

The analysis of typhoon parameters by using AMSU data

DATA

METHOD

RESULTS

CONCLUSION

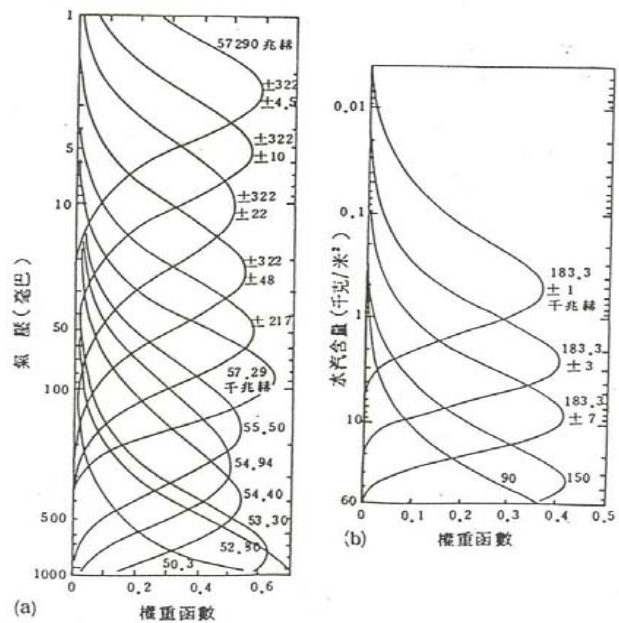
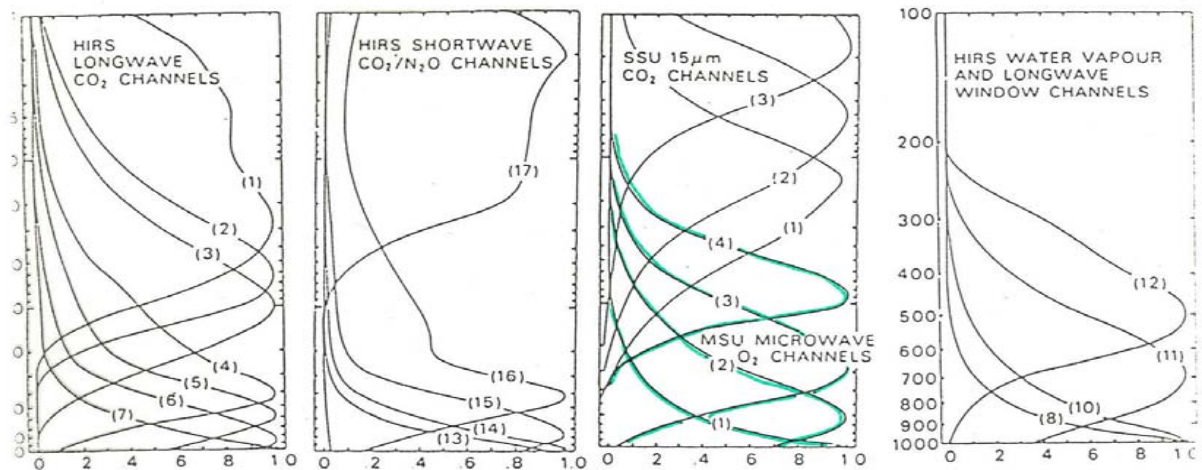
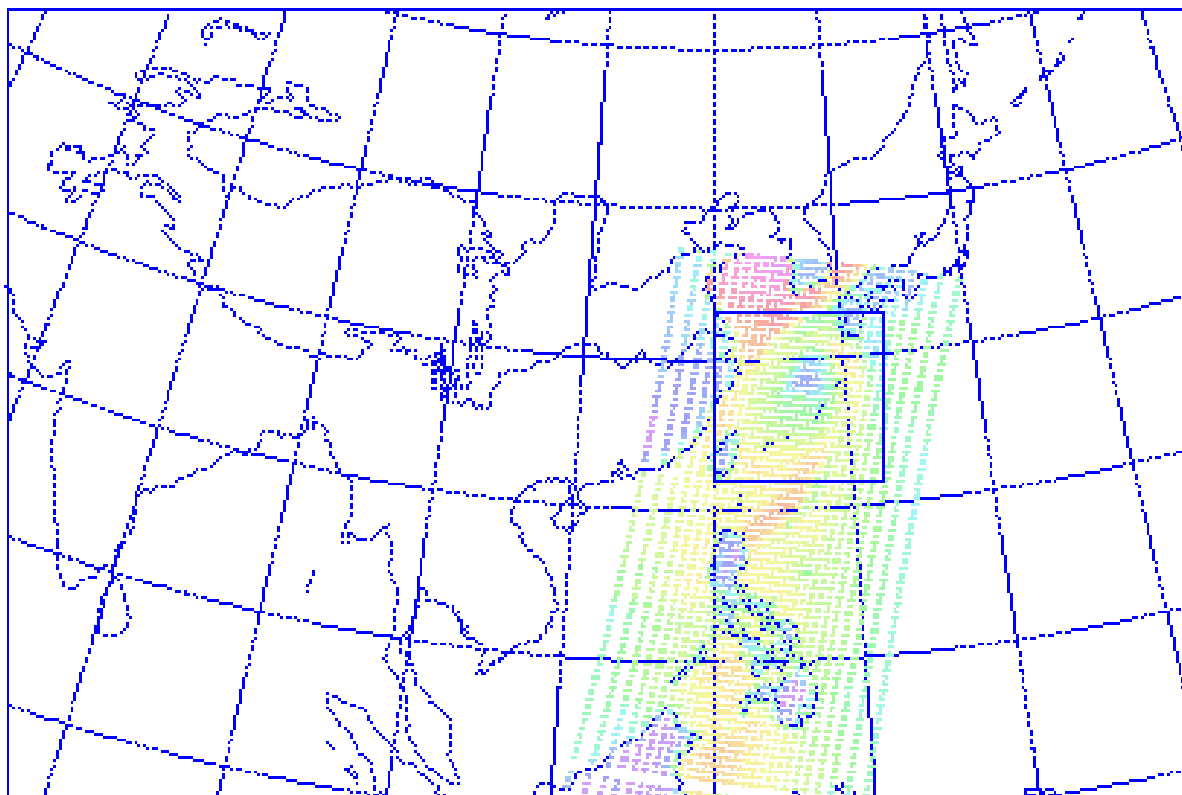


