



集水區長期雨量機率預報應用 於水庫入流量預測表現評估

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2024/9/5

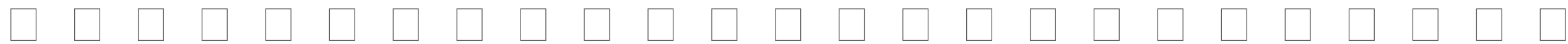
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01/

02/

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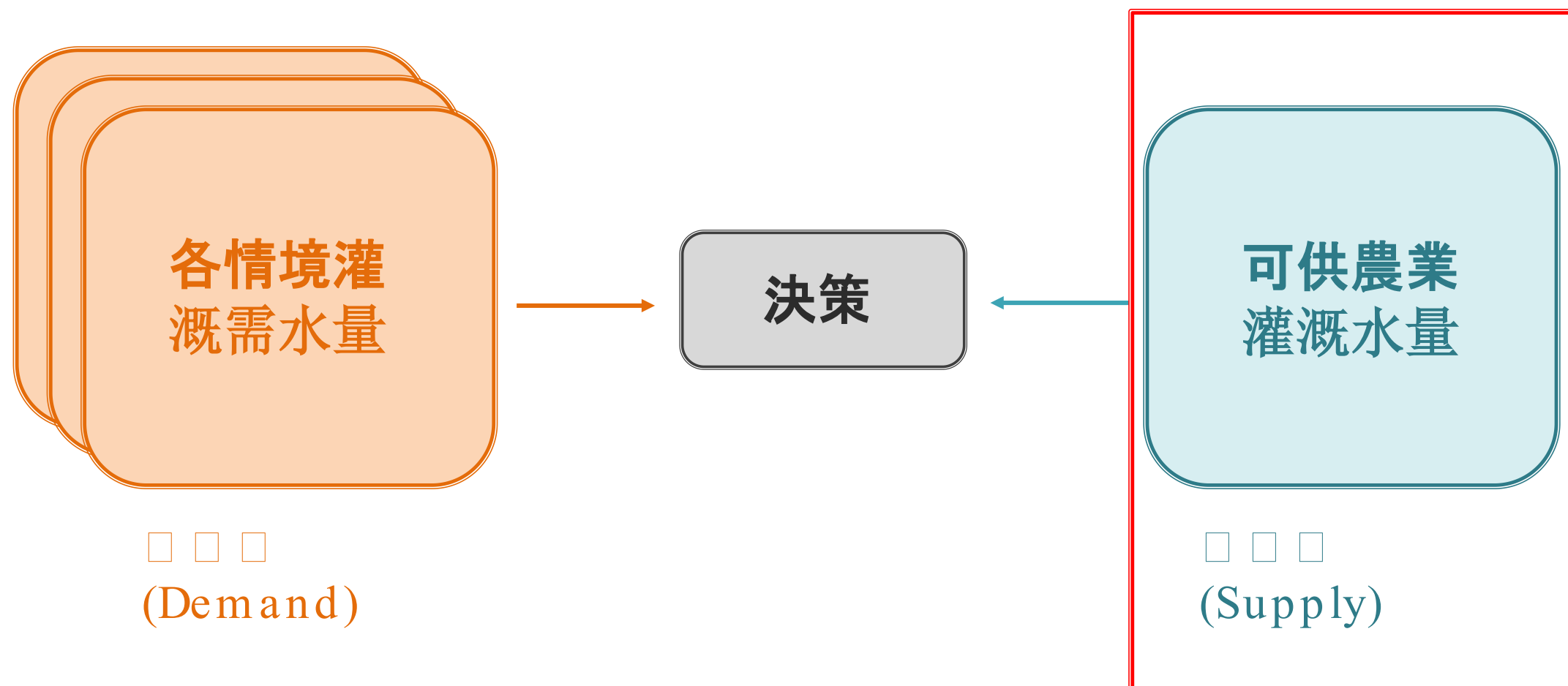


01 / 前言

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□ □ □ □ □ 管理與決策

□ □ □ □ □ □ □ □ □ □ □ □ □ **需水面(Demand) 及供**
水面(Supply) □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □



□ □ 可供農業灌溉水量 □ □ □

1. □ □ □ □ □ □ □ □

2. 供灌期間水庫入流量

3. □ □ □ □ □ □ □ □ □ □ □

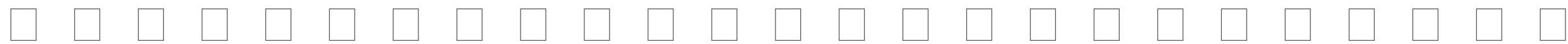
01 / 前言

□ □ □ □ □ □ □ □ □ **評估長度** >>> **未來五個月之累積入流量**



□ □ □ □ □ □ □ □ □ **評估方法**

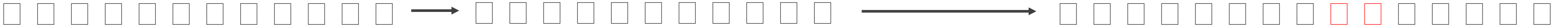
- □ □ □ □ □ □ □ □ □ (□ □ □ □ □ □ □ □ □)
- **入流量預報 (參考雨量預報資訊)**



