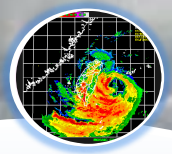


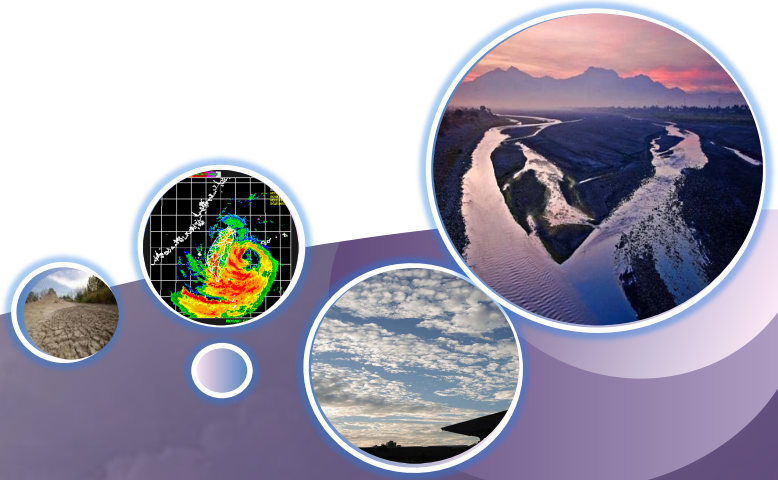
系集預報系統產生最佳定量降水預報方法之探討與分析

預報中心
葉世瑄

簡介

- 基本系集預報產品
  - Ensemble mean, median, standard deviation, max., min., …
  - Probability of QPF(PQPF&QPFP)

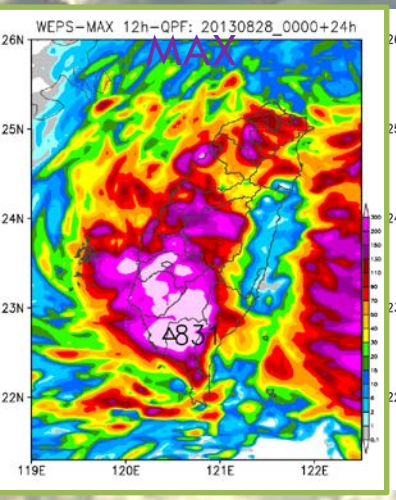
- 進階系集預報產品
  - The probability-matched ensemble mean (PM)
  - New PM

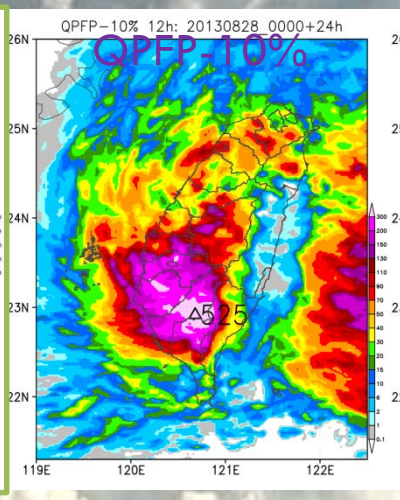


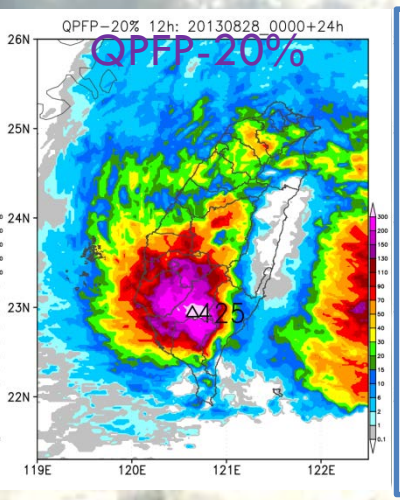
Probability Inherent: QPFP-y%

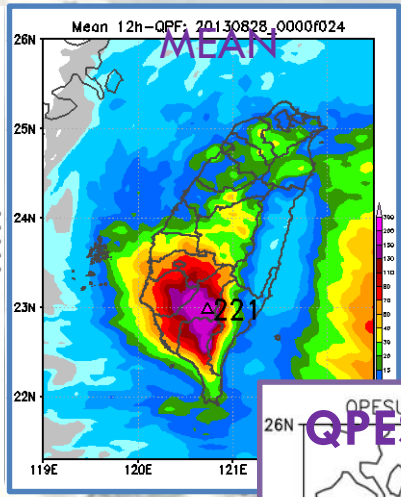
Percentile or Exceeding Probability
百分位 或 超越機率

