

紫外線預報系統建置及初步成效

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紫外線指數(UVI)特性
UVI統計預報及鄉鎮尺度面化
作業流程串接
建模/應用/面化表現
總結

紫外線指數特性

CWB觀測資料

1998.04-2015.06 共20測站

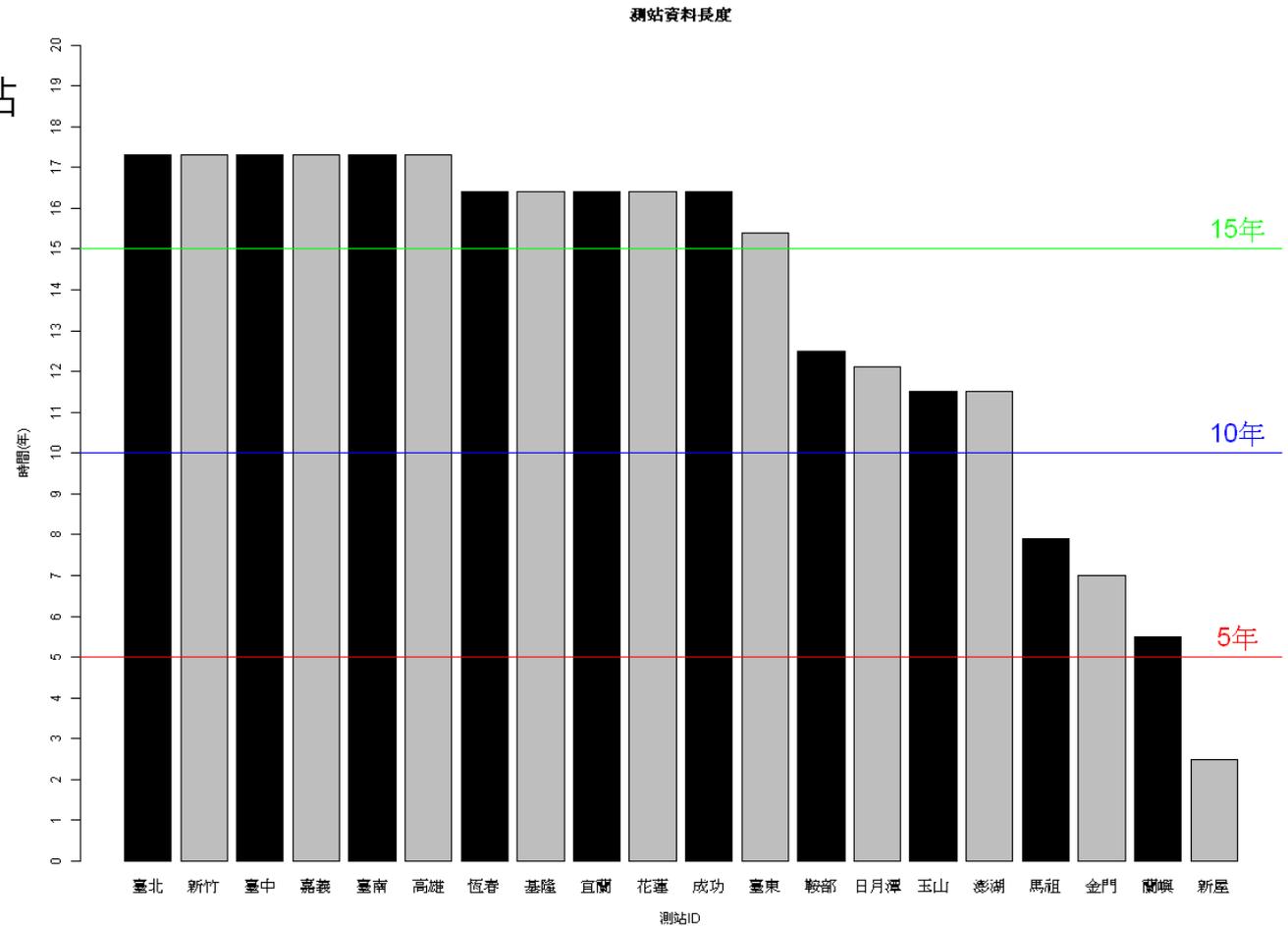
建模測資料

2010-2012, 共19測站

本島15站

離島4站

(不含新屋)