02 / 評估流程及方法

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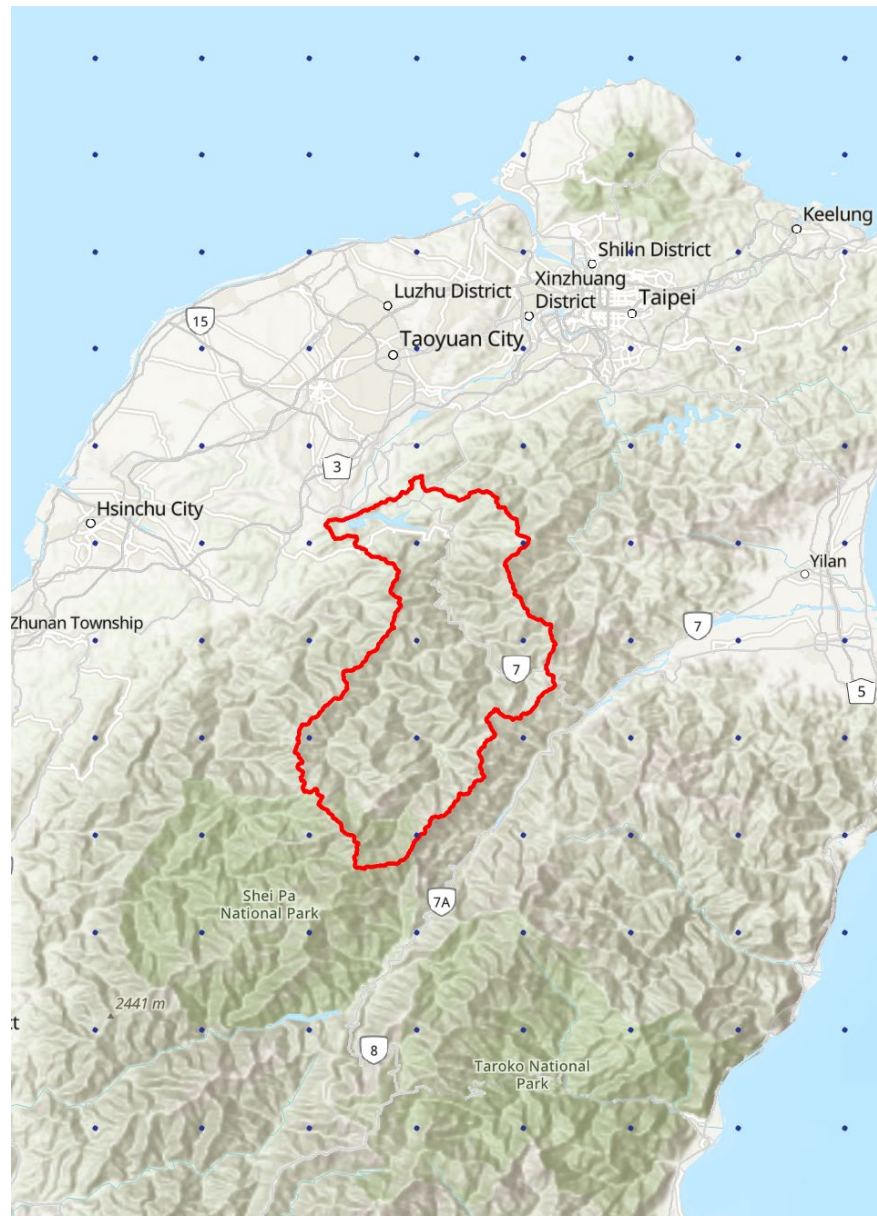
raw data



30 members, 30 years

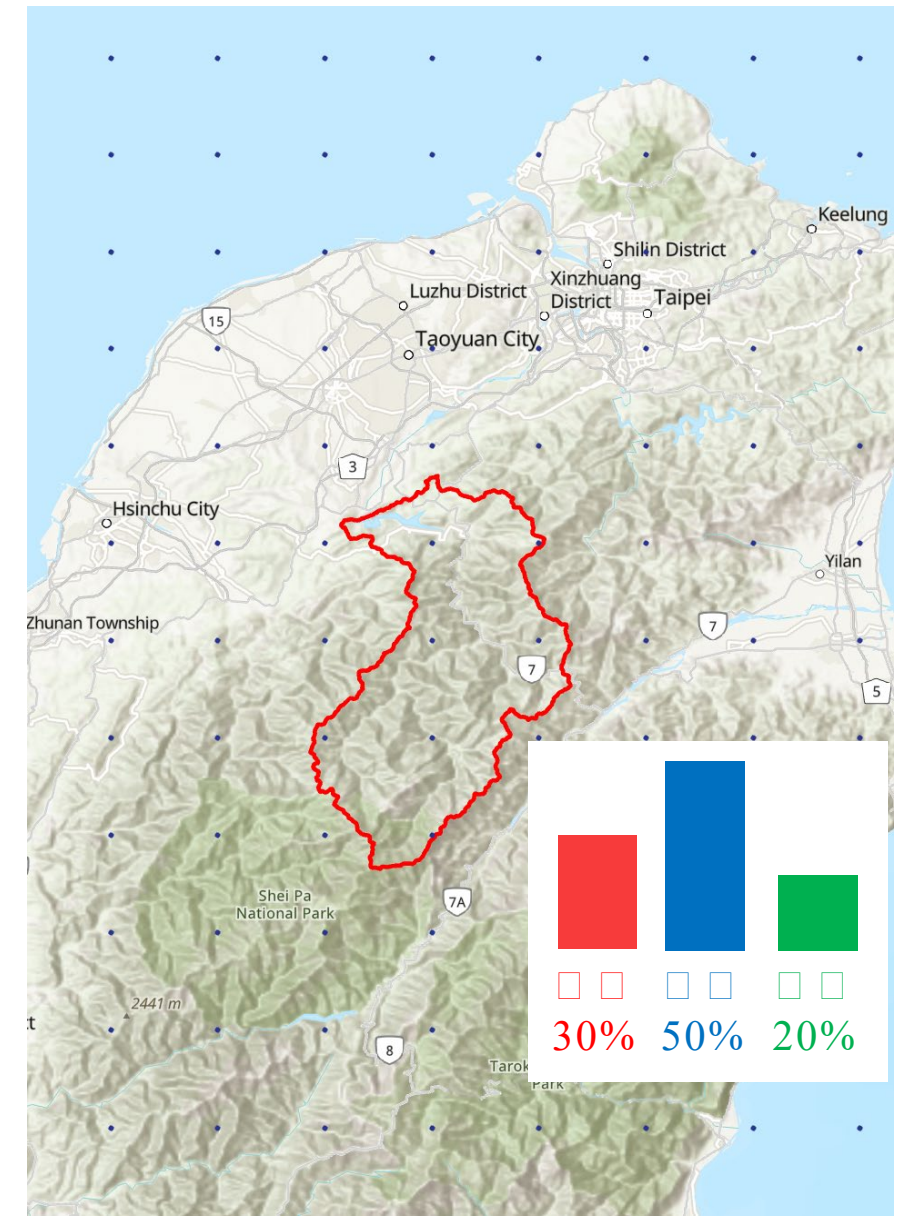


30 members, 30 years



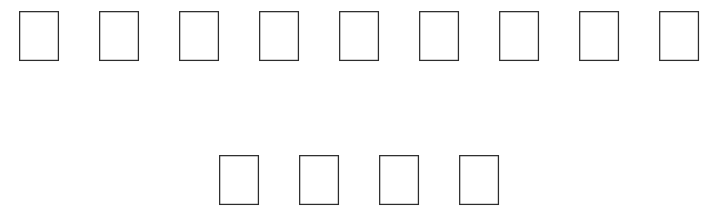
- [Grid]
- [Grid] 30 [Grid]