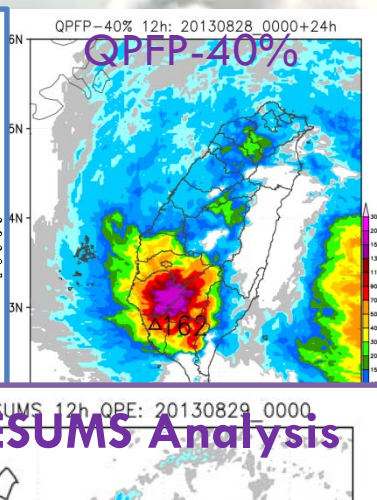
(黃2016, 大氣科學)

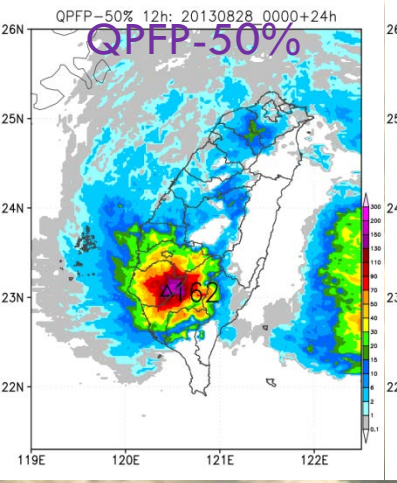


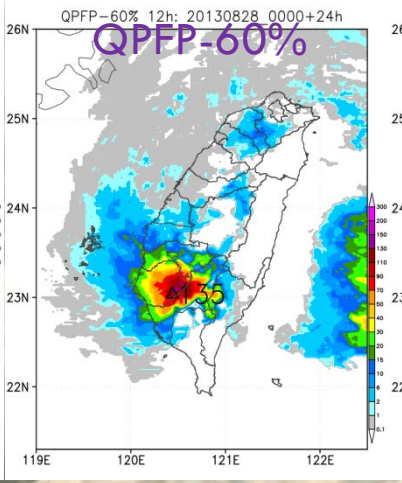


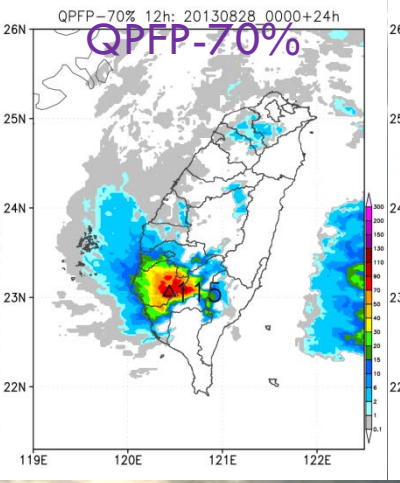


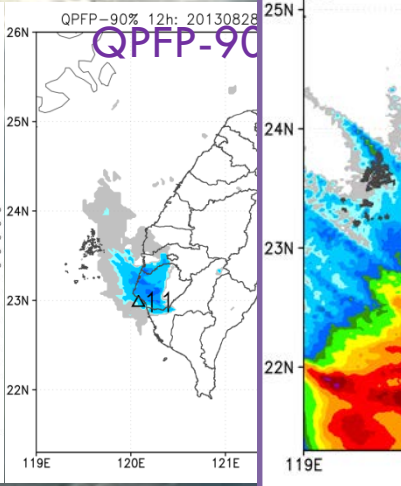