圖 13-18 (a) AMSU-A 的氣溫權重函數。(b) AMSU-B 的水汽權重函數。

NOAA15 AMSU-A CH 1

TIME 2001/**/16/23/ 8/



$$T(p) = C_o(p, \theta_s) + \sum_{i=1}^n C_i(p, \theta_s) T_b(v_i, \theta_s)$$

$$f \nabla^2 \psi + 2(\psi_{xx} \psi_{yy} - \psi_{xy}^2) + \psi_x f_x + \psi_y f_y = \nabla^2 \phi$$

$$\frac{1}{2}(\psi_{xx} + \psi_{yy} + f)^2 - \frac{1}{2}(\psi_{xx} + \psi_{yy})^2 - 2\psi_{xy}^2 + (\psi_x f_x + \psi_y f_y) - (\Phi_{xx} + \Phi_{yy} + \frac{1}{2}f^2) = 0$$

$$V = k_i \tilde{N}^{3/4}$$

$$\begin{aligned}
\nabla^2(\sigma\omega) + f\xi_a \frac{\partial^2 \omega}{\partial p^2} &= f \frac{\partial}{\partial p} (V_\psi + V_x) \cdot \nabla \xi \\
&+ \frac{R}{P} (\nabla^2 V_\psi + \nabla^2 V_x) \cdot \nabla T \\
&- f \frac{\partial}{\partial p} (\xi \nabla^2 x) + f \frac{\partial}{\partial p} \left(\omega \frac{\partial \xi}{\partial p} \right) \\
&+ f \frac{\partial}{\partial p} \left(\nabla \omega \cdot \nabla \frac{\partial \psi}{\partial p} \right) \\
&- \frac{R}{C_p P} \nabla^2 Q + fg \frac{\partial^2}{\partial p^2} \nabla \times \tau
\end{aligned}$$

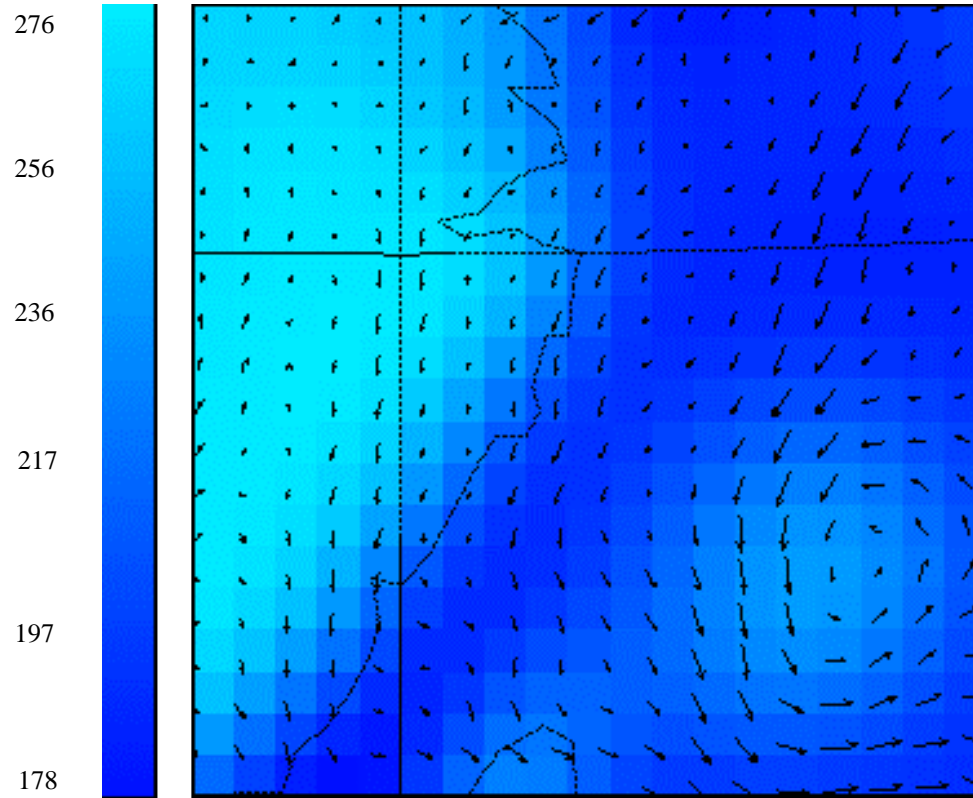
$$\nabla^2 x + \frac{\partial \omega}{\partial p} = 0$$

$$CLW = \cos \theta \{ D_0 + D_1 \ln [T_s - T_B (v_1)] \\ + D_2 \ln [T_s - T_B (v_2)] \}$$