30 years

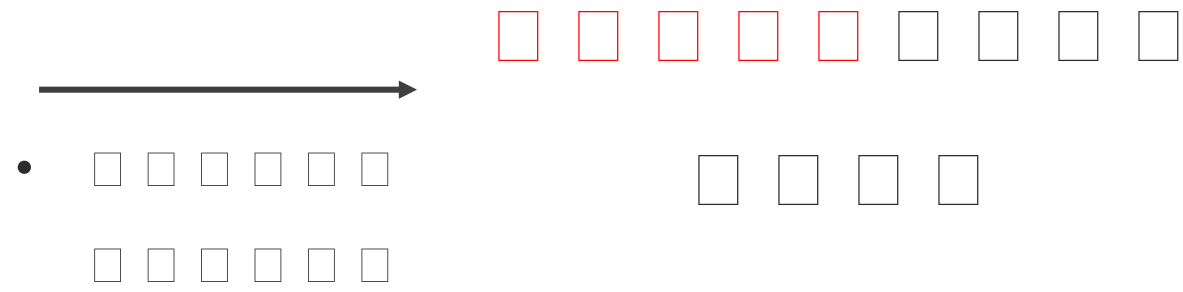


02 / 評估流程及方法

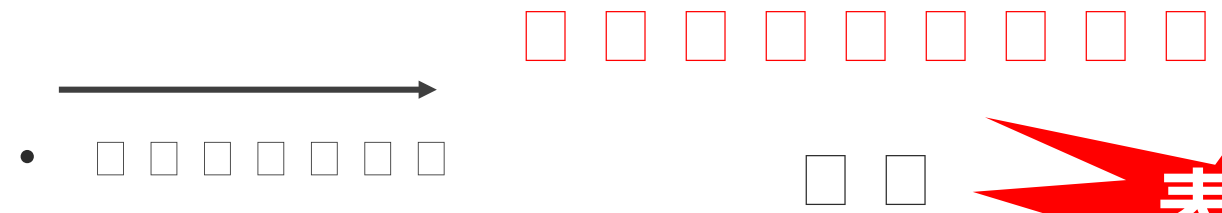
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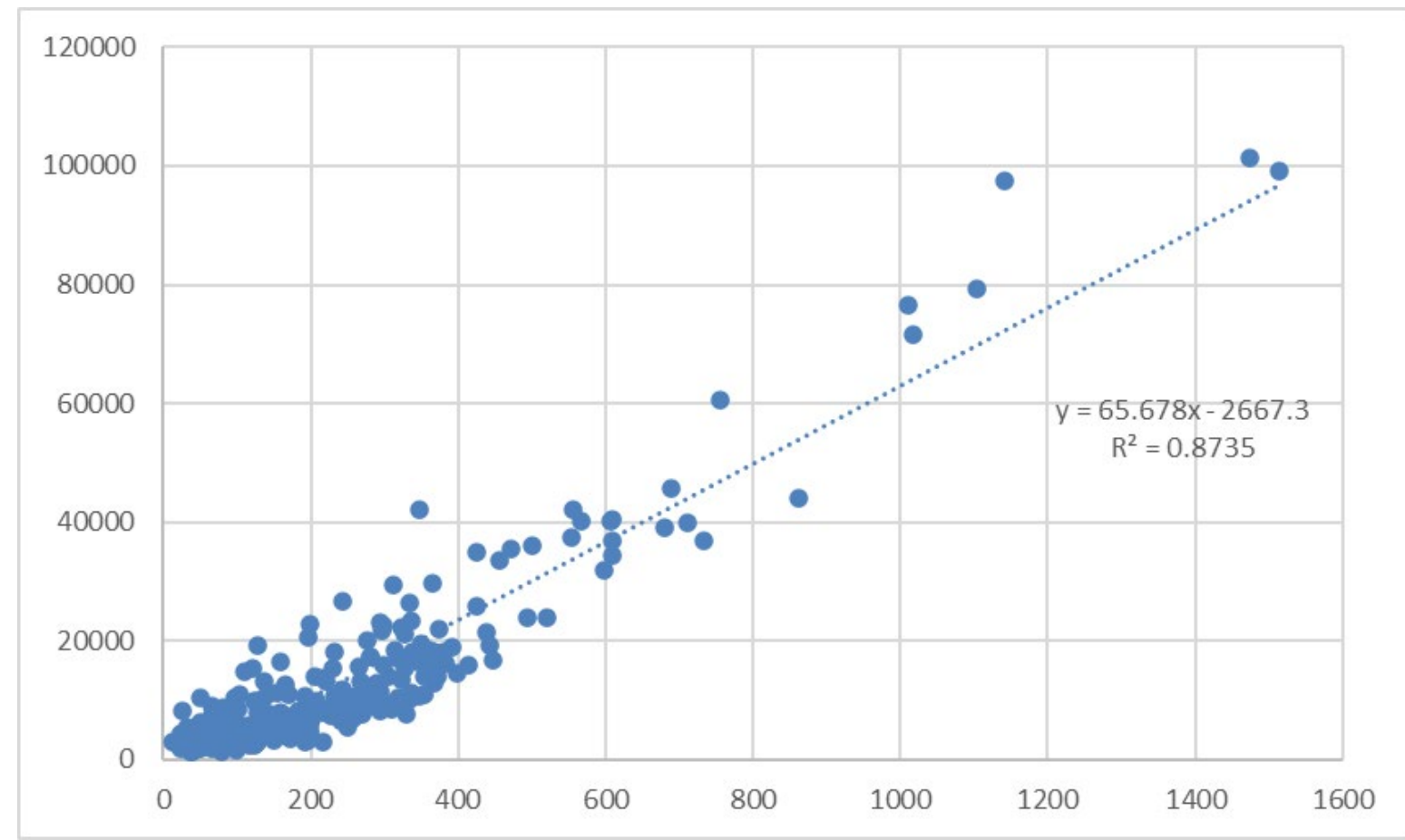
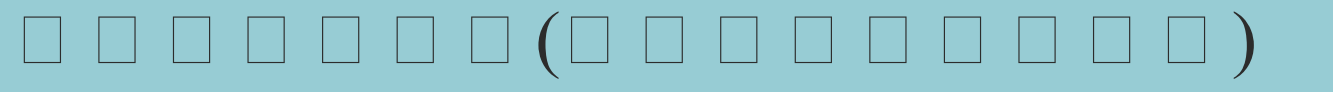
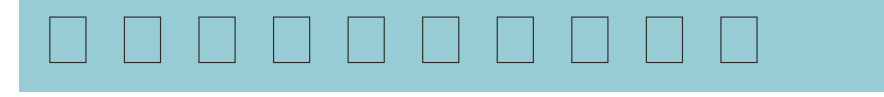
3