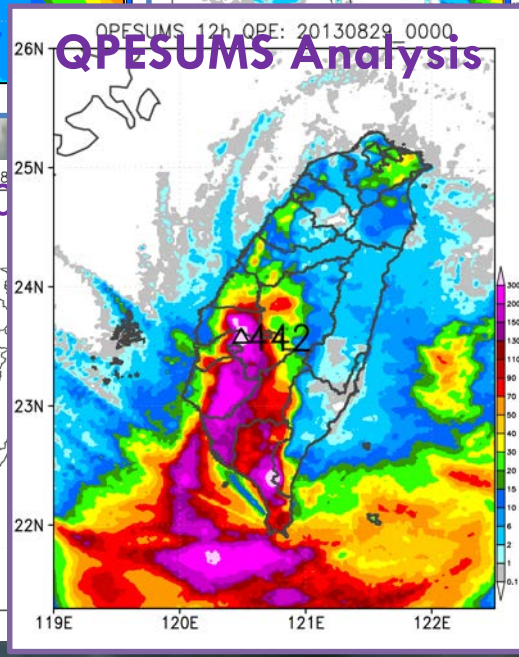






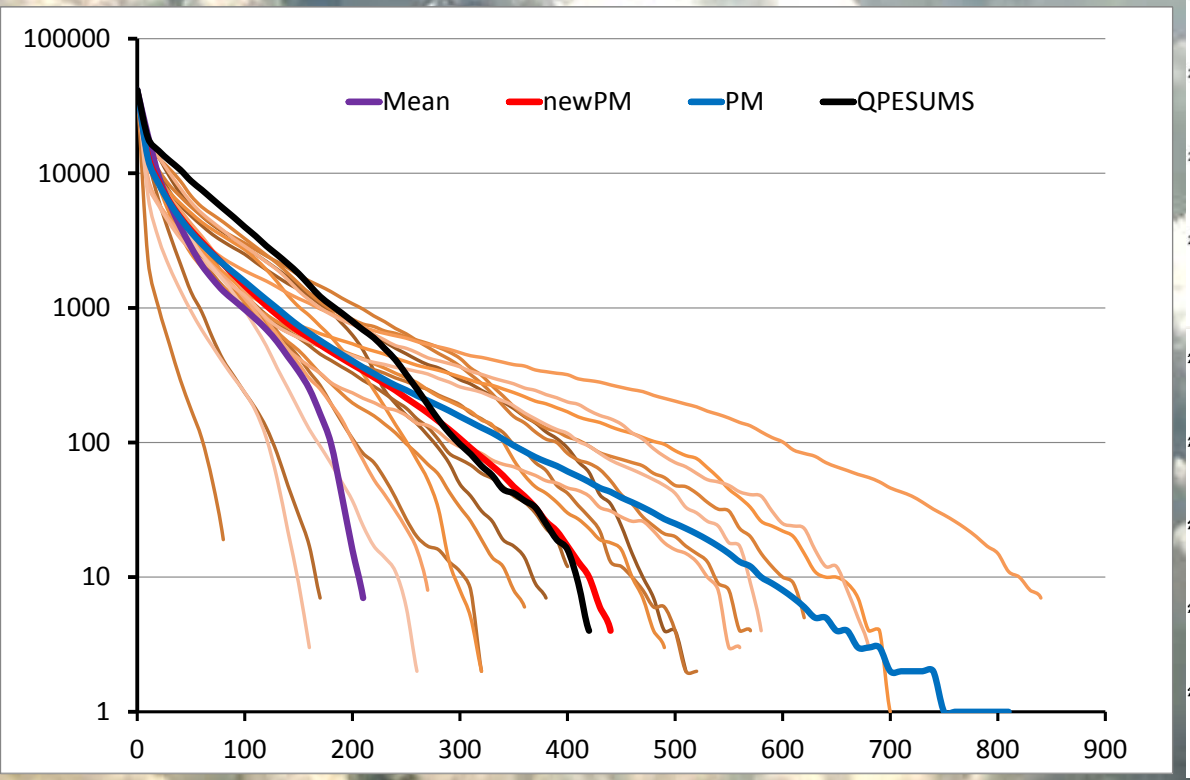


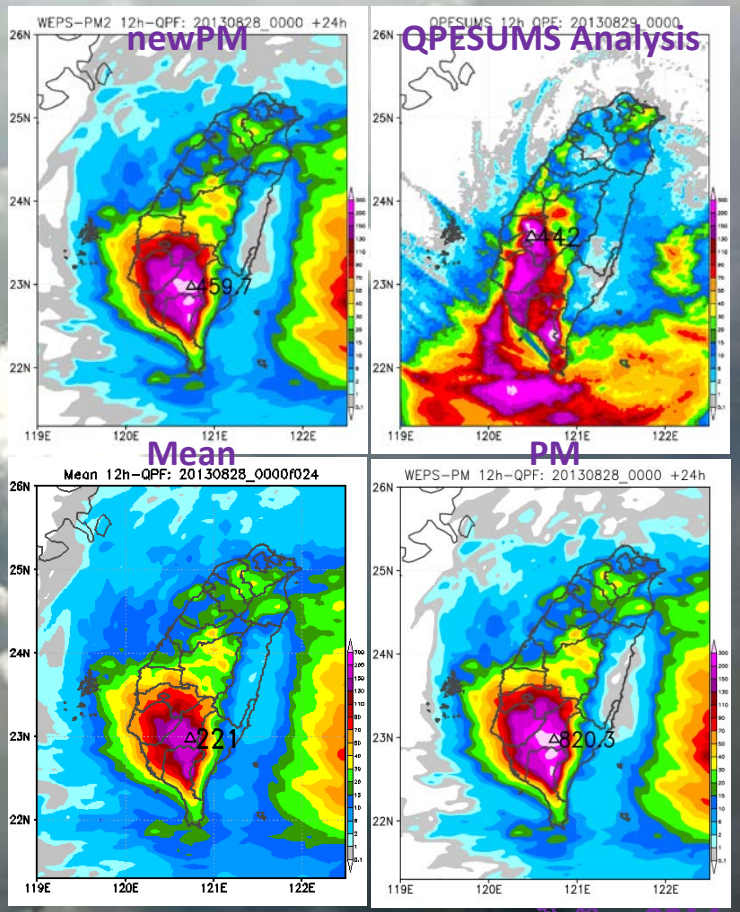




Probability matched mean (PM), New PM

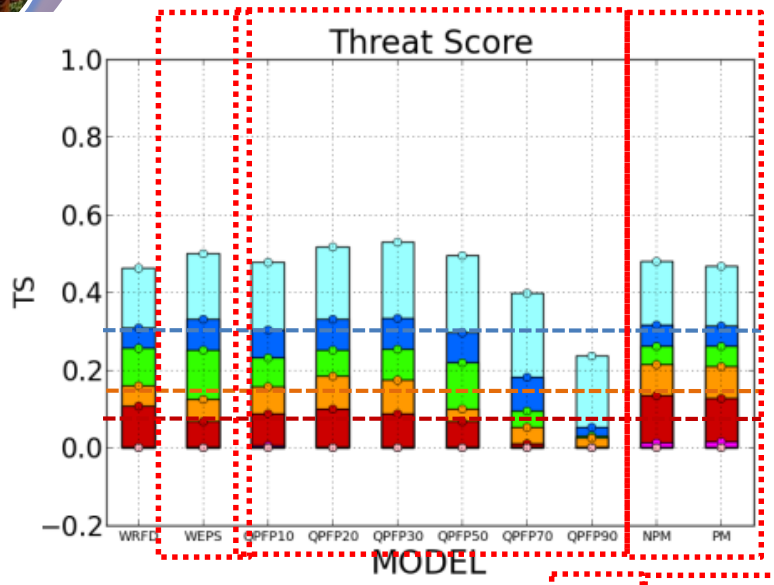
- The same spatial shape as the ensemble mean
- The same PDF of the entire ensemble system (PM, Elbert 2001).
- Or Averaging the PDFs among the ensemble dimension (newPM, Yeh 2014)
- Deal not on spatial distribution.

