

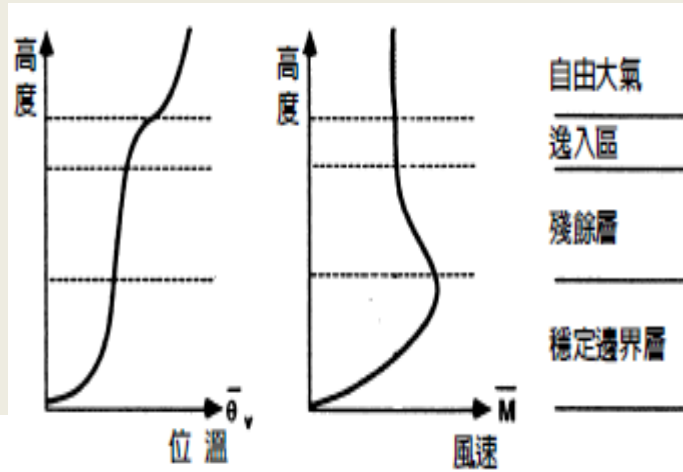
YSU及MYNN邊界層參數法於台灣 局部環流預報表現之初步研究

黃小玲 洪景山

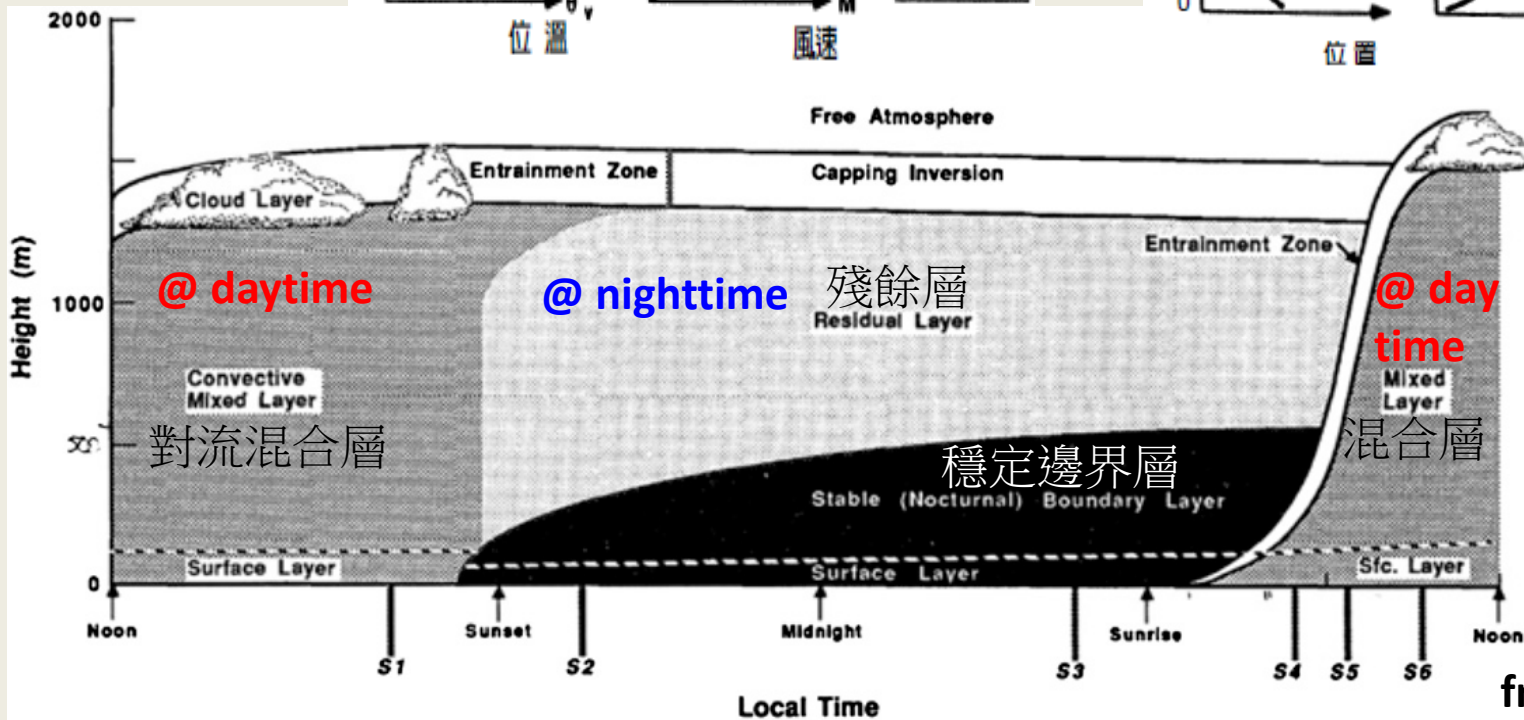
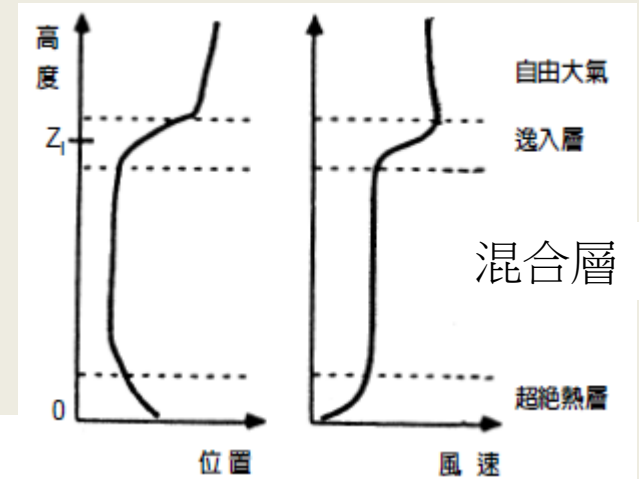
106年天氣分析與預報研討會
2017/09/12 ~ 09/14 @ 台北

邊界層特性

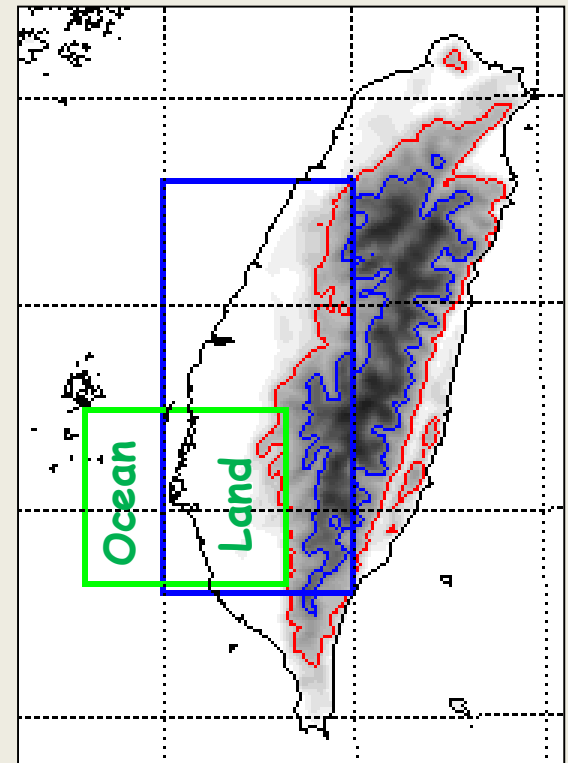
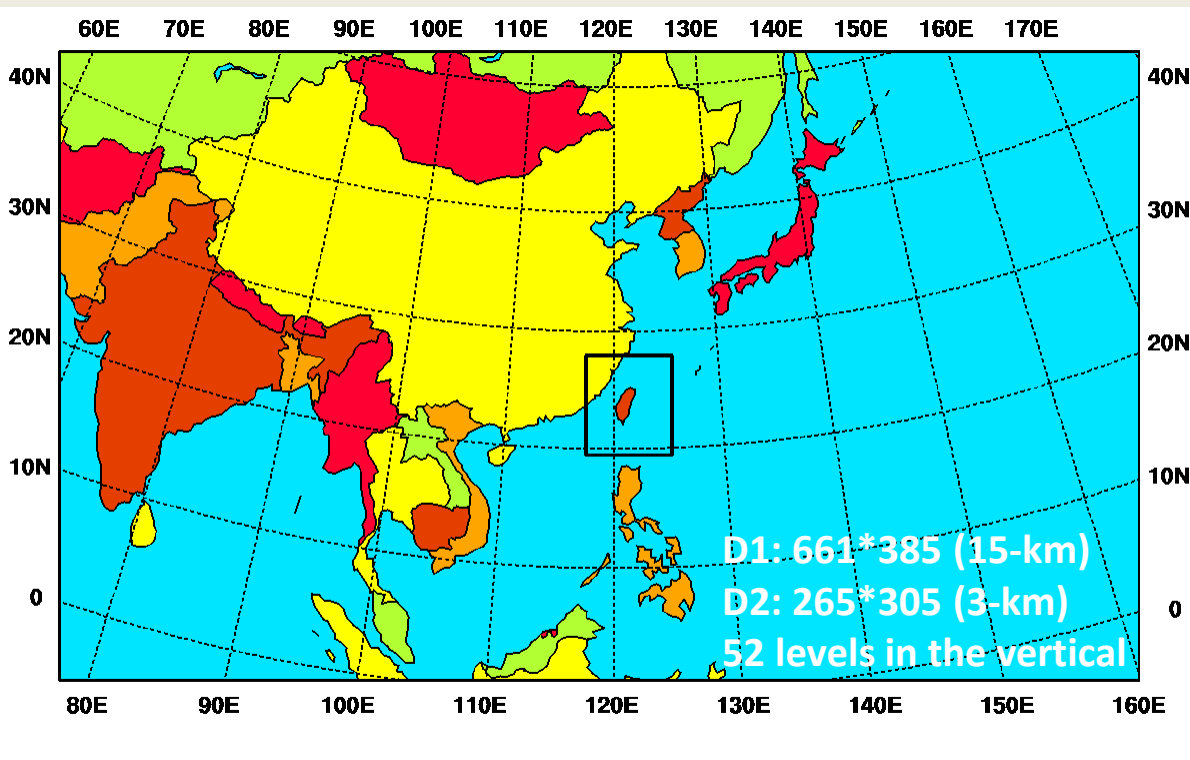
@ nighttime



@ daytime



from Stull (1988)

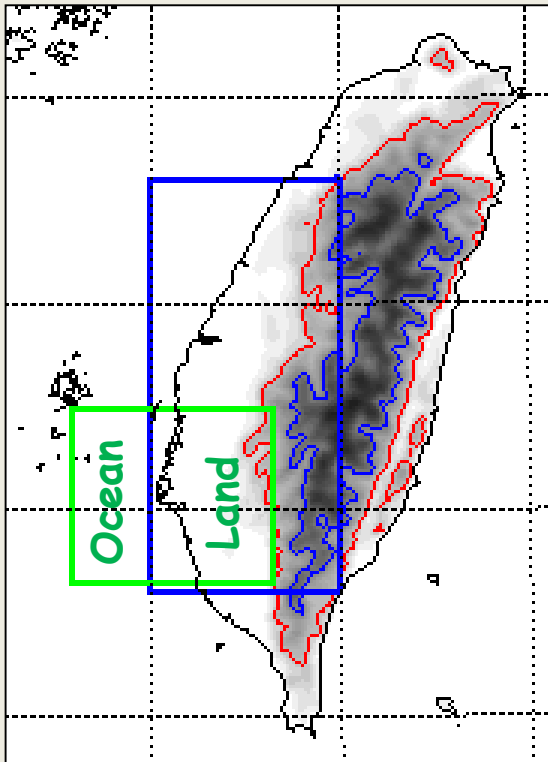


**PBL tests:
 YSU & MYNN**

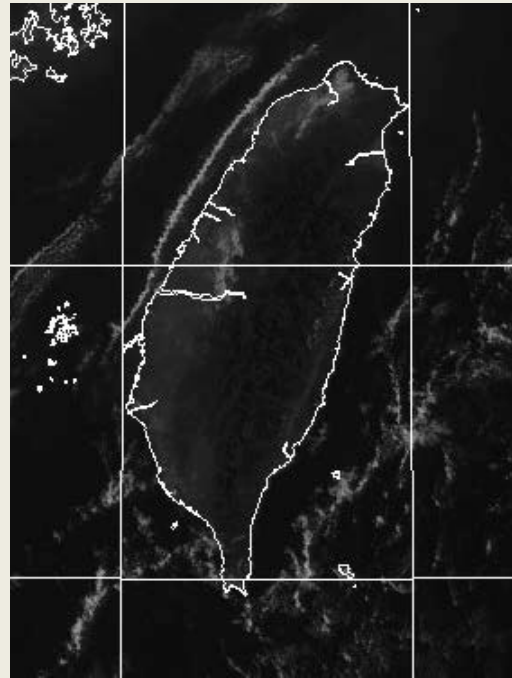
**Cases: 2016/07/19 to 07/22
 & thunderstorm (2017/07/01 to 07/06)**

