

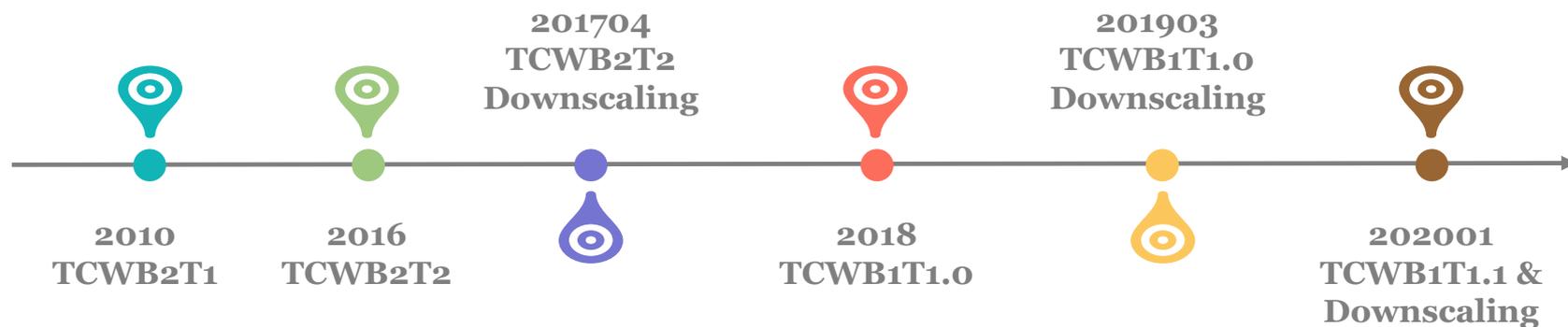
# 運用氣象局新一代海氣耦合模式發展測站 及水庫集水區統計降尺度預報系統

**Using TCWB1T1.1 Develop Stations and Reservoir  
Watershed Statistical Downscaling Forecast System**

中央氣象局氣象科技研究中心  
林昀靜、李清騰、李思瑩、張庭槐

# 氣象局氣候模式降尺度預報發展

中央氣象局為因應短期氣候預報的需求發展了動力統計氣候預報系統，第二代二步法氣候預報系統(TCWB2T2)在2016年開始進行作業化的預報測試，並從2017年4月開始，此模式(TCWB2T2)的測站降尺度預報開始上線作業化。氣象局第一代海氣耦合模式(TCWB1T1.0)從2018年開始準作業預報，從2019年3月開始提供測站降尺度預報產品。新一代海氣耦合模式(TCWB1T1.1)從2020年1月開始進行準作業月與季預報並同時提供此系統的測站降尺度預報作業。



# 氣候模式降尺度預報系統

TCWB1T1.1

CDAS/NCEP IC

Global Model Forecast

CWB-GFS(T119L40)

↕  
MOM3

Station Forecast

(16 stations)

Temperature 、 Precipitation

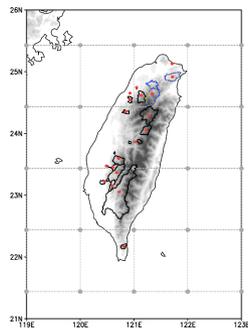
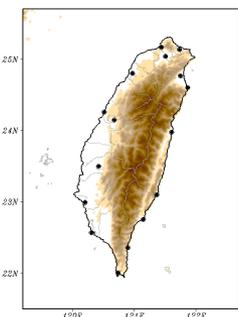
Reservoir Watershed Forecast

(19 watershed area)

