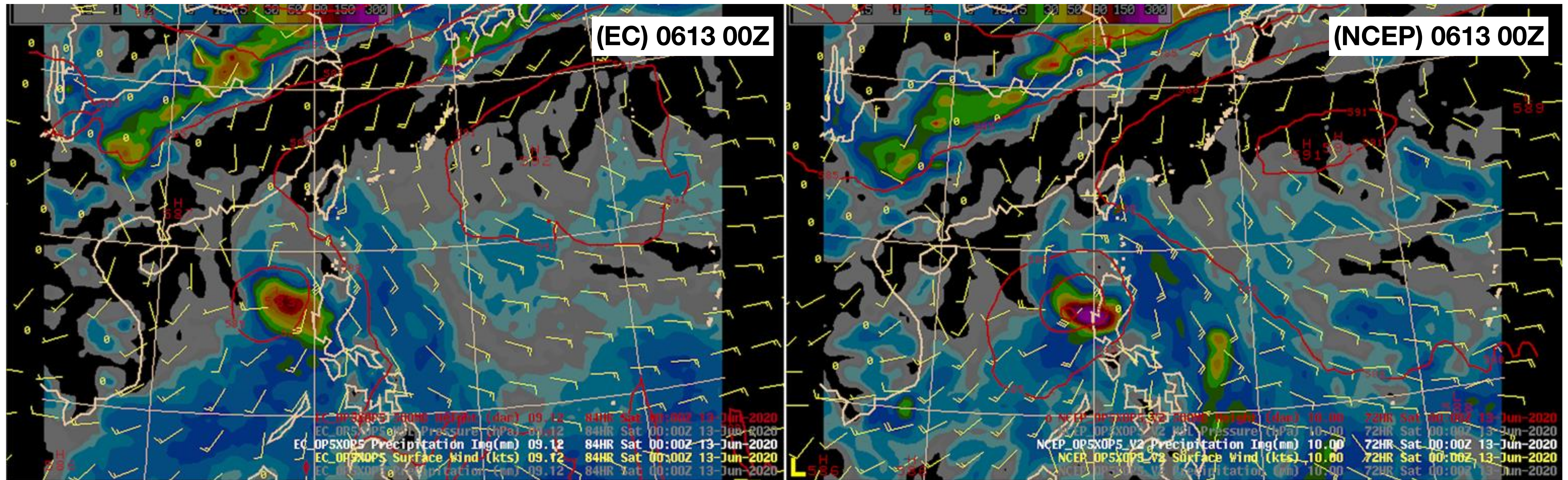
Varied subtropical high strength between NCEP and EC

Contour: **500 hPa height**
Shading: **Precipitation**
Vector: **Surface wind**



Varied subtropical high strength between NCEP and EC

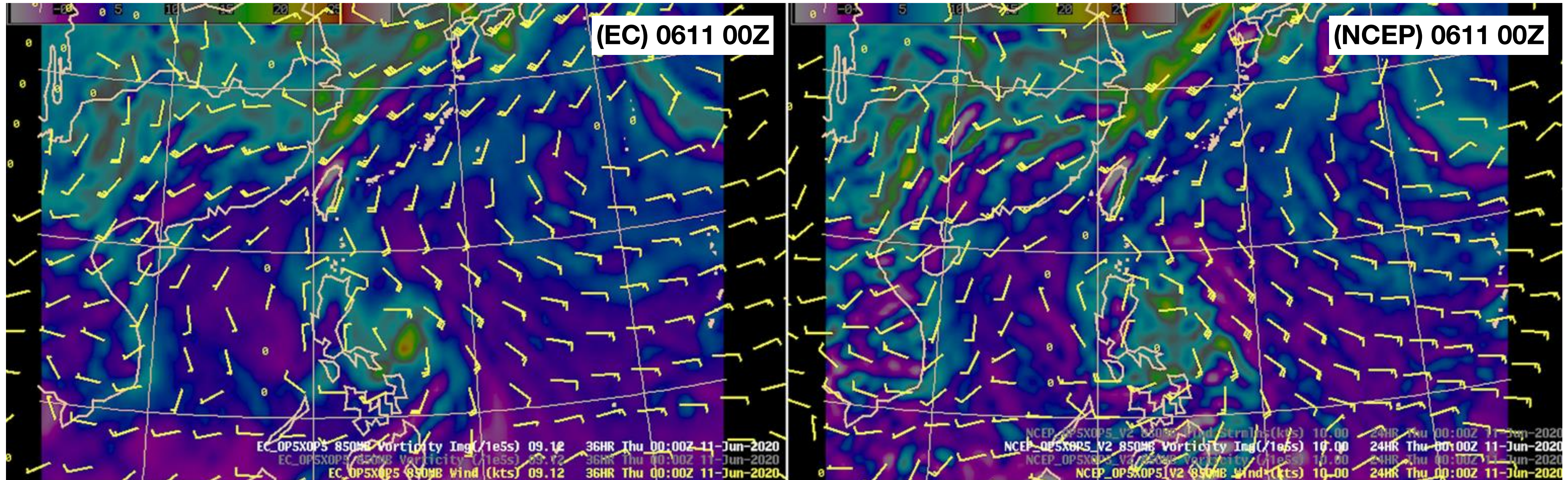
Contour: **500 hPa height**
Shading: **Precipitation**
Vector: **Surface wind**



- Subtropical high in the EC forecasts is consistently stronger than in the NCEP forecasts for the next 3 days

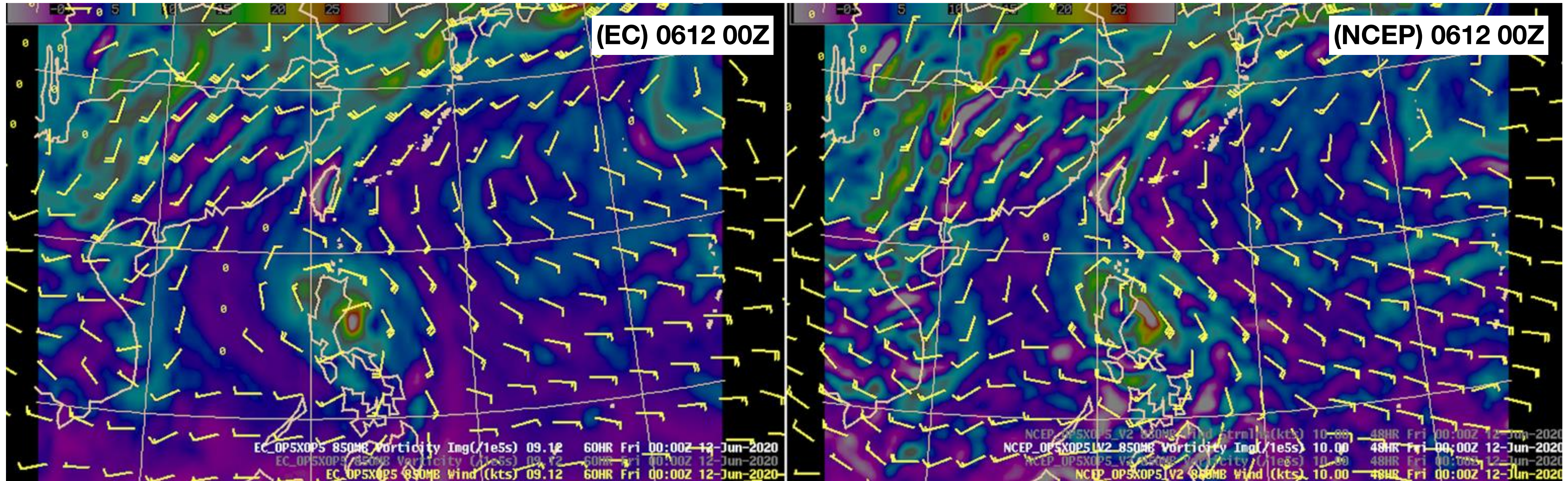
Higher 98W propagation speed in the EC forecasts

Contour: **500 hPa height**
Shading: **850 hPa Vorticity**
Vector: **Surface wind**



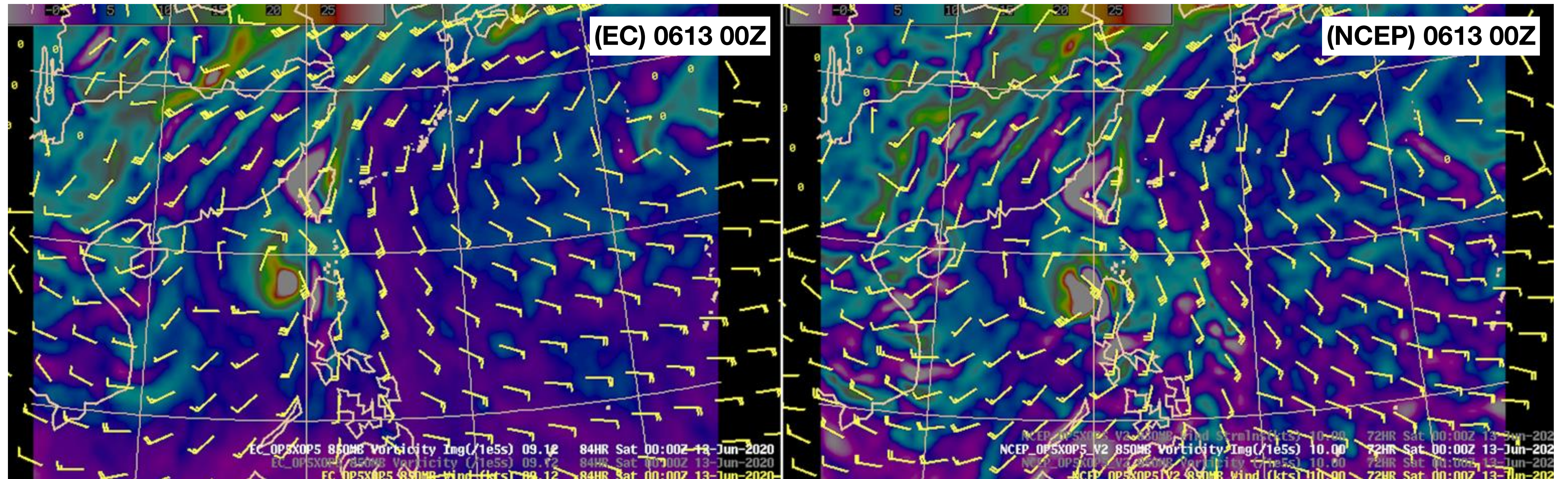
Higher 98W propagation speed in the EC forecasts

Contour: **500 hPa height**
Shading: **850 hPa Vorticity**
Vector: **Surface wind**



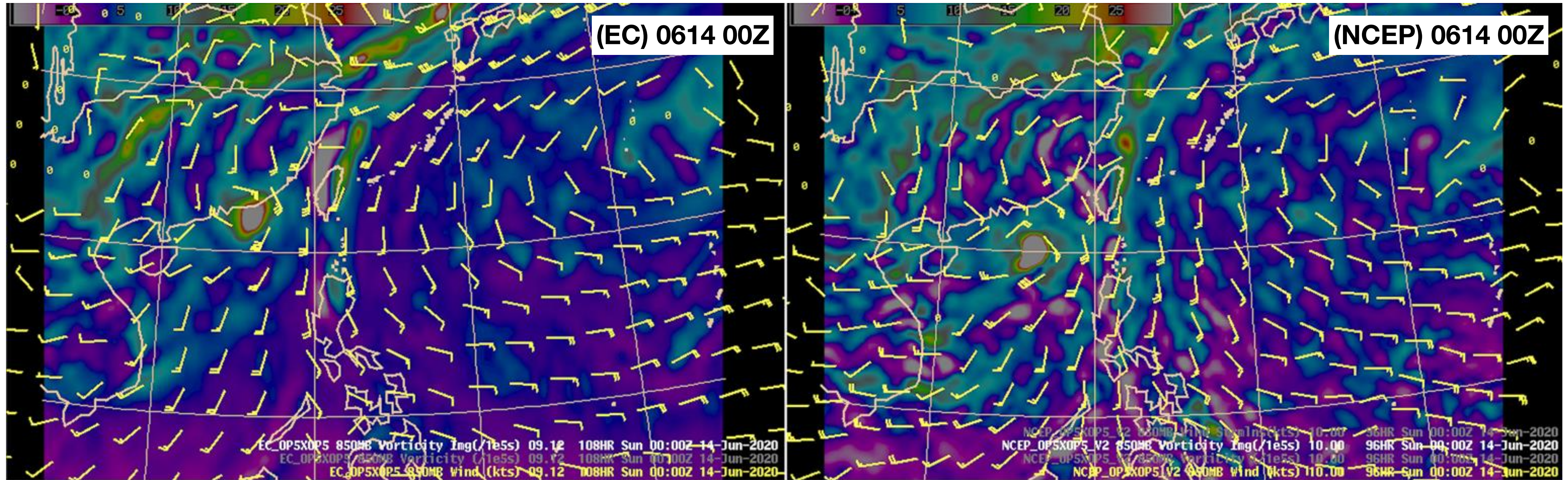
Higher 98W propagation speed in the EC forecasts

Contour: **500 hPa height**
Shading: **850 hPa Vorticity**
Vector: **Surface wind**



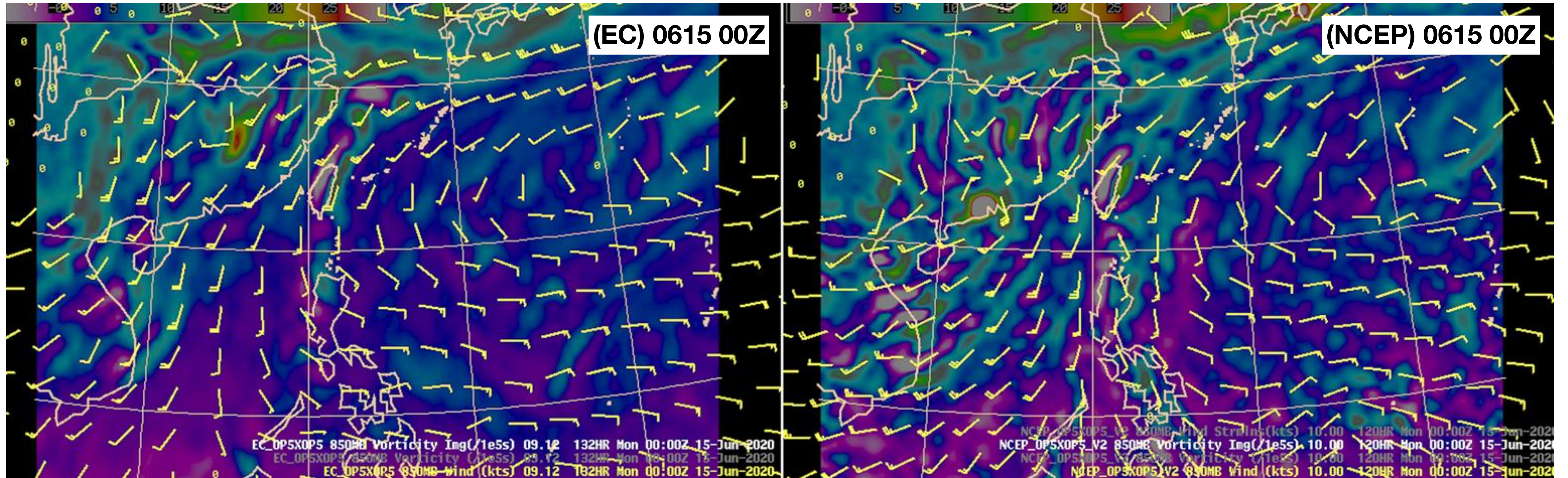
Higher 98W propagation speed in the EC forecasts