Flat: terrain height < 500 m
Mountain: 500 < terrain height < 1500 m
Ocean: terrain height < 0 m
Land: terrain height < 500 m

Case: 2016/07/19 to 07/22



07/21/0000 UTC



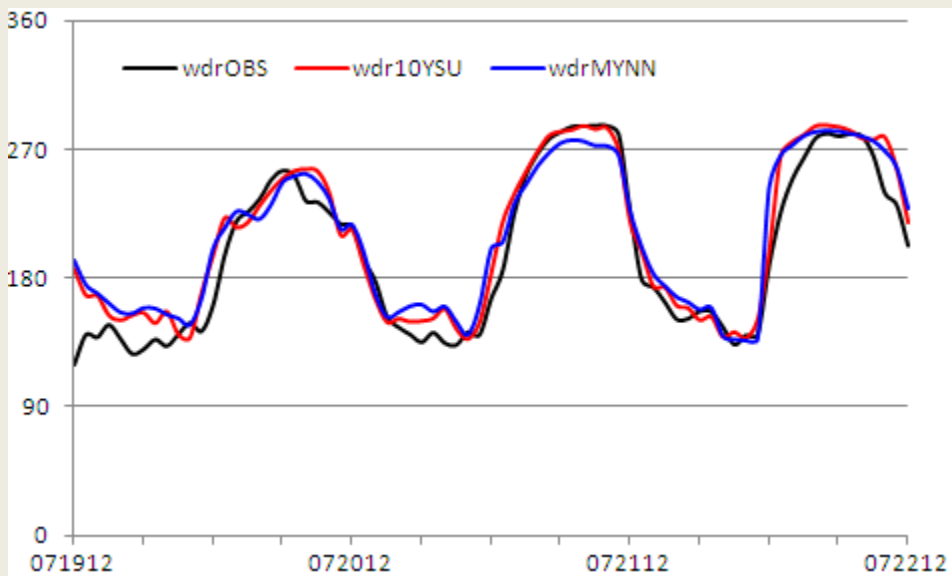
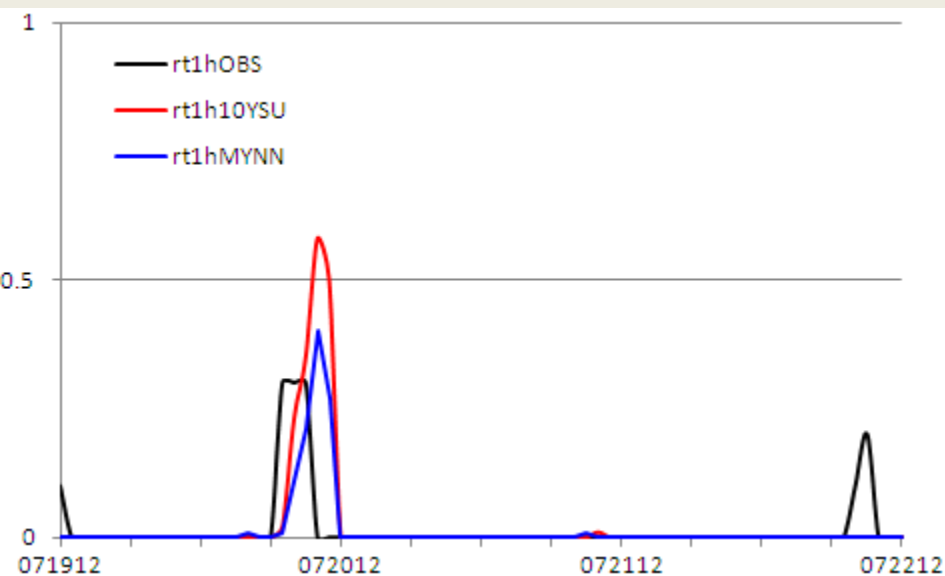
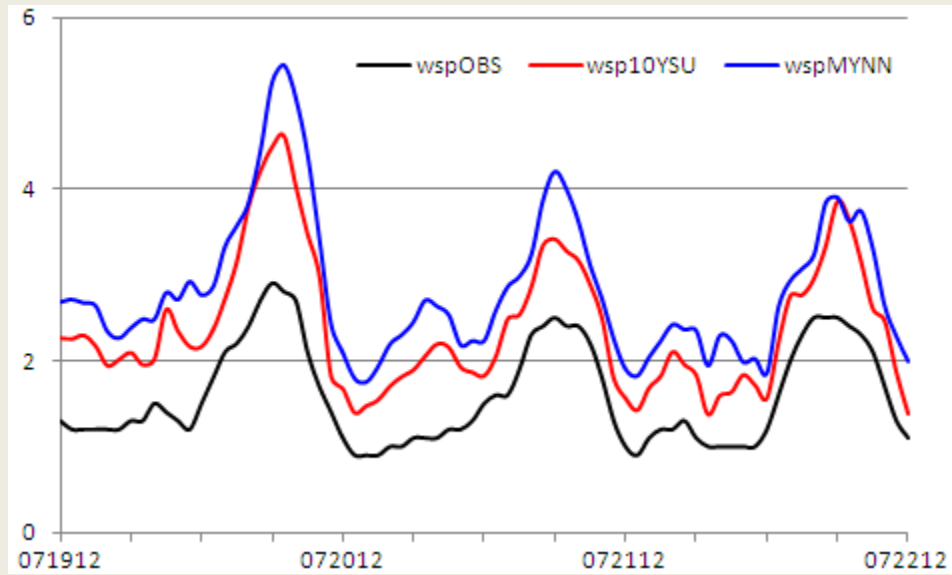
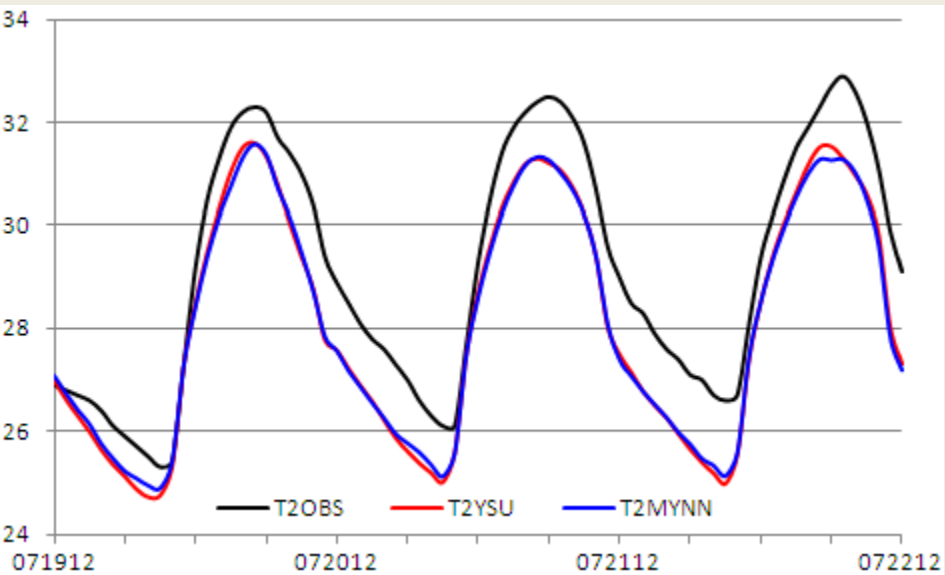
Flat: terrain height < 500 m