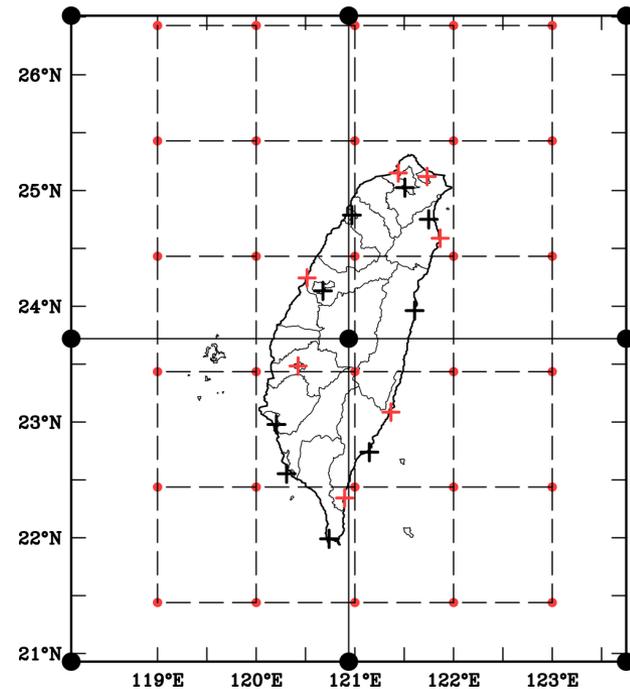
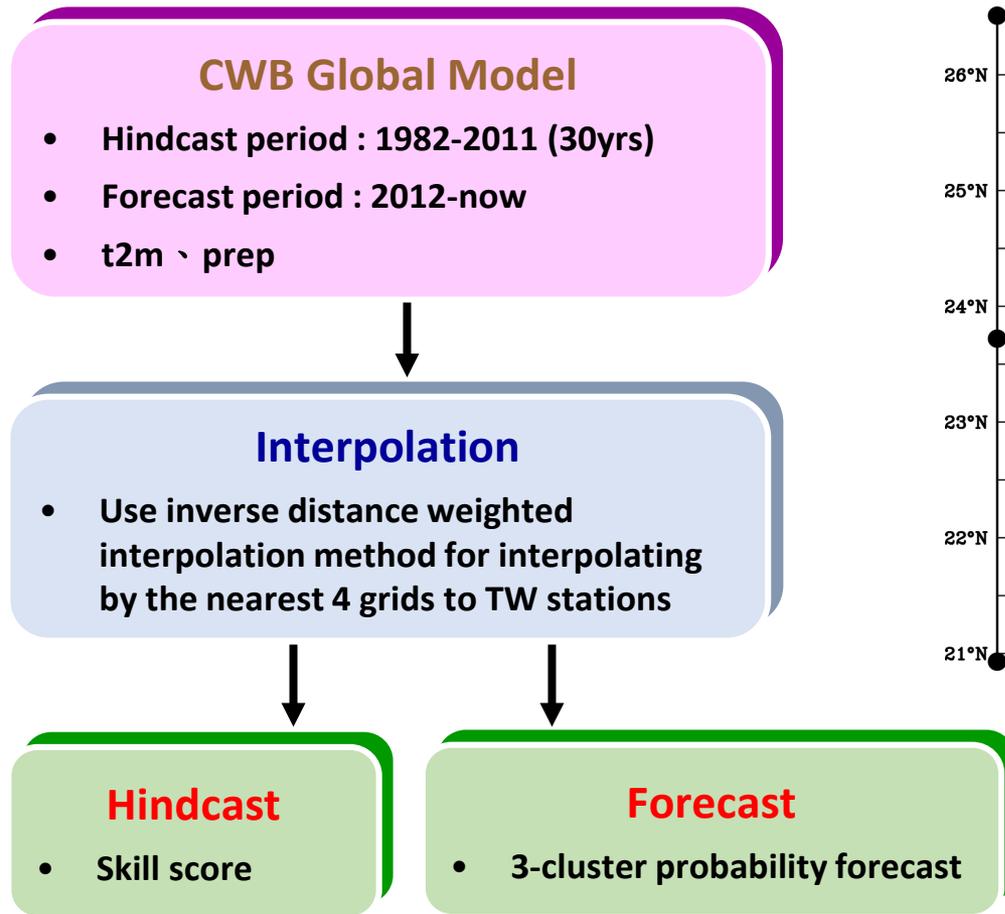
Precipitation