4



表現評估



$$\Phi(z) = P(Z \leq z)$$

$$\mu = \frac{x_1 \Phi^{-1}(p_2) - x_2 \Phi^{-1}(p_1)}{\Phi^{-1}(p_2) - \Phi^{-1}(p_1)}$$

$$\sigma = \frac{x_2 - x_1}{\Phi^{-1}(p_2) - \Phi^{-1}(p_1)}$$

Z □ □ □ □ □ □ □ □ □ □

x_i □ (i = 1,2)

p_i □ (i = 1,2)

02 / 評估流程及方法

表現評估(一)

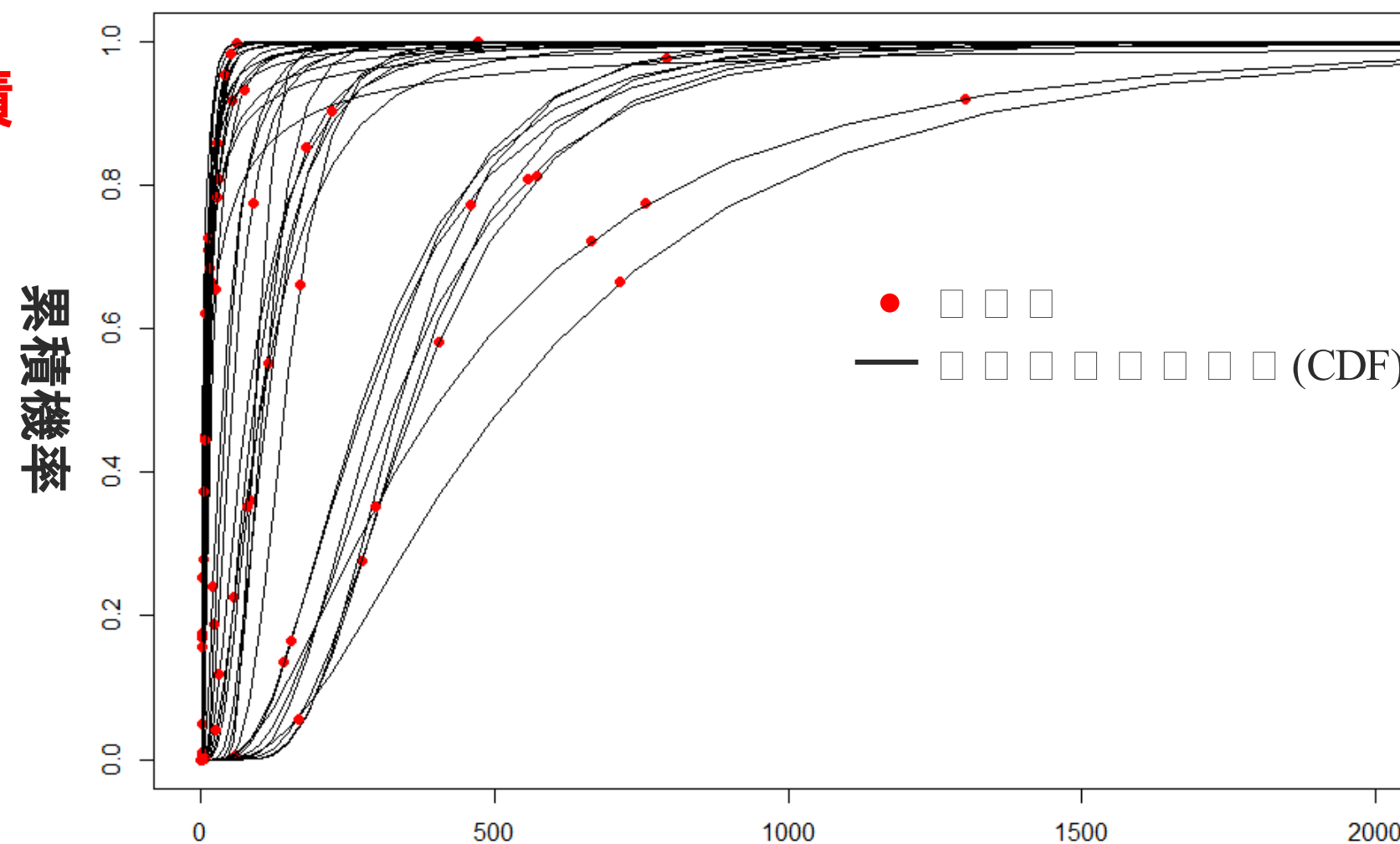
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(Probability Integral Transformation) **累積**