Mountain: 500 < terrain height < 1500 m

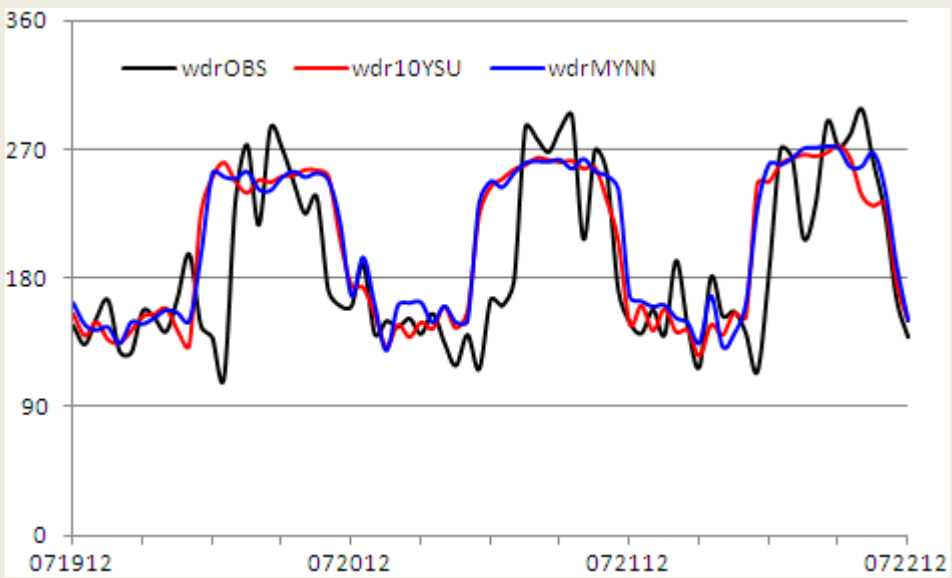
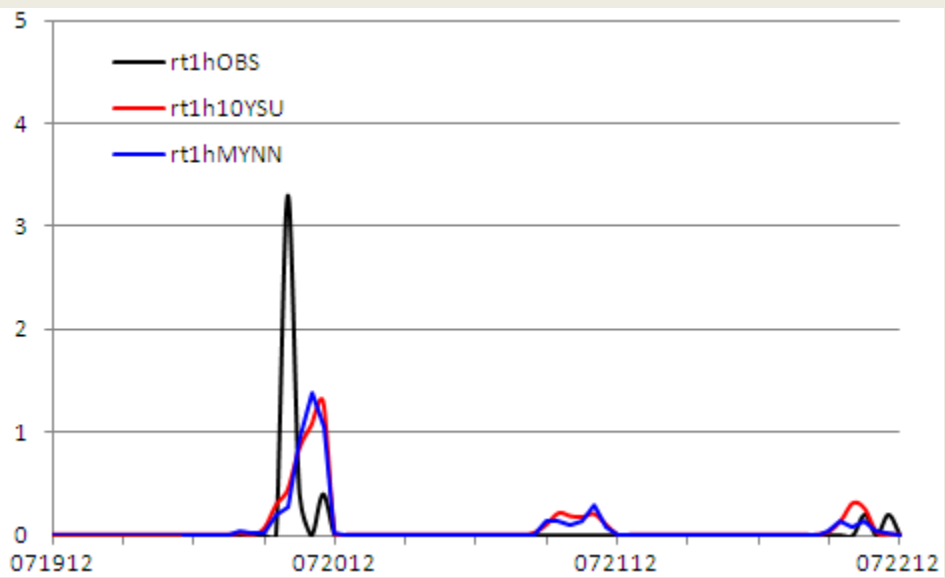
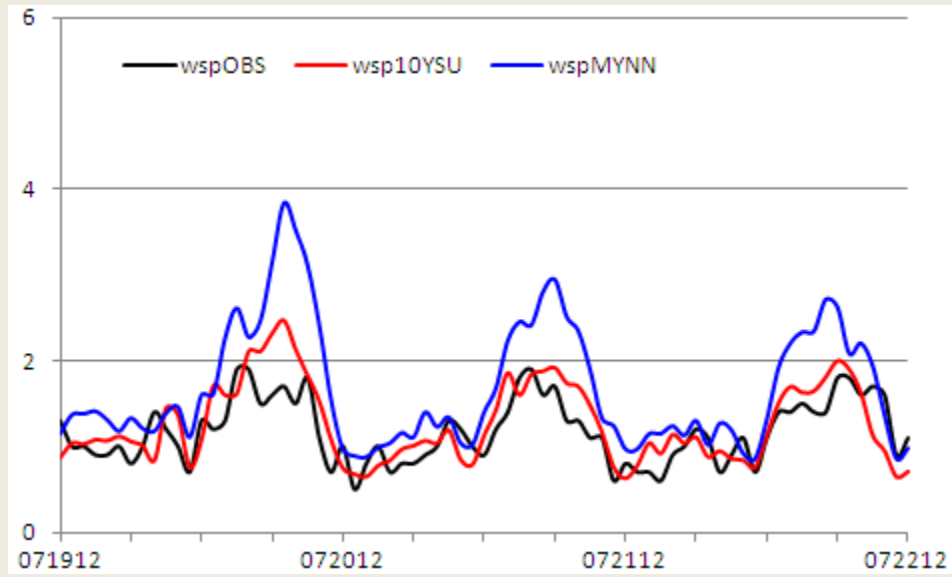
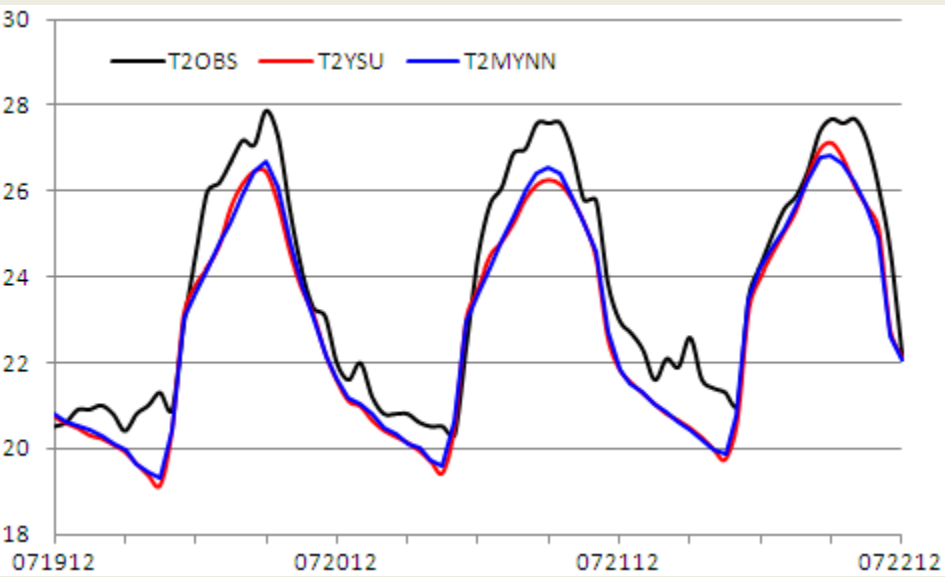
Ocean: terrain height < 0 m

Land: terrain height < 500 m

Flat



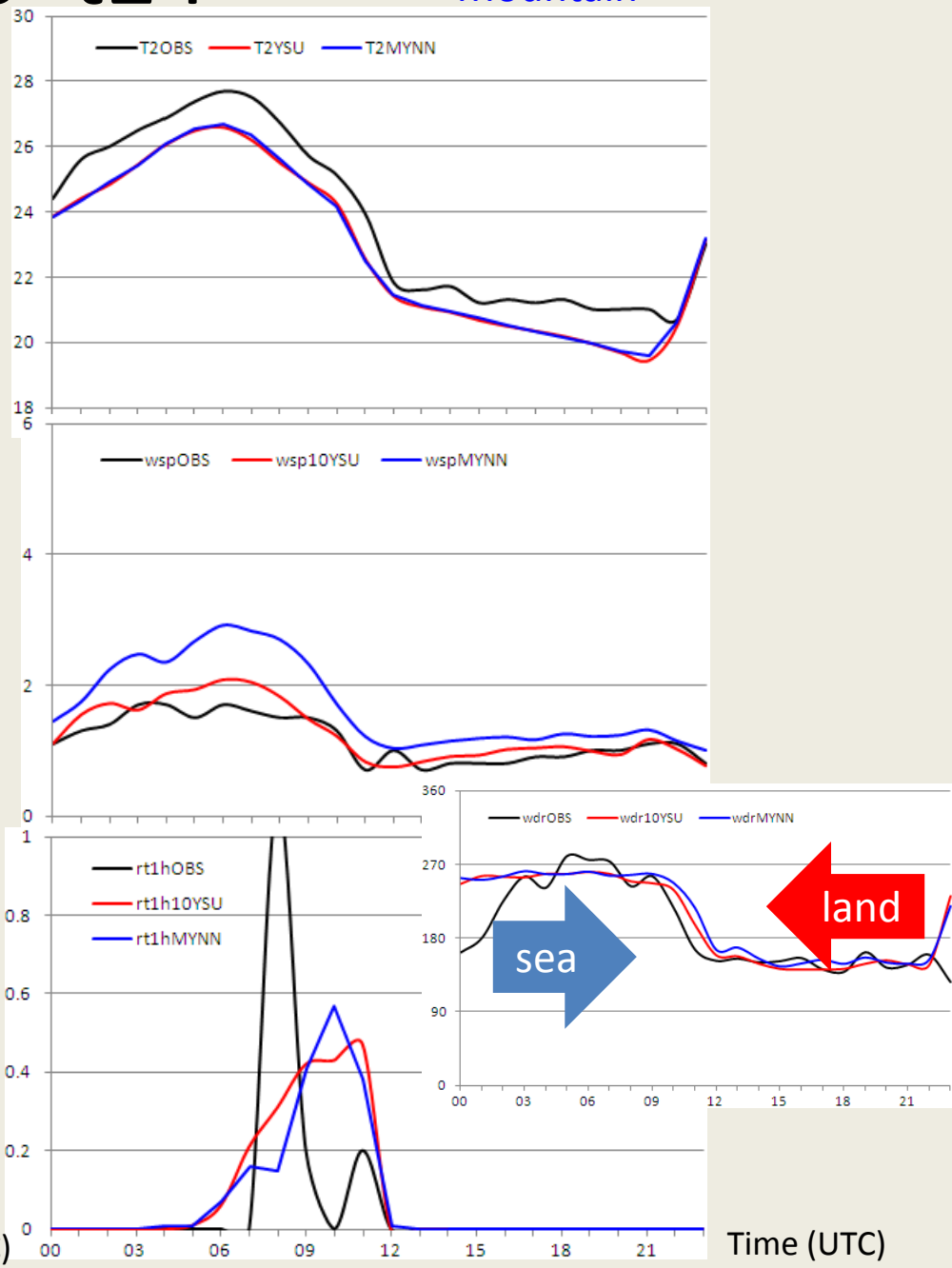
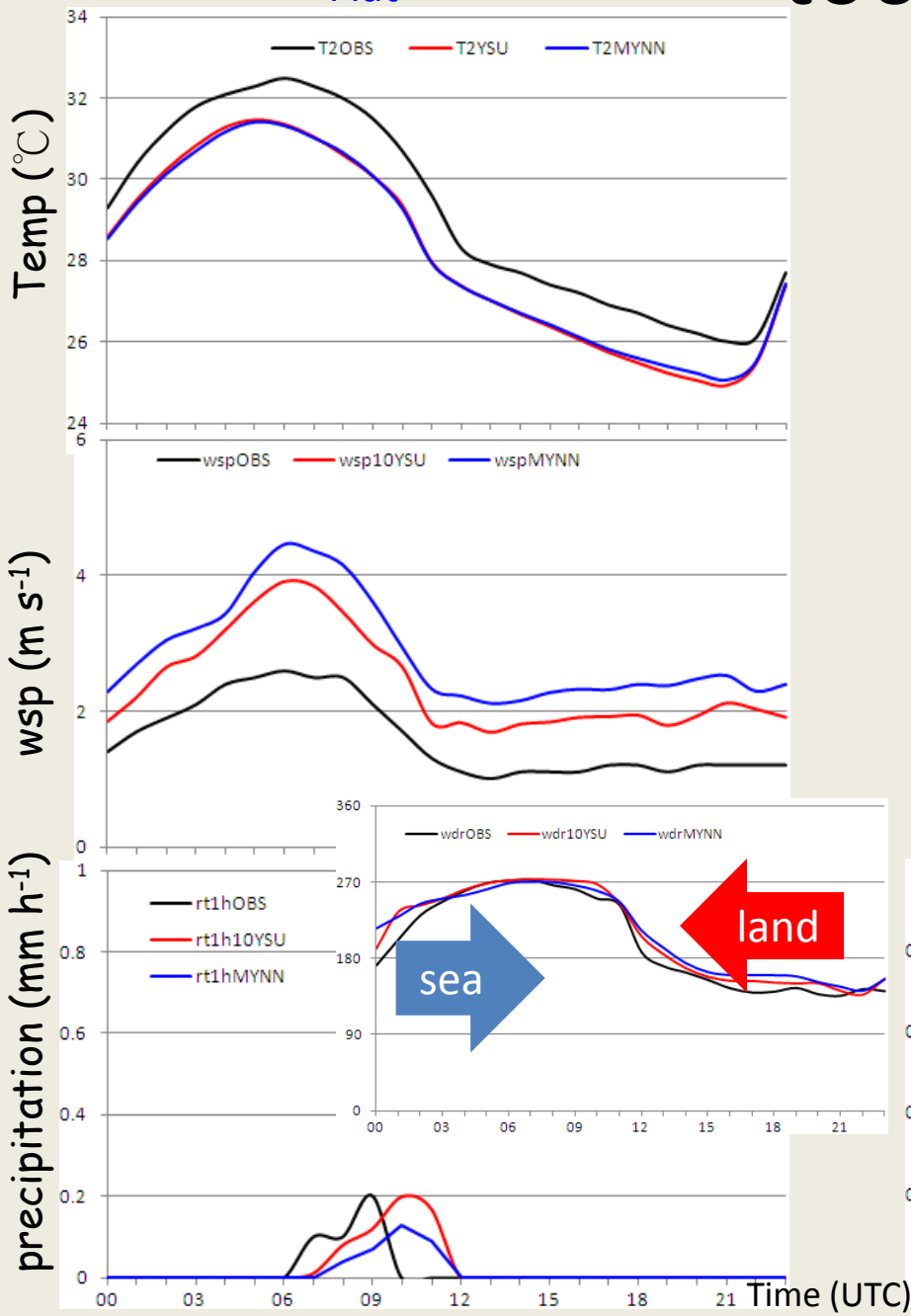
Mountain