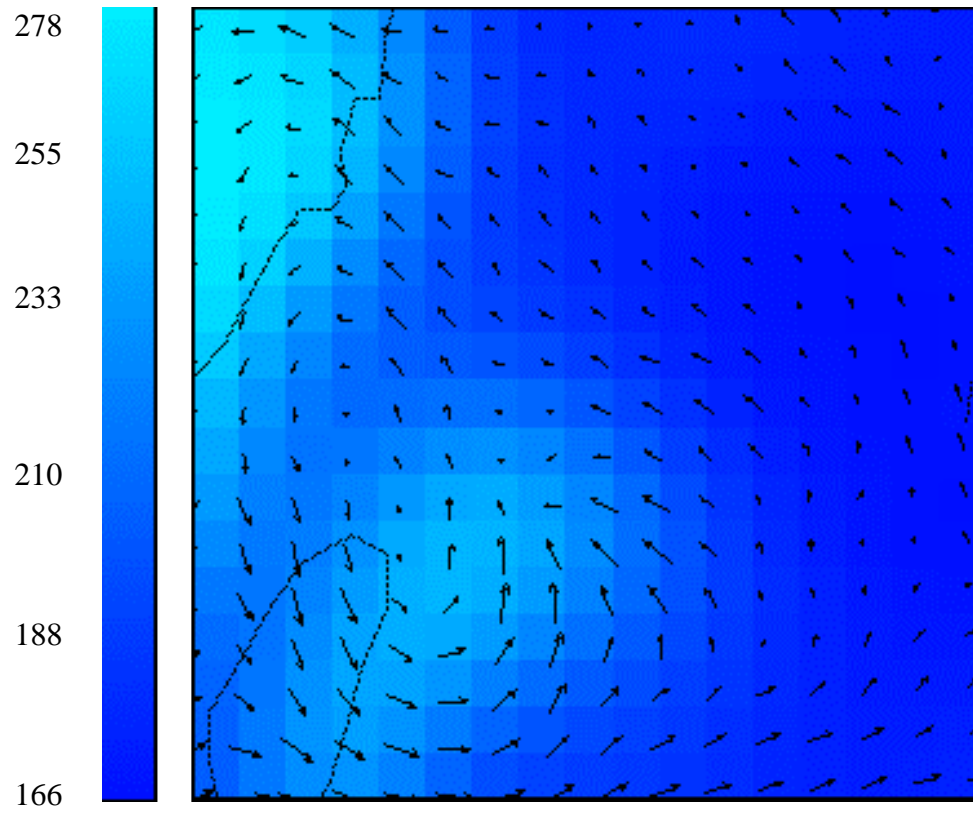
$$R = 0.002(100CLW)^{1.7}$$

$$\text{£} \text{ } \text{H} C_{Di} \text{ } \text{y}_{bi} \text{ } \text{y}_b$$

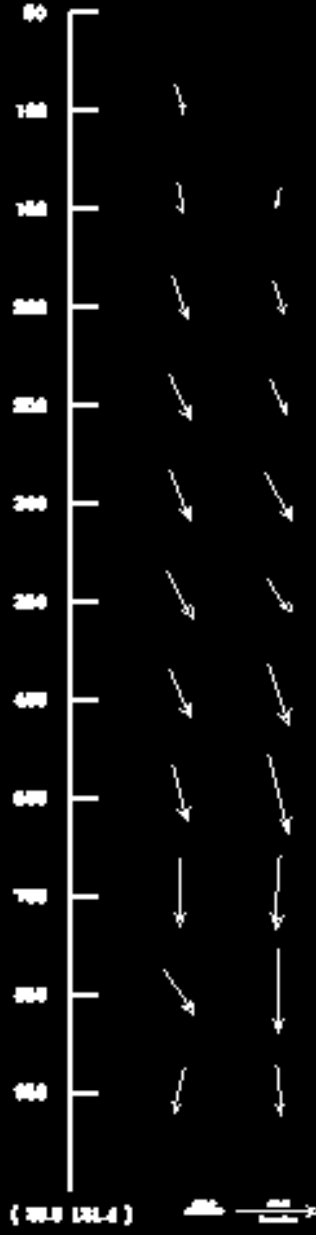
Time 2001 / 09 / 14 / 23 / 34 AMSU channel 2