Statistical Downscaling

interpolation



# 測站統計降尺度預報流程

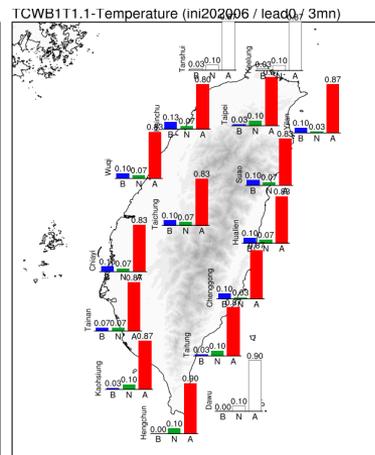
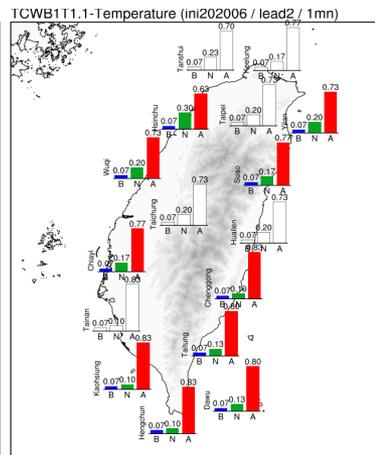
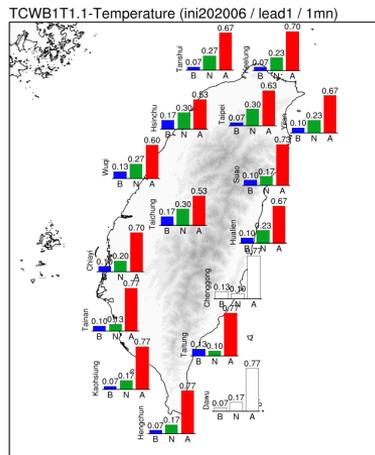
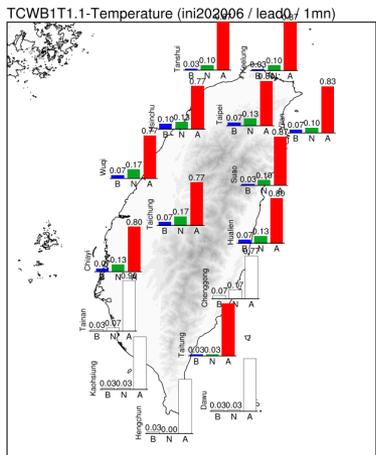


# 測站統計降尺度預報產品

TCWB1T1.1

Initial month 202006

溫度



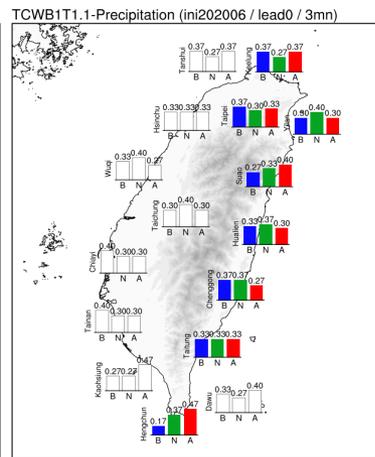
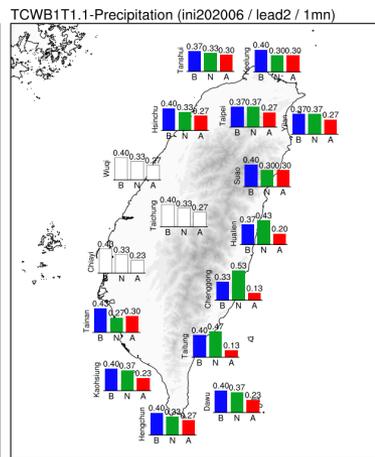
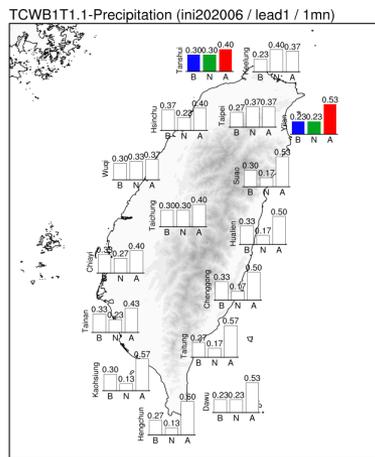
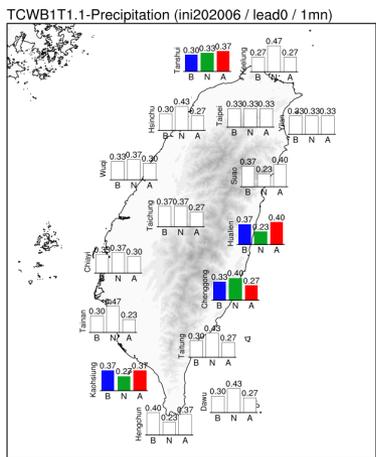
lead0m