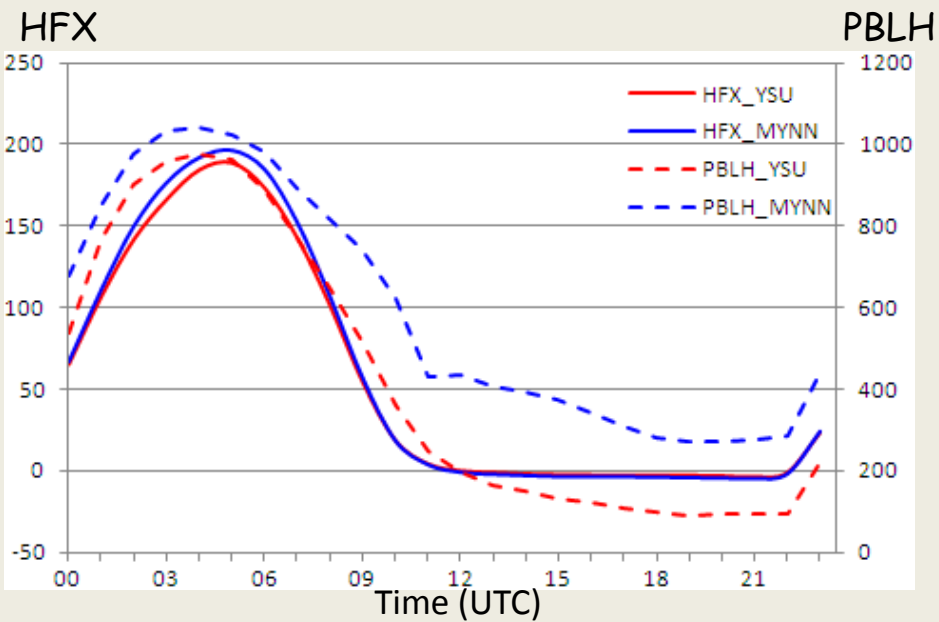
t00~t24

Flat

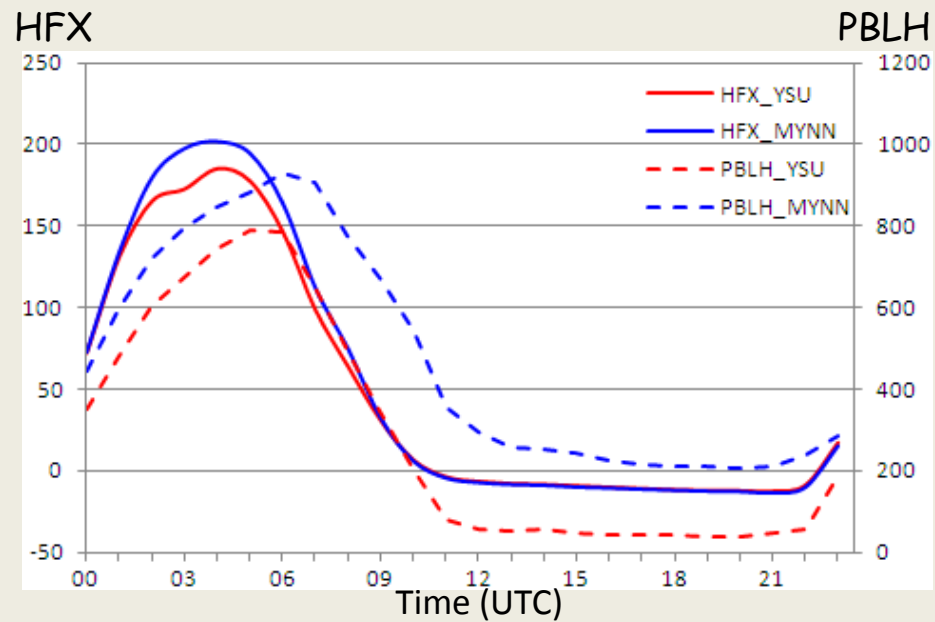
Mountain



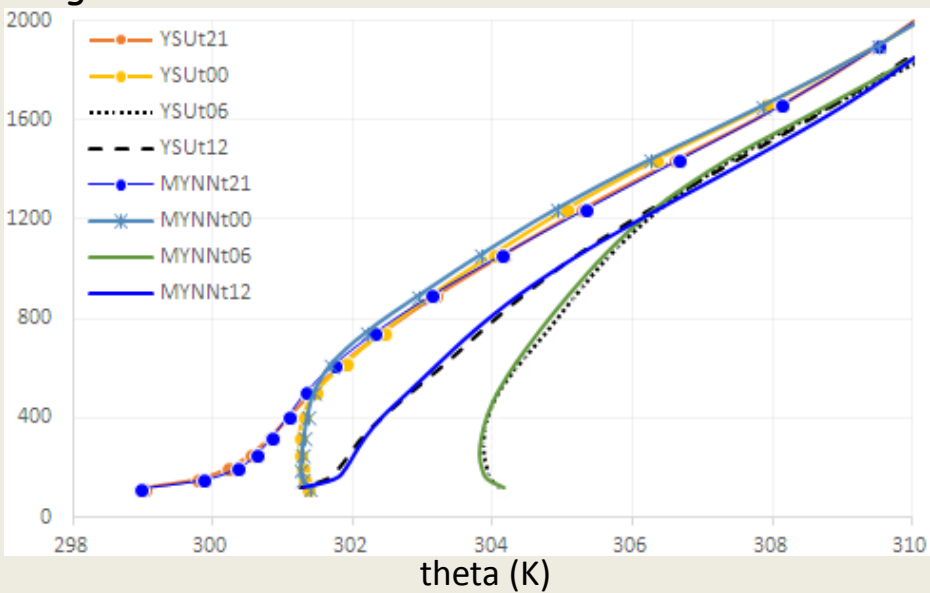
Flat



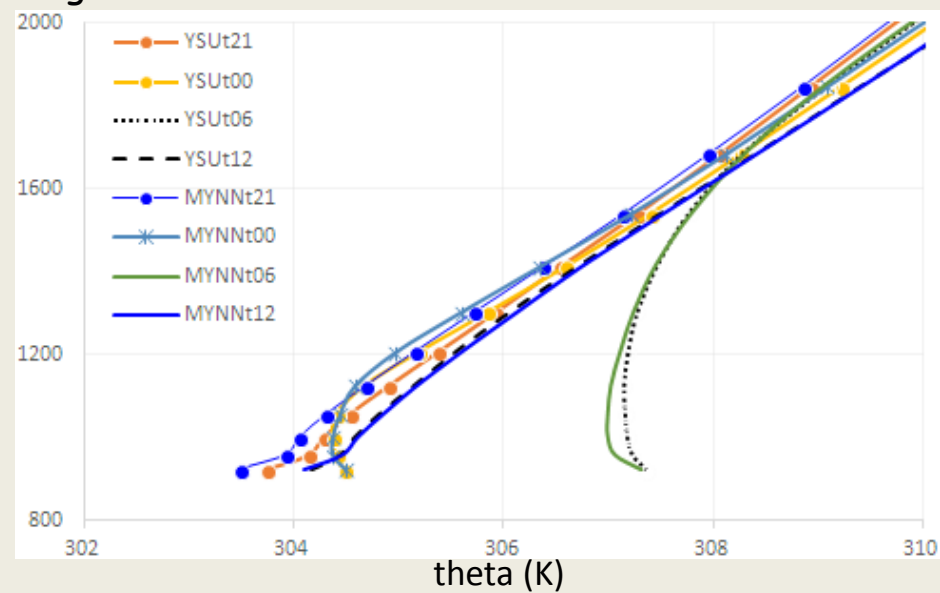
Mountain



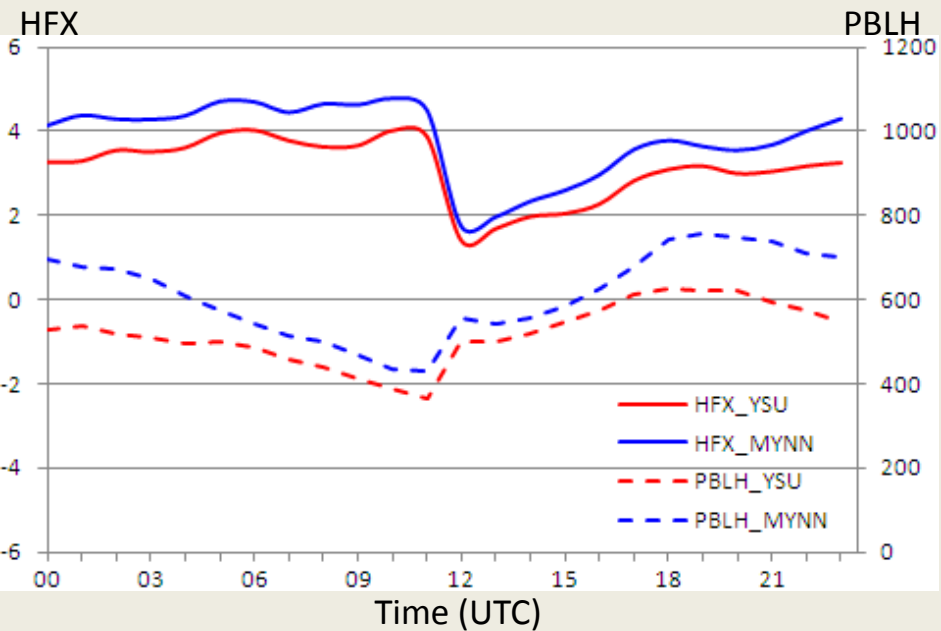
Height



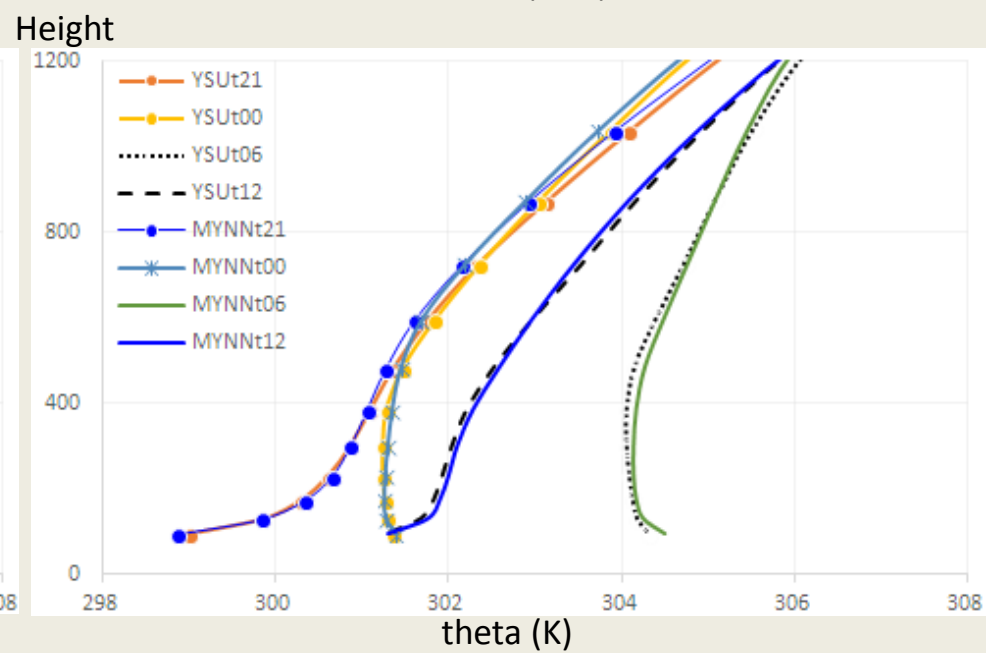
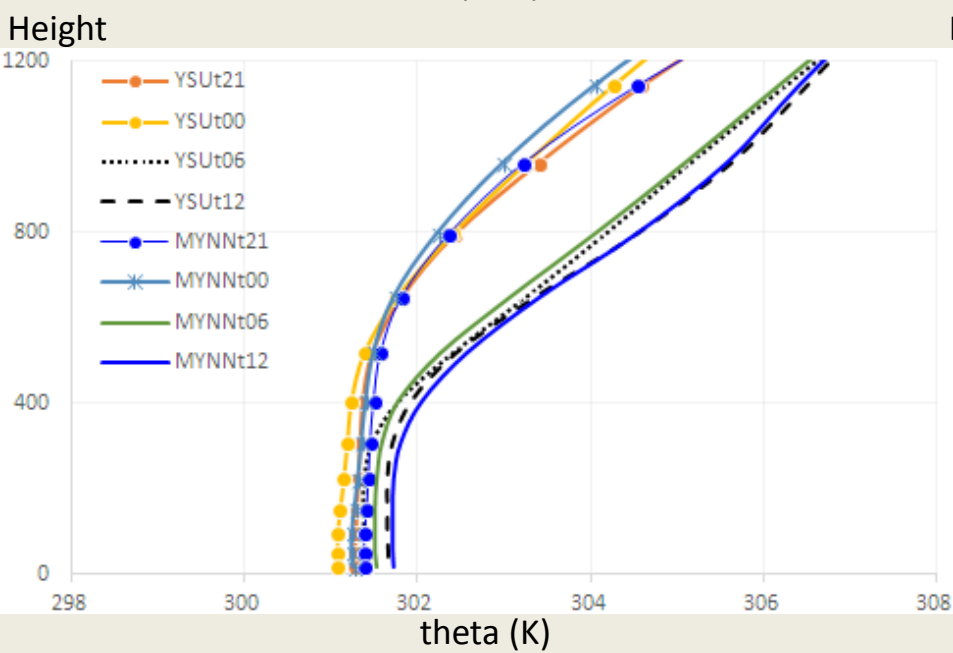
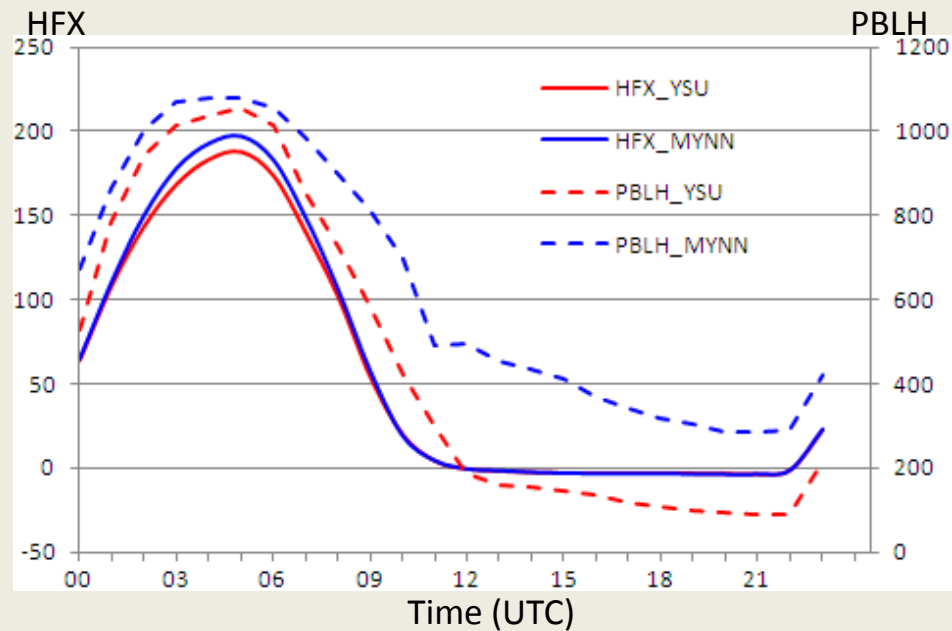