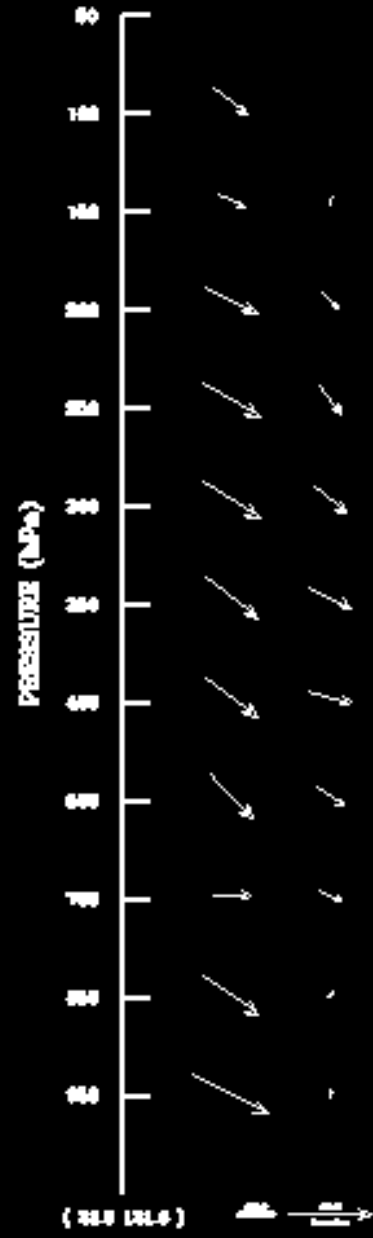
Time : 2001/ 09 / 16 / 10 / 24 500hPa



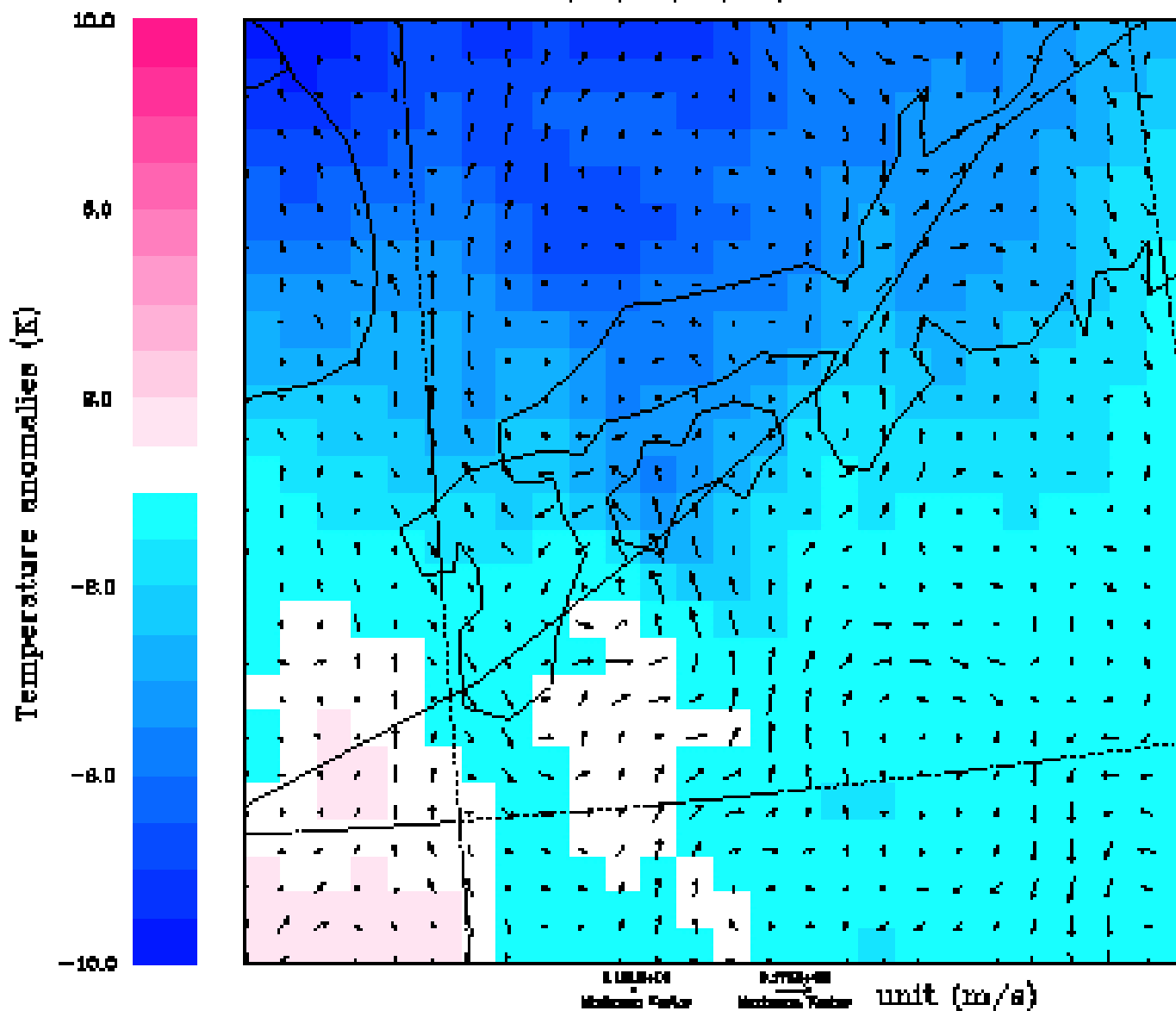
PRESSURE (MPa)