Contour: **500 hPa height**
Shading: **850 hPa Vorticity**
Vector: **Surface wind**

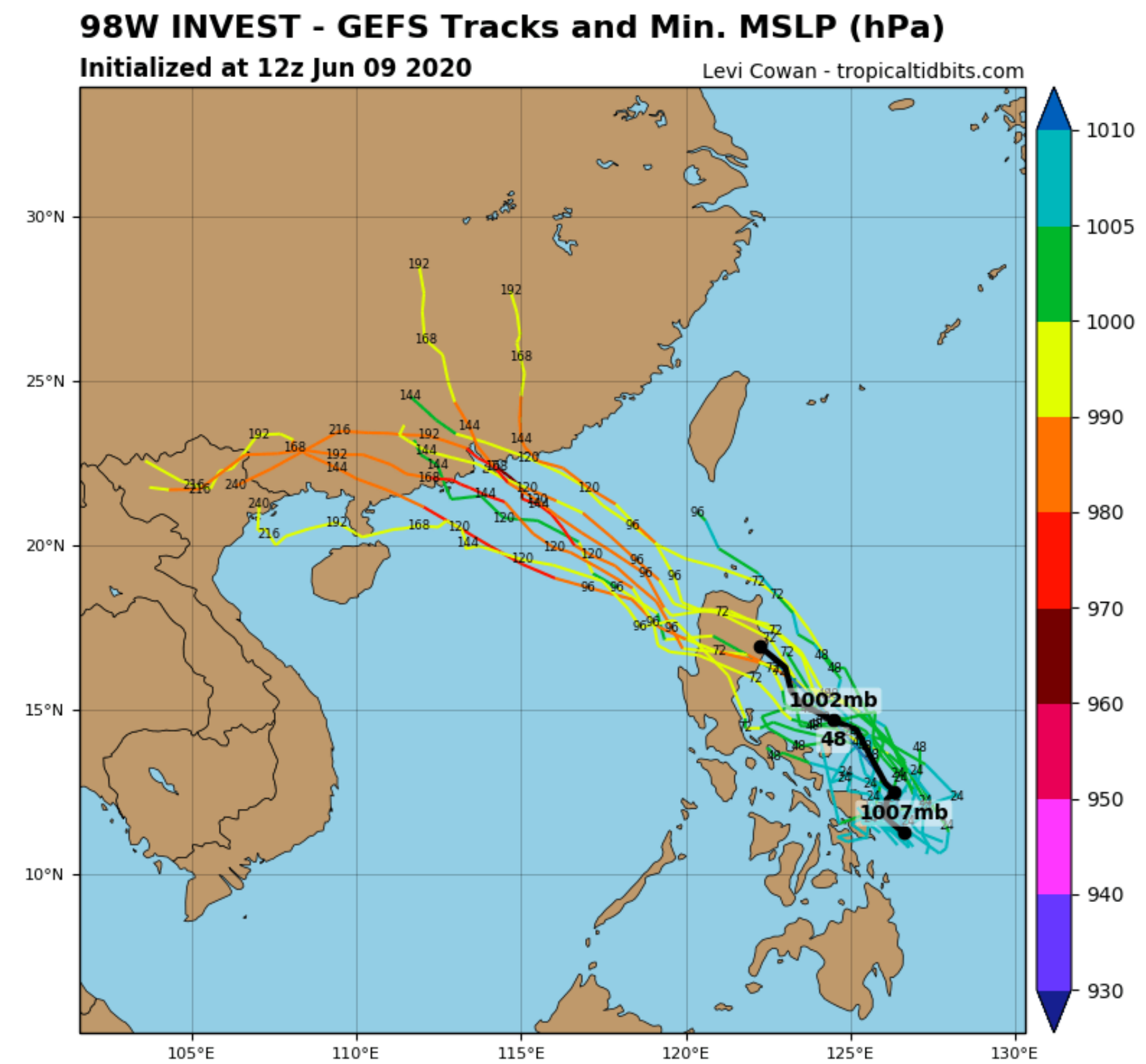
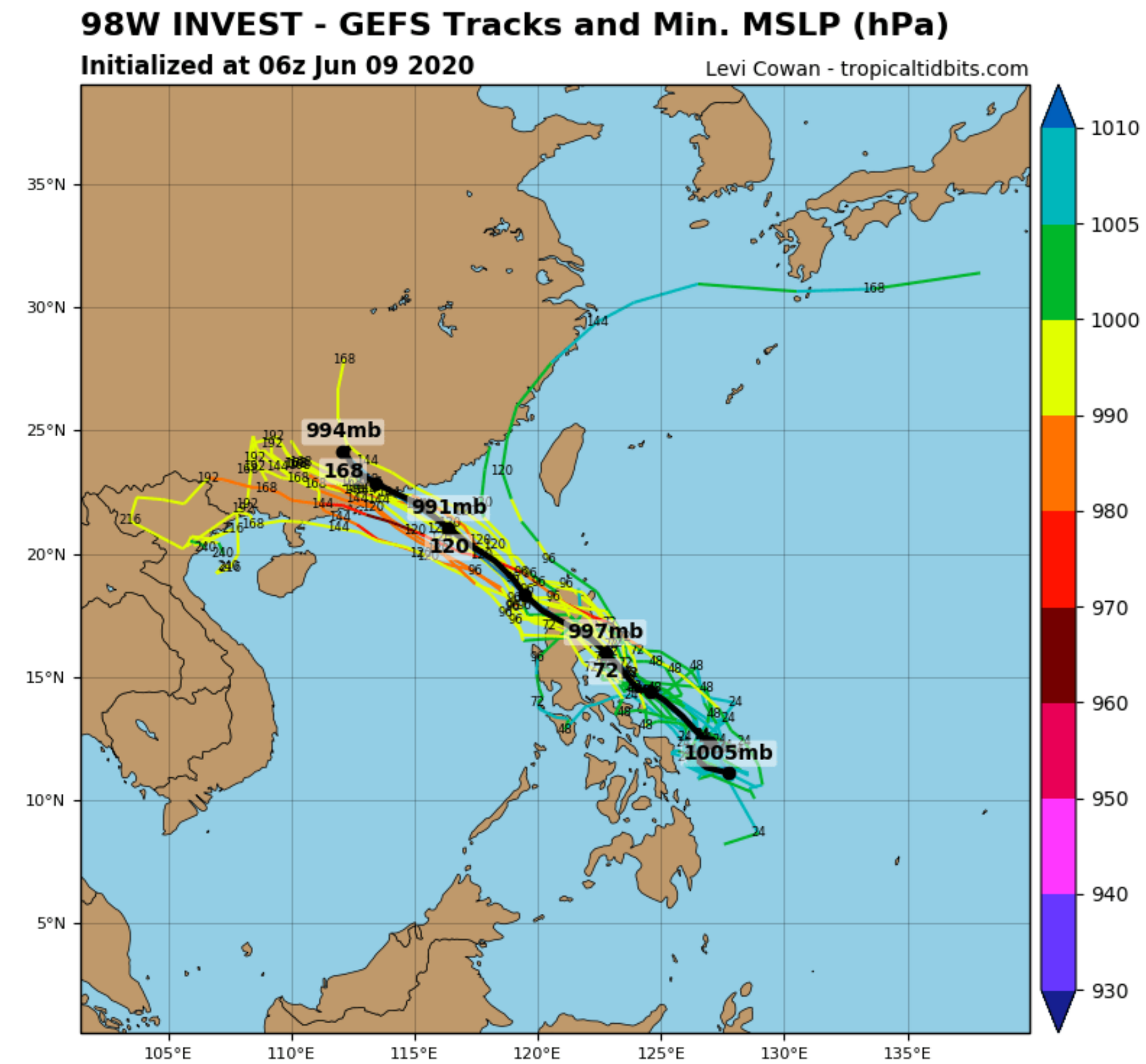


Higher 98W propagation speed in the EC forecasts

Contour: **500 hPa height**
Shading: **850 hPa Vorticity**
Vector: **Surface wind**

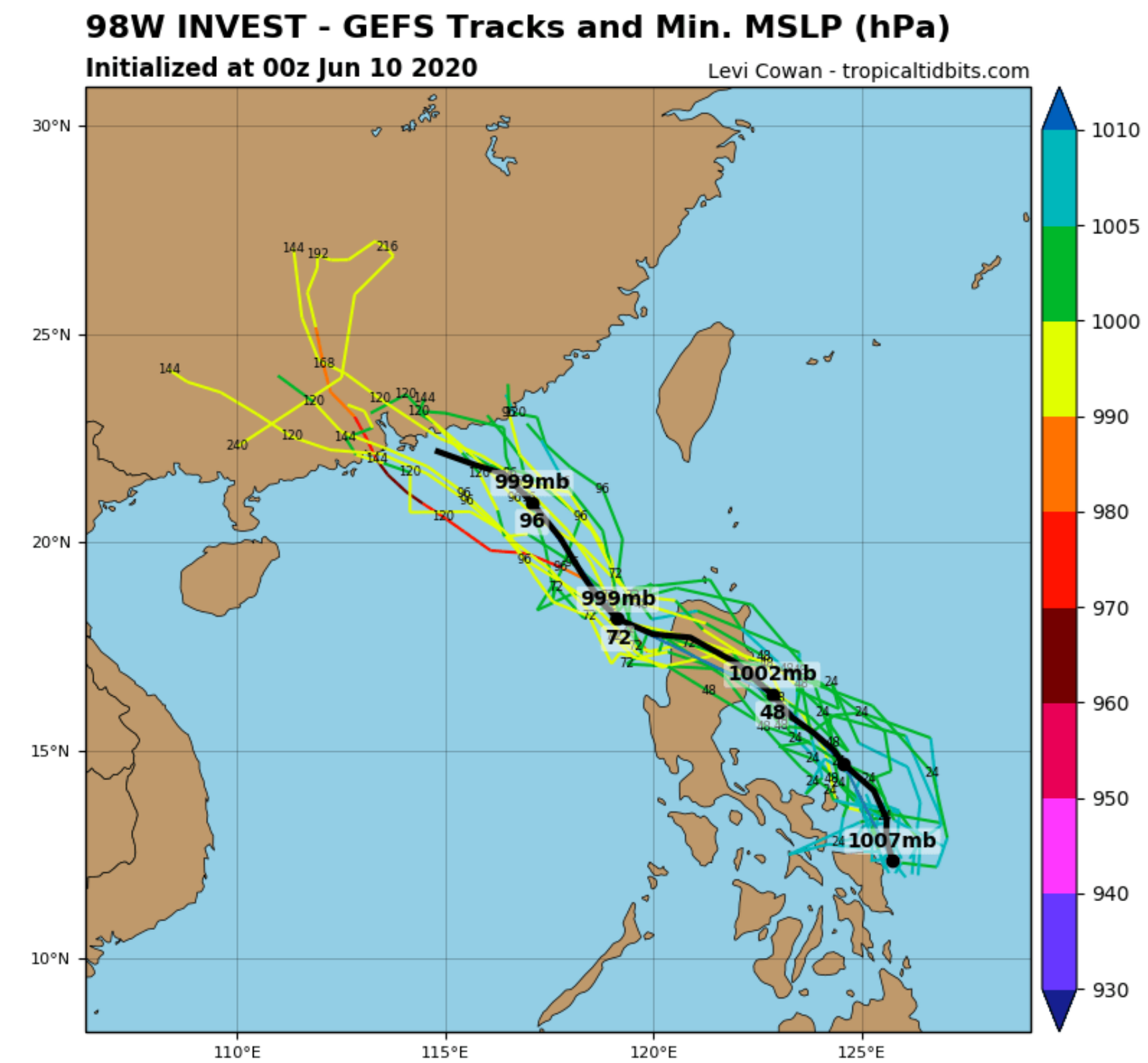
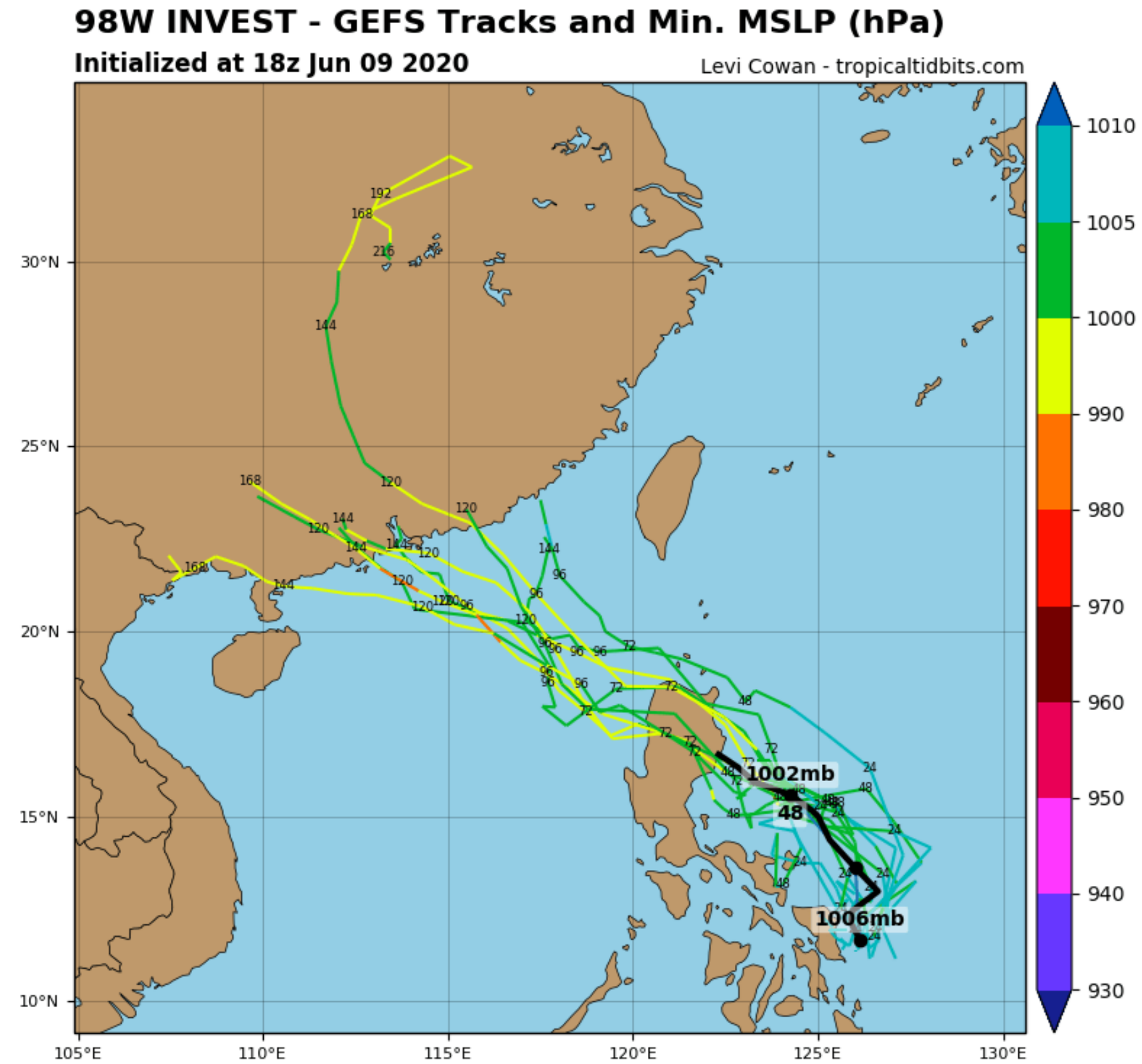