機率值應具U[0,1] 之均勻分佈

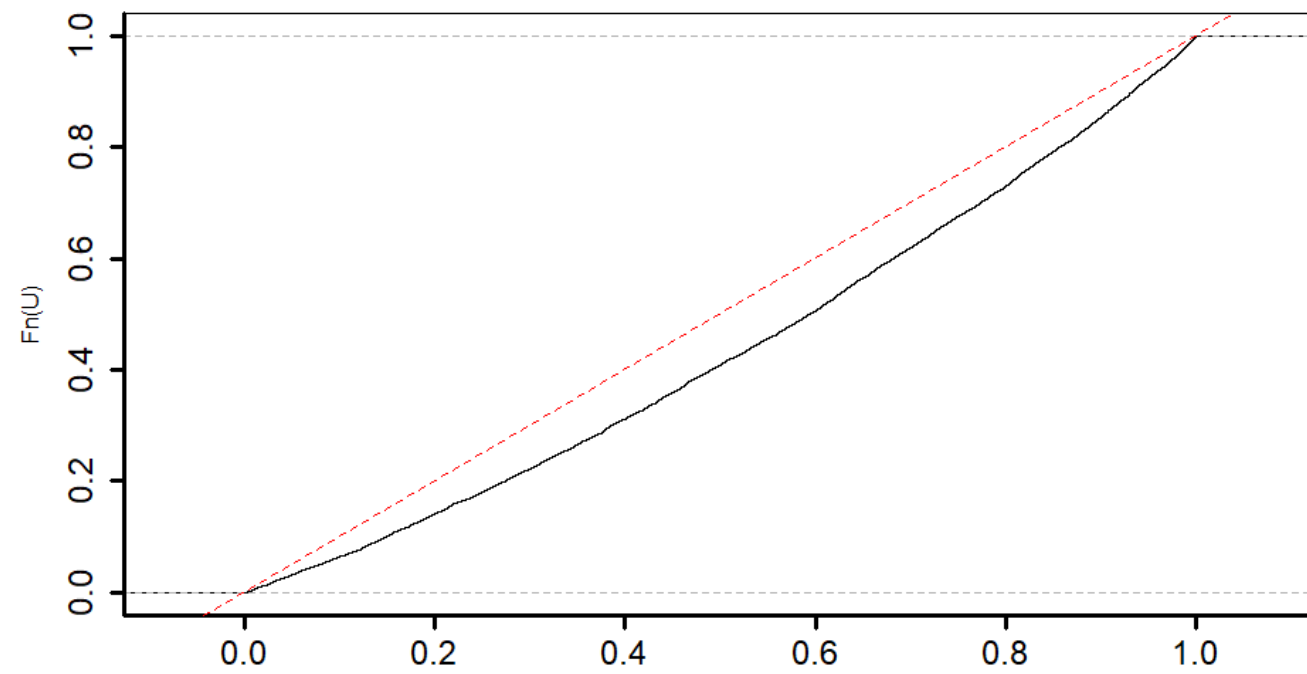


**Kolmogorov-Smirnov (K-S)
適合度檢定**

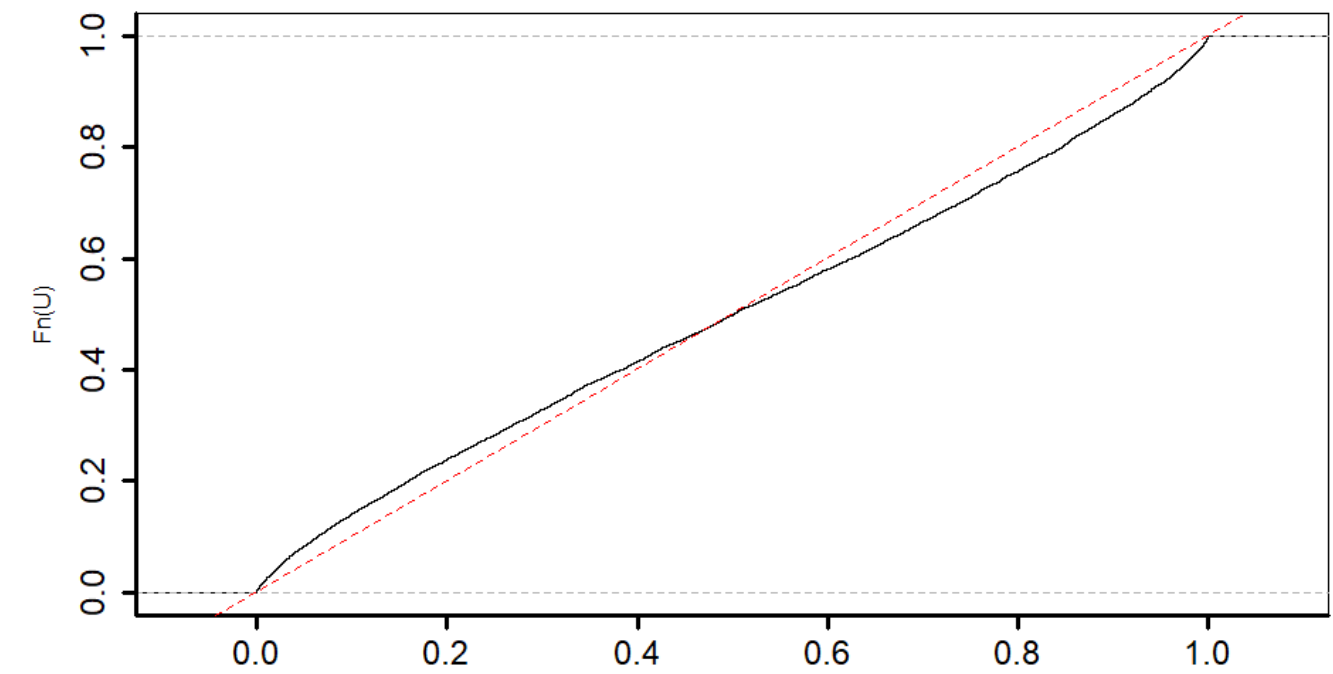


02 / 評估流程及方法