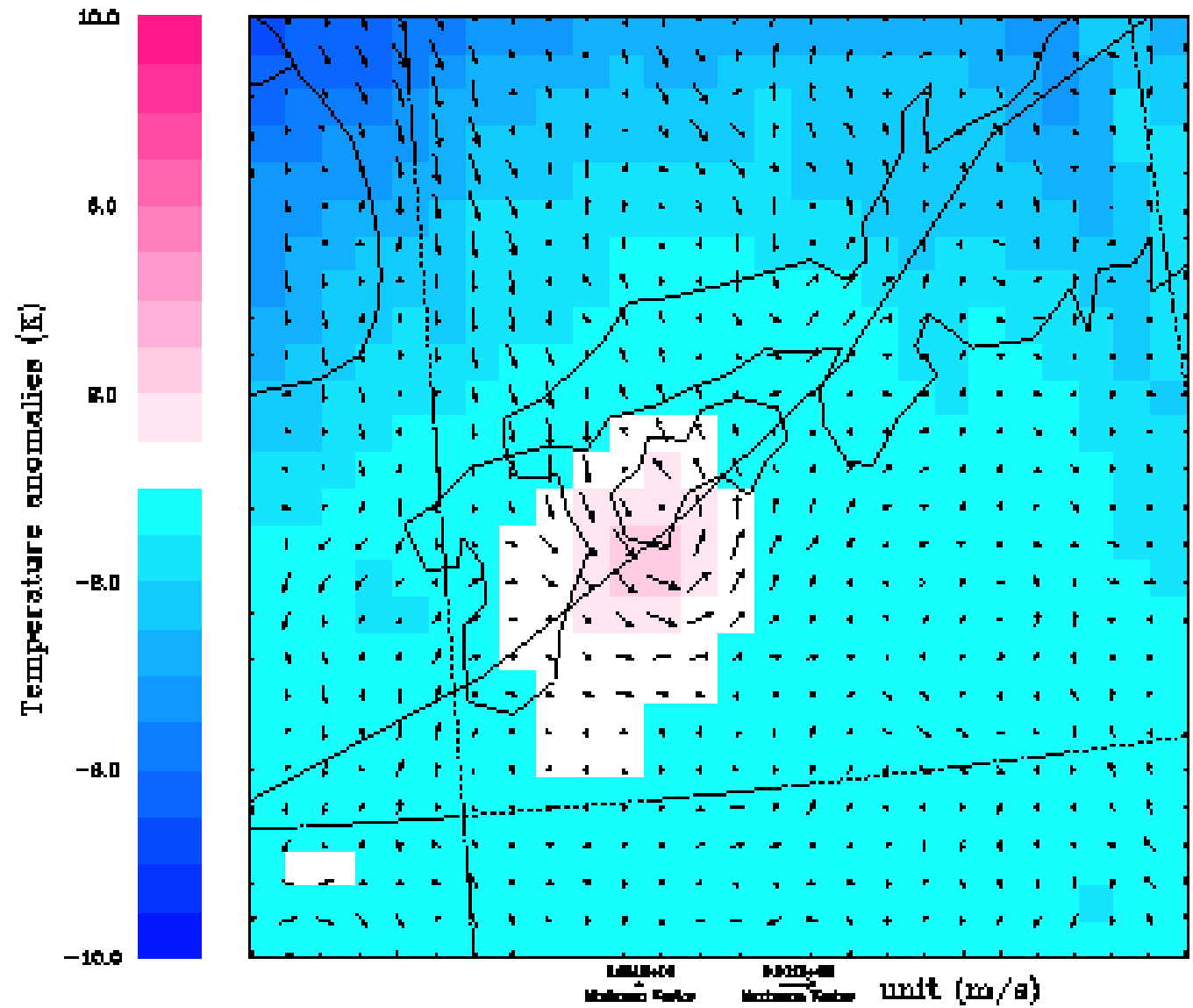
(0.1 0.2)



