

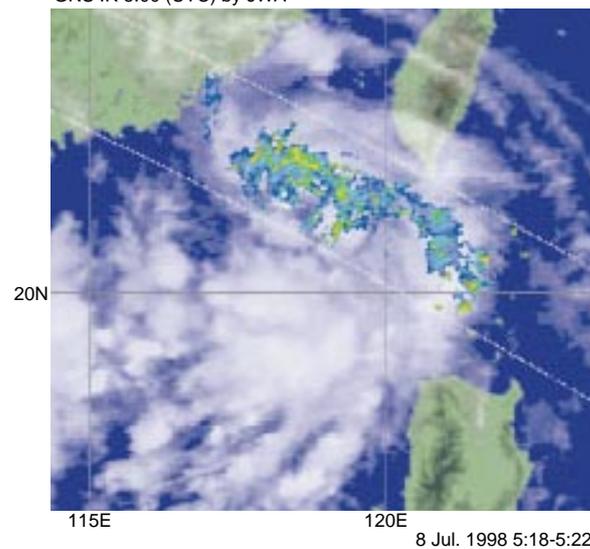


# Evolution of tropical cyclone

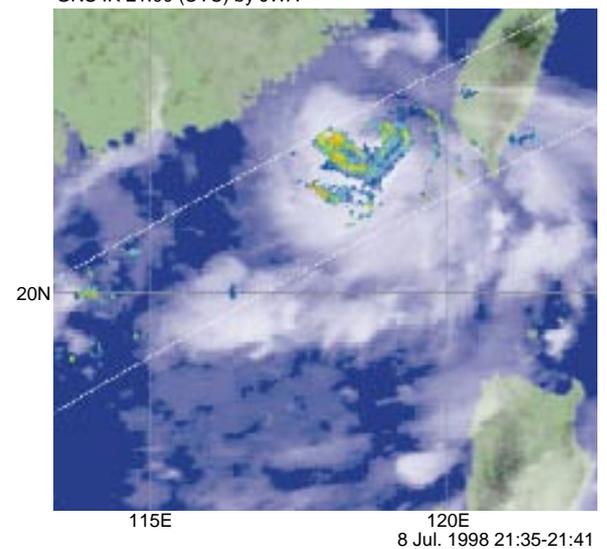


## Formation and developing stage

GNS IR 5:00 (UTC) by JWA

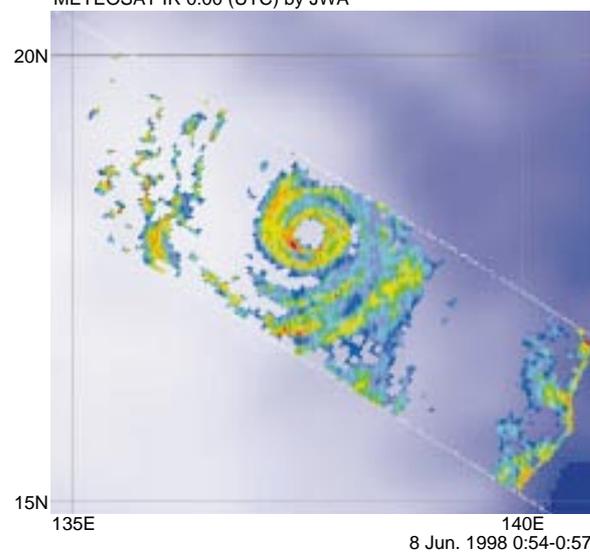


GNS IR 21:00 (UTC) by JWA

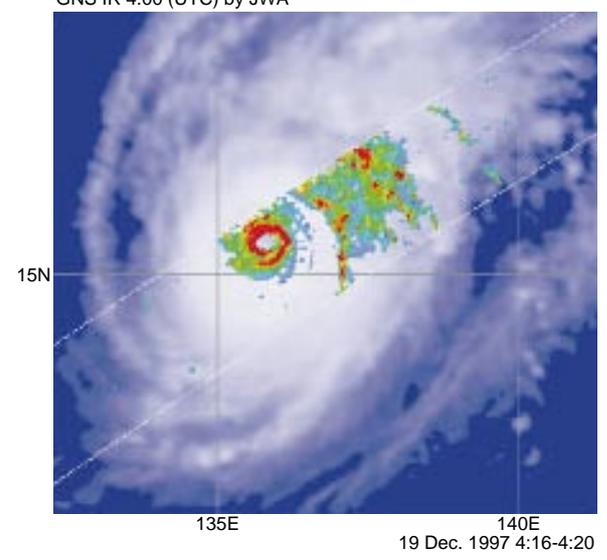


## The Mature stage

METEOSAT IR 0:00 (UTC) by JWA

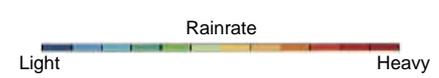
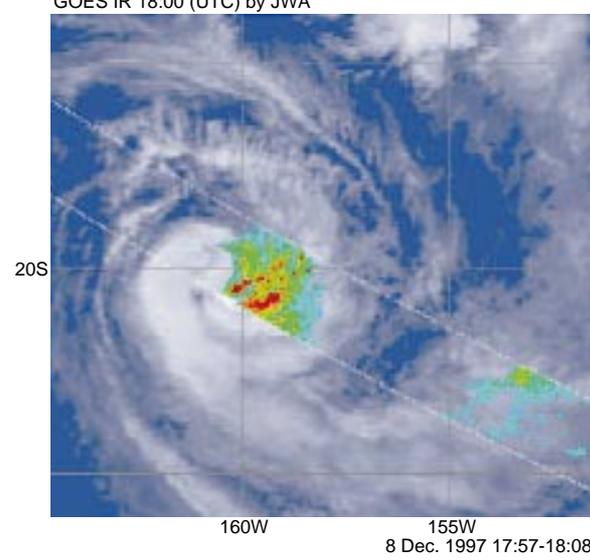


GNS IR 4:00 (UTC) by JWA



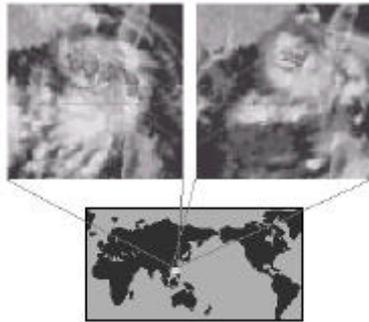
## Decaying stage

GOES IR 18:00 (UTC) by JWA



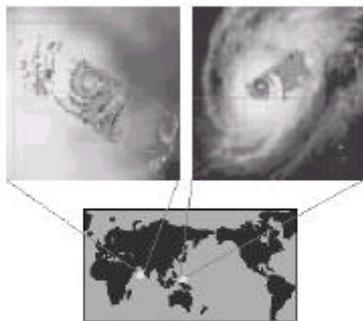
## Evolution tropical cyclone

TRMM can detect various evolution stages of tropical cyclones. It is especially difficult to observe the occurrence and developing stages over tropical oceans, where surface radars are not available. TRMM clearly shows the internal structure of the cyclone in detail over such oceans. In these maps, the various evolution stages of the cyclone are shown by horizontal cross section of the Precipitation Radar (PR) rain maps at an altitude of 2.0 km superposed on cloud maps of the meteorological satellites.



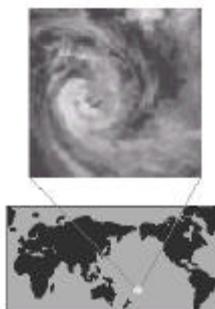
### Formation and developing stage

These images show a tropical cyclone that formed at the southwest of Taiwan on 8 July 1998. Light rain is indicated in blue, broadly north and east of eye (left image). It then gathers and develops after 16 hours (right image). It has some strong rain parts indicated red color. After 10 hours, this cyclone grew to become Typhoon No. 1 in 1998.



### The Mature Stage

Left image shows a strong tropical cyclone west of the Indian Peninsula. The structure of rain is similar to that in Typhoon PAKA. This indicates that the structure is typical for mature tropical cyclone. The cloud image is not clear because this are a is located at the edge of the meteorological satellite observation area. The right image shows the typhoon PAKA that did great damage to the Guam Island in December 1997. There is no rain in the eye of this cyclone. The cloud was round, and rain existed only on the eastside of the eye. There are several strong linear rain areas, called 'rain bands' around the eye and in the rain area on the east side of the eye.



### Decaying stage

This image shows the cyclone PAM observed in the December 1997. This cyclone had a clockwise spiral because it was located in the Southern Hemisphere. This tropical cyclone had some rain bands in the eastern rain area like a mature-stage cyclone. However, the eye and strong rain around the eye cannot be detected.