Weaker TC in more recent model runs



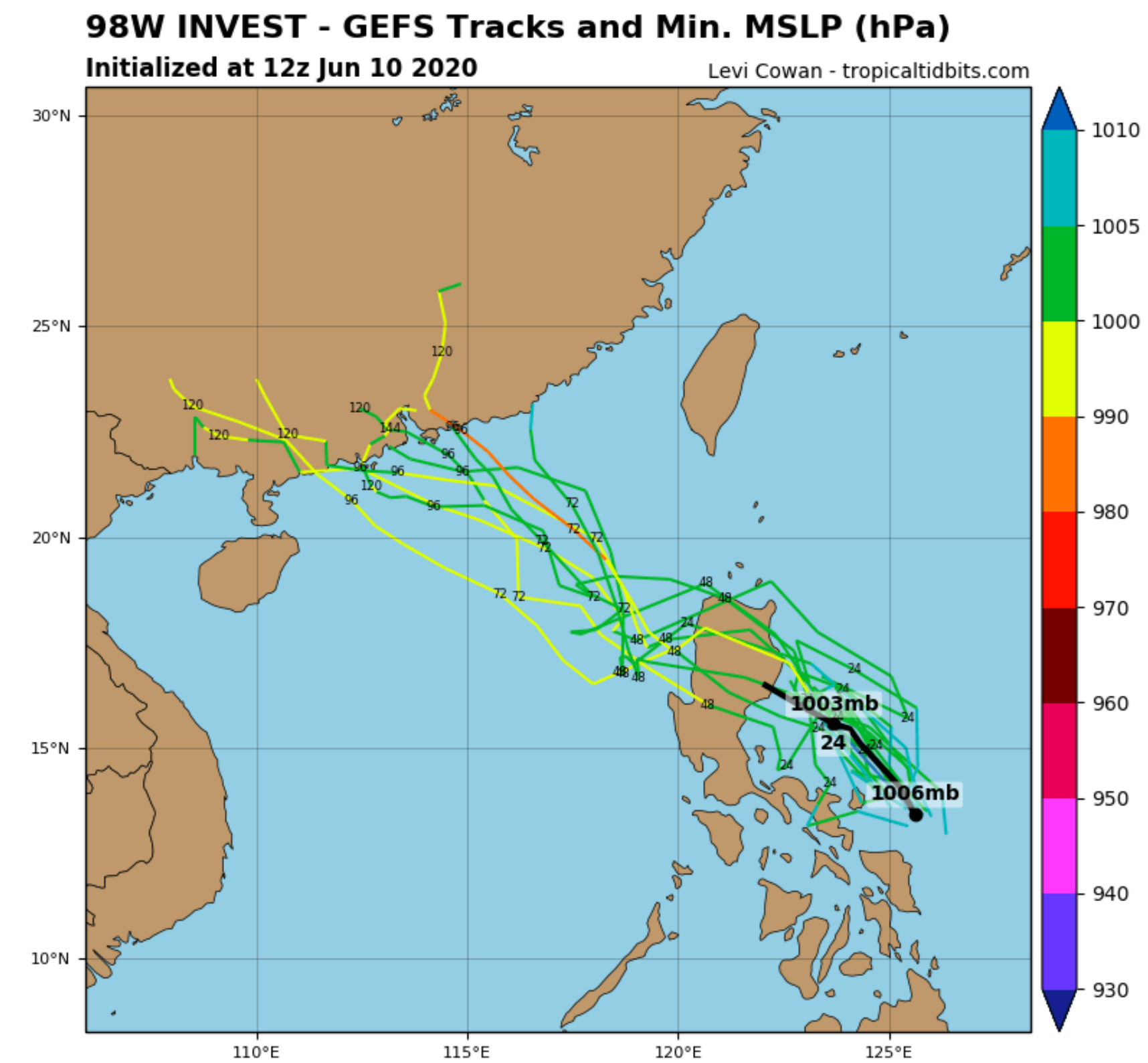
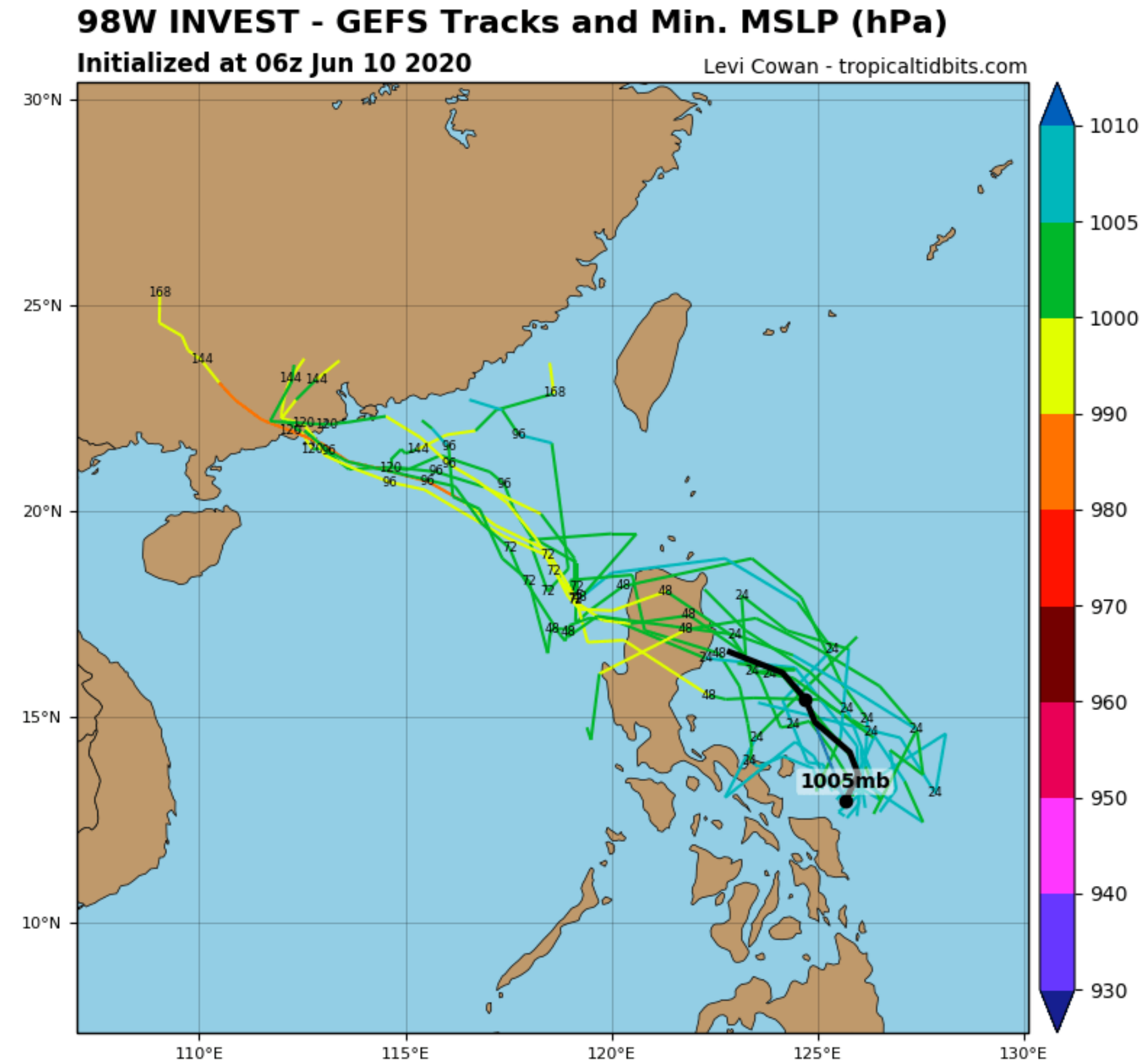
- In earlier runs, 98W was expected to reach low-end Cat 1 intensity after crossing Luzon Island

Weaker TC in more recent model runs



- Number of ensemble members with sea level pressure < 990 hPa decreases with each new run

Weaker TC in more recent model runs

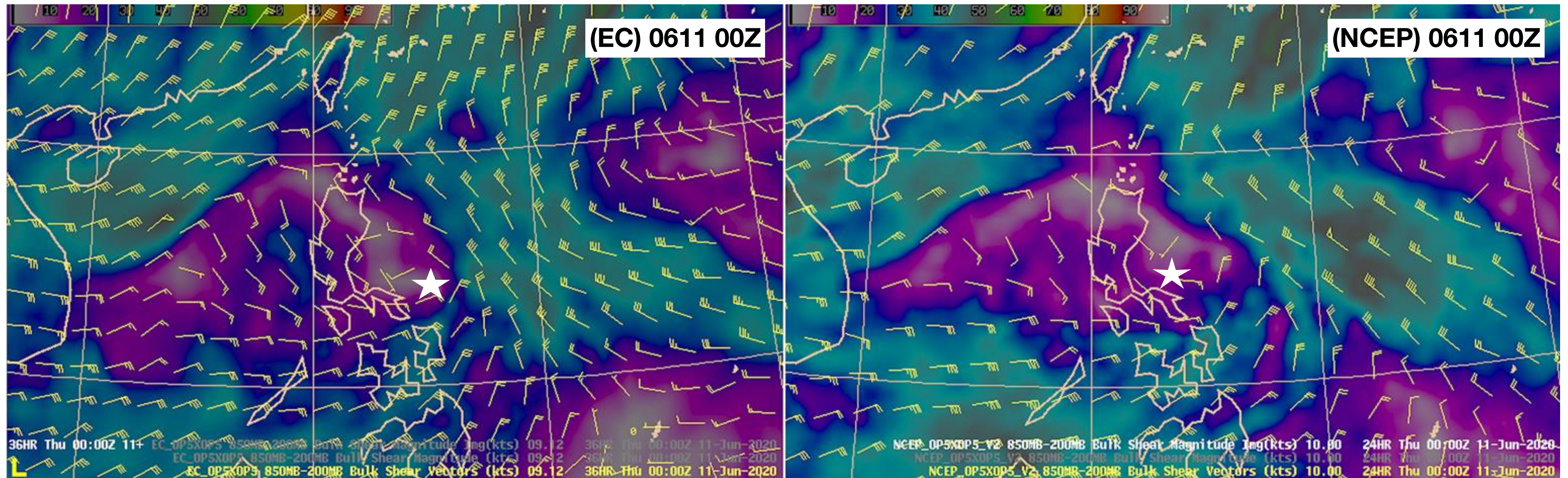


- Number of ensemble members with sea level pressure < 990 hPa decreases with each new run

Forecasted environmental conditions near 98W

Shading: 850-200 hPa bulk shear
magnitude

Vector: 850-200 hPa bulk shear vectors



- Shear is expected to remain low while the system is located in the Philippines Sea

Forecasted environmental conditions near 98W

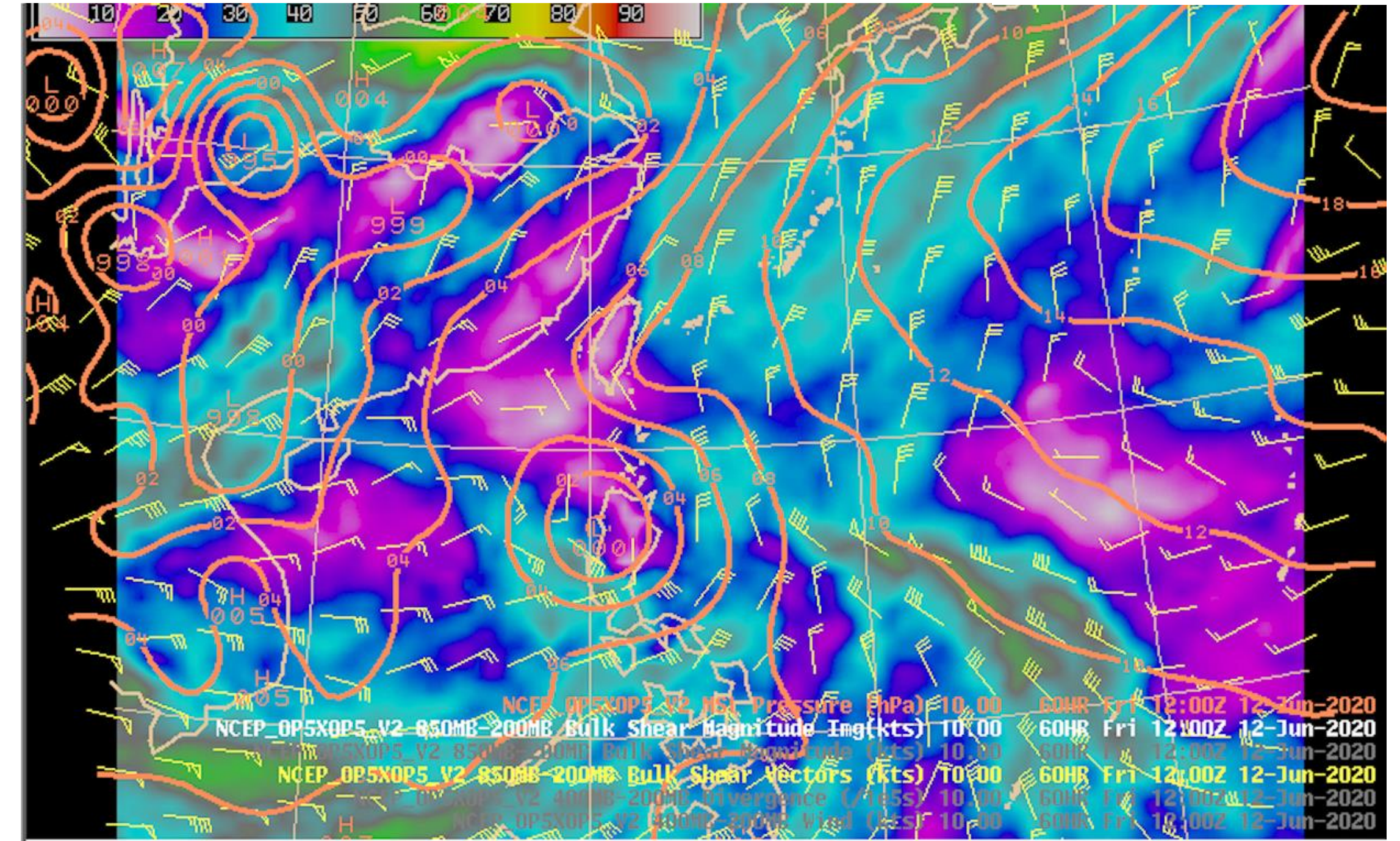
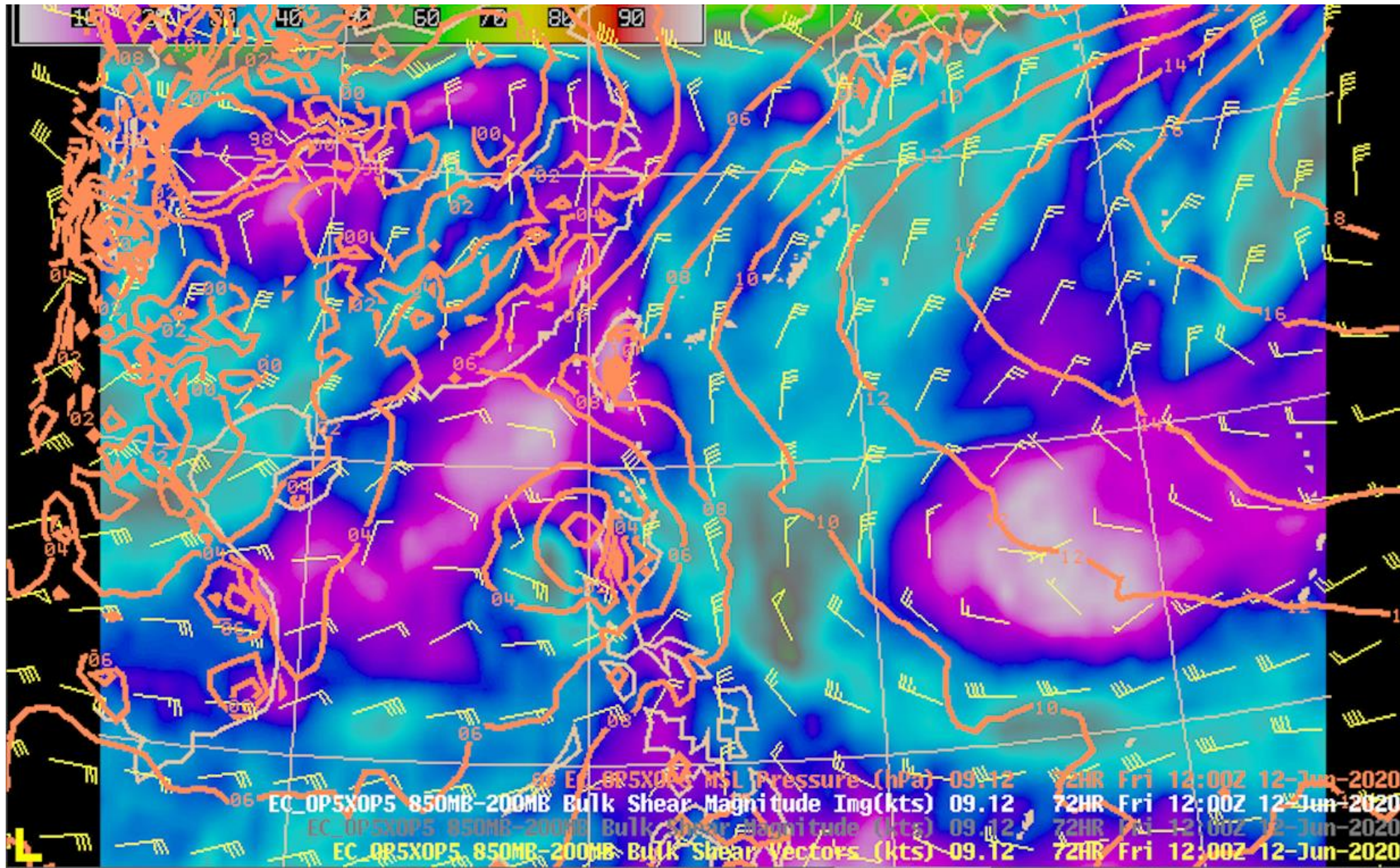
Shading: 850-200 hPa bulk shear
magnitude