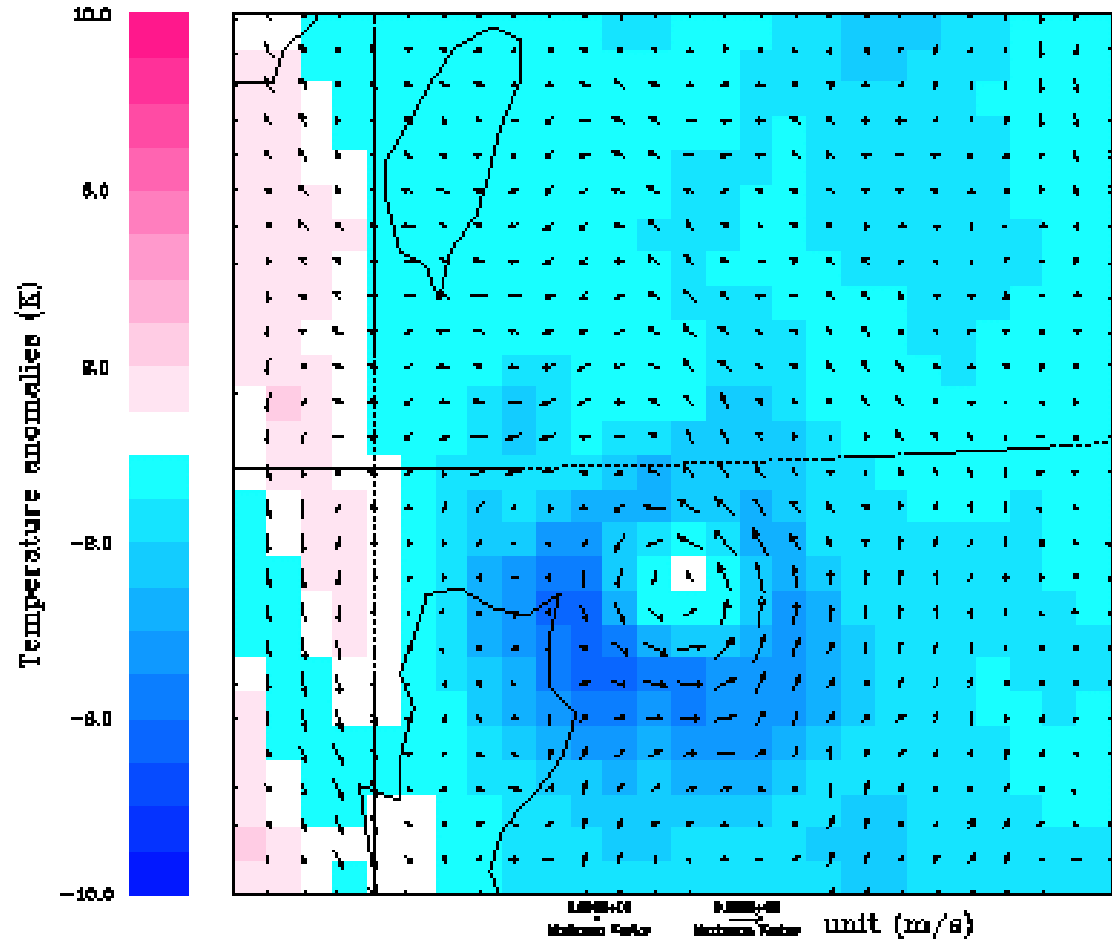
TIME 2004/ 9/29/ 4/57/ 850.0hPa



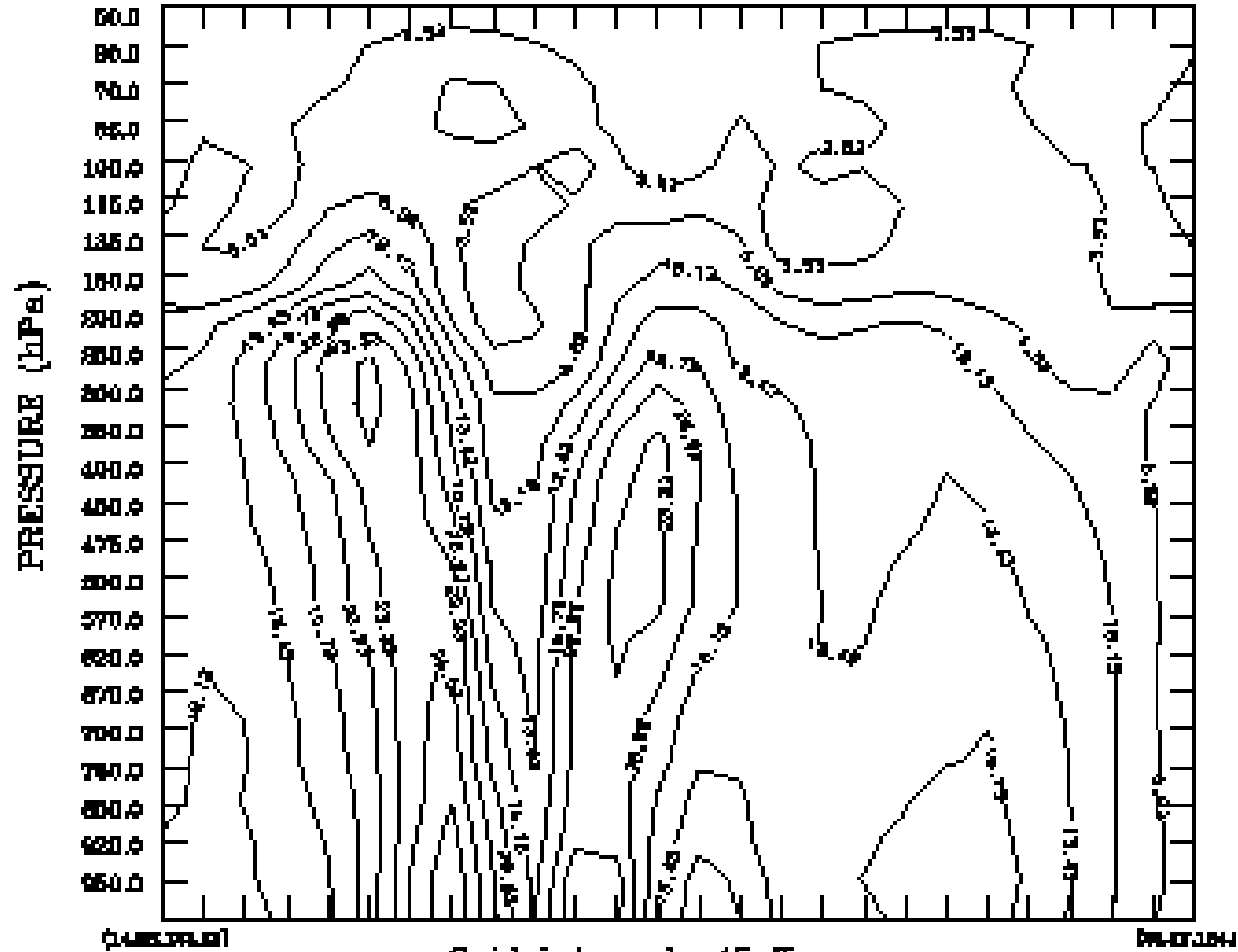