Height



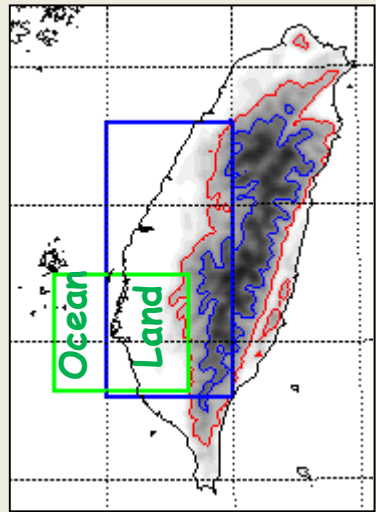
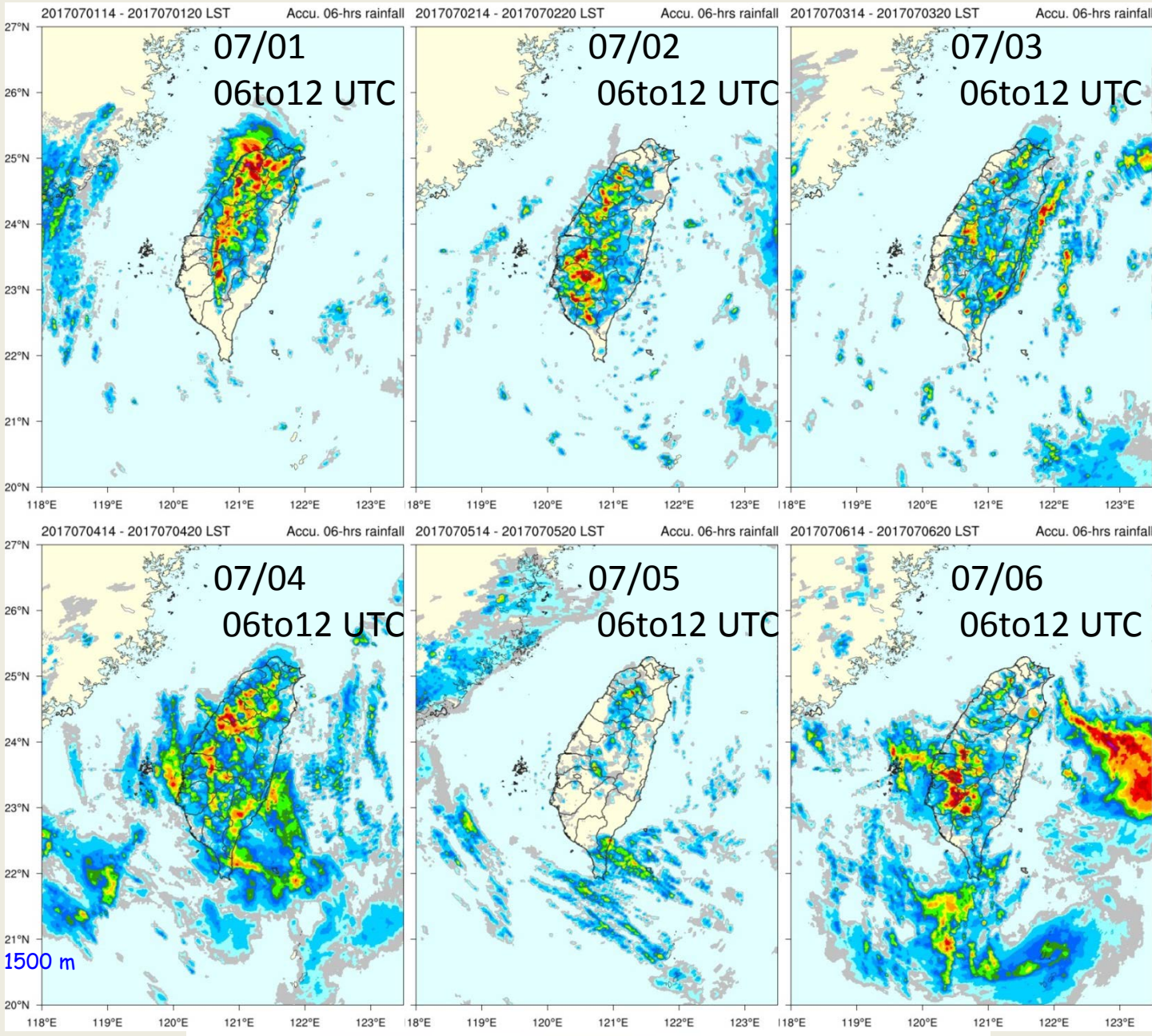
Ocean



Land



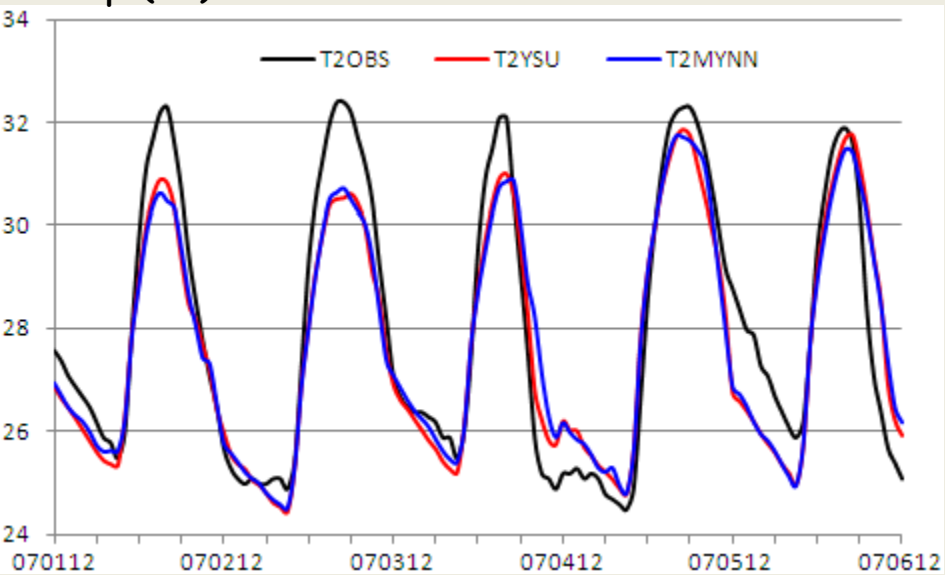
Case: thunderstorm (2017/07/01~ 07/06)



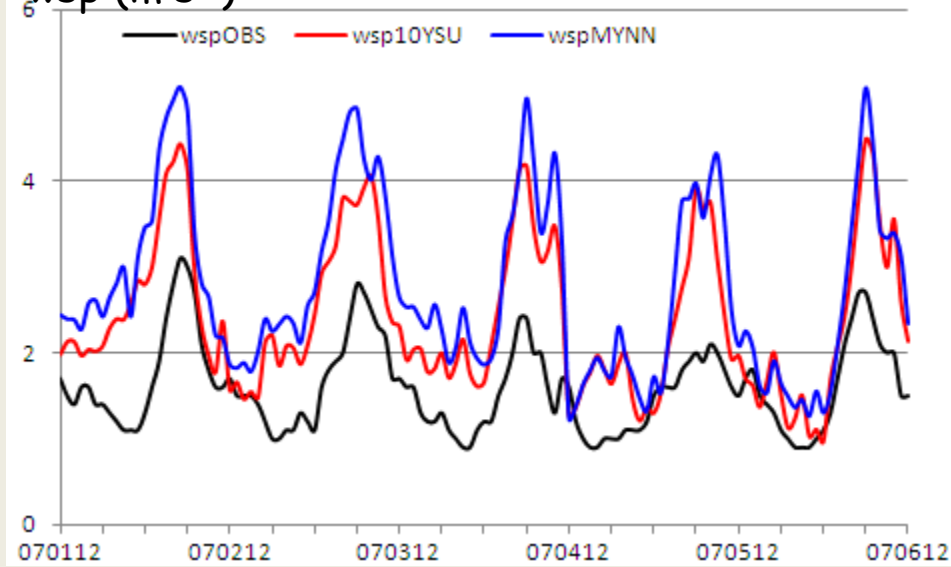
- Flat:** terrain height < 500 m
- Mountain:** 500 < terrain height < 1500 m
- Ocean:** terrain height < 0 m
- Land:** terrain height < 500 m