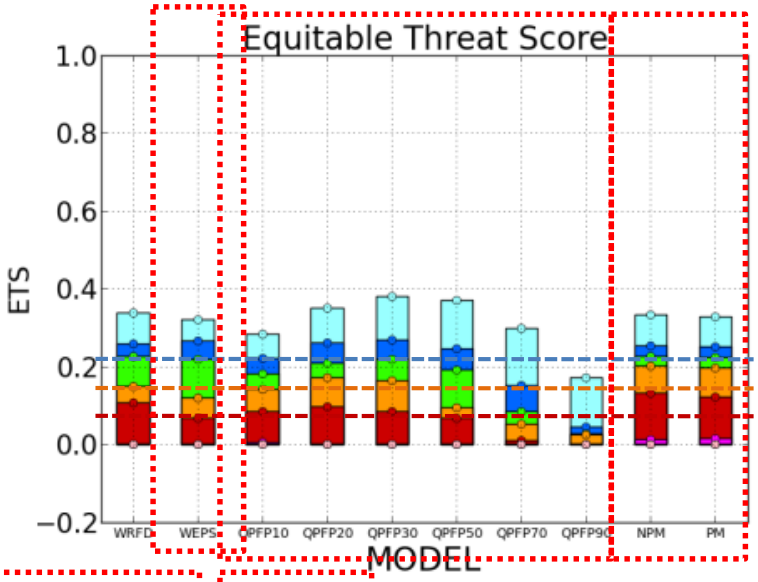


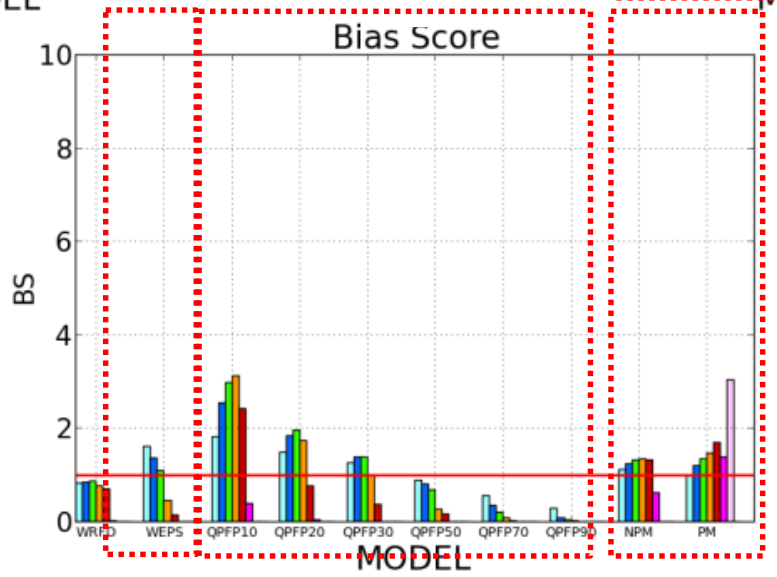


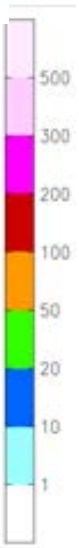