TIME 2004/ 9/29/ 4/57/ 250.0hPa



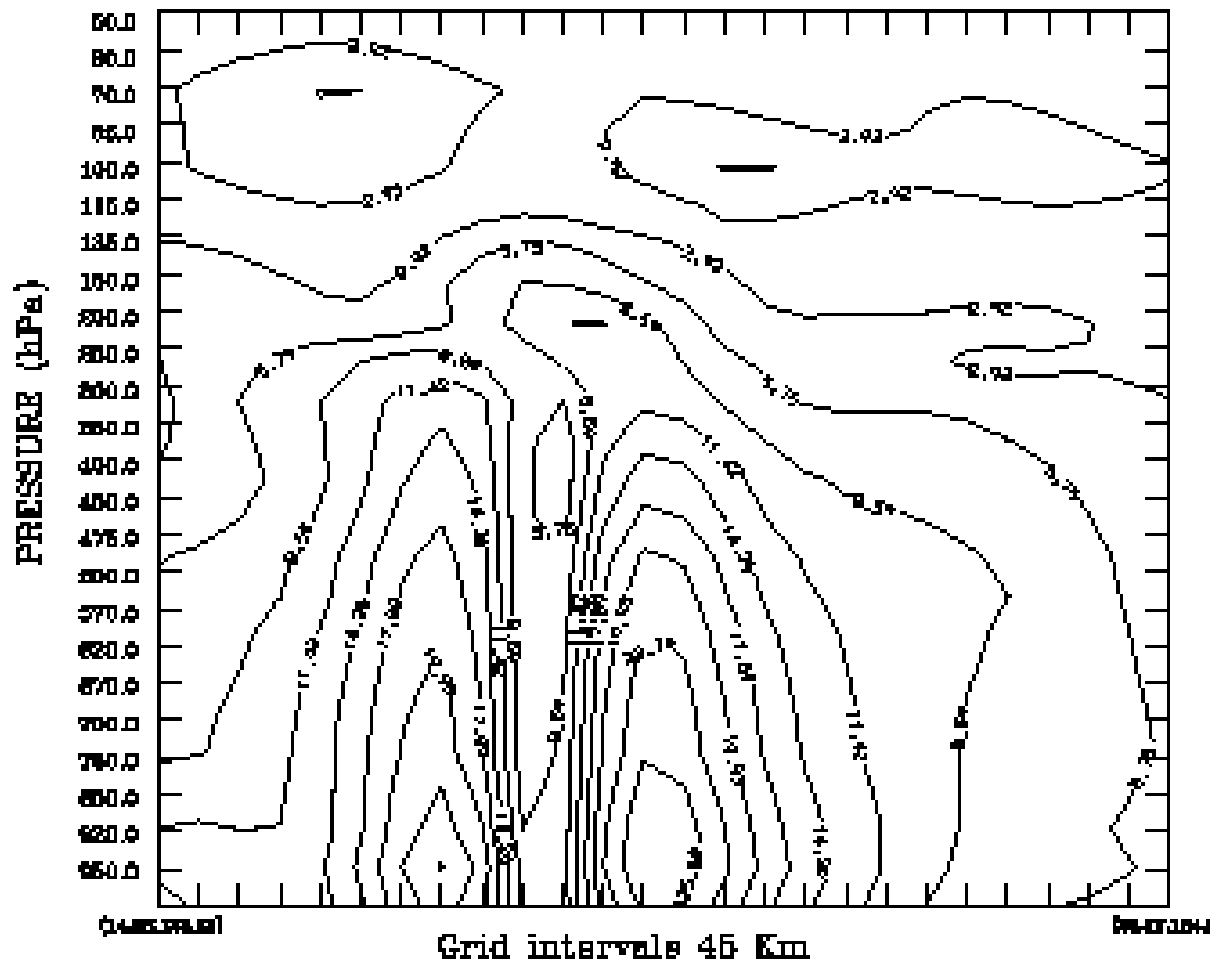
TIME 2004/ 8/29/ 5/41/ 850.0hPa



Tangential Wind (m/s)