Flat

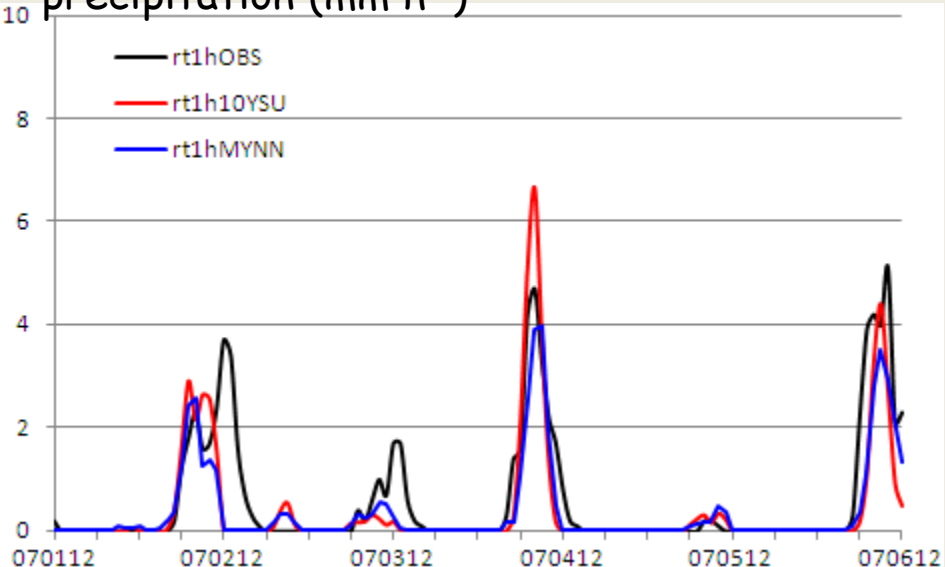
Temp ($^{\circ}\text{C}$)



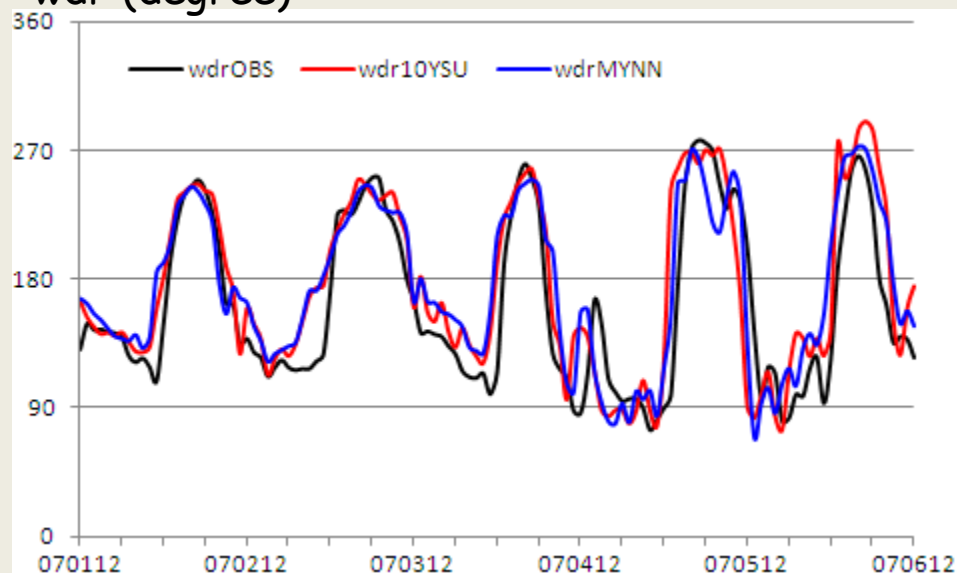
wsp (m s^{-1})



precipitation (mm h^{-1})

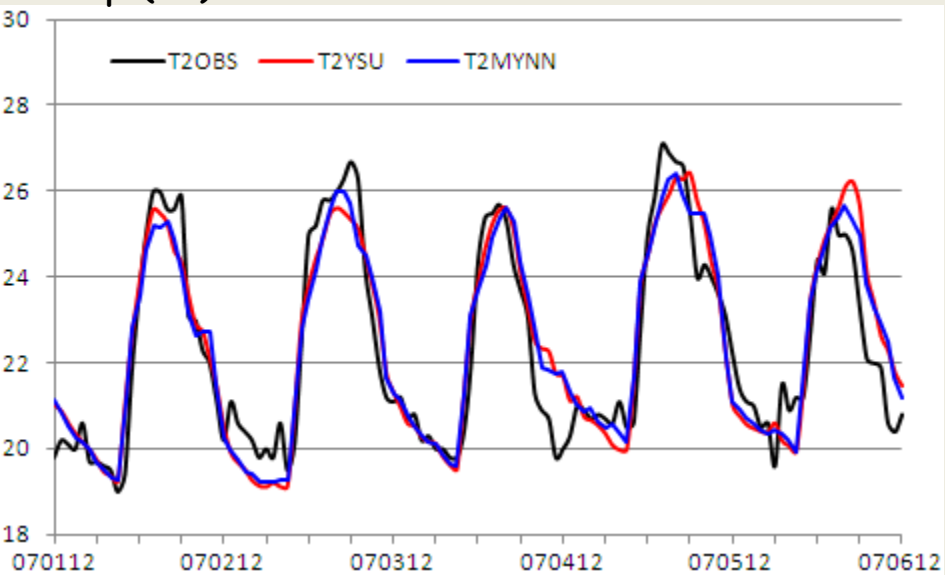


wdr (degree)

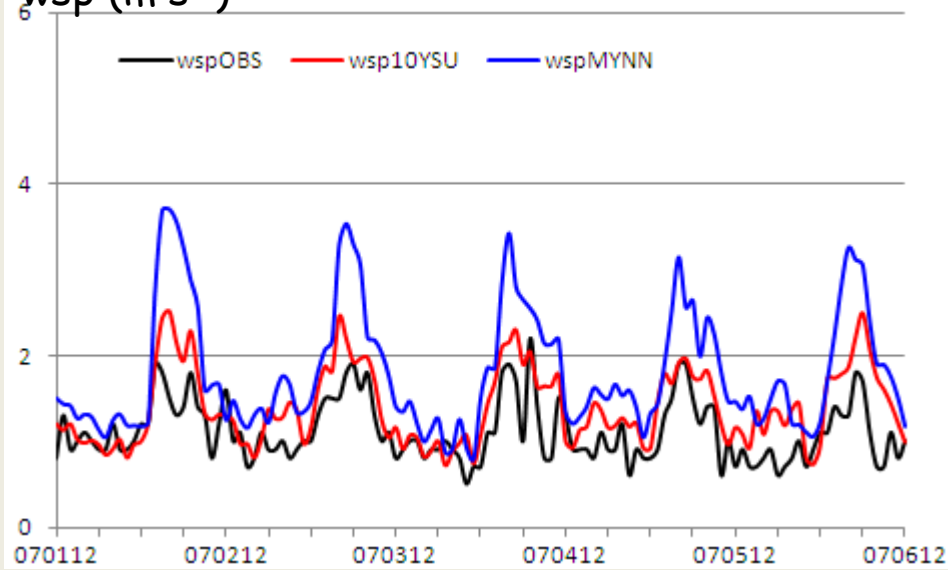


Mountain

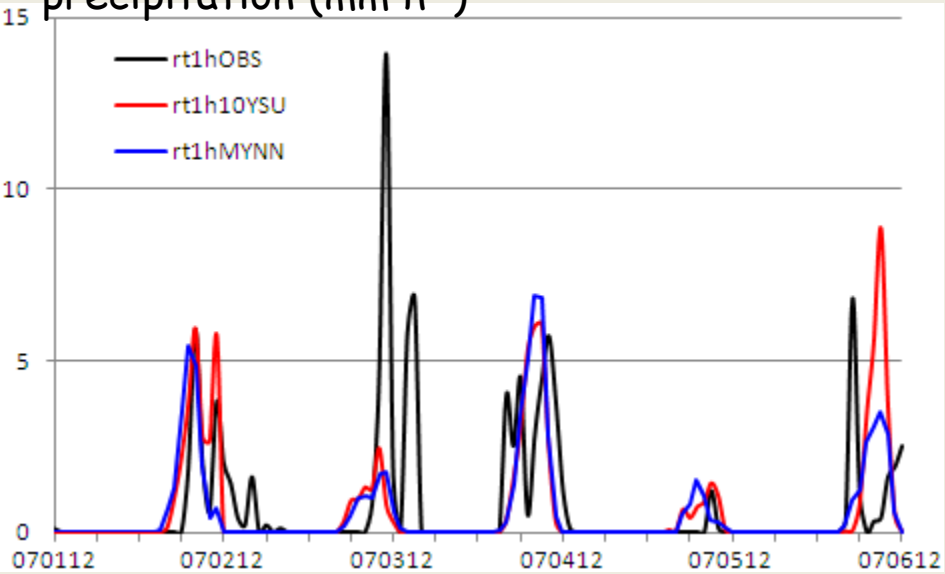
Temp ($^{\circ}\text{C}$)



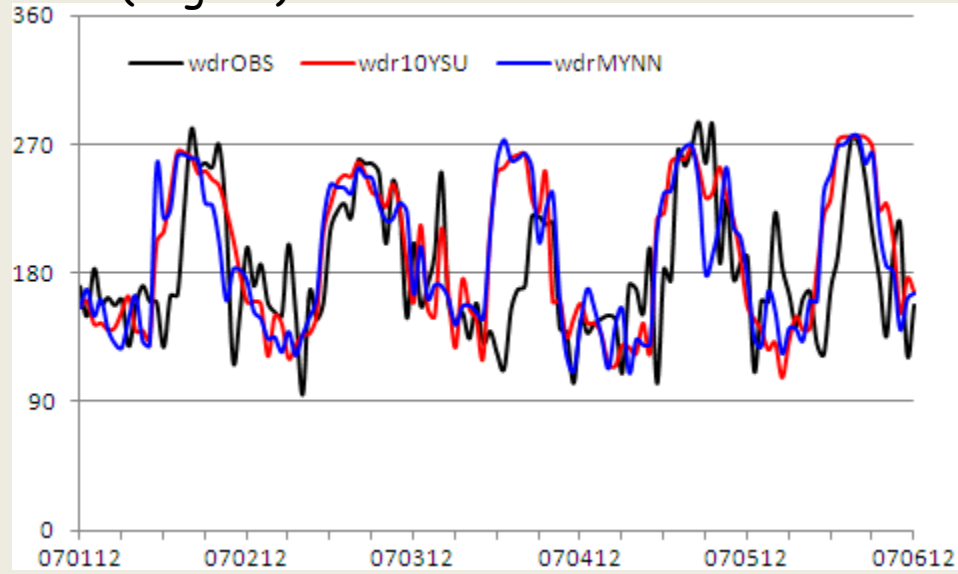
wsp (m s^{-1})



precipitation (mm h^{-1})



wdr (degree)