葉等，2014

2015 Meiyu 12-24h QPF Verification

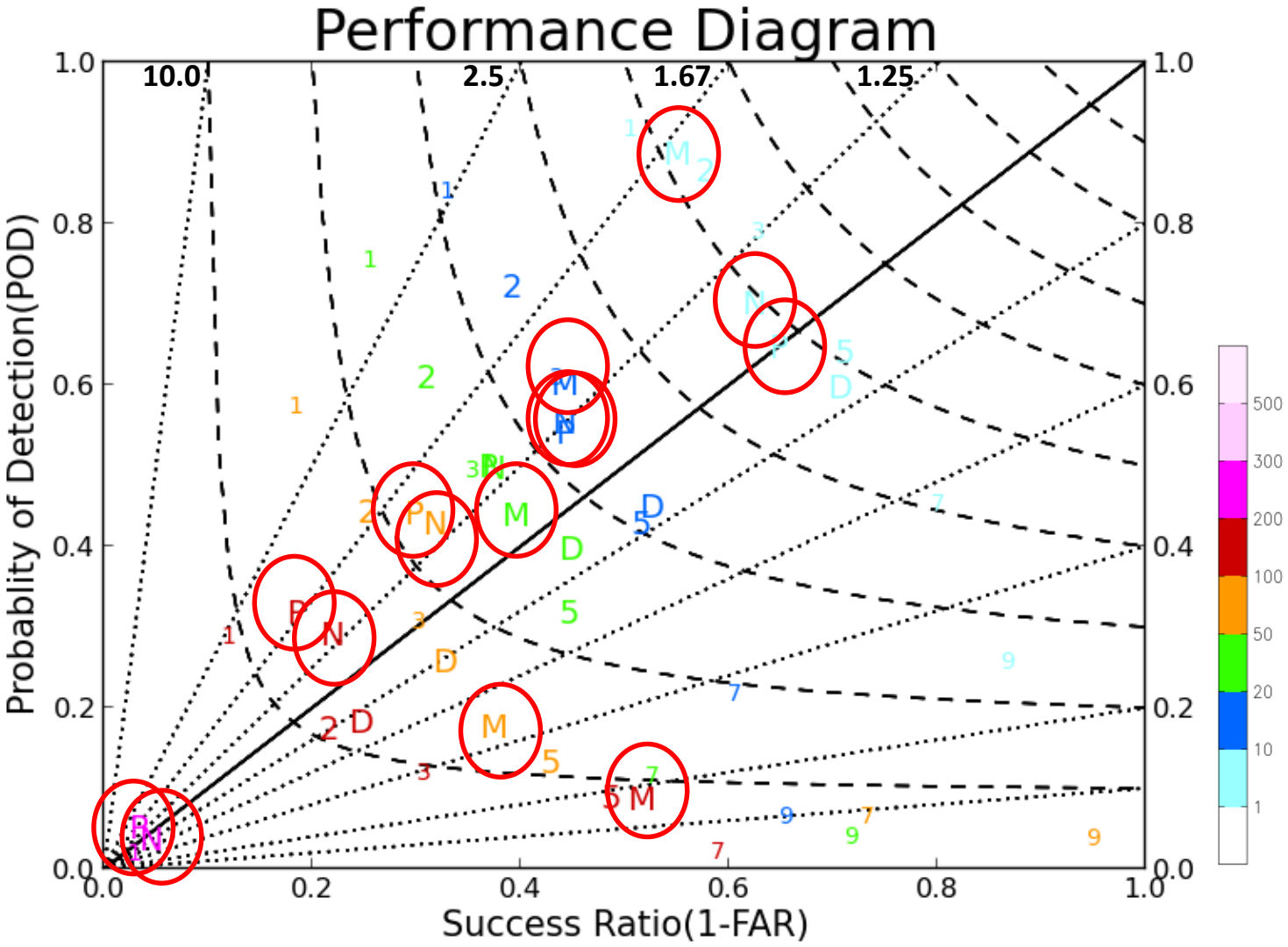