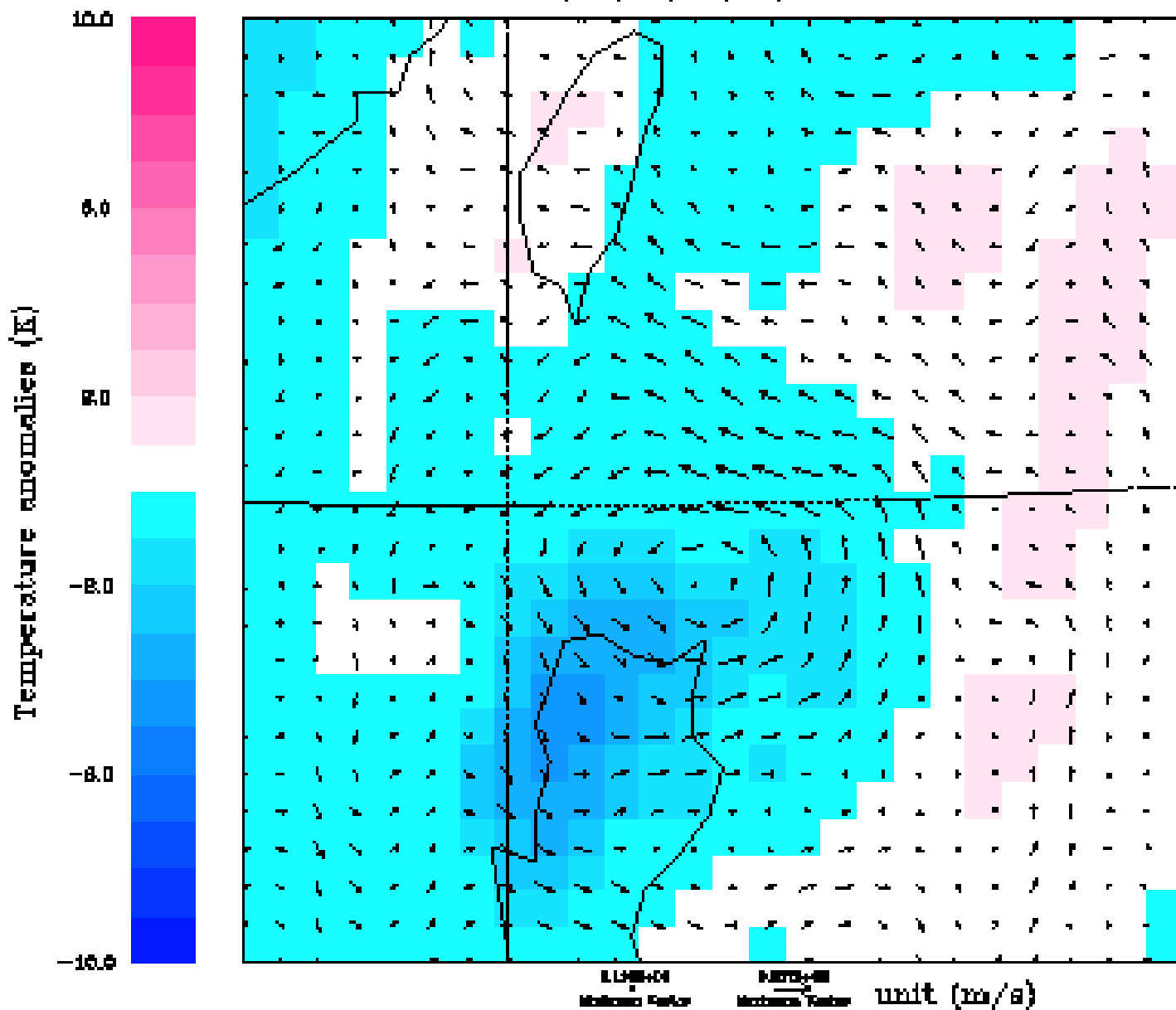


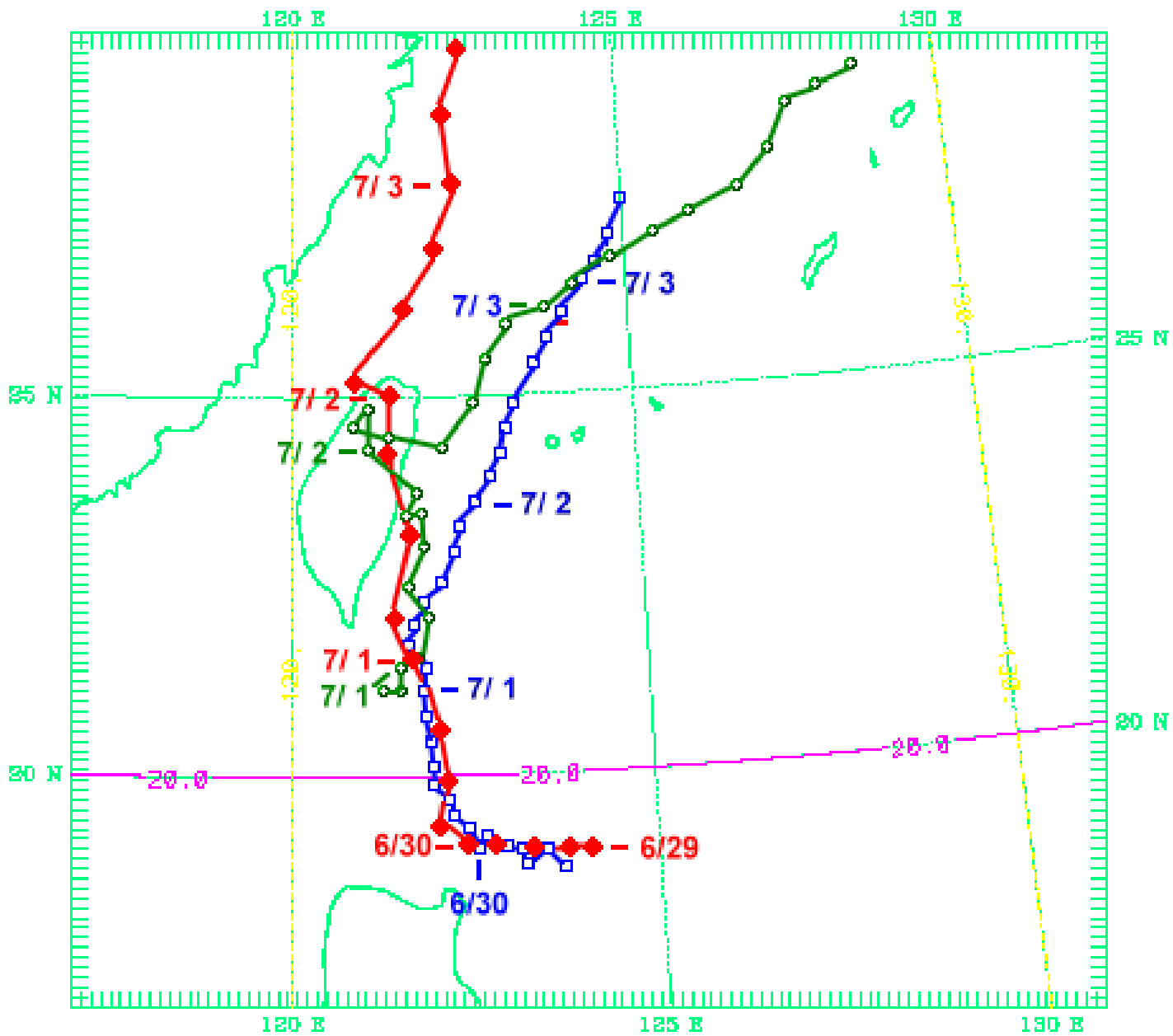
Tangential Wind (m/s)



TIME 2004/ 6/28/ 6/41/

TIME 2004/ 8/29/18/12/ 500.0hPa





Conclusion and future work

- Three dimensional Typhoon temperature and wind fields can be estimated by AMSU data. And typhoon various structure at different environments could be depicted.
- The typhoon fields driven from AMSU could provide an initial condition for NWP forecast.
- In estimating process assumed 50 hPa height is constant and integrated from top to lower levels to calculate height at each levels seem reasonable.
- *More case test*
- *More accurate temperature estimate (data or technique)*