紫外線指數特性

每日最大UVI分級.分布

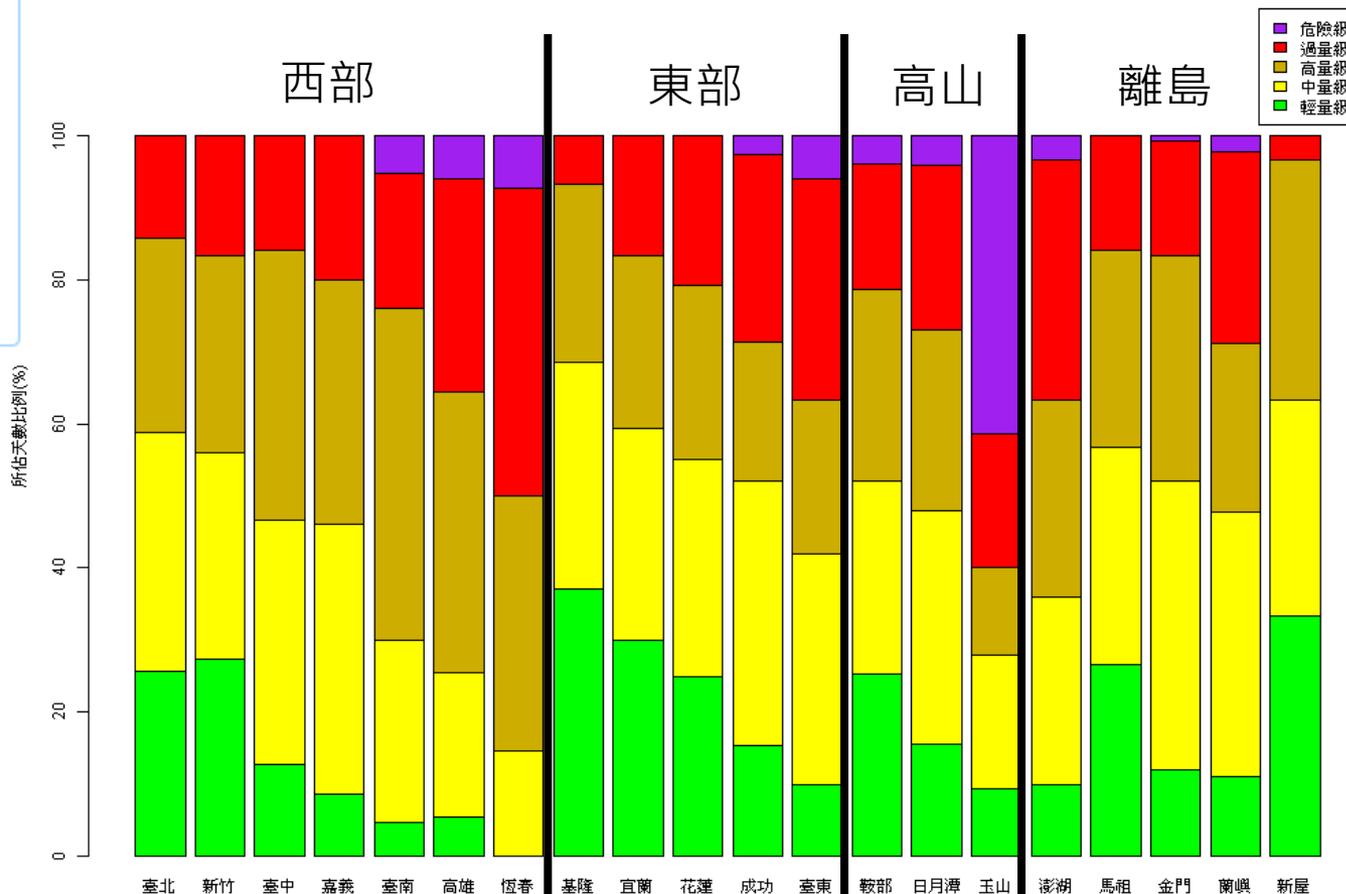
紫外線指數分級說明

0~2	低量級	
3~5	中量級	
6~7	高量級	
8~10	過量級	
11+	危險級	

紫外線指數分級係依據WHO相關規範。

由北到南
由低到高(WHO, 2003)
由西到東(陳, 2010)

清明(0330-0413) 每日最大UV強度天數比例



(資料年份：2005~2014)

UVI統計預報及鄉鎮尺度面化

線性迴歸(LR)

$$y = \beta_0 + \beta_1 x_1 + \beta_2 x_2$$

y : Max UVI

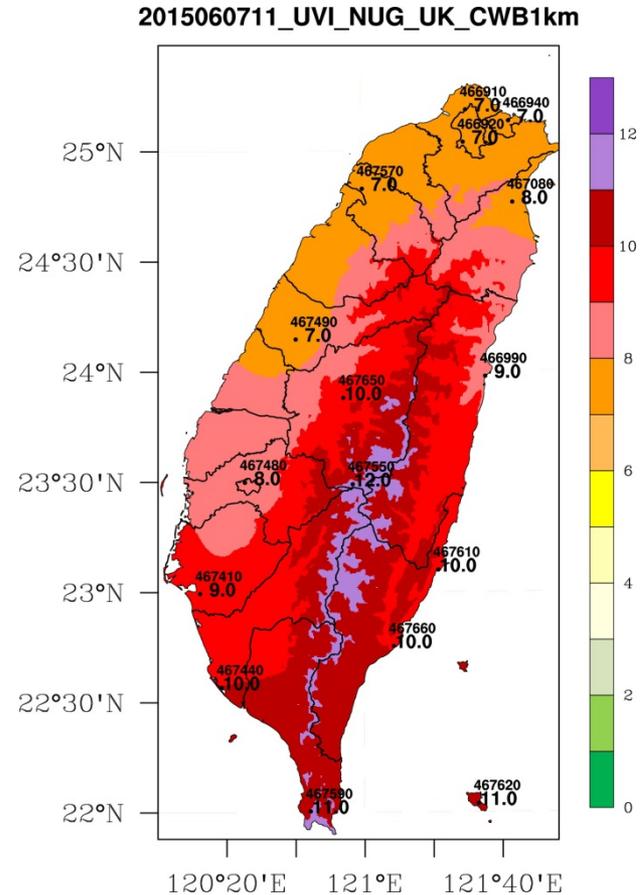
x_1 : Obs Tx

x_2 : Obs CD(Min[11L,14L])

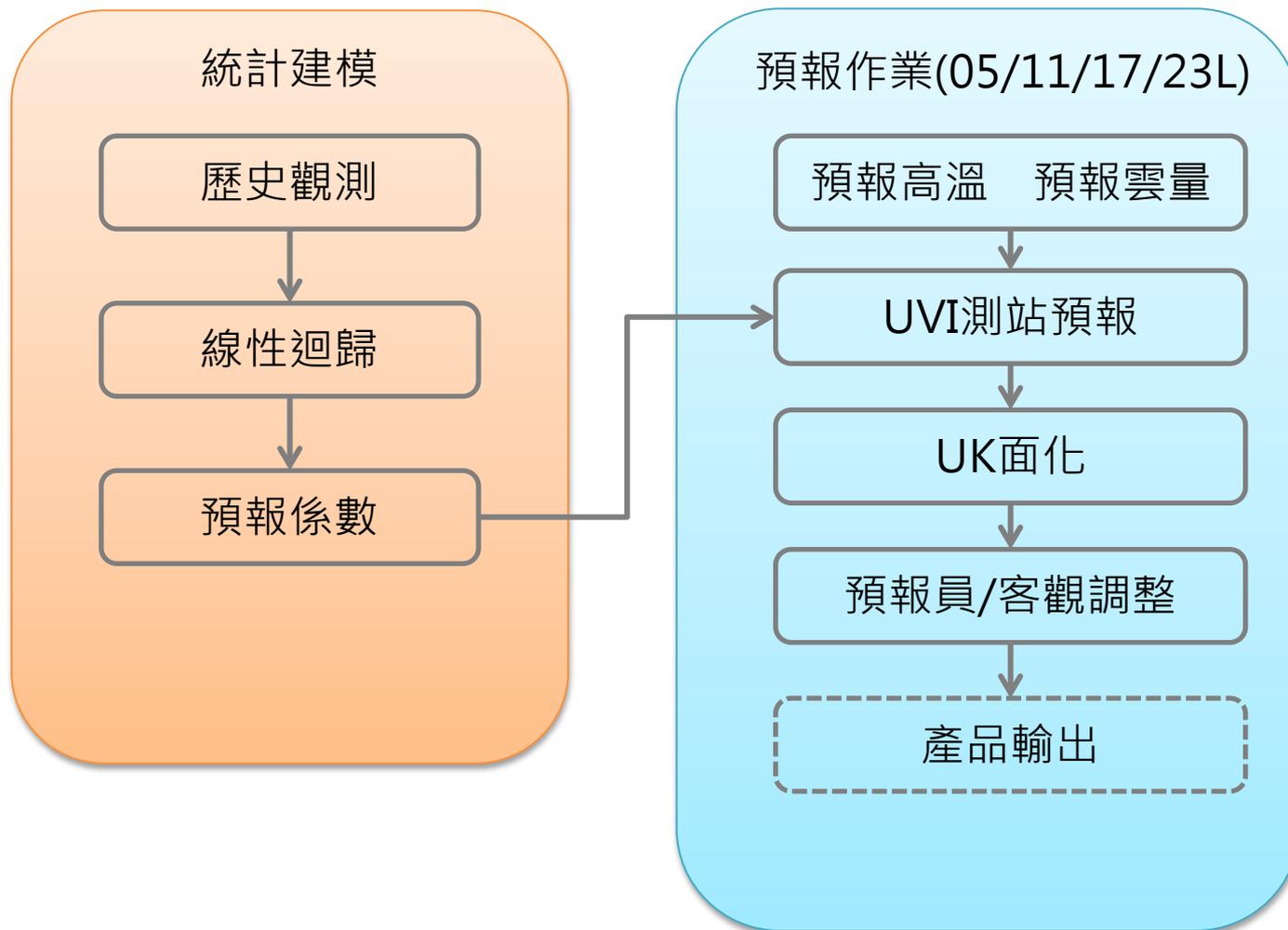
通用克利金法(UK)