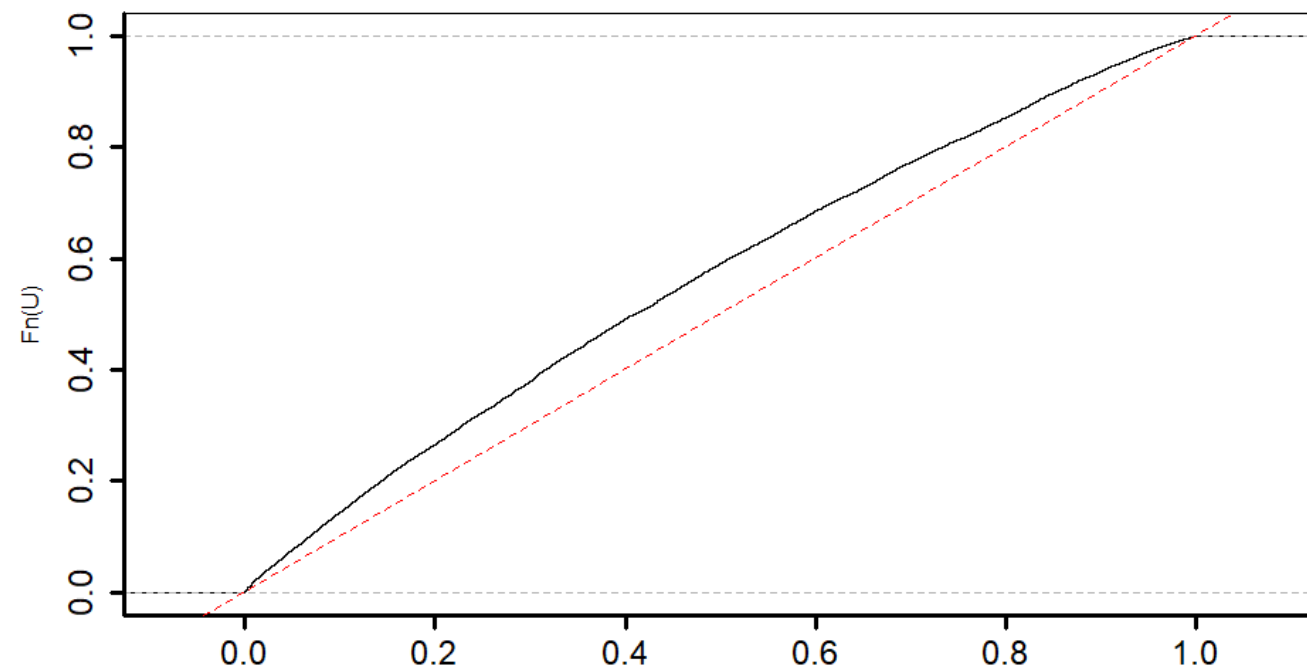
範例二：觀測值平均數 > 預報機率分布



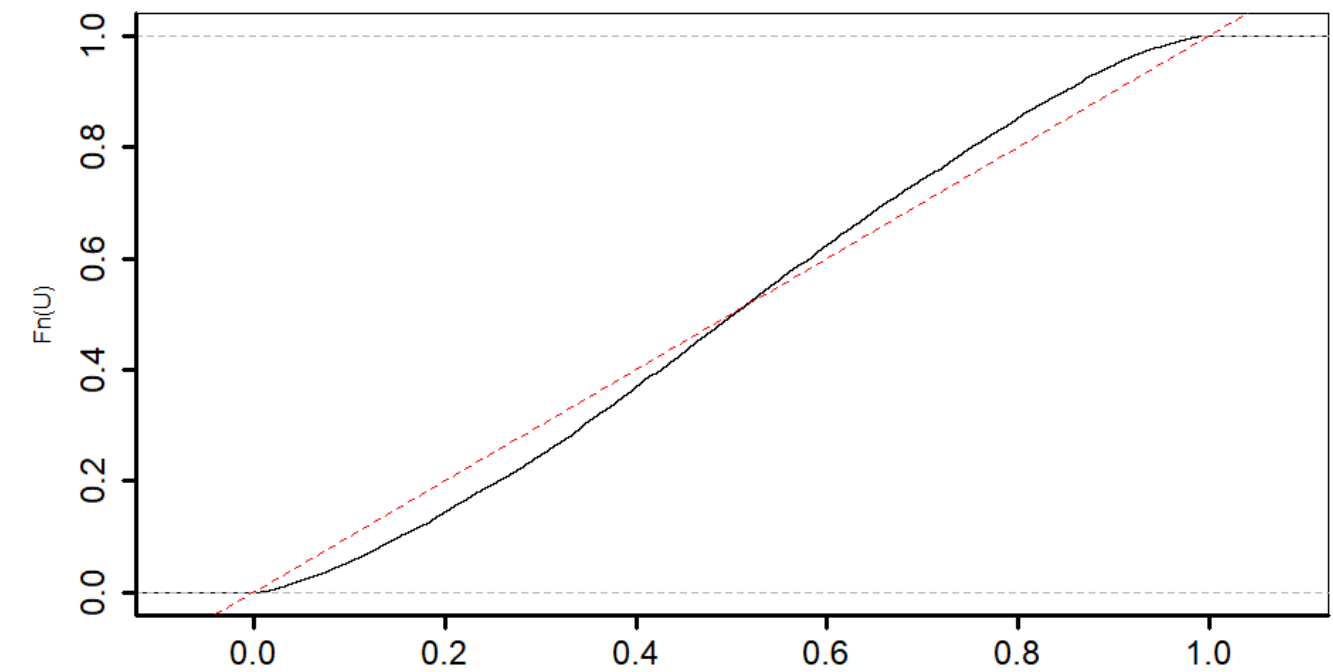
範例四：觀測值變異數 > 預報機率分布



範例三：觀測值平均數 < 預報機率分布