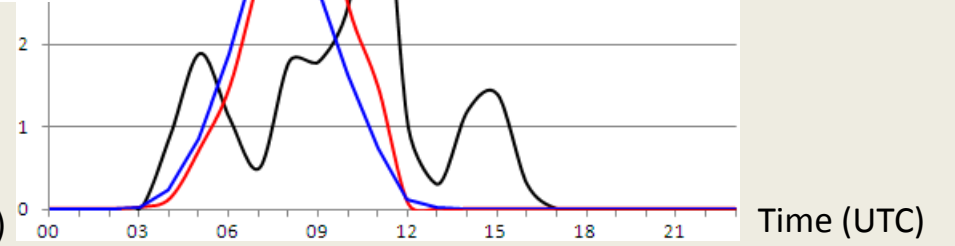
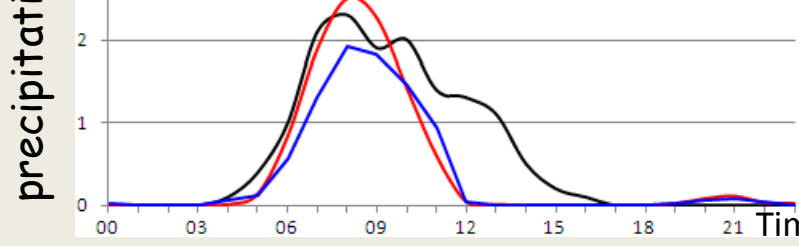
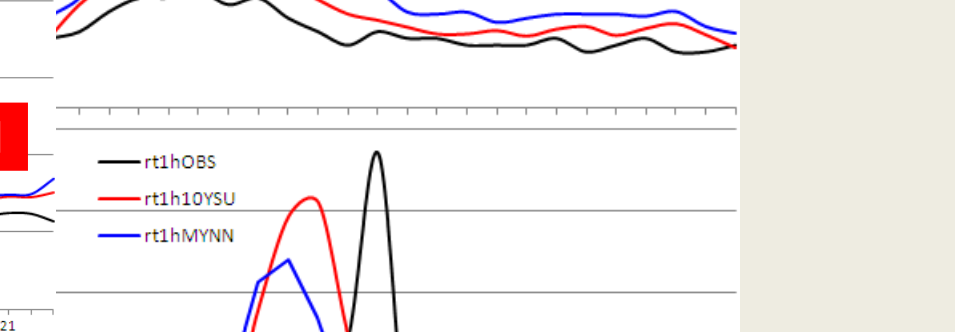
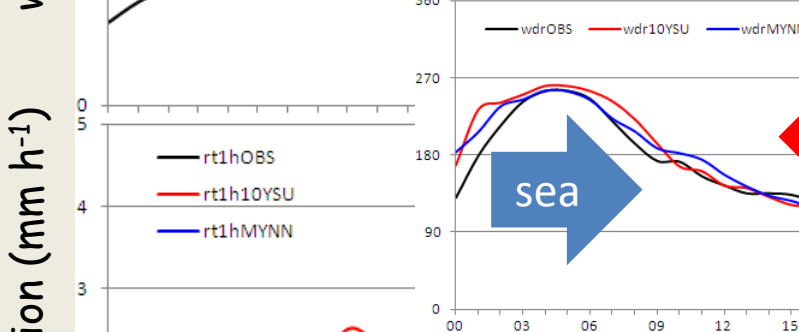
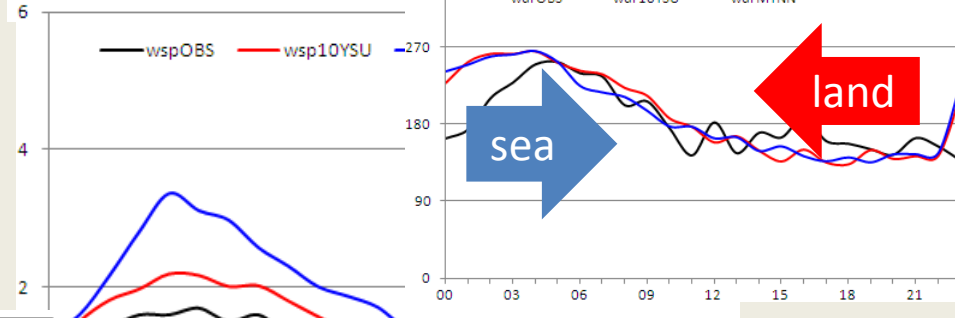
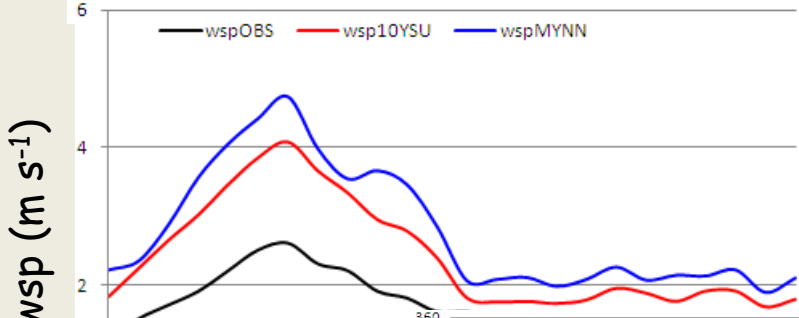
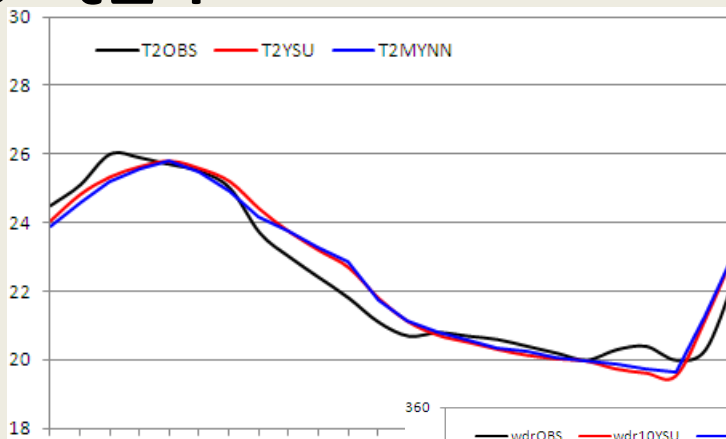
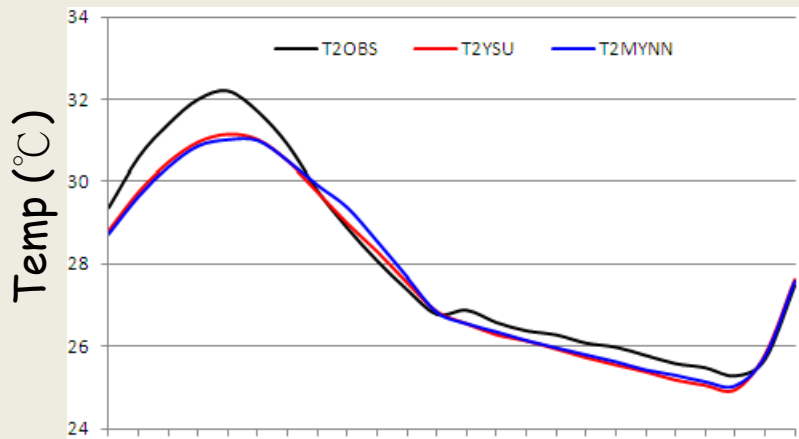
Time (UTC)

Time (UTC)

Flat

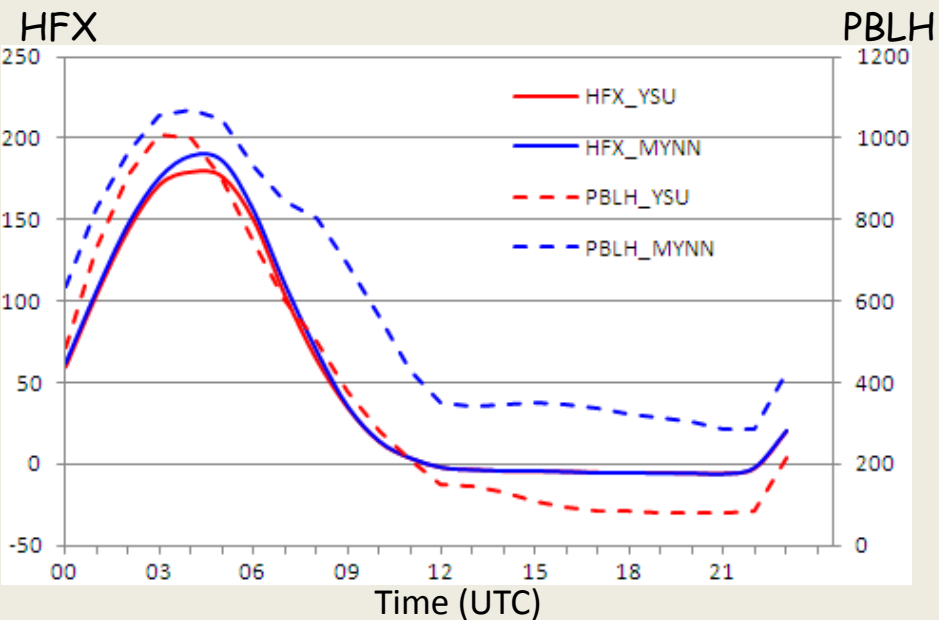
t00~t24

Mountain

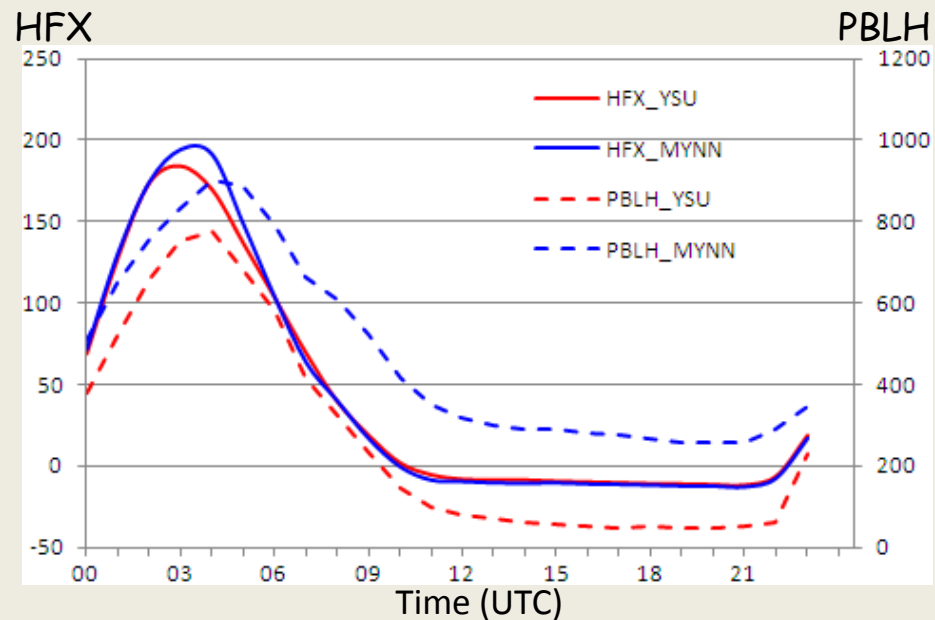


Time (UTC)