lead1m

lead2m

lead0s

雨量



中央氣象局 氣象科技研究中心

Research and Development Center  
Central Weather Bureau

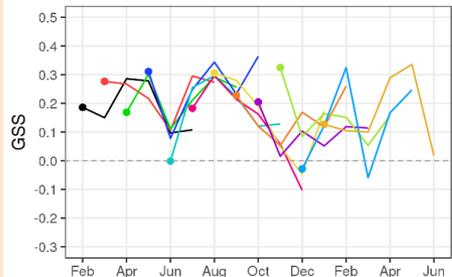
# 測站統計降尺度預報技術

TCWB1T1.1

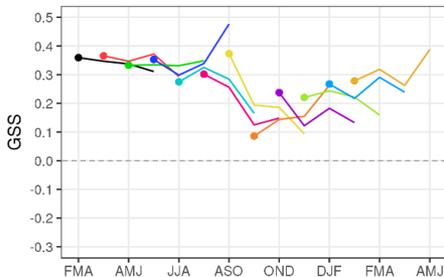
## 溫度

### Hindcast

t2m.GSS (TCWB1T1.1 / 1982-2011 / 1mn)



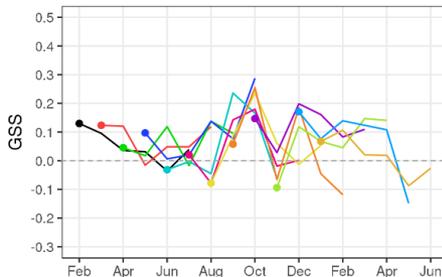
t2m.GSS (TCWB1T1.1 / 1982-2011 / 3mn)



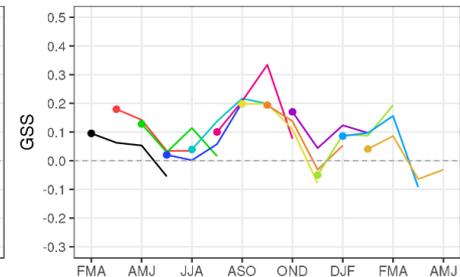
## 雨量

### GSS/1982-2011

pcp.GSS (TCWB1T1.1 / 1982-2011 / 1mn)

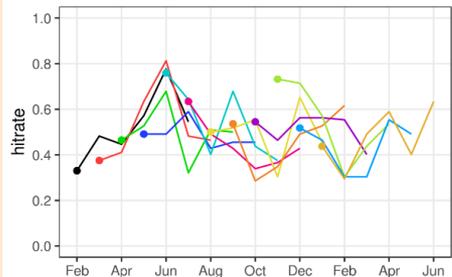


pcp.GSS (TCWB1T1.1 / 1982-2011 / 3mn)

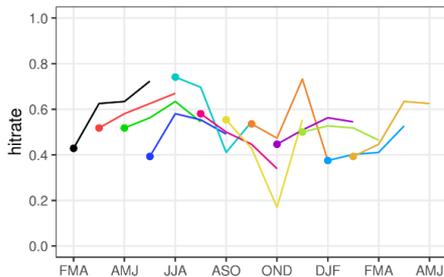


### Forecast

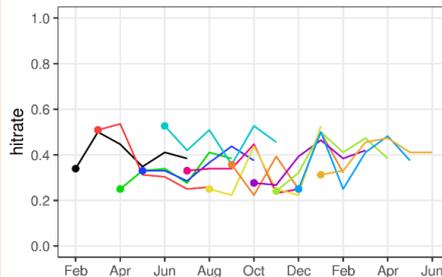
t2m.Hitrate (TCWB1T1.1 / 2012-2018 / 1mn)



t2m.Hitrate (TCWB1T1.1 / 2012-2018 / 3mn)