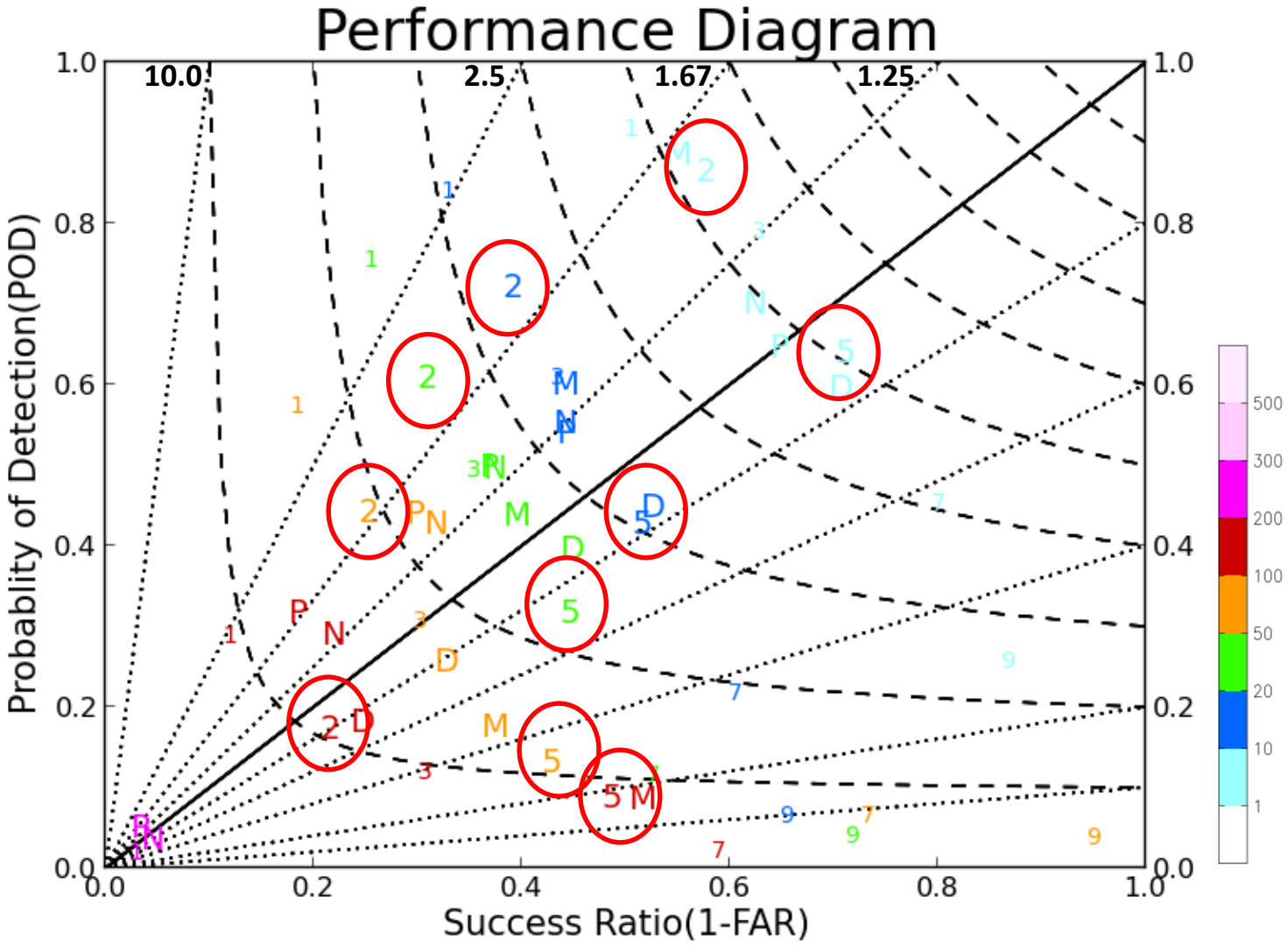


2015 Meiyu 12-24h QPF



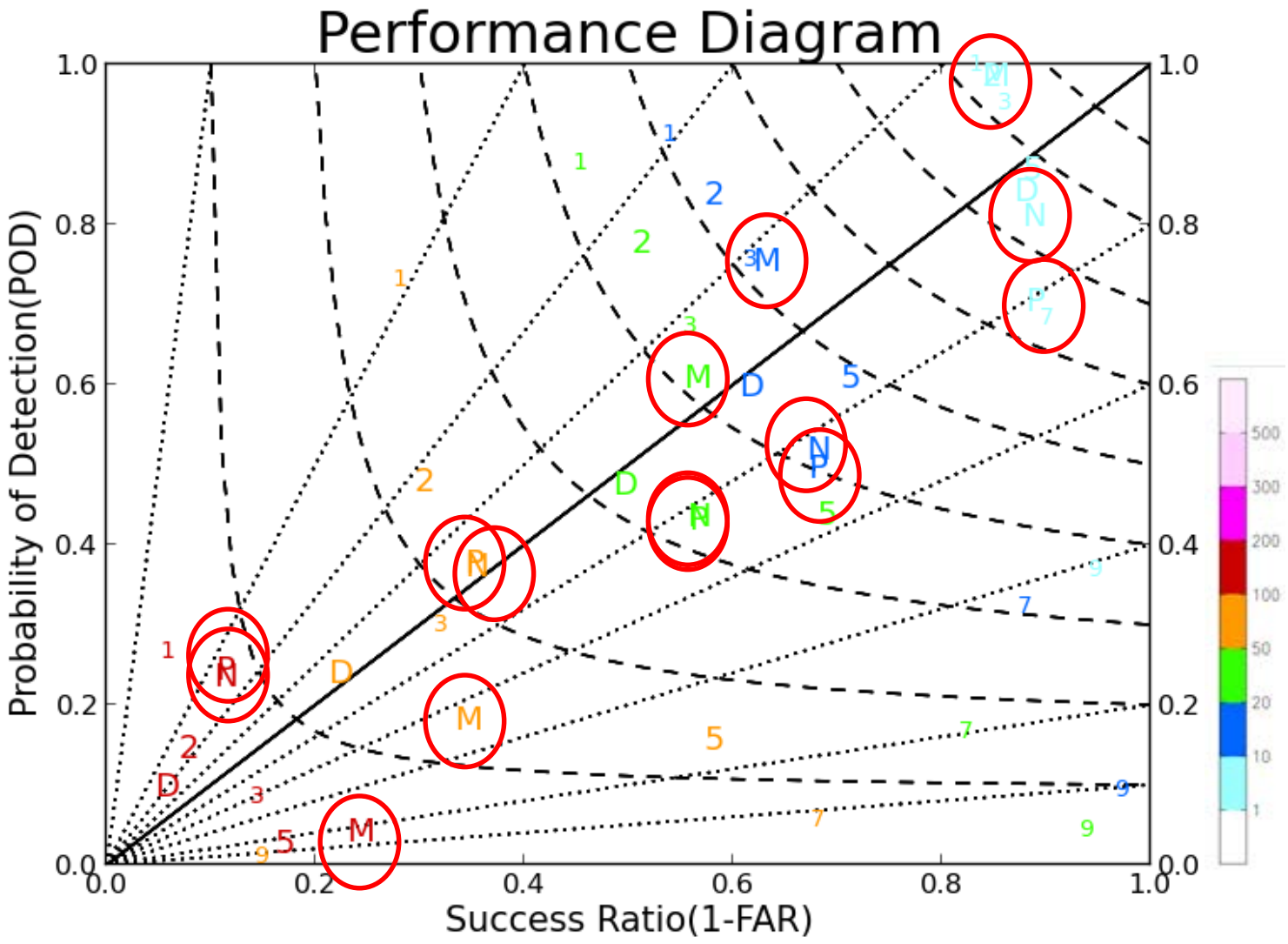
(Robbert, 2009)