趨勢方程

1. 高度、緯度
2. 高度、緯度、經度

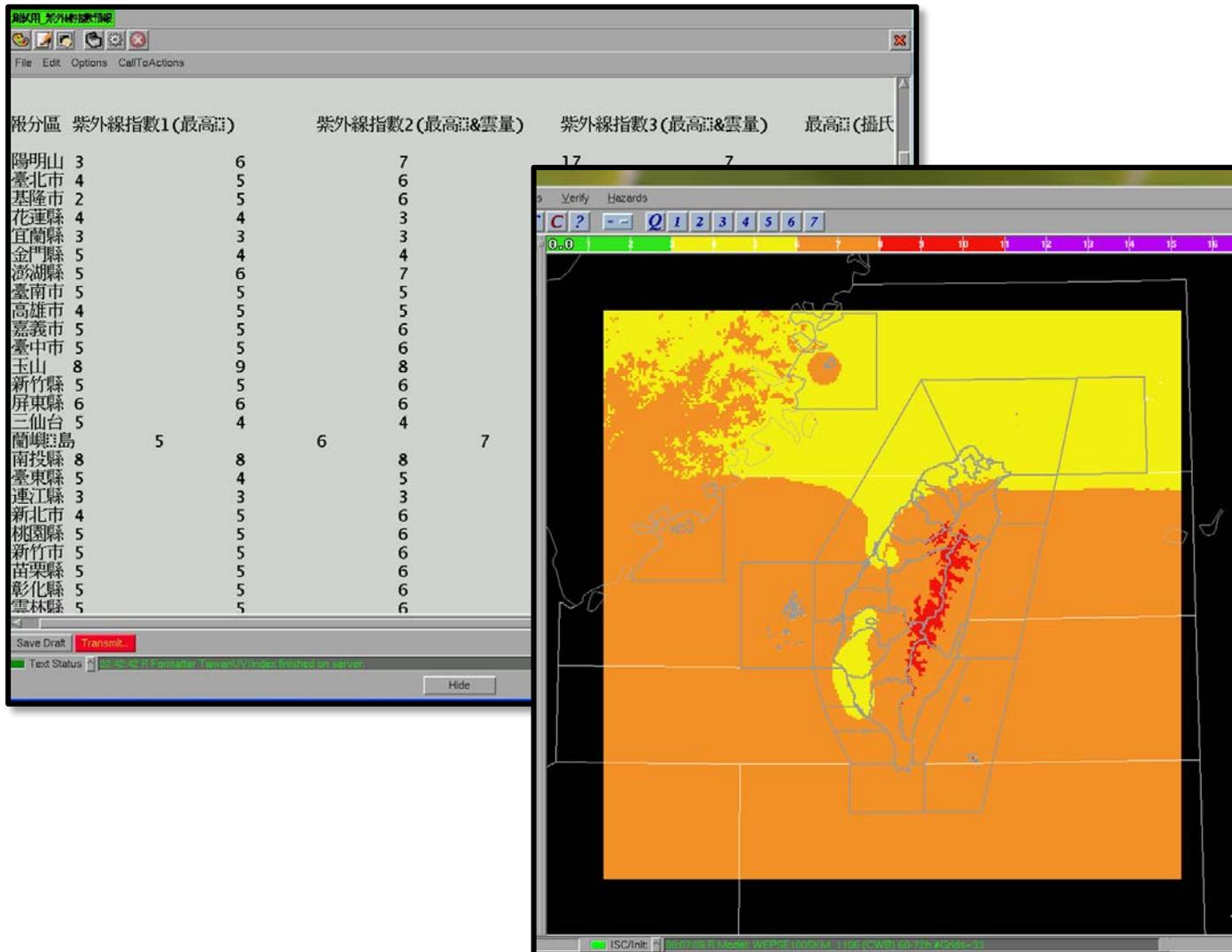


作業流程串接



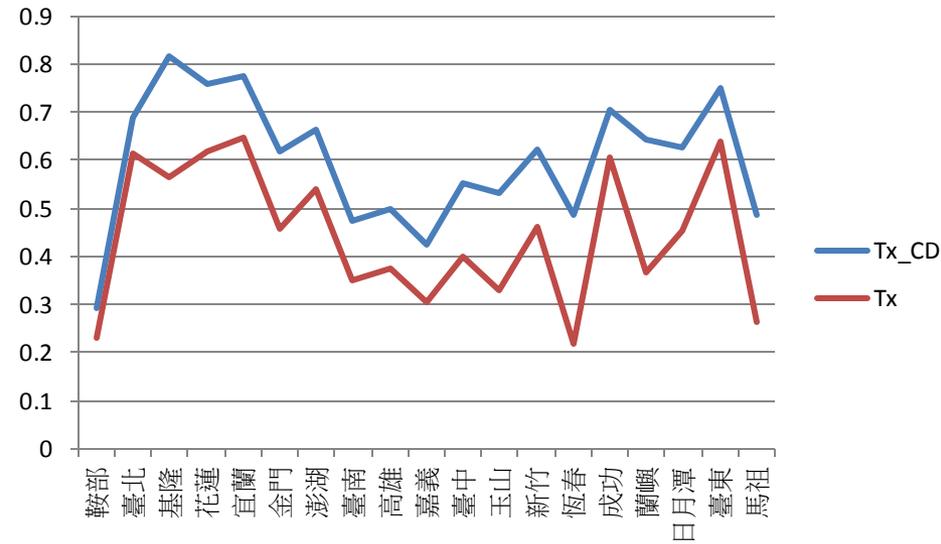
作業流程串接

預報作業系統GFE

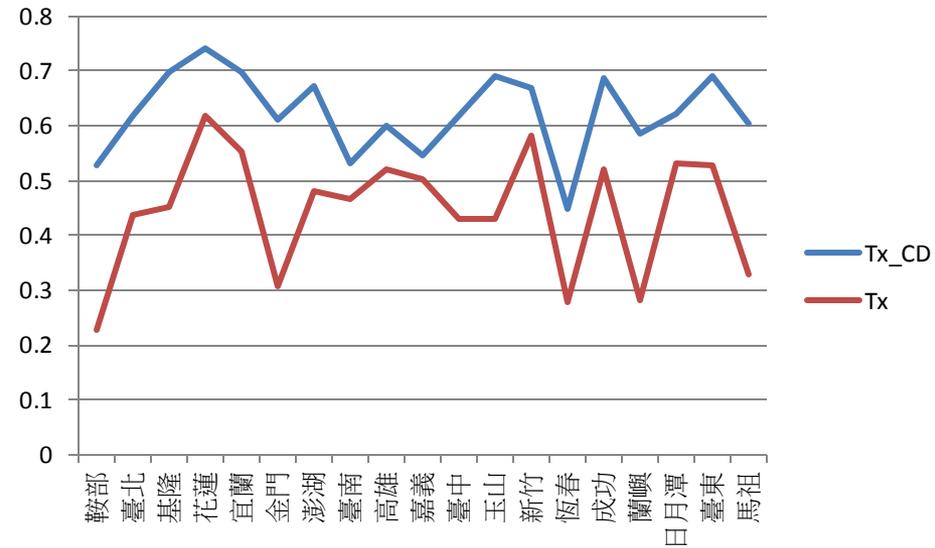


建模表現(Adj_R2)

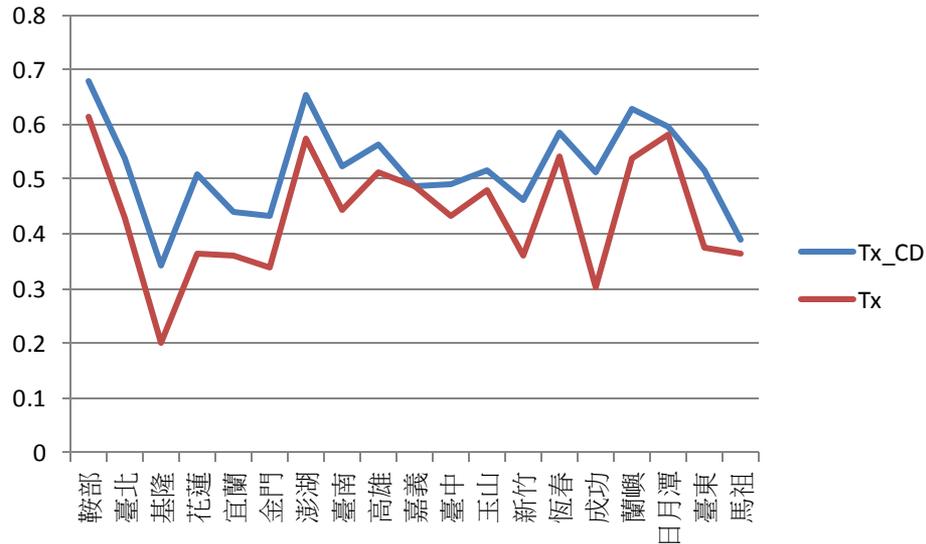
1月



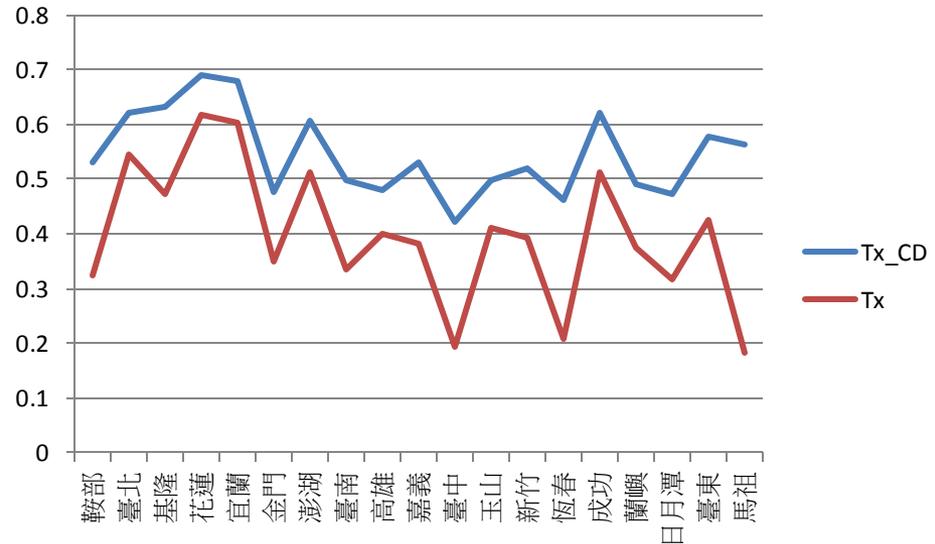