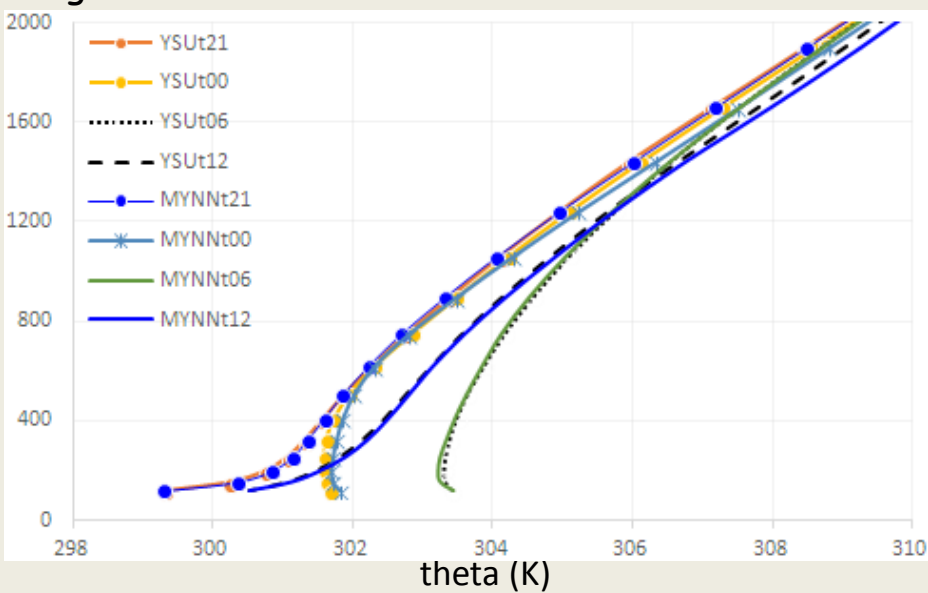
Flat



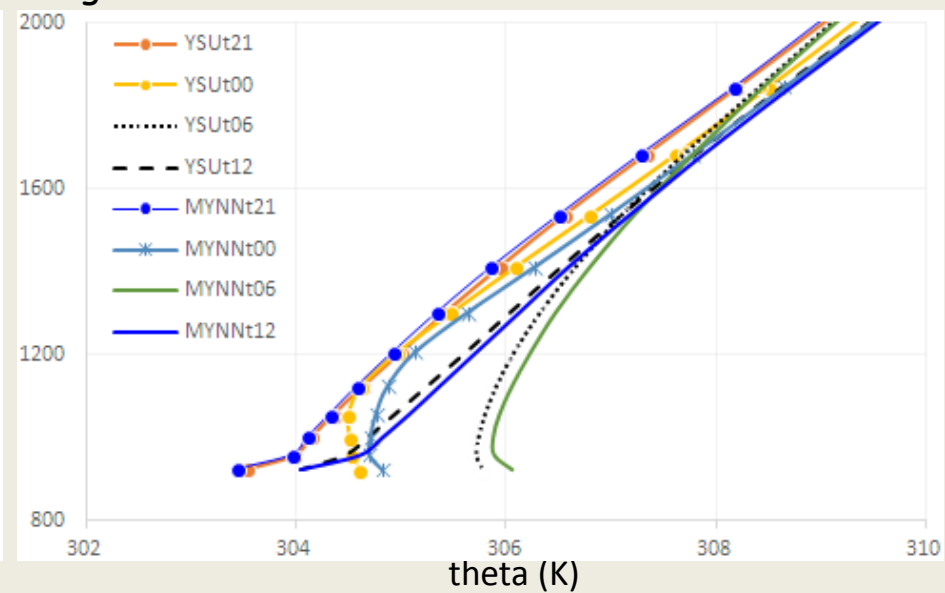
Mountain



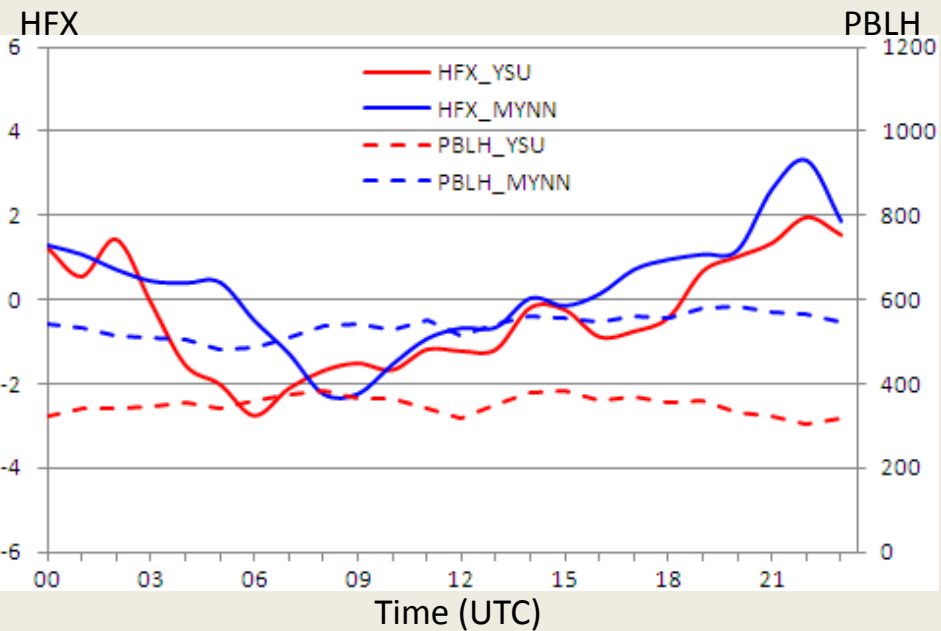
Height



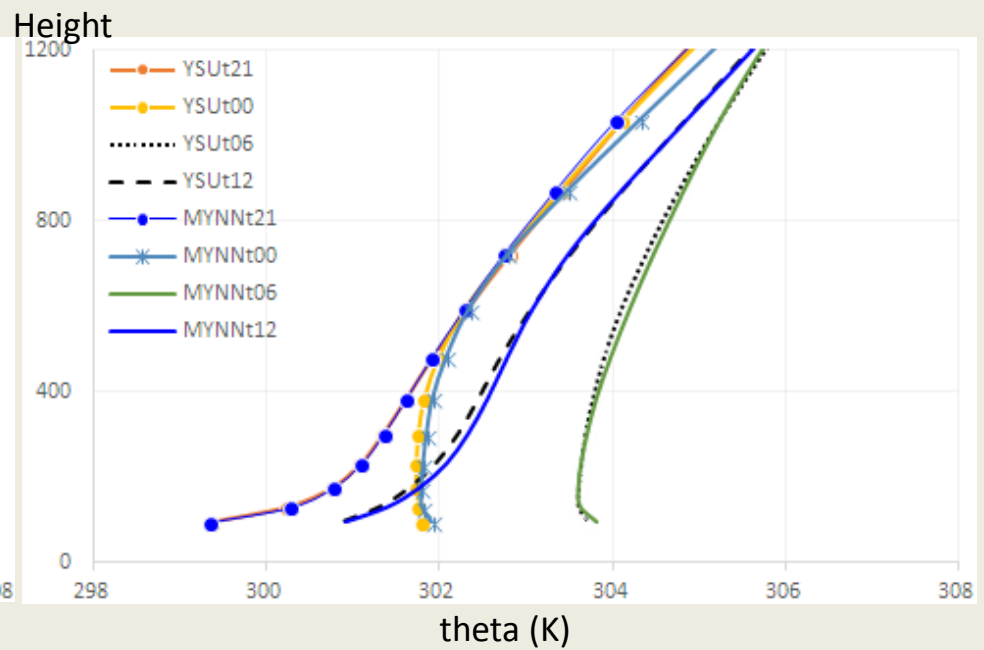
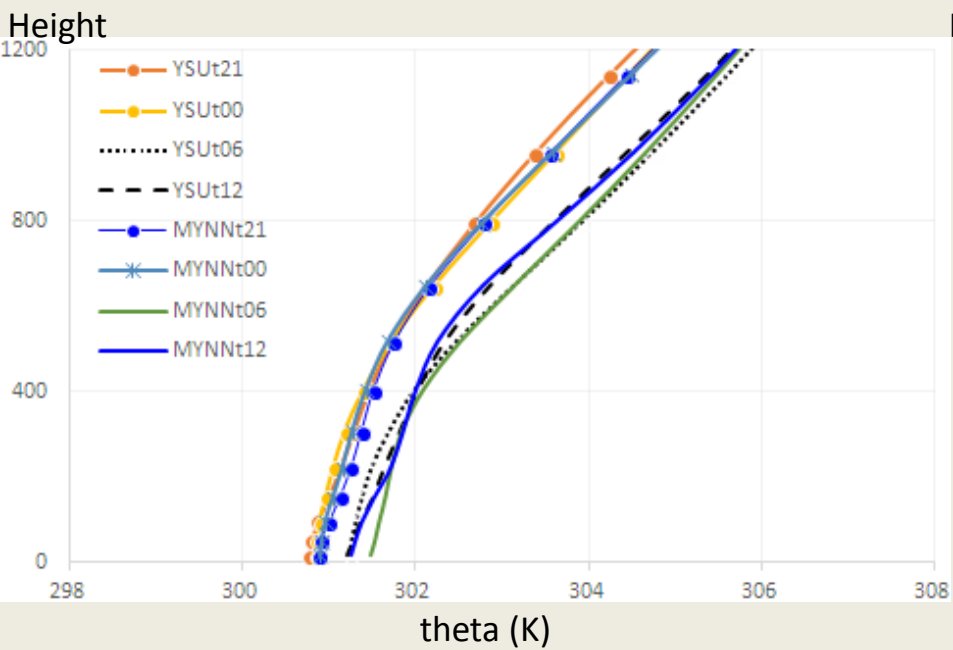
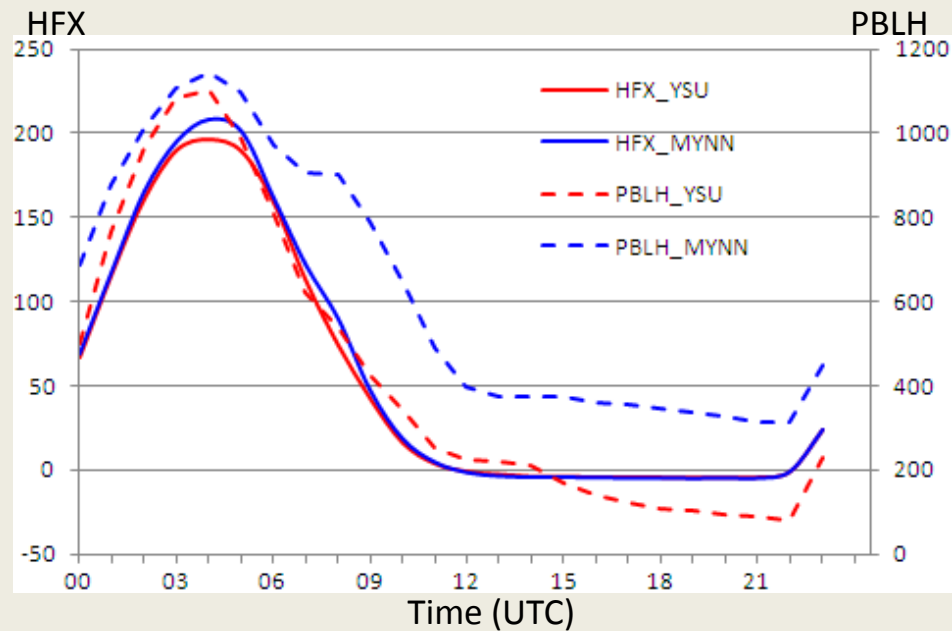
Height



Ocean



Land



Summary

- YSU & MYNN 實驗預報個案之風速於平地 (Terrain height < 500 m) 及山區 (500 < Terrain height < 1500 m) 區域皆有明顯偏強的趨勢，且 MYNN 於 **daytime** 山區風速較 YSU 實驗更為偏強；YSU & MYNN 實驗的溫度冷偏差主要發生於未降水時間，尤其是午間加熱期間
- PBL 日夜變化：
daytime 加熱期間，邊界層高度 (PBLH) 隨溫度及熱通量 (HFX) 增加而增高；**nighttime** 反之
daytime 加熱期間之 YSU 及 MYNN 實驗於山區底層的 theta 差異較平地明顯
- 海陸之 PBL 差異：
陸地於 **daytime** 之加熱效率大於海洋，因此陸地 (PBLH ~ 1000 m) 之 PBLH 較海洋 (PBLH < 600 m) 為高，且 MYNN 普遍較 YSU 實驗為高