Vector: 850-200 hPa bulk shear vectors

Contour: Sea Level Pressure

(EC) 0612 12Z

(NCEP) 0612 12Z



- Shear is expected to remain low while the system is located in the Philippines Sea

Forecasted environmental conditions near 98W

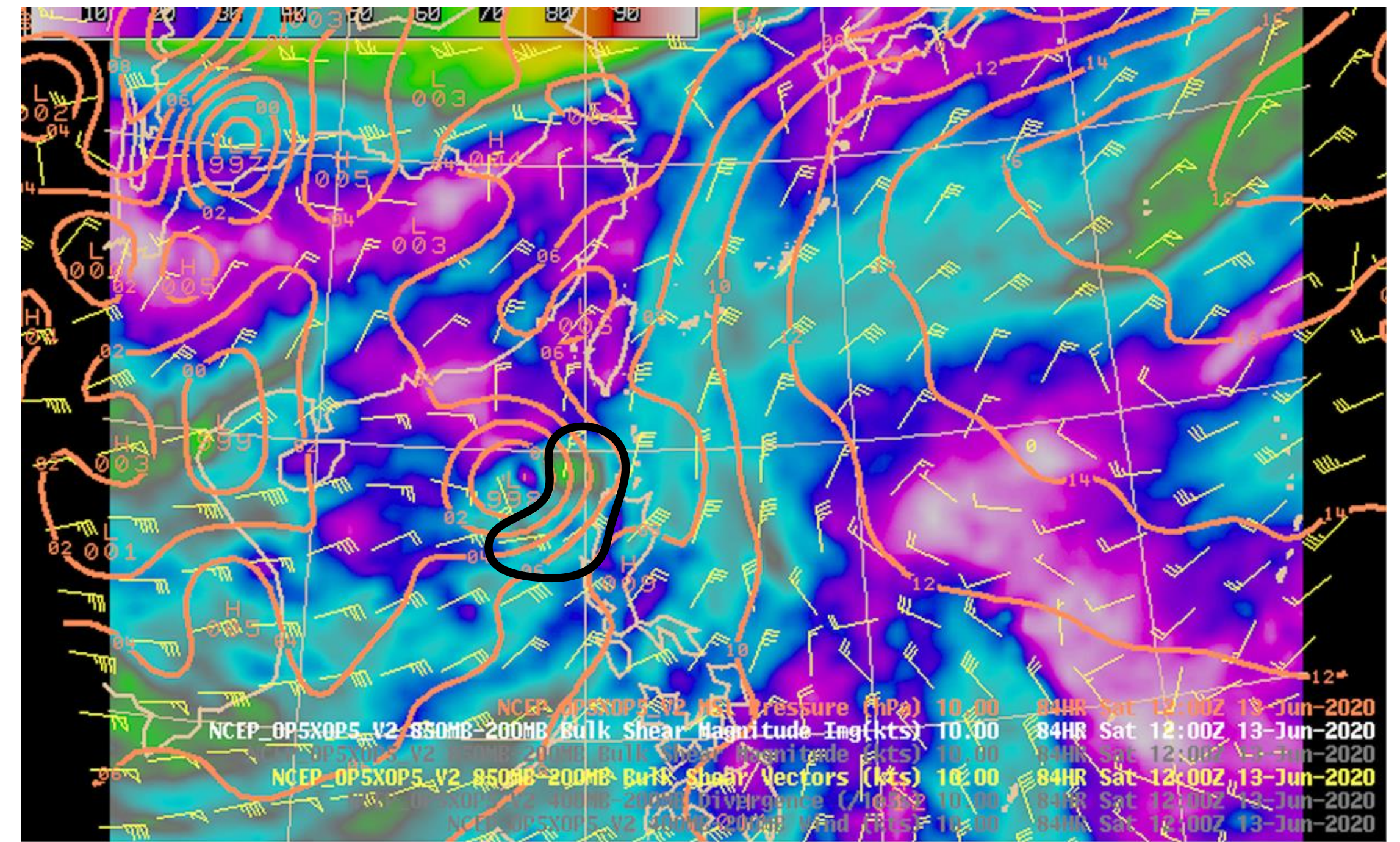
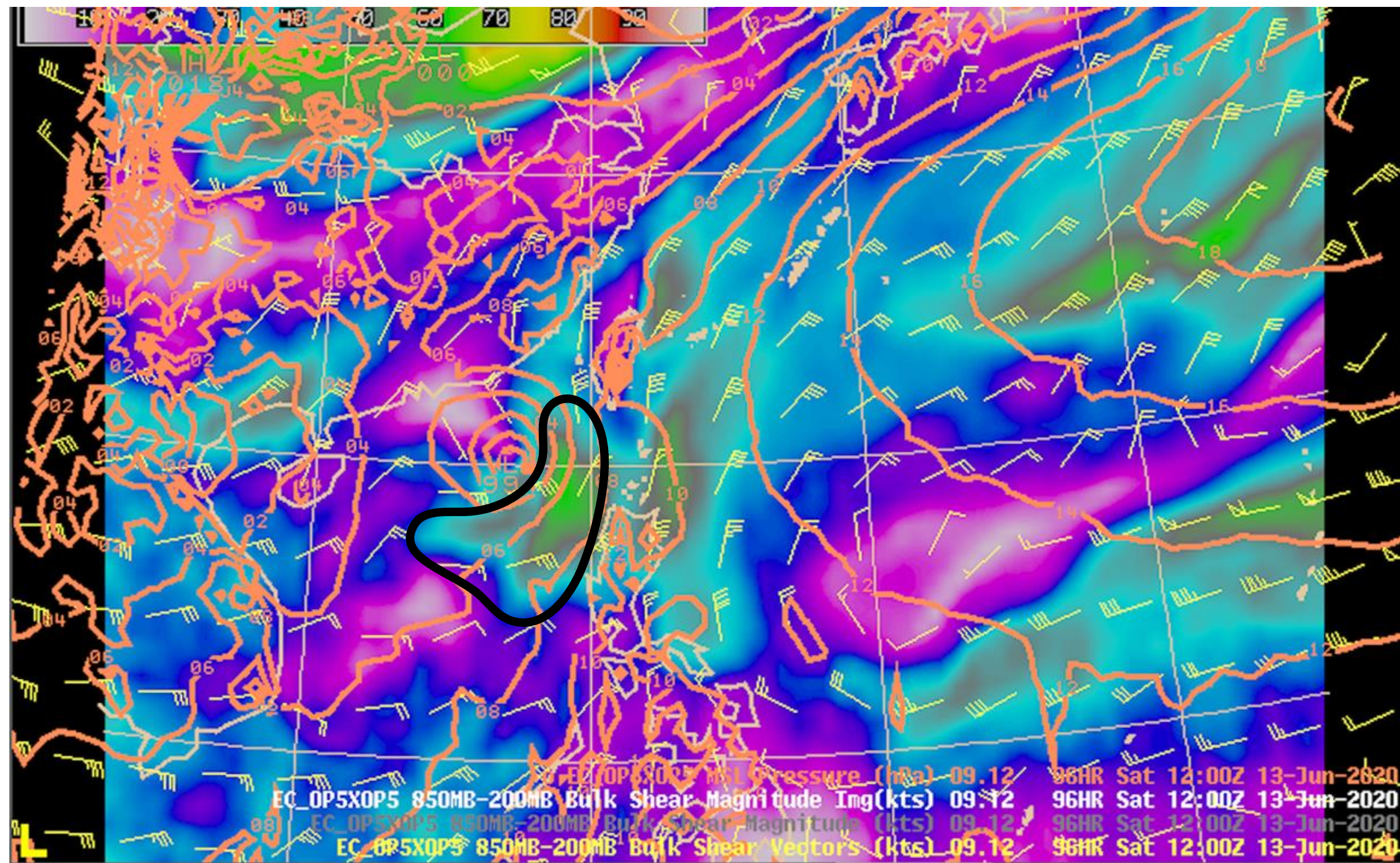
Shading: 850-200 hPa bulk shear magnitude

Vector: 850-200 hPa bulk shear vectors

Contour: Sea Level Pressure

(EC) 0613 12Z

(NCEP) 0613 12Z



- Shear remains low along the predicted 98W track after it crosses Luzon Island
- Enhanced shear in the 98W's SW quadrant ← TC circulation enhancing southwesterly flow
- SW flow enhancement slightly stronger in the NCEP forecast? (Notice the stronger shear magnitude)

Forecasted environmental conditions near 98W

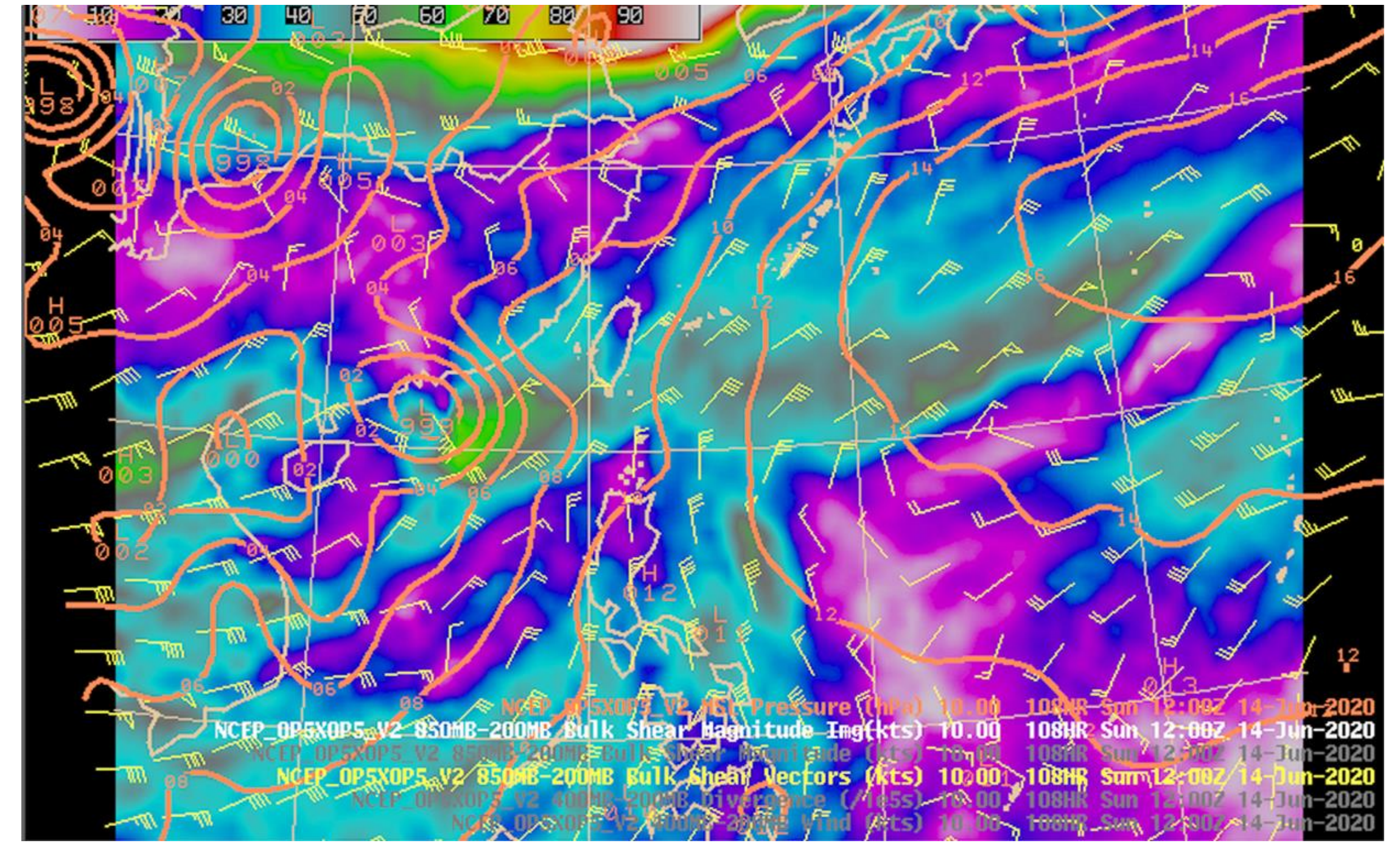
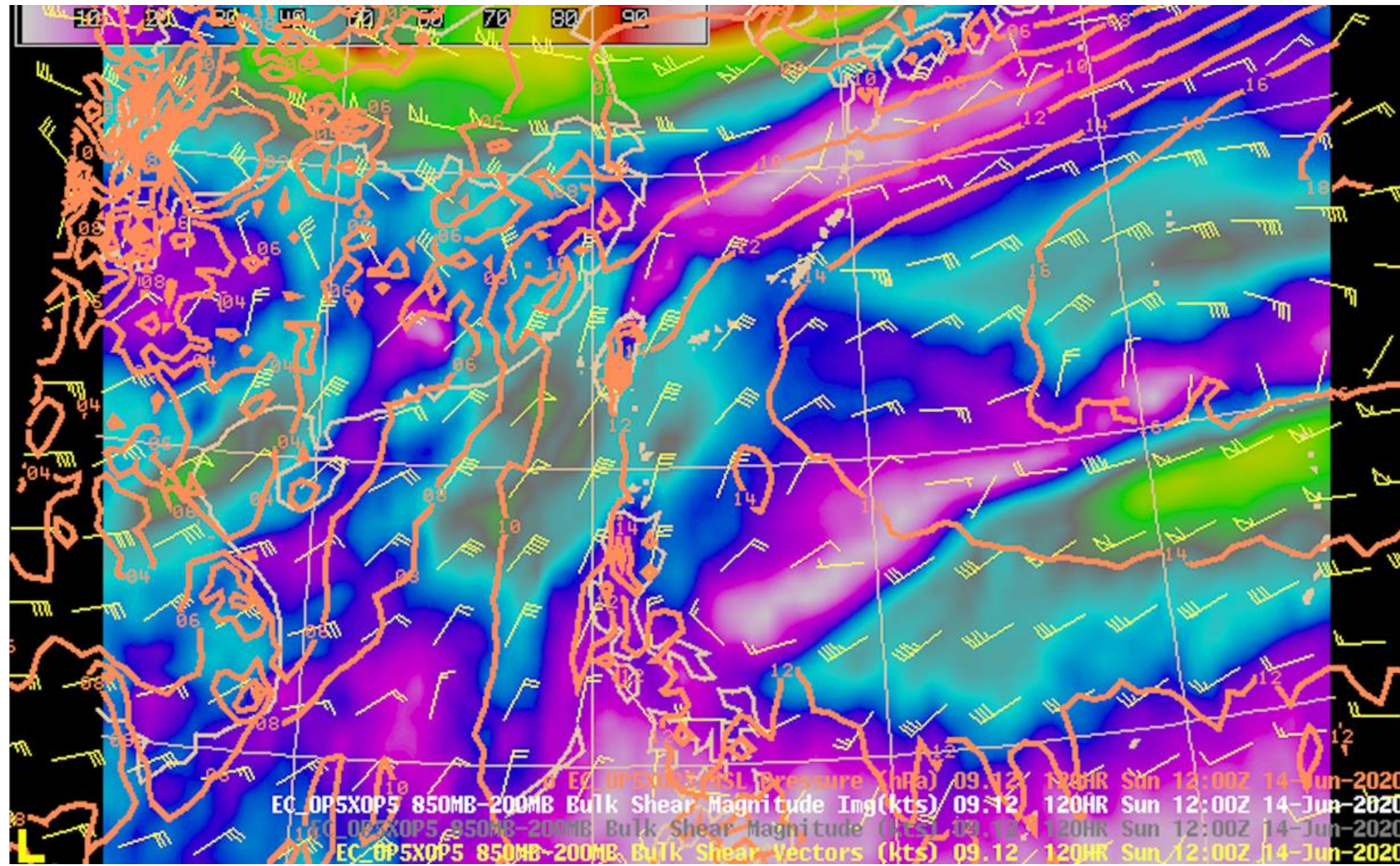
Shading: 850-200 hPa bulk shear magnitude