4月



7月



10月



應用表現

2010-2012建模，預報2013

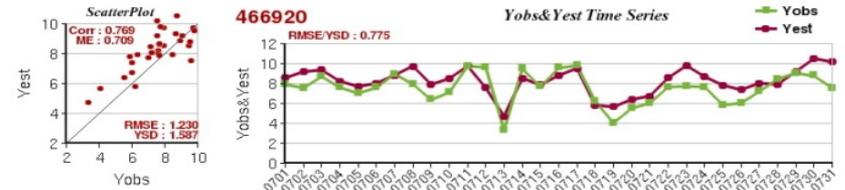
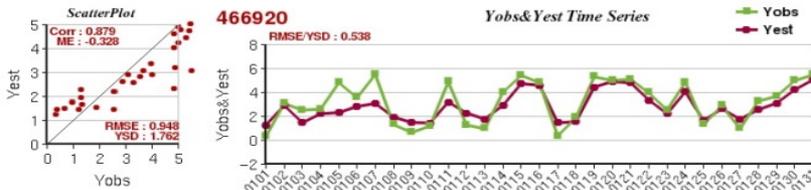
1月

7月

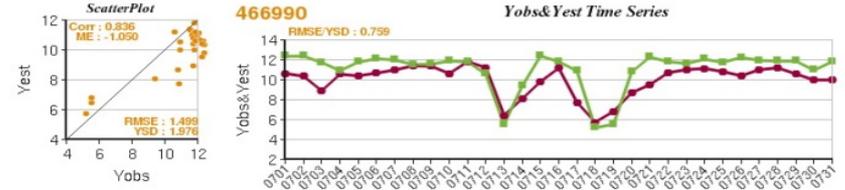
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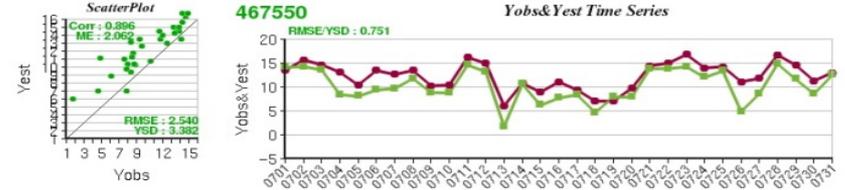
台北