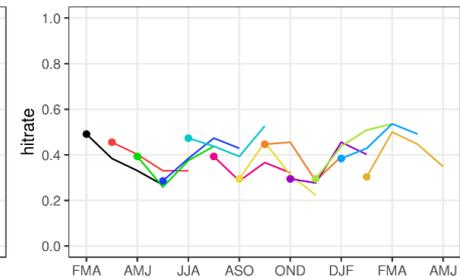


pcp.Hitrate (TCWB1T1.1 / 2012-2018 / 1mn)

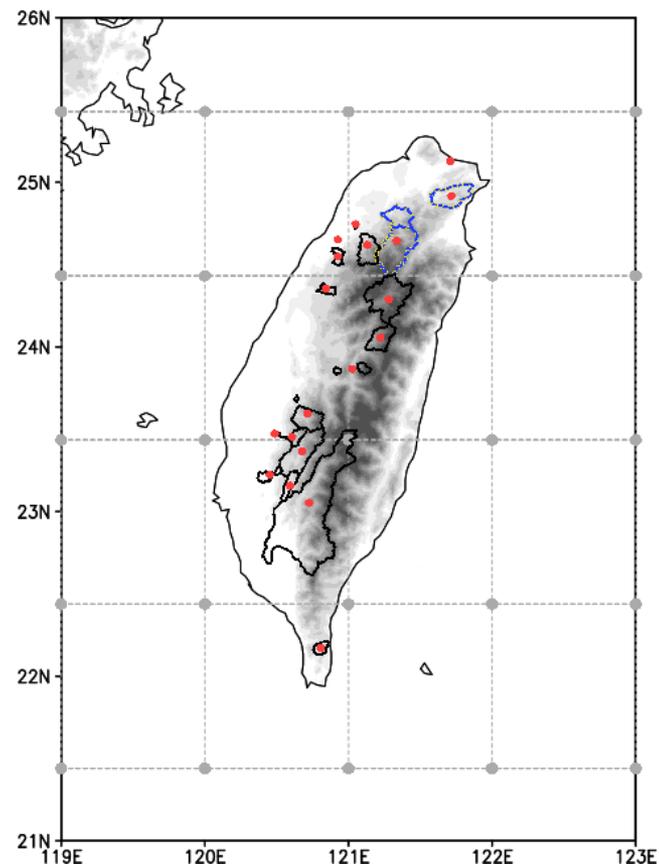
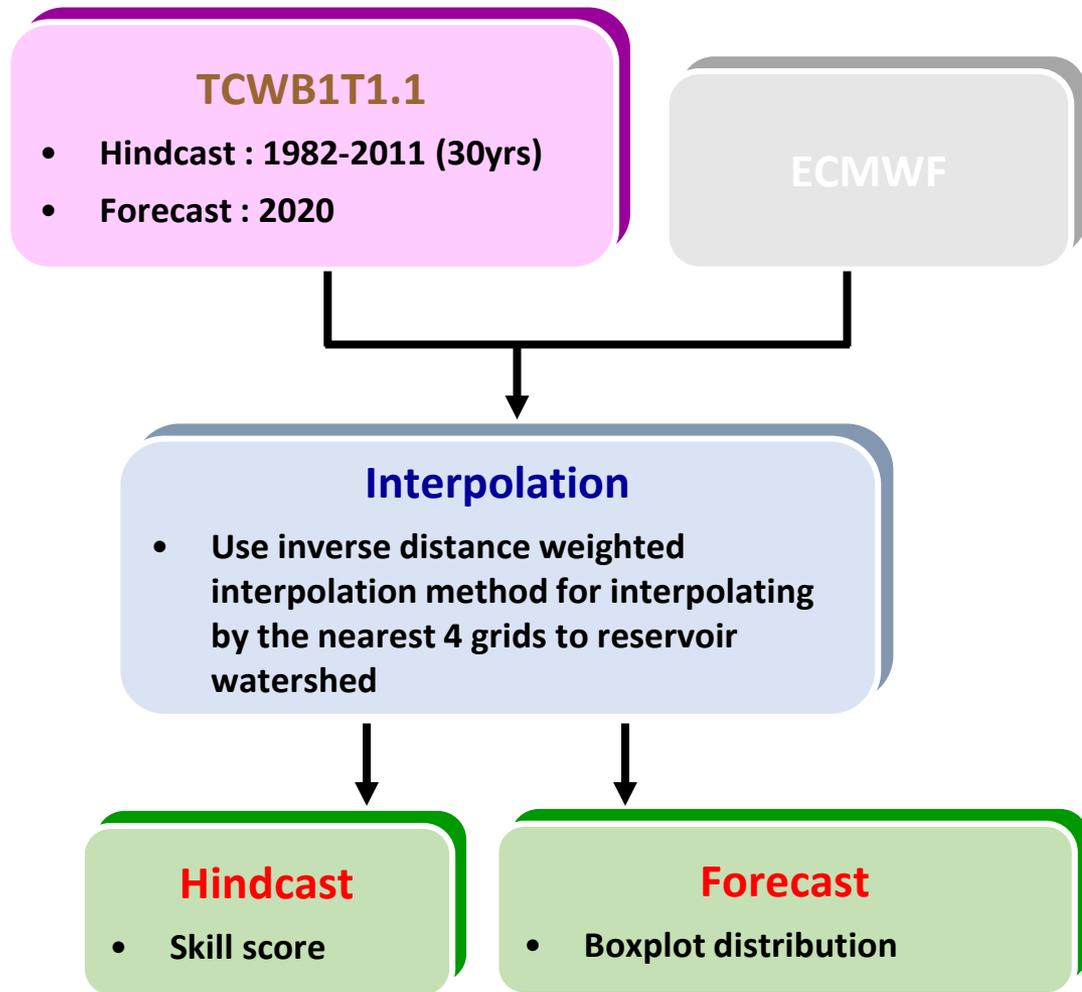