Vector: 850-200 hPa bulk shear vectors

Contour: Sea Level Pressure

(EC) 0614 12Z

(NCEP) 0614 12Z



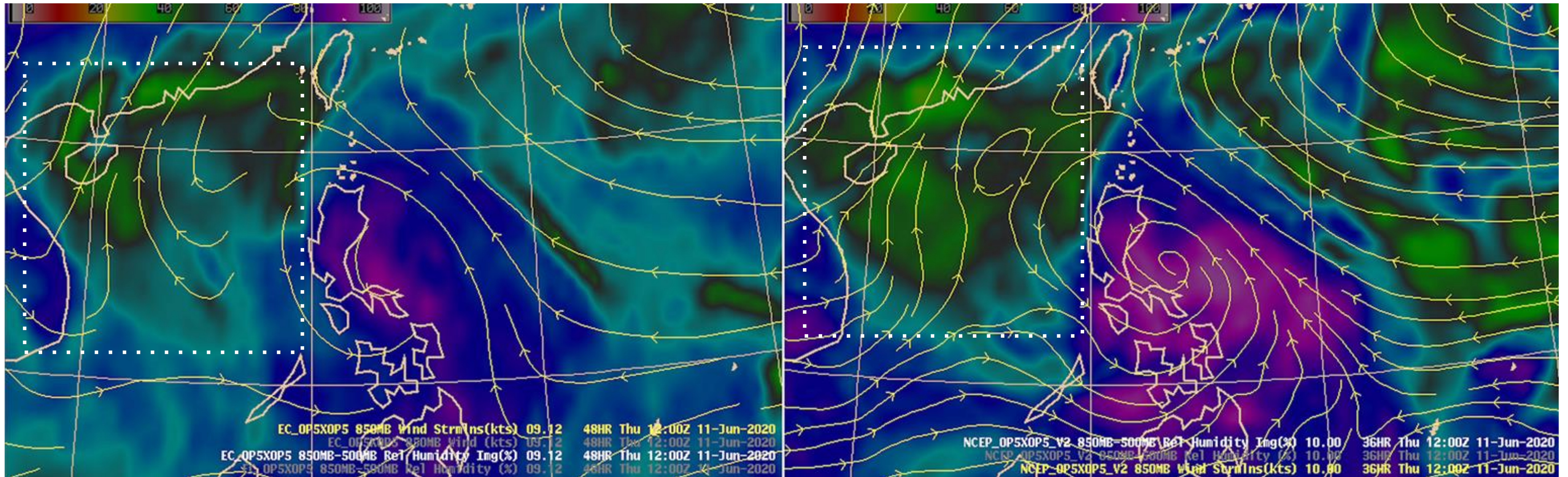
- Favorable shear environment northeastward of 98W should persist till landfall

Drier environment in northern SCS

Shading: 850-500 hPa relative humidity
Streamline: 850 hPa wind

(EC) 0611 12Z

(NCEP) 0611 12Z



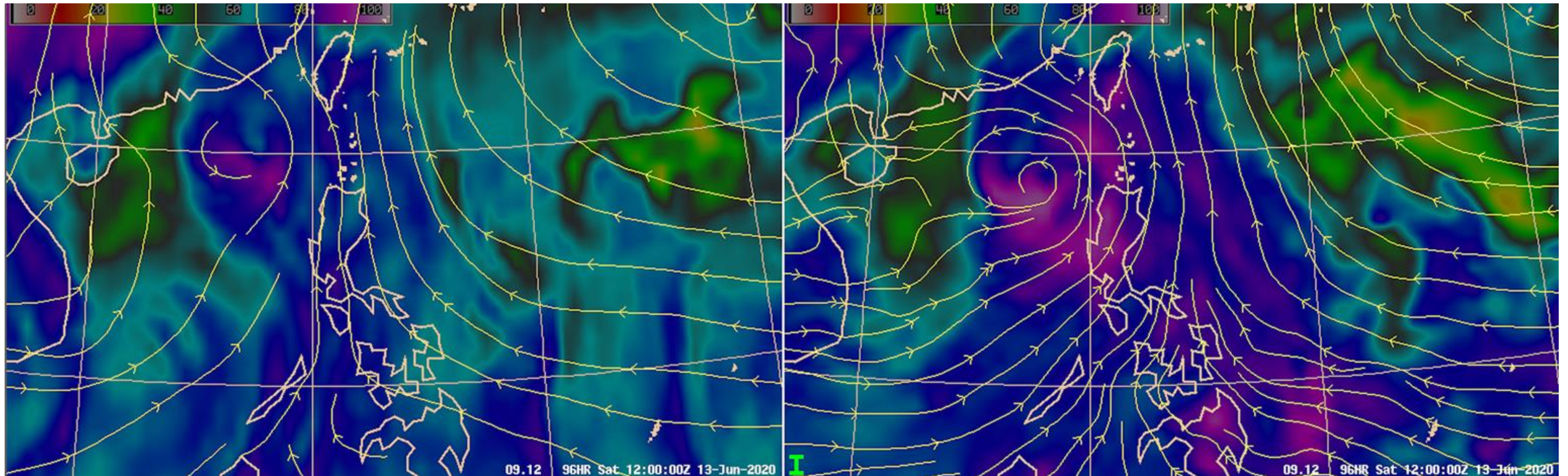
- 98W will encounter drier environment after it crosses Luzon Island

Drier environment in northern SCS

Shading: 850-500 hPa relative humidity
Streamline: 850 hPa wind

(EC) 0613 12Z

(NCEP) 0613 12Z

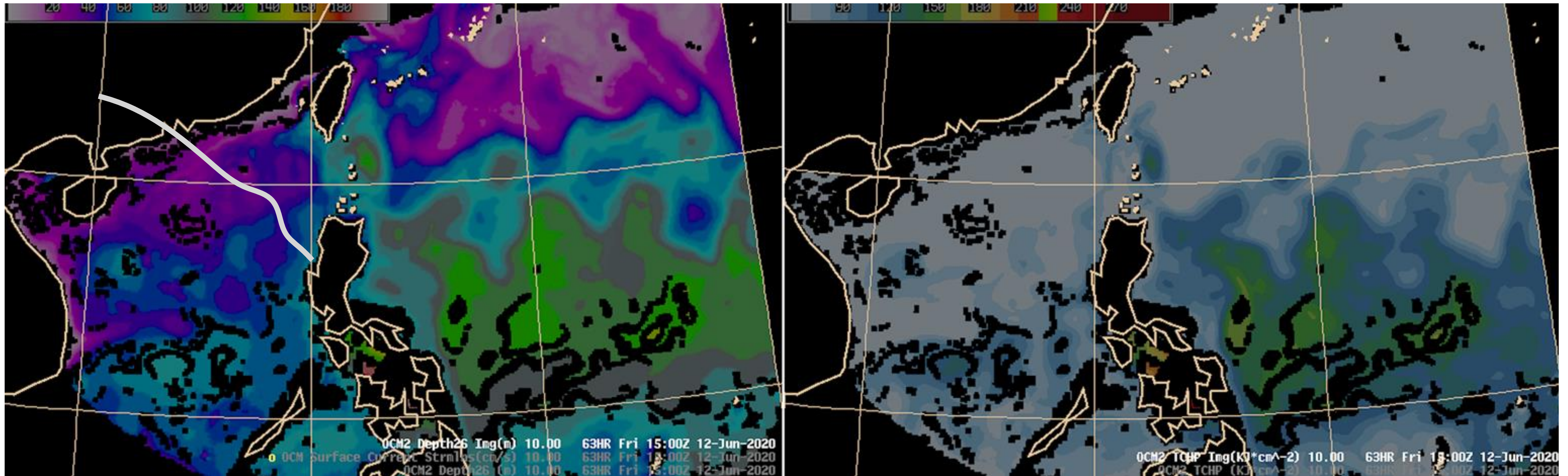


- Potential intrusion of drier air into the reorganizing tropical cyclone

Less favorable oceanic condition in the northern SCS

(OCM2) 0612 15Z

(OCM2) 0612 15Z



Shading: **OCM2 Depth of 26°C isotherm (m)**

Shading: **OCM2 Tropical Cyclone Heat Potential (kJ cm⁻²)**

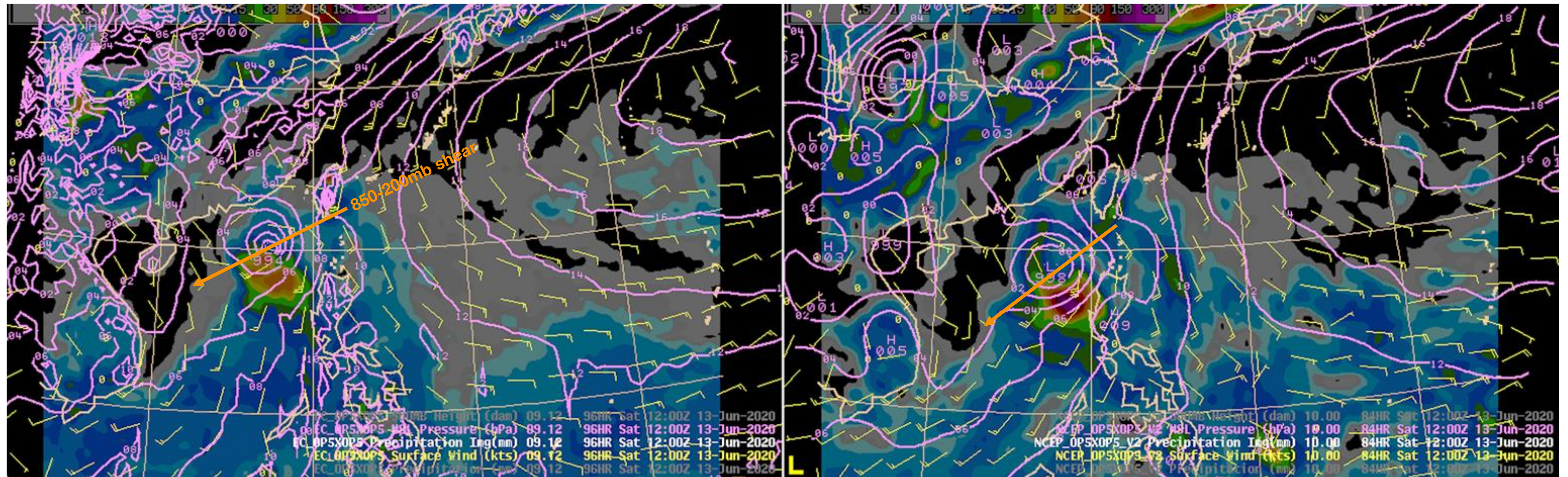
- The upper layer ocean conditions for the northeastern SCS are rather inhospitable and are increasingly so as TC tracks northwestward

Exacerbation of TC precipitation asymmetry over SCS

Shading: **Precipitation**
 Vector: **Surface wind**
 Contour: **Sea Level Pressure**