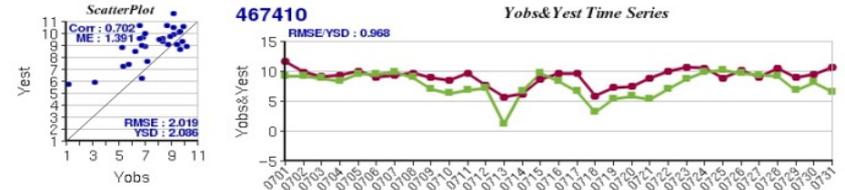
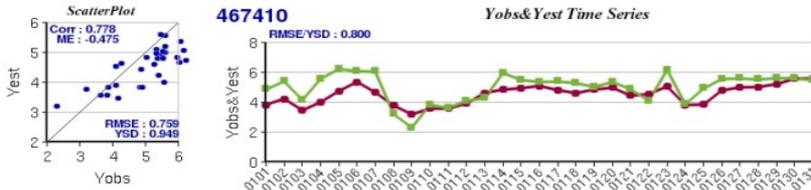
花蓮



玉山



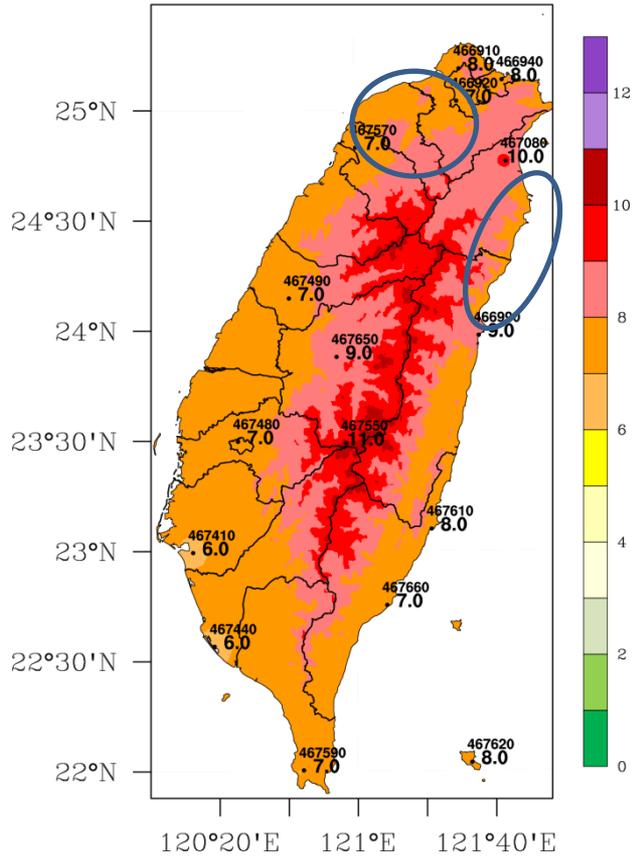
台南



面化表現(面化方法選擇)

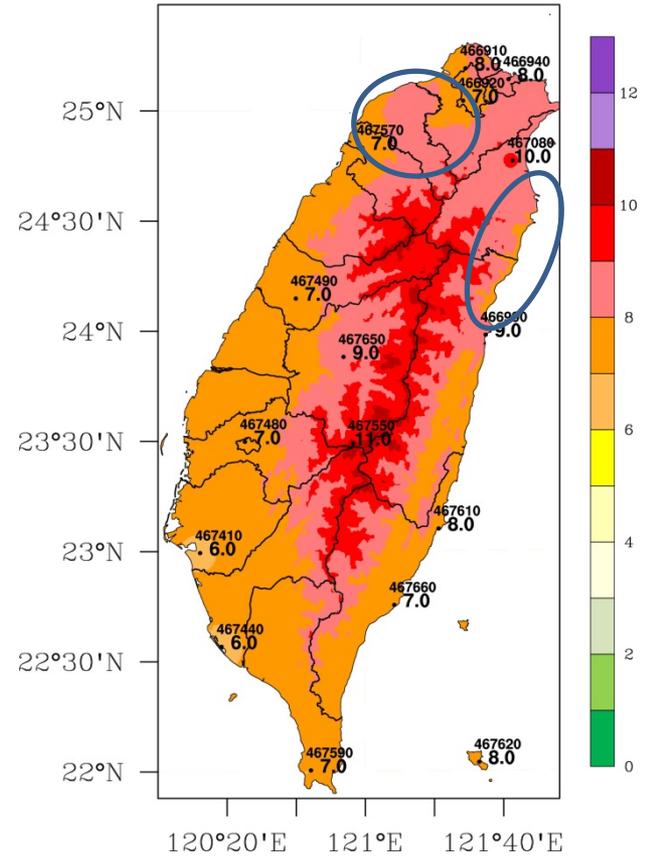
經+緯+高

2015071911_UVI_NUG_UK_CWB1km



緯+高

2015071911_UVI_NUG_UK_CWB1km



總結

1. 使用高溫及雲量建立UVI的統計模型，Adj_R2最高約有0.8的表現。
2. 藉由 通用克利金法 將15個本島測站面化至鄉鎮網格點上，有利於預報作業流程編修作業。但是否符合真實現況，還是必須有更多觀測點資料才能證實。
3. UVI統計預報方法可獲得初步客觀的預報結果，預報員可依主觀經驗及客觀條件，調整獲得更佳的預報表現。