2015 Meiyu 12-24h QPF



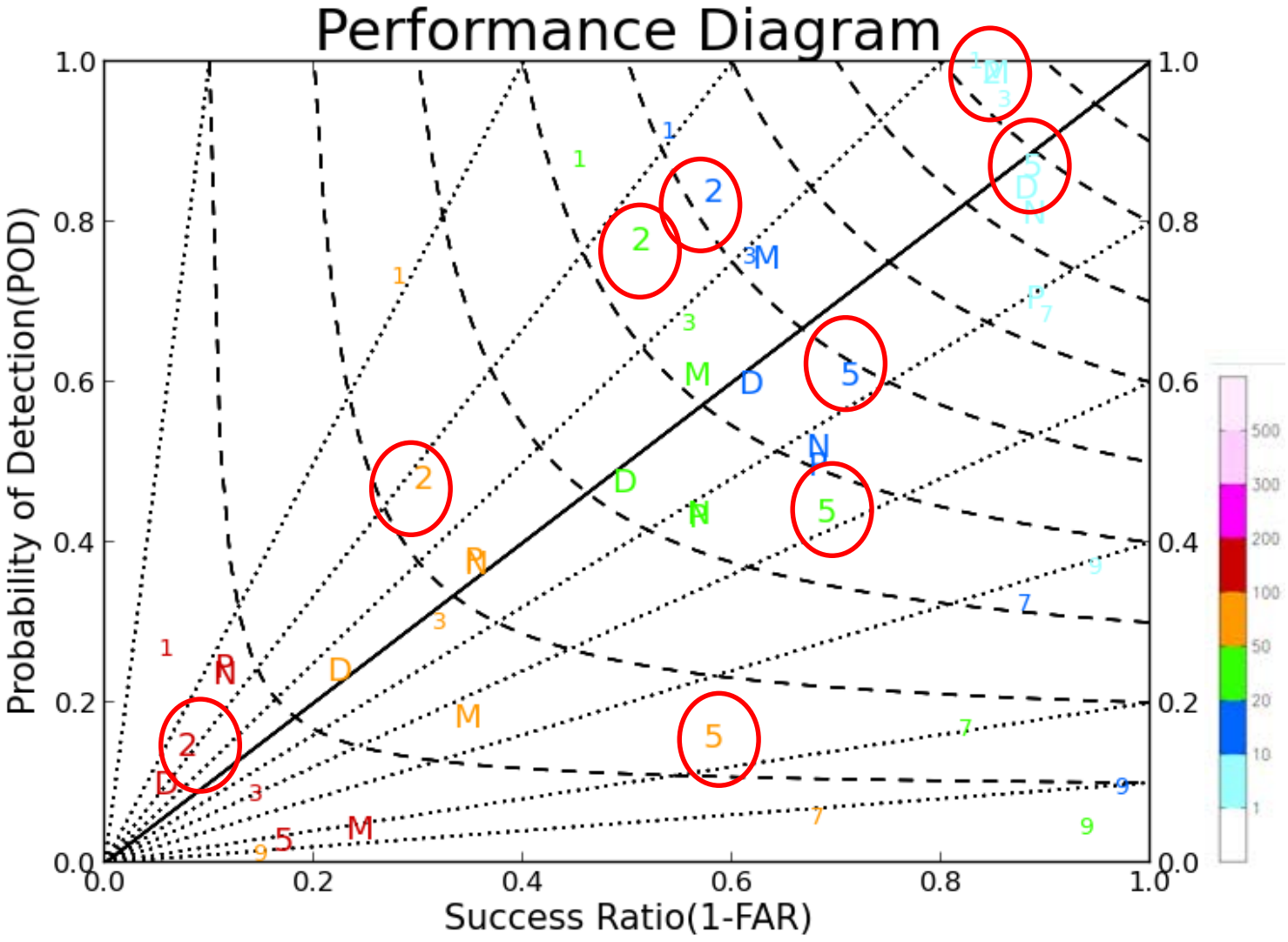
(Robbert, 2009)

2016 0611-0615 12-24h QPF



(Robbert, 2009)

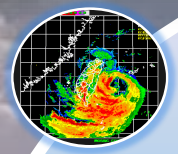
2016 0611-0615 12-24h QPF



(Robbert, 2009)

總結

- 系集平均對小(大)雨之預報技術高(低)，具有對小雨高估但大雨低估且不均勻偏離的特性。
- PM與NPM具有保守特性，QPFP則不保守。
- NPM是理論及統計上的最佳解，具有高預報技術且接近無偏的特性。
- 官方QPF傾向提供稍低機率、但高風險事件，稍有過度預報，與QPFP20之特性相似。
- QPFP可提供預報彈性及風險評估，針對防災應變，可提供不同情境評估：
  - 高風險、低機率的QPFP5或QPFP10；
  - 稍高風險、稍低機率的QPFP20或QPFP30；
  - 低風險、高機率的QPFP50或QPFP70等。



Thanks for your listening!!