(EC) 0613 12Z

(NCEP) 0613 12Z



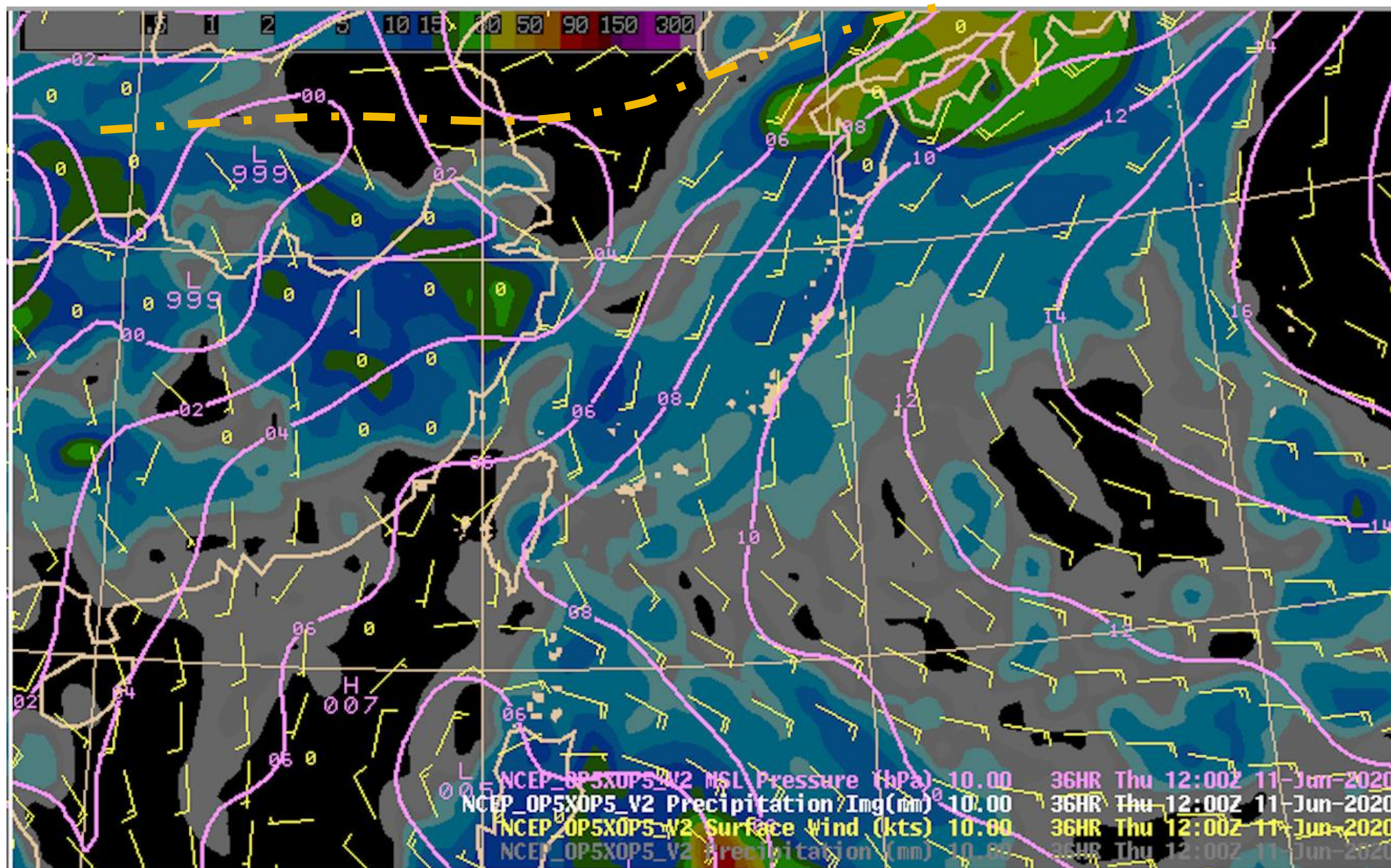
- Model-predicted precipitation distributions become more asymmetric
- More intense precipitation generally occurs at the downshear left quadrant of the TC
- Convergence of southwesterly and TC circulation further enhances this asymmetry

Short summary on model guidances on 98W

- The system is not expected to intensify to beyond the tropical storm category prior to making landfall near Hong Kong/Macau
- NCEP ensemble members seems to gradually become less optimistic with regard to the intensification of this system
- Forecasts for the system track diverge somewhat, with EC predicting a quicker propagation and shift to the east in terms of landfall location
- Environmental conditions become more marginal for intensification after 98W leaves WPAC
- Precipitation asymmetry is expected to persist

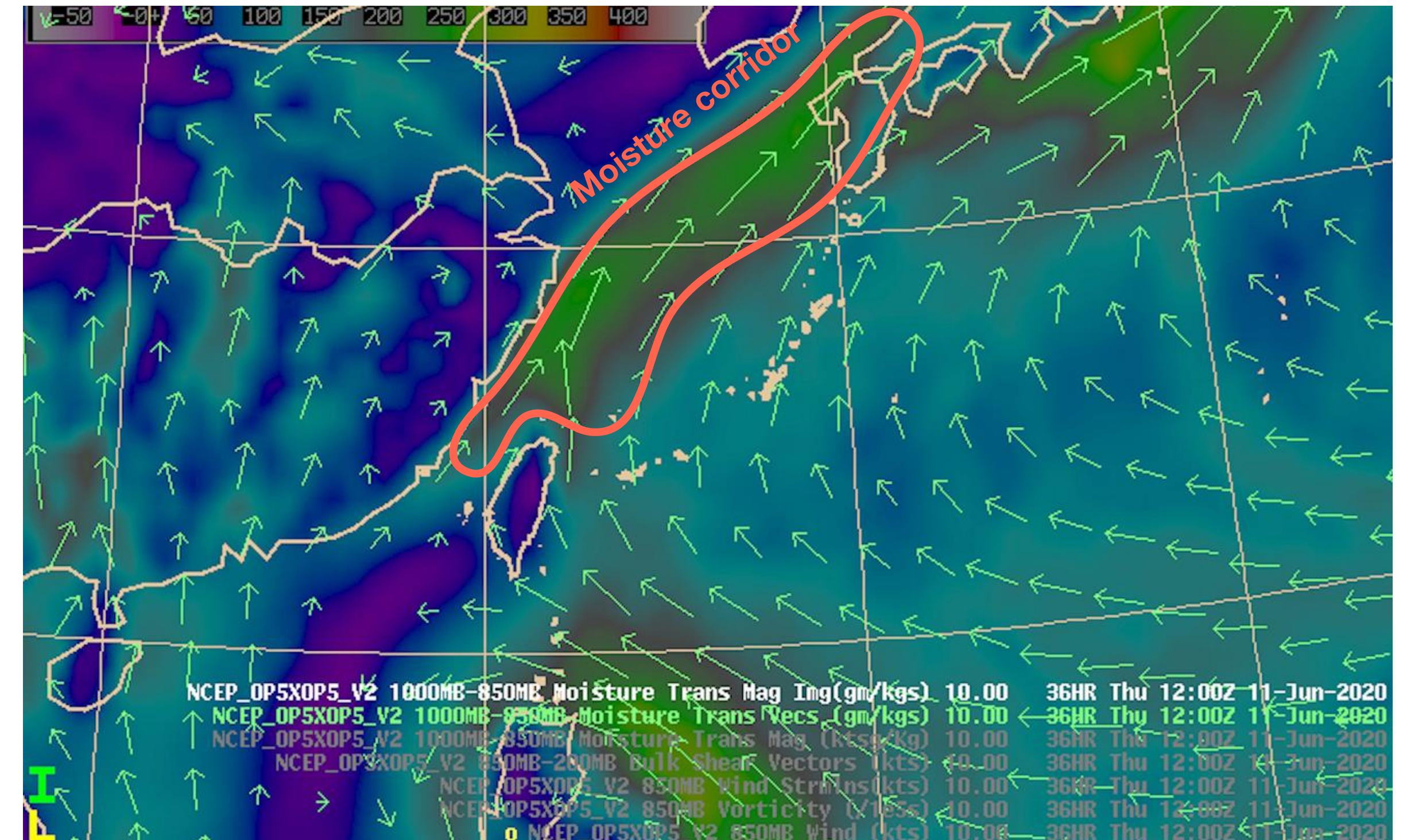
Northward migration of mei-yu rainy systems

(NCEP) 0611 12Z



Contour: Mean sea level pressure
 Shading: Precipitation
 Vector: Surface wind

(NCEP) 0611 12Z

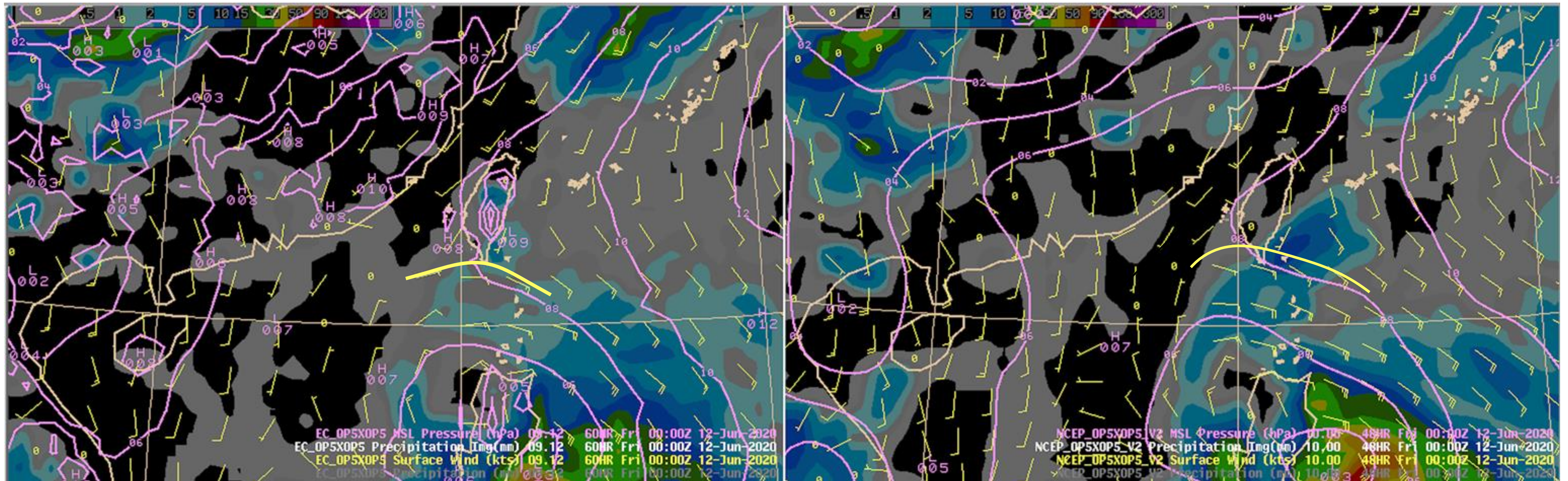


Shading: 1000-850 hPa moisture transport magnitude
 Vector: 1000-850 hPa moisture transport vectors

Influence of TC circulation on southern Taiwan rainfall

(NCEP) 0612 12Z

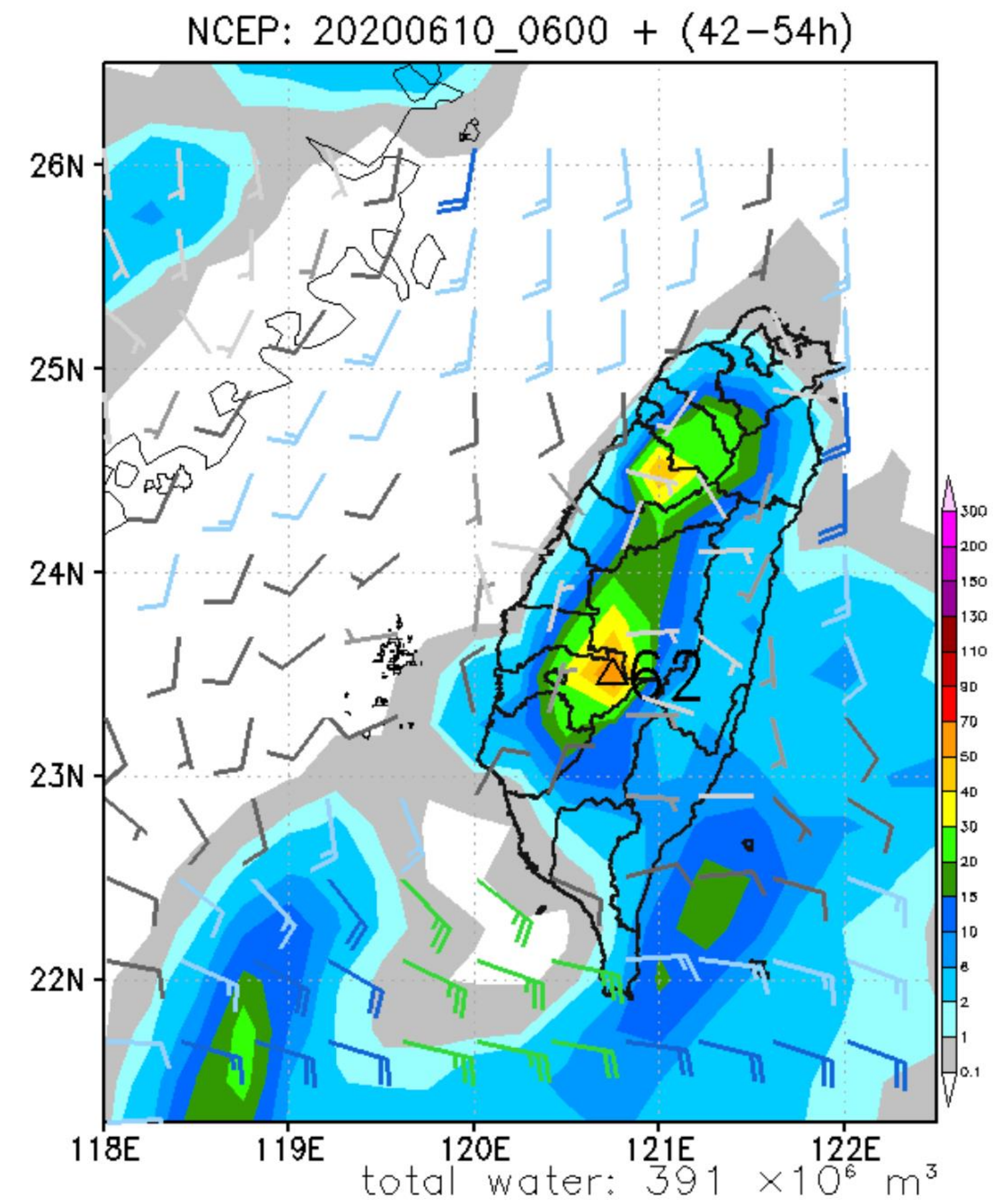
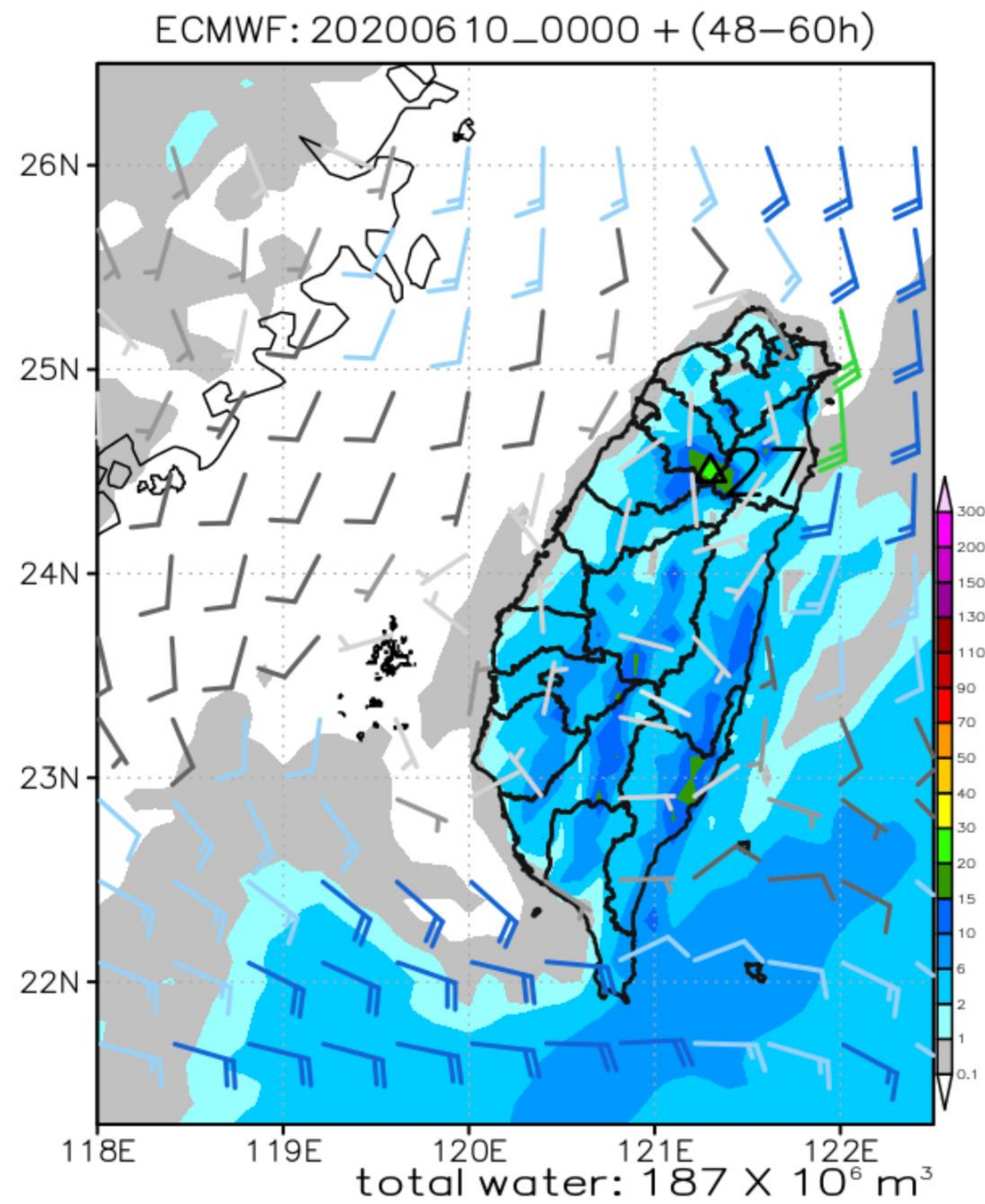
(NCEP) 0611 12Z