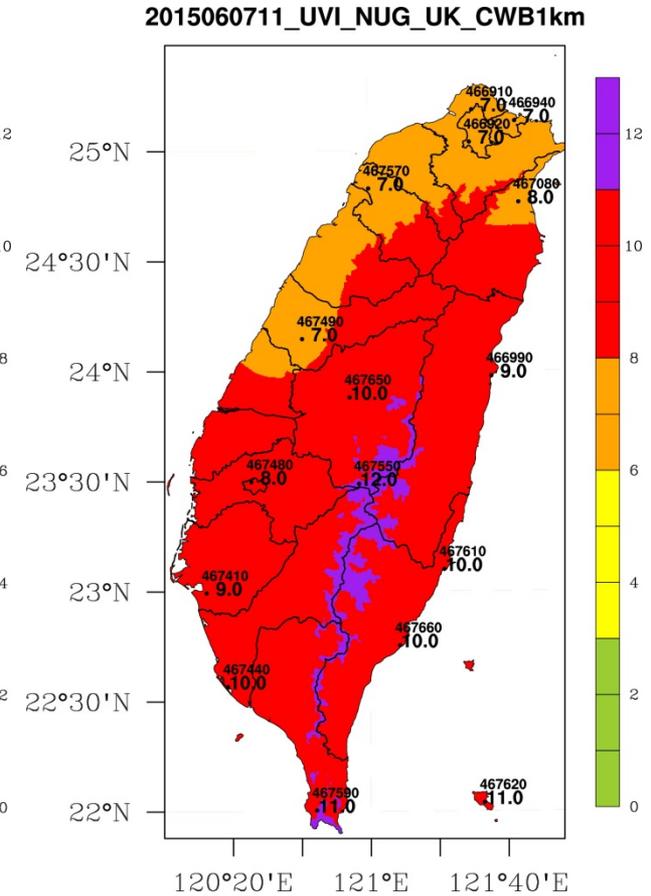
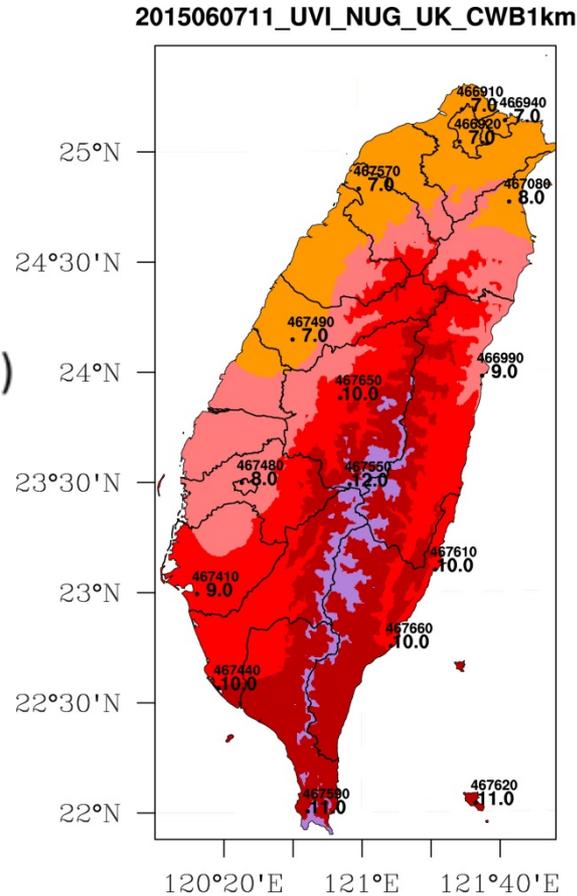
統計方法及鄉鎮尺度面化

$$y = \beta_0 + \beta_1 x_1 + \beta_2 x_2$$

y : Max UVI

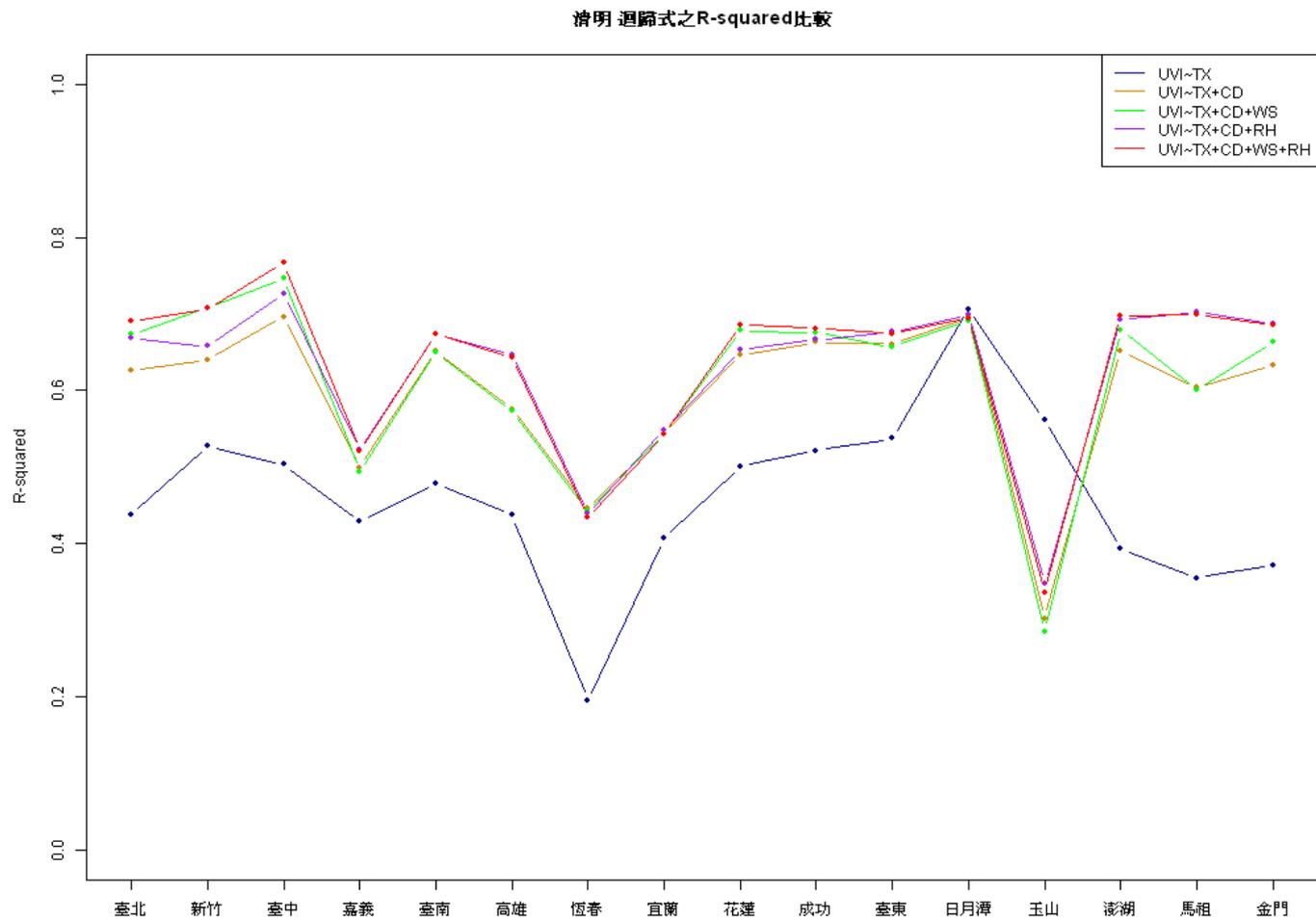
x_1 : Obs Tx

x_2 : Obs CD(Min[03Z,06Z])