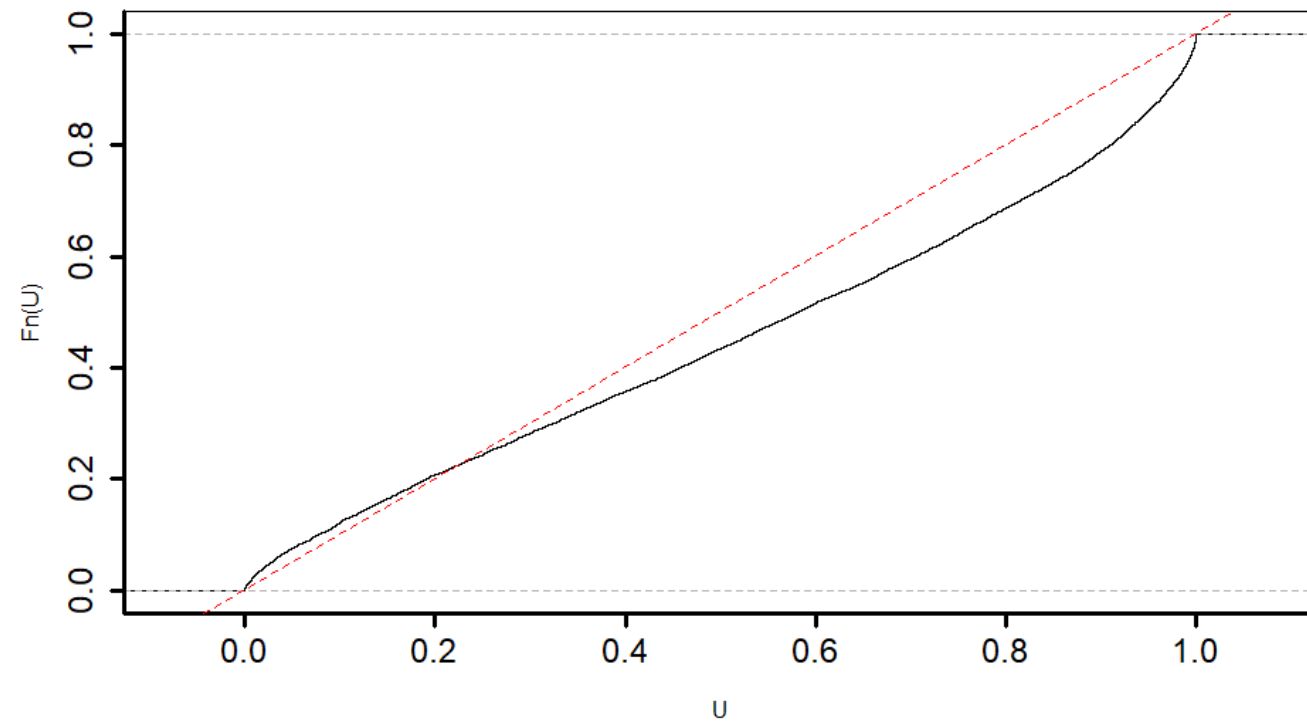


範例五：觀測值變異數 < 預報機率分布

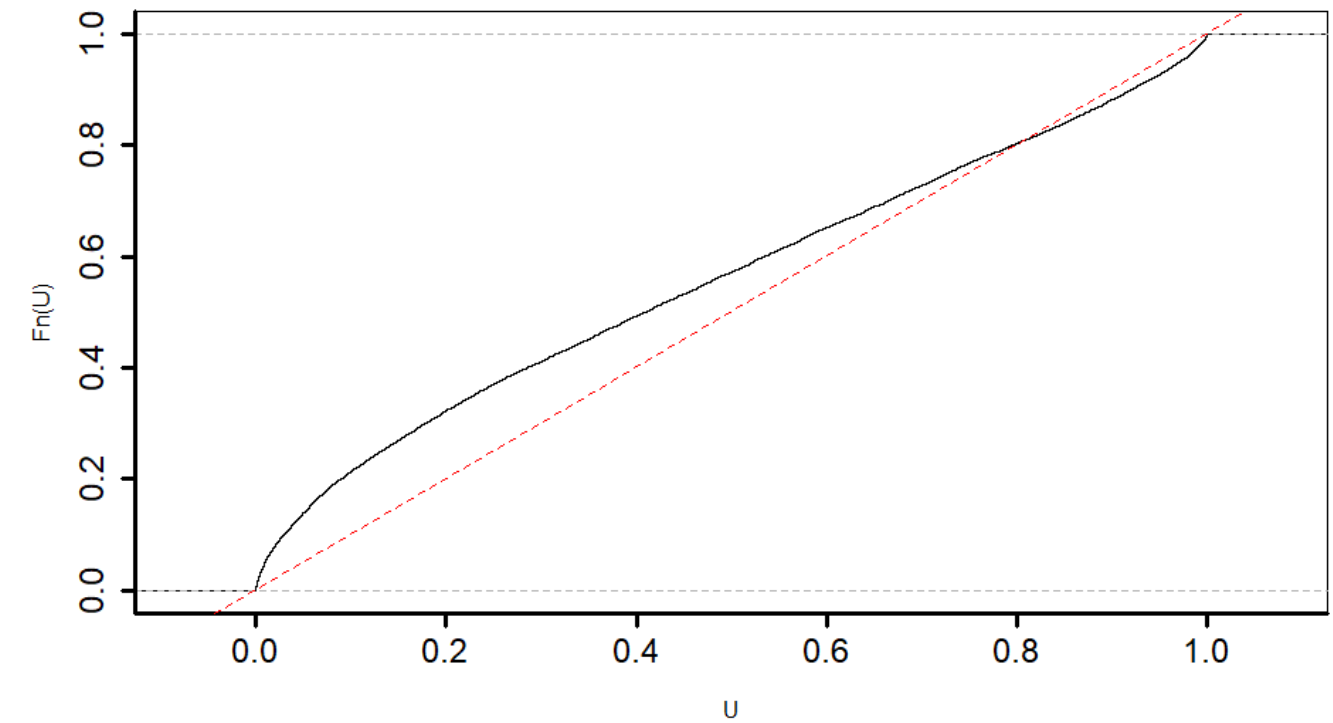


02 / 評估流程及方法

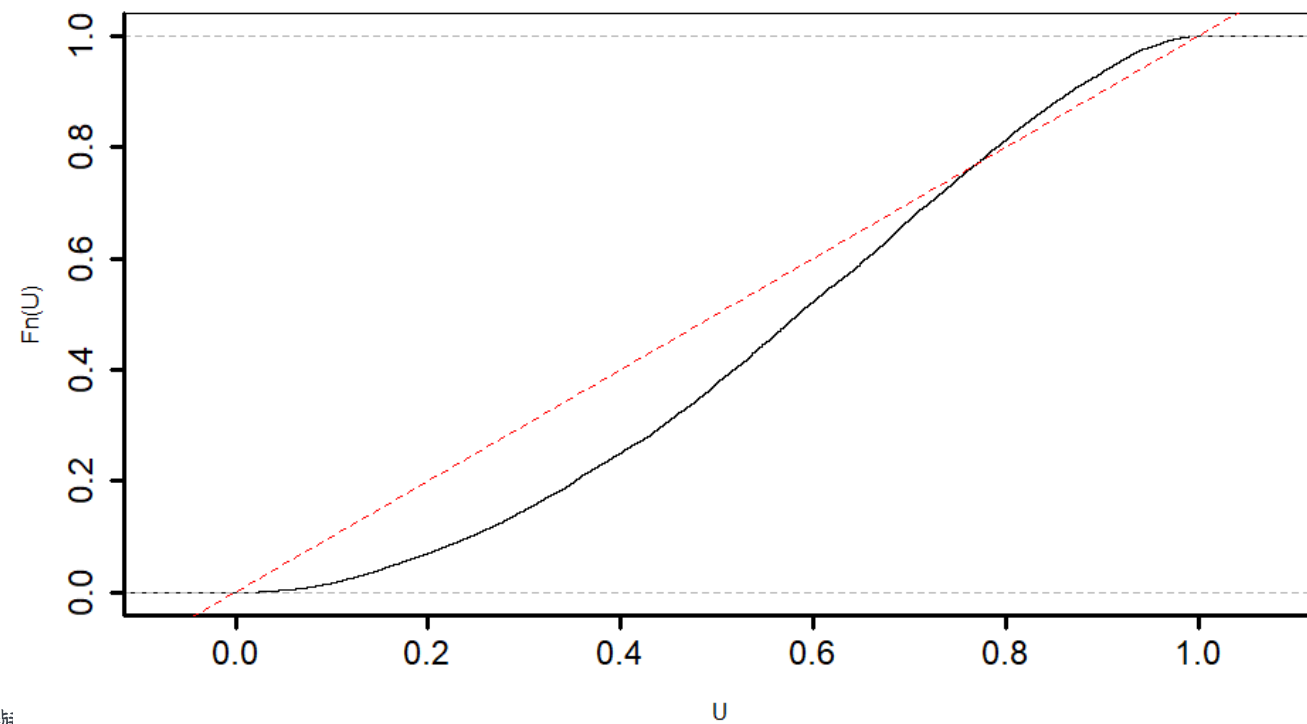