pcp.Hitrate (TCWB1T1.1 / 2012-2018 / 3mn)

### Hitrate/2012-2018



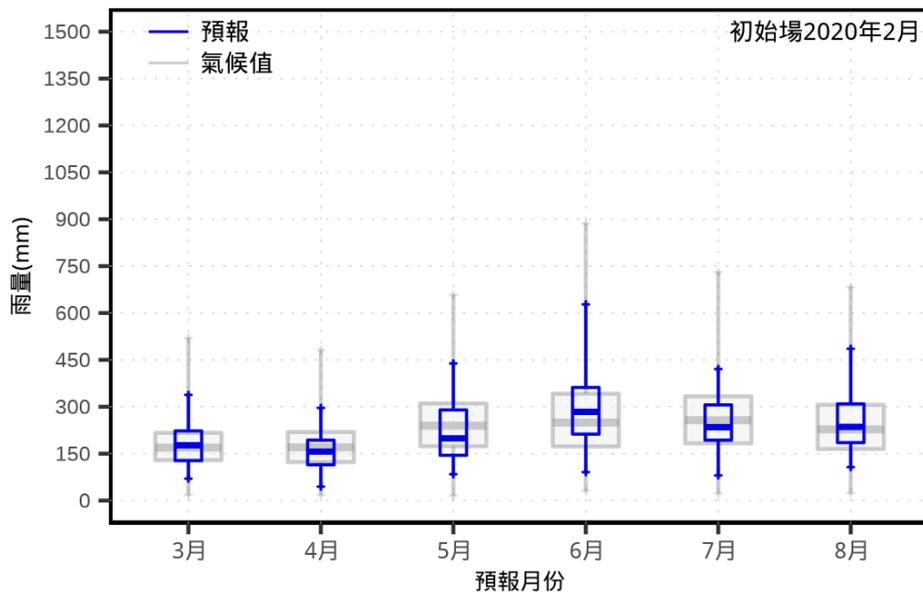
# 水庫集水區統計降尺度雨量預報流程



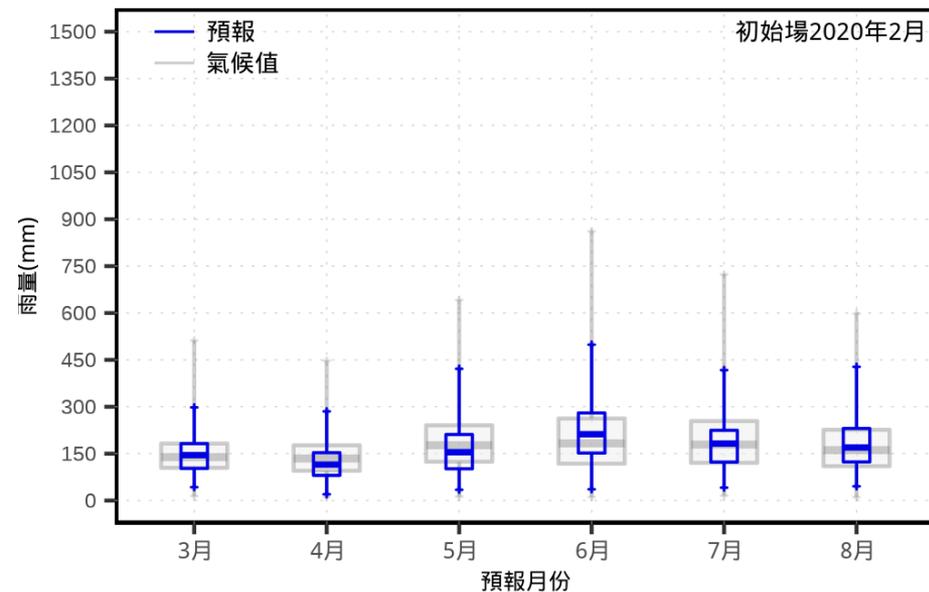
# 水庫集水區統計降尺度雨量預報產品

Initial month 202002

## 翡翠水庫



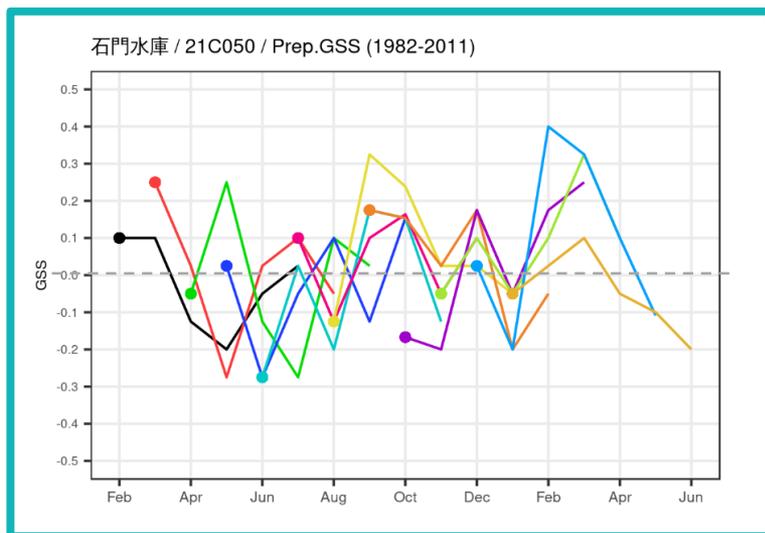
## 石門水庫



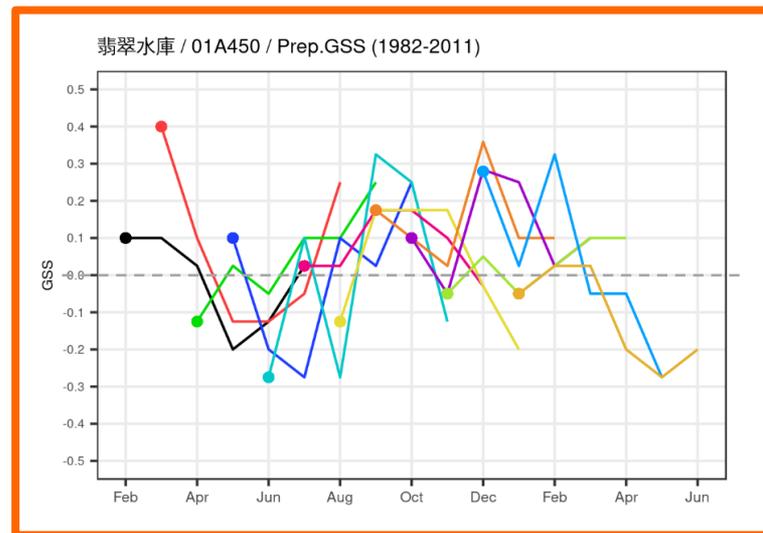


# 集水區測站統計降尺度事後預報技術

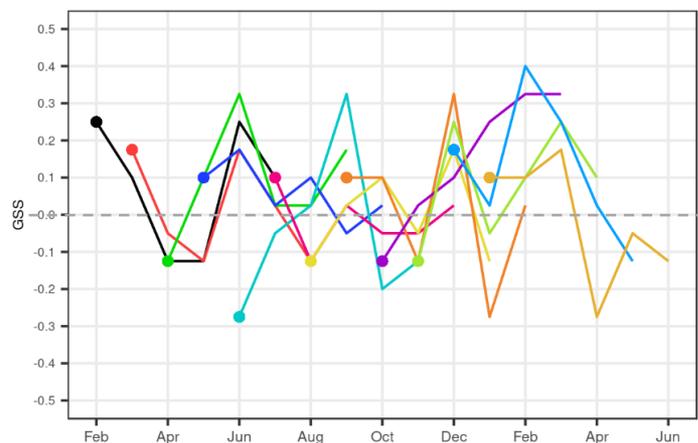
## 石門水庫



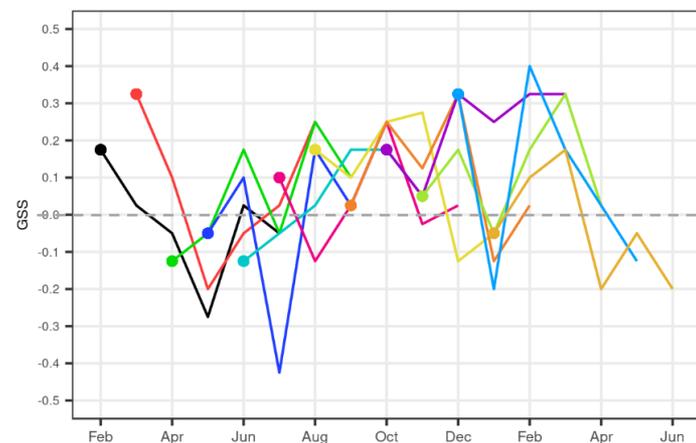
## 翡翠水庫



Hsinchu.pcp.GSS (TCWB1T1.1 / 1982-2011 / 1mn)



Taipei.pcp.GSS (TCWB1T1.1 / 1982-2011 / 1mn)



# 小結與未來工作

- 根據氣象局新一代海氣耦合模式(TCWB1T1.1)降尺度到測站的溫度、雨量校驗結果，溫度的降尺度預報能力比雨量好，但雨量在特定的月份卻也有不錯的預報表現。目前此預報系統每個月會定期產出16個測站的溫度、雨量月與季預報產品供作業中心參考。
- 水庫集水區的降尺度預報系統還在發展階段，但根據石門水庫以及翡翠水庫的事後預報較驗結果顯示出此方法有一定的預報技術，因此未來將持續發展、應用到全臺灣更多的水庫集水區，另外也將評估使用ECMWF模式預報資料發展水庫集水區的降尺度預報系統。



**謝謝聆聽 敬請指教**

---

**Thank you for your listening.**