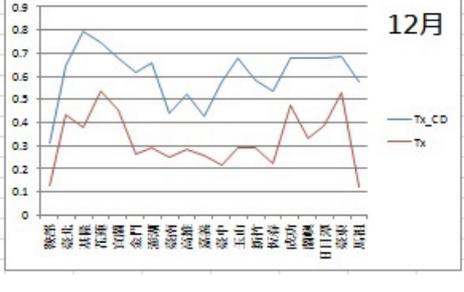
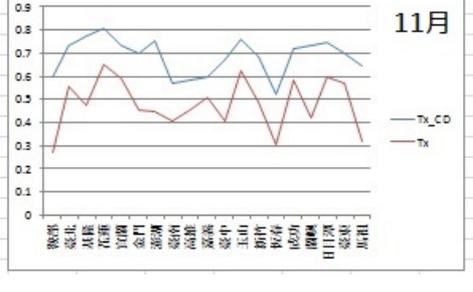
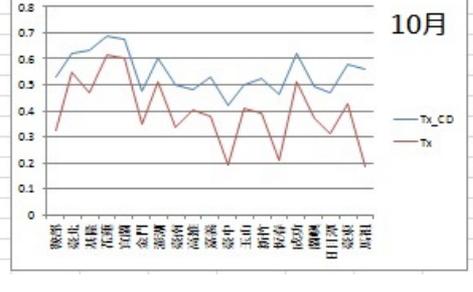
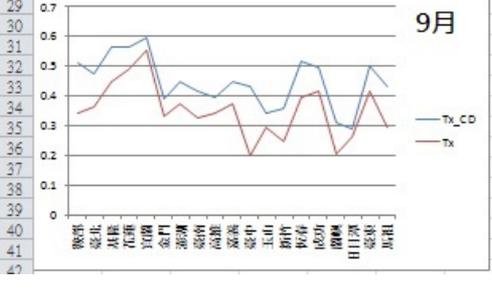
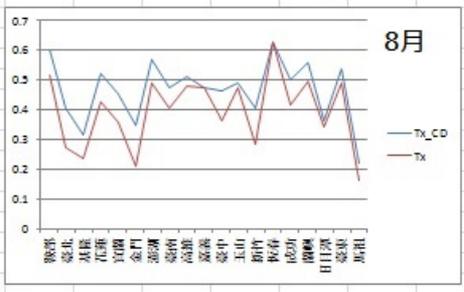
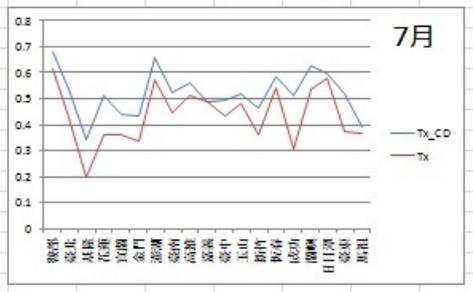
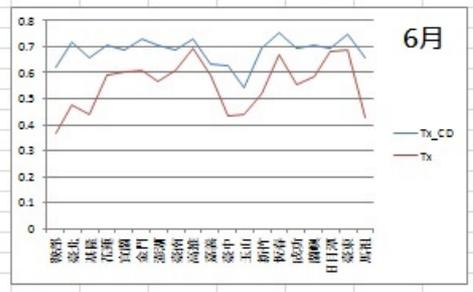
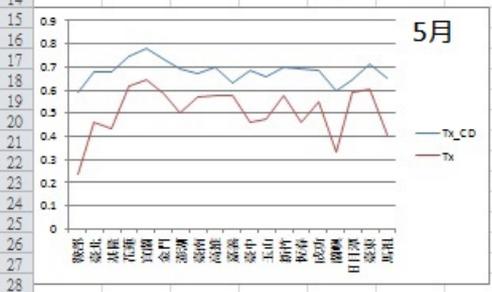
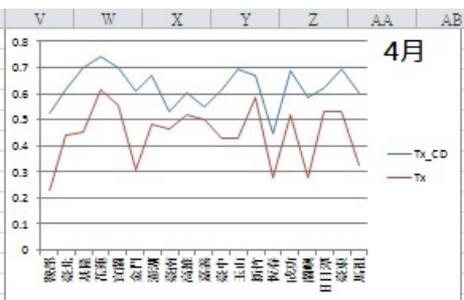
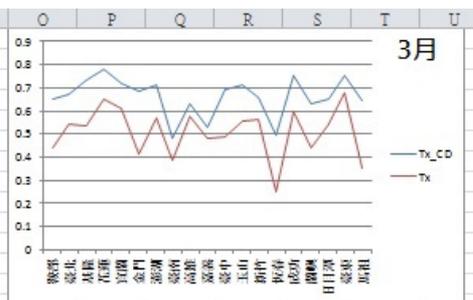
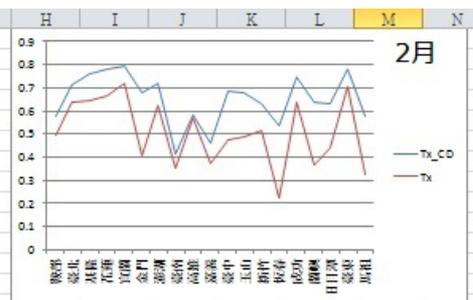
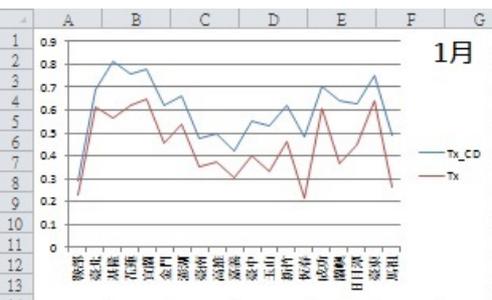


建模表現(Adj_R2)

增加其他變數建模(TX.CD.WS.RH)

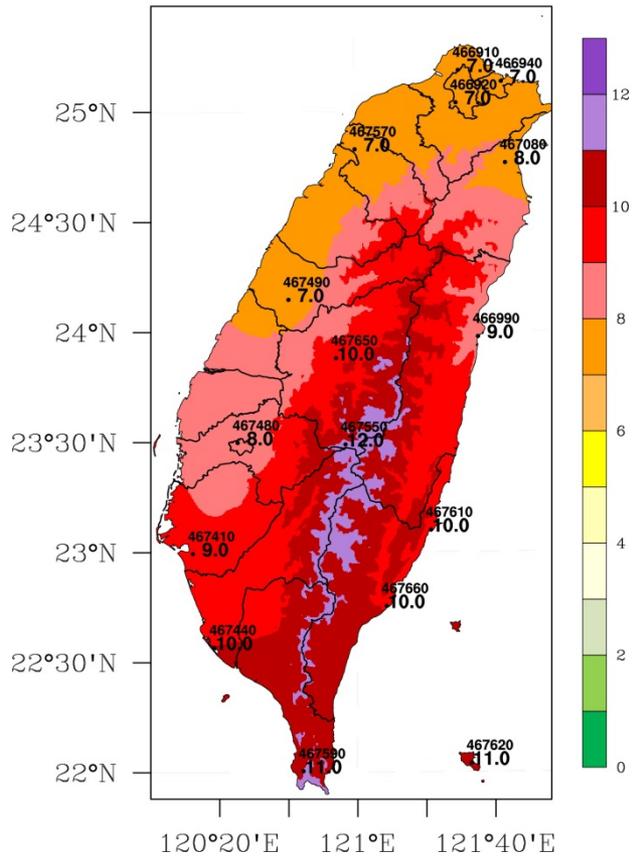


(資料年份：2010~2014)