範例六：觀測平均 > 預報平均、觀測變異 > 預報變異



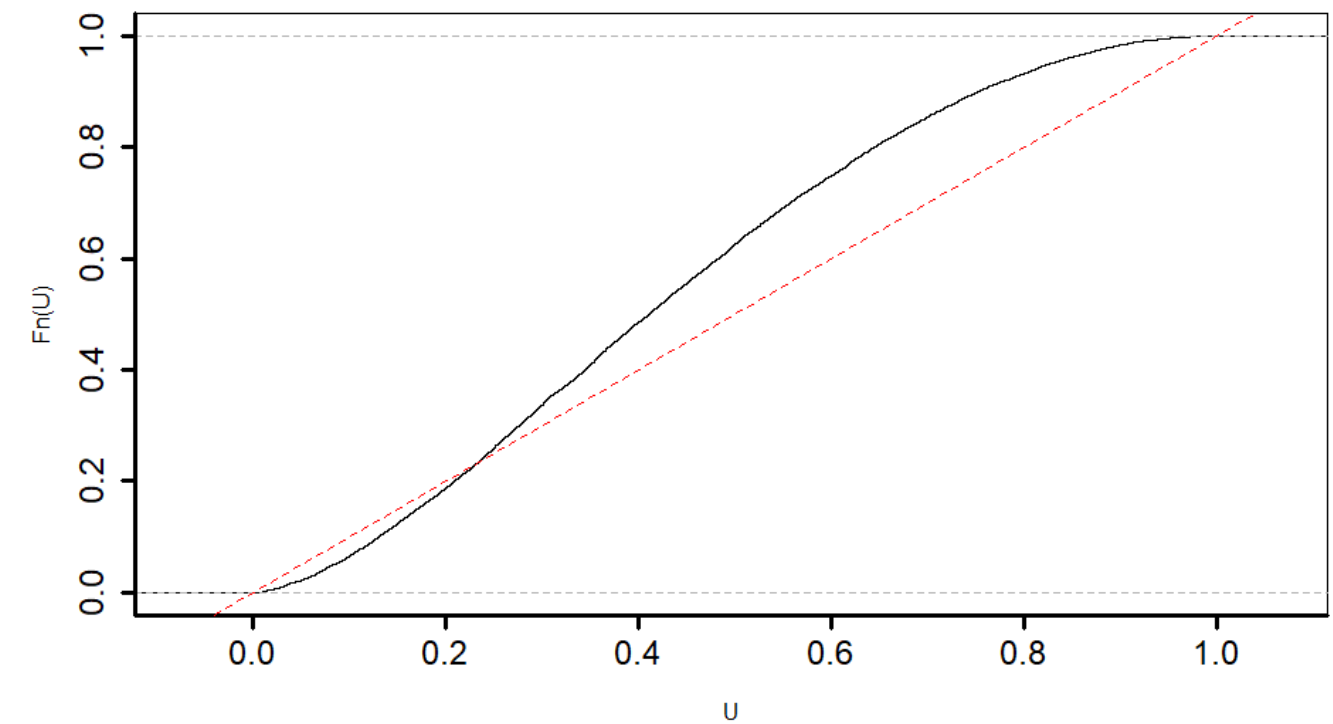
範例八：觀測平均 < 預報平均、觀測變異 > 預報變異

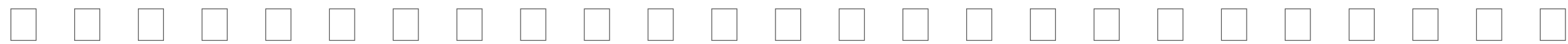


範例七：觀測平均 > 預報平均