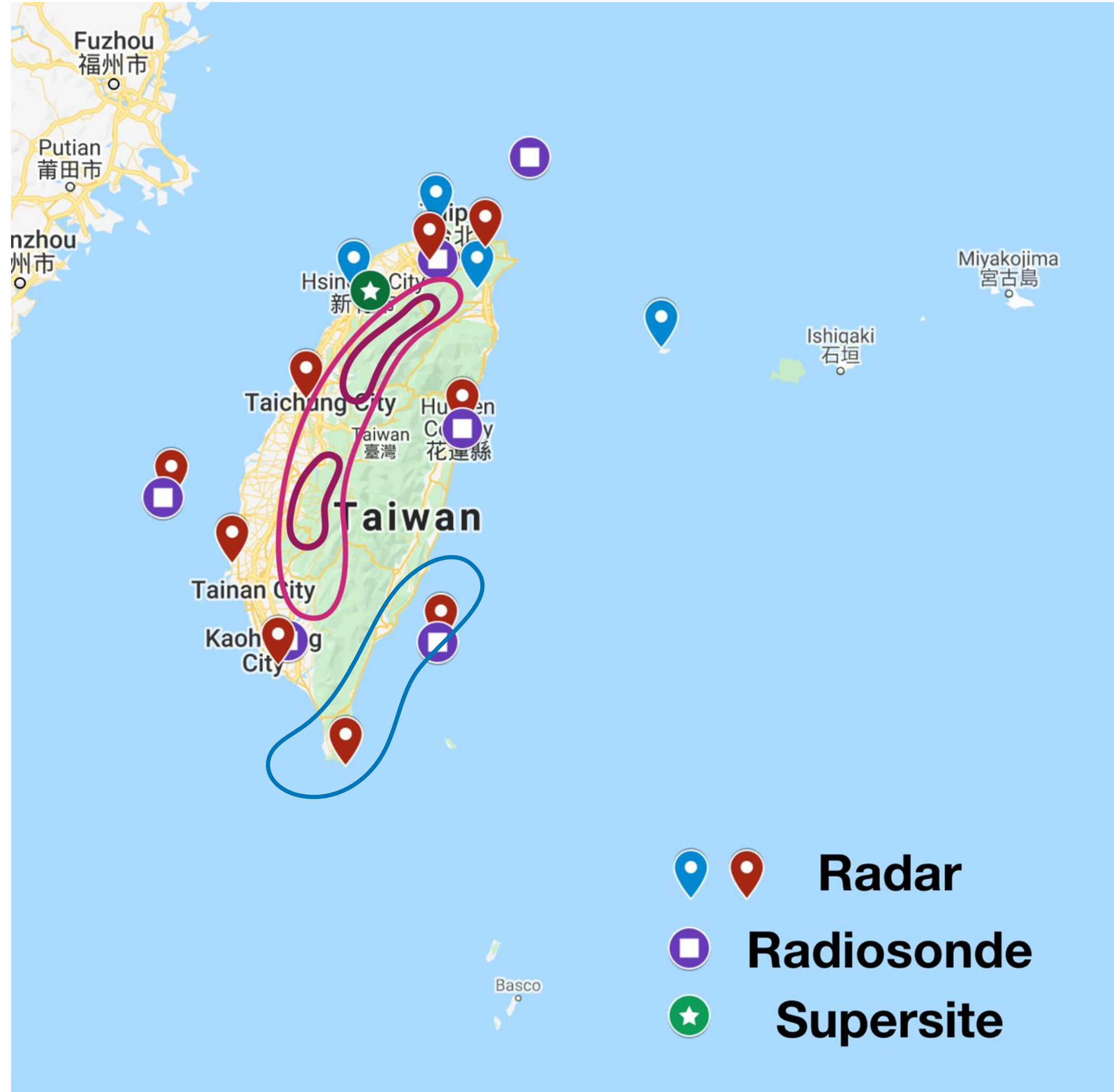
Contour: **Mean sea level pressure**
 Shading: **Precipitation**
 Vector: **Surface wind**

Shading: **1000-850 hPa moisture transport magnitude**
 Vector: **1000-850 hPa moisture transport vectors**

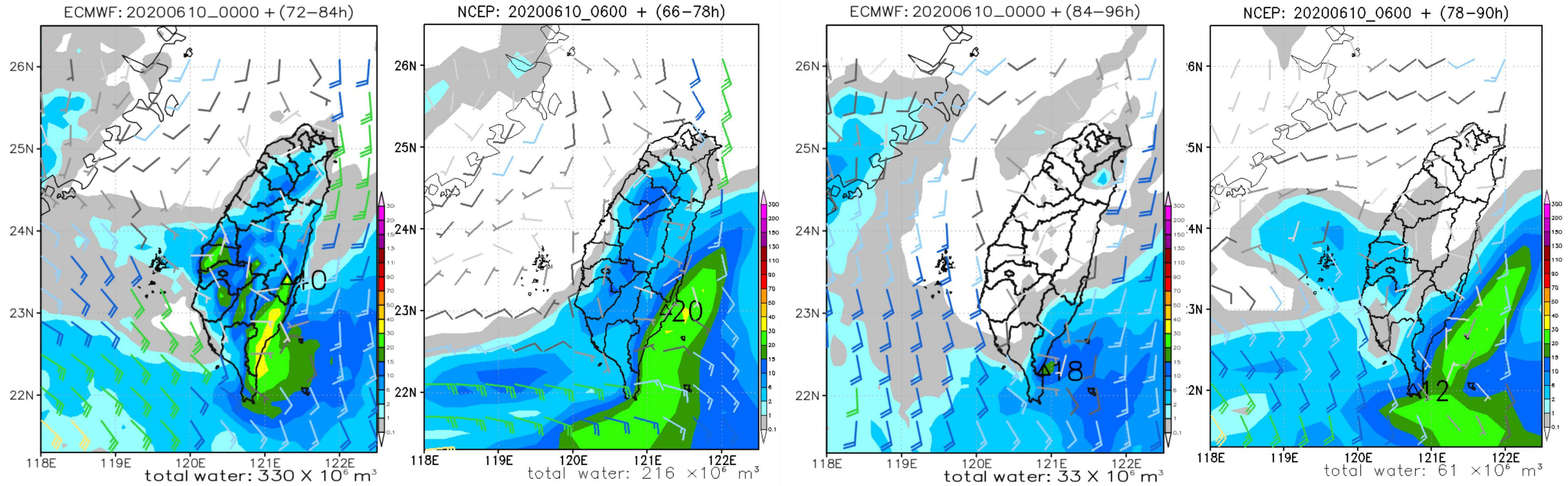
Return to a afternoon thunderstorm-dominated regime (12 Aug)



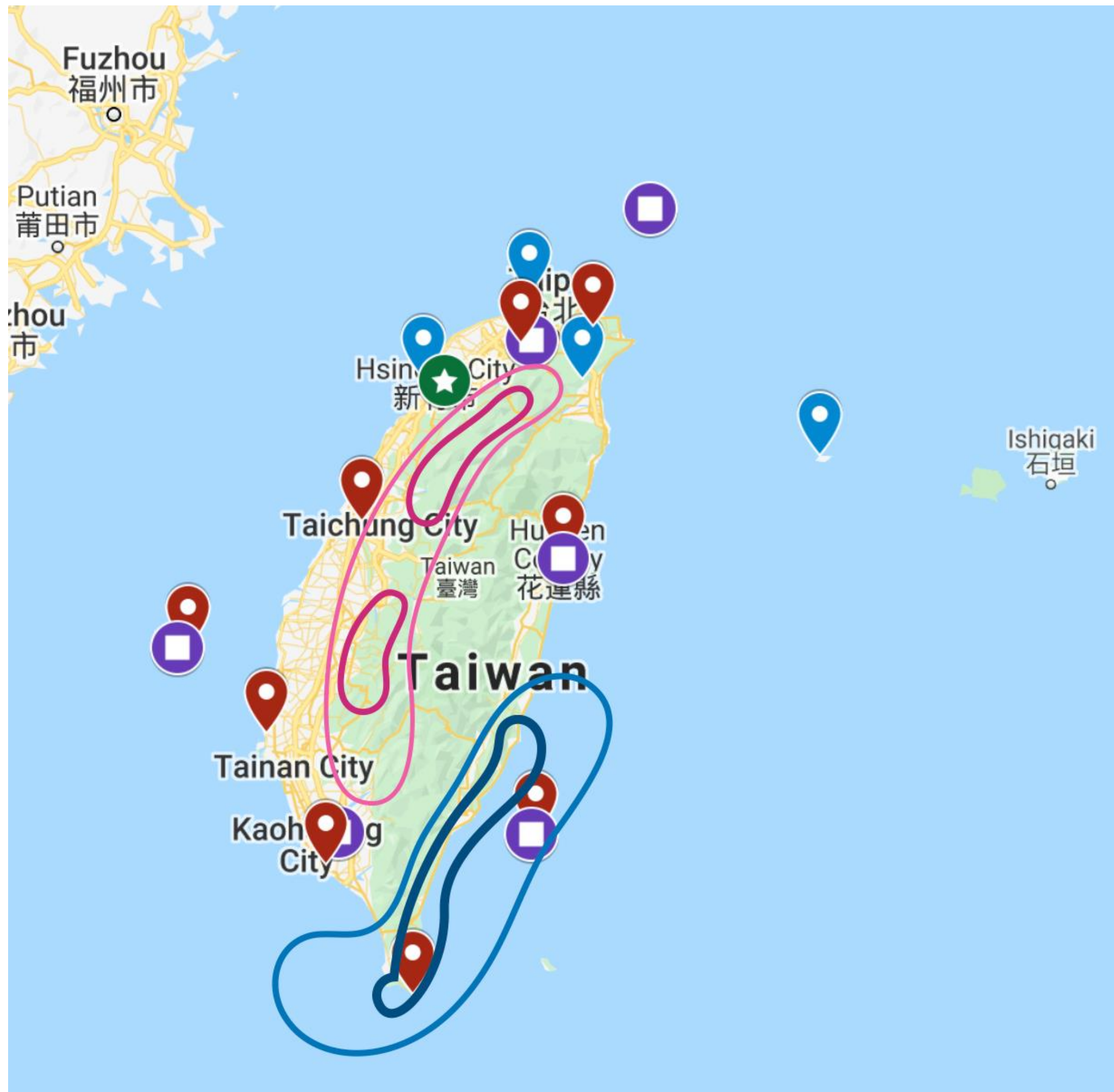
Potential precipitation hotspots on 12 Aug



Windward precipitation in southeastern Taiwan (13 Aug)