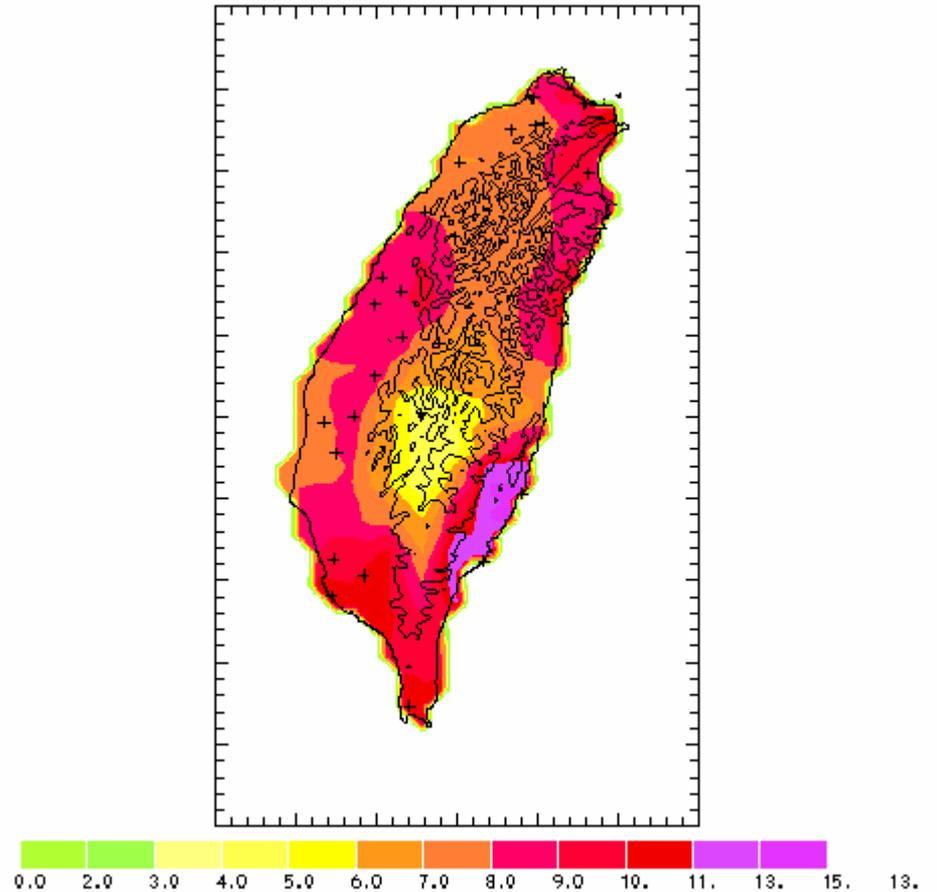
CWB - 通用克利金法

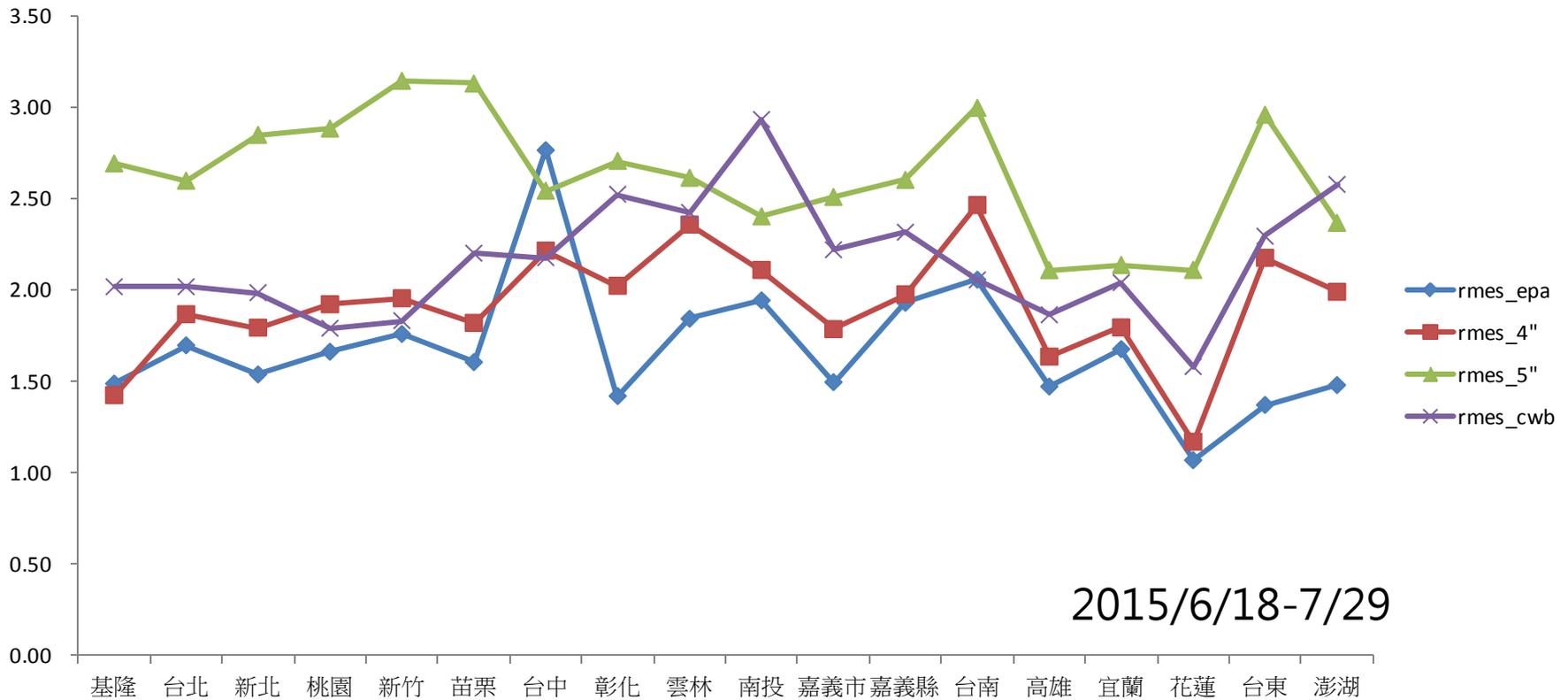
2015060711_UVI_NUG_UK_CWB1km



EPA - 雙線性內插

UVI 2015/09/02 observation





2015/6/18-7/29

- 環保署的主觀預報表現較佳(除台中市的預報表現)
- 台大模式第5代的誤差偏大，第4代的預報成效較好
- 本局的預報表現大多介於第4、第5代之間，EPA、4"、5"及CEB平均的RMES分別為1.68、1.92、2.63、2.16