Potential precipitation hotspots on 13 Aug

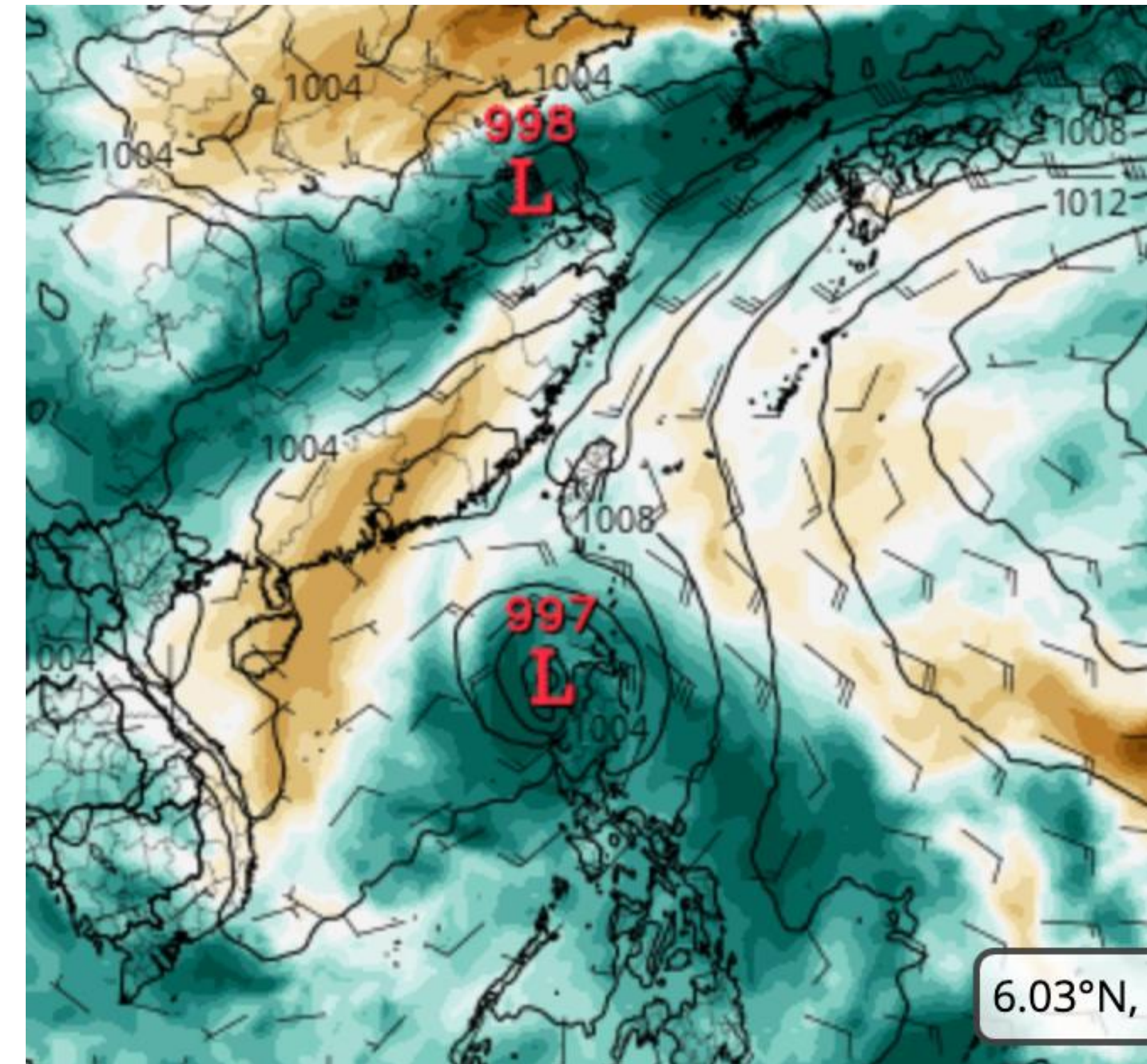


Contour: **Mean sea level pressure**

Shading: **700-400 hPa RH**

Vector: **700-400 hPa wind**

(NCEP) 0613 00Z



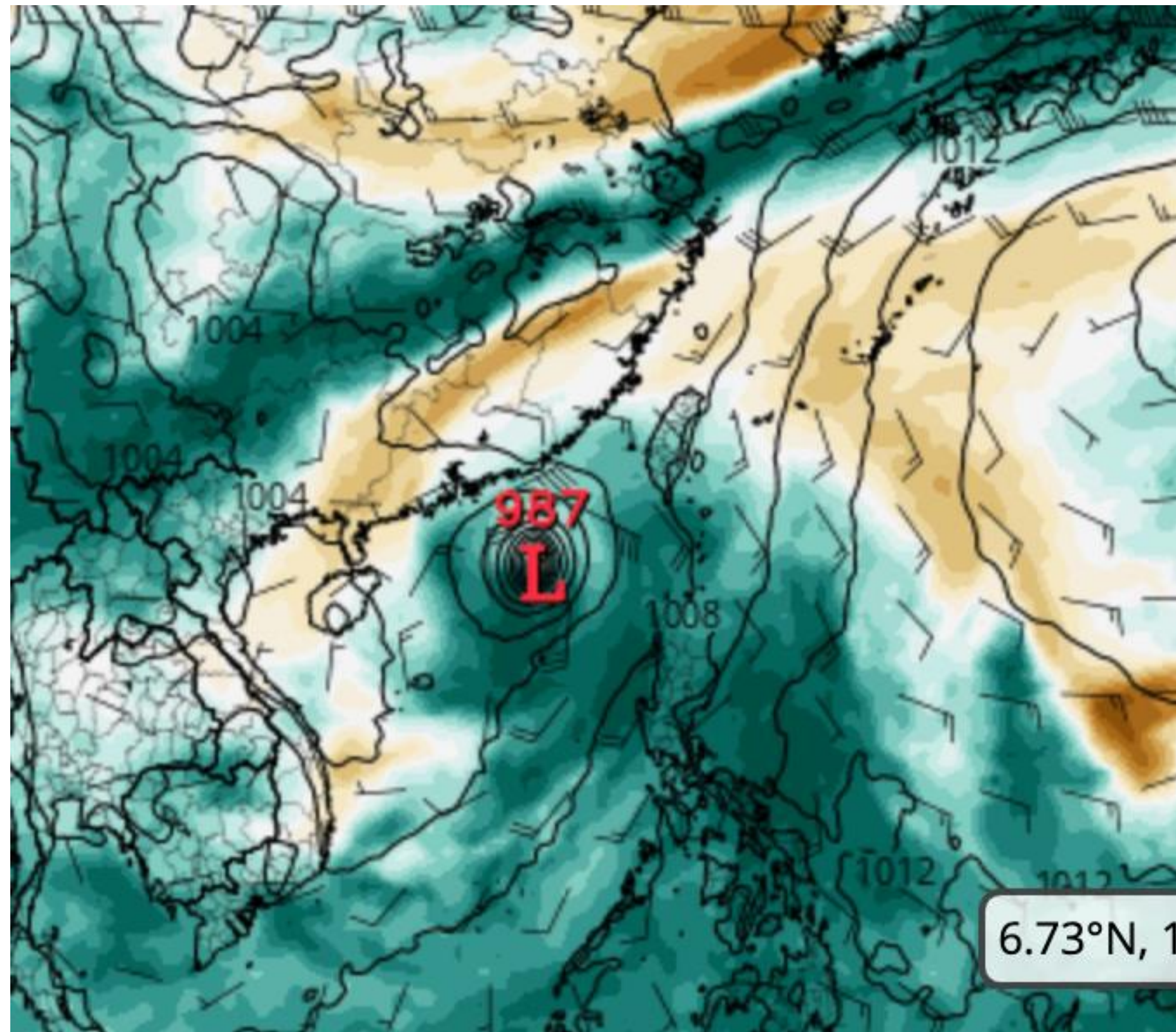
Source: Tropical Tidbits

Low-level moisture conditions for extended forecast period

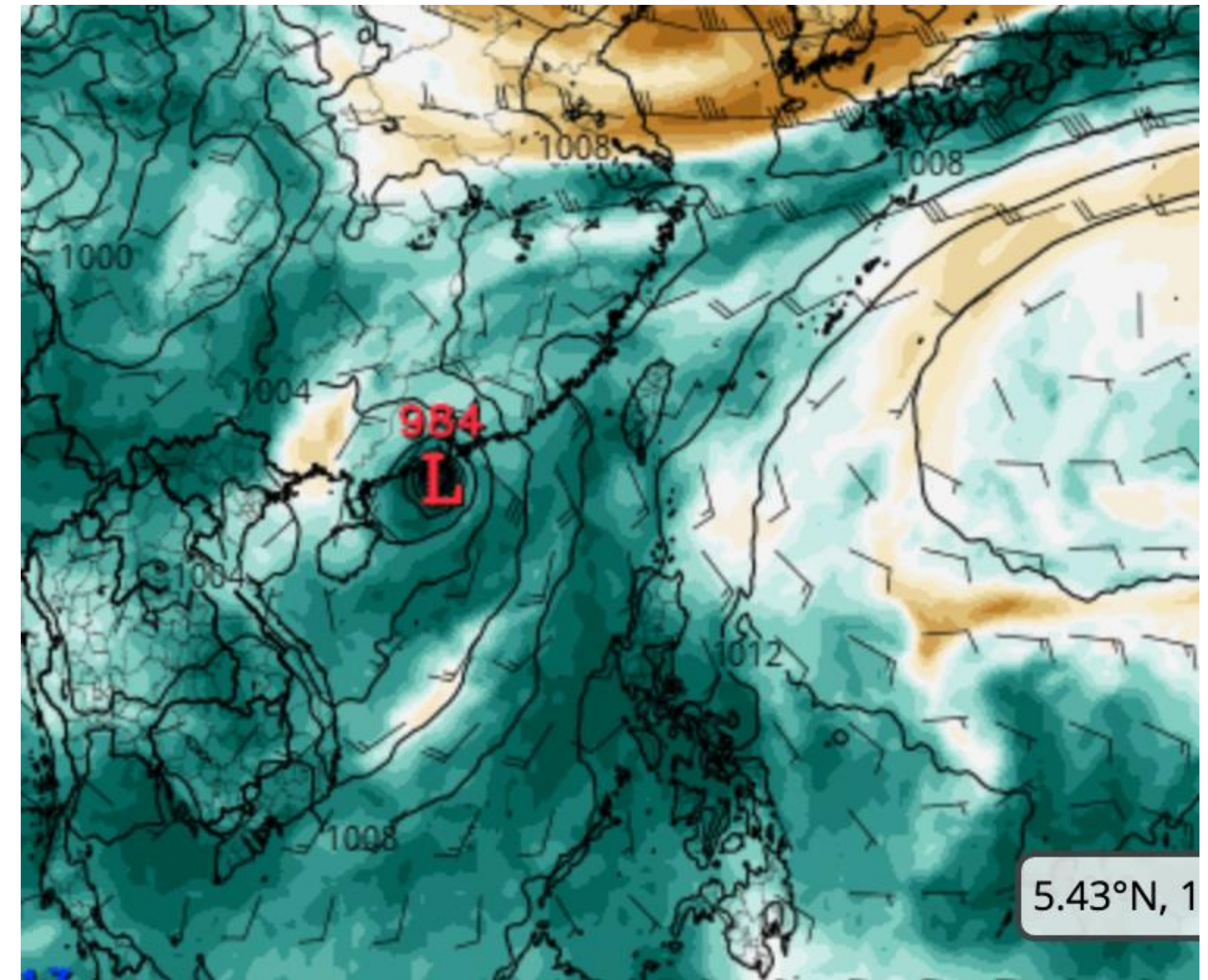
Contour: **Mean sea level pressure**
Shading: **700-400 hPa RH**
Vector: **700-400 hPa wind**

Source: Tropical Tidbits

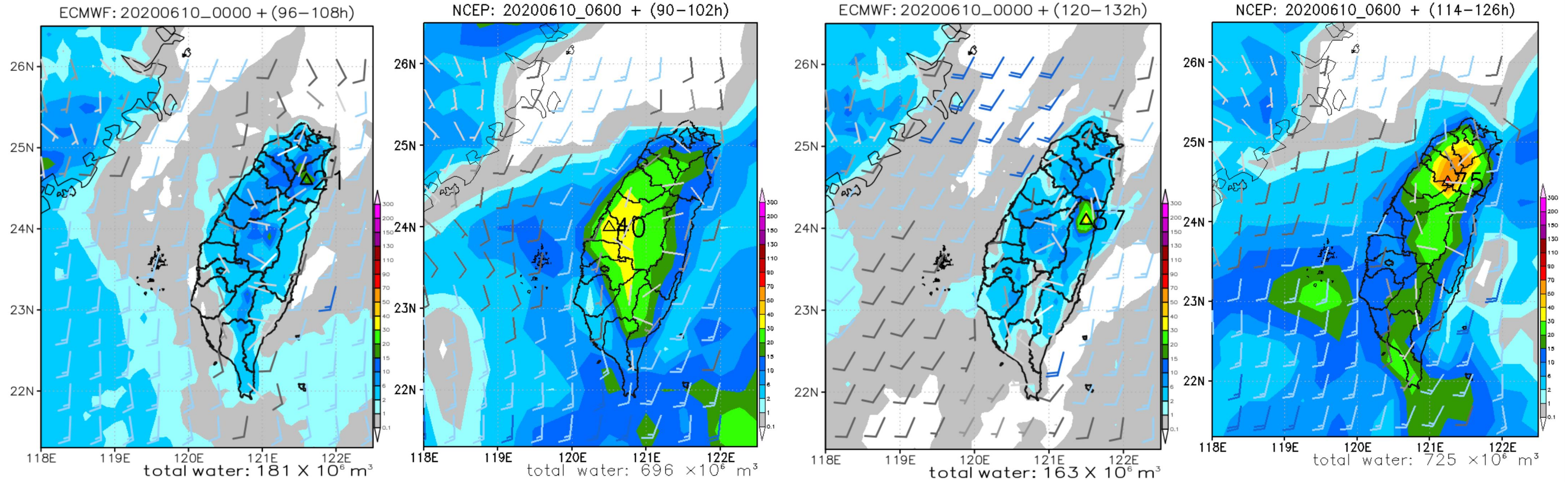
(NCEP) 0614 00Z



(NCEP) 0615 00Z



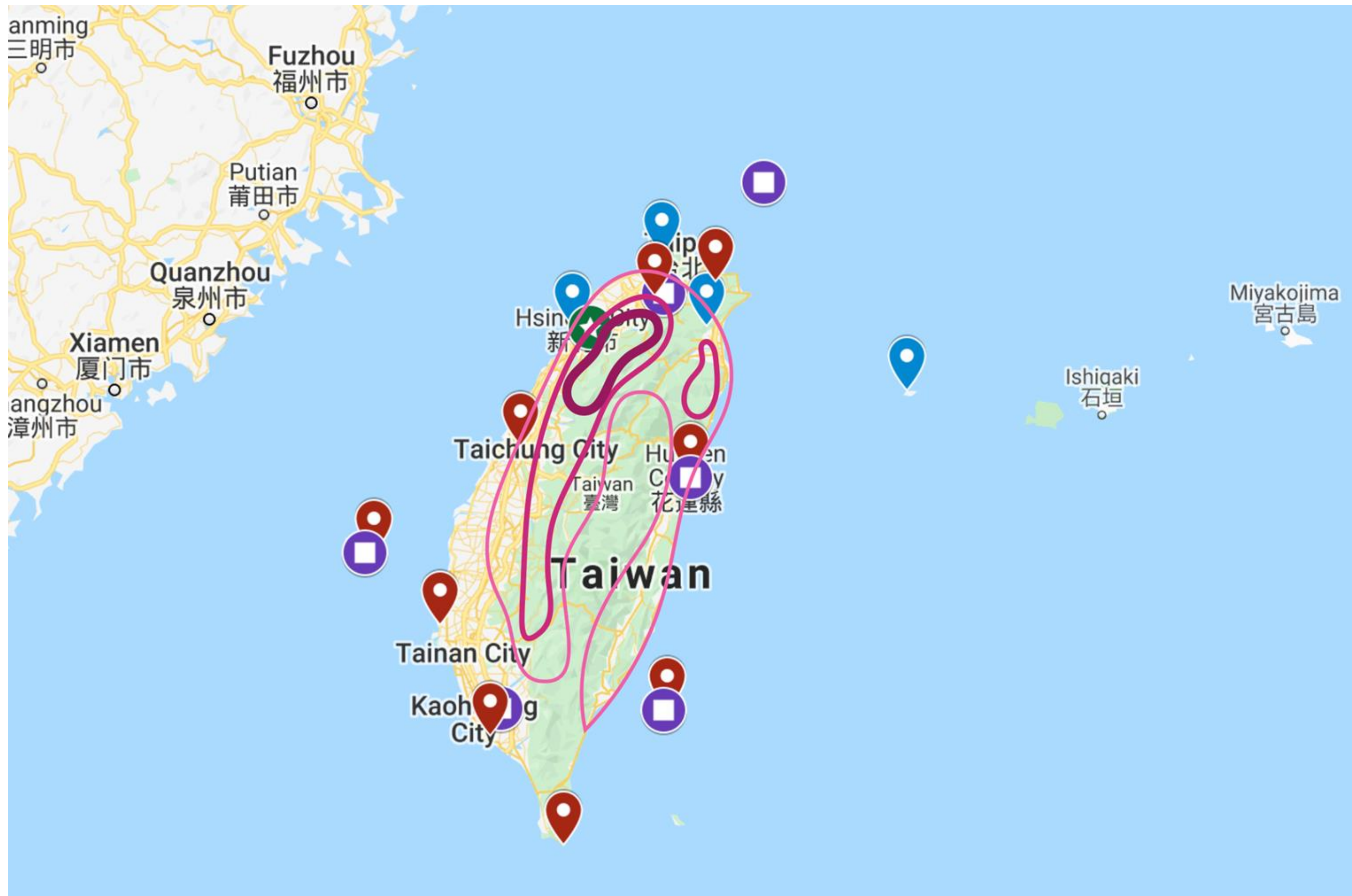
Higher possibility for intense afternoon thunderstorm events (after 13 Aug)



0614 00-12Z

0615 00-12Z

Higher possibility for intense afternoon thunderstorm events (after 13 Aug)



Big ideas

- 0-12 hr forecasts on low-level wind field and moisture transport signal the end of the current mei-yu event
- Apart from the weekend, precipitation events during the forecasting period should be mostly afternoon thunderstorms
- Southeastern Taiwan could experience some windward precipitation induced by 98W's circulation
- Environmental moistening shortly after the landfall of 98W near Hong Kong should enable stronger afternoon thunderstorms early next week
- Some model discrepancies in the thunderstorm intensity next week. Could be related to TC placement, intensity, and whether southwesterly flow could be enhanced by TC. If so, to what extent
- Need to closely monitor 98W and do constant model validations

Potential precipitation hotspots on 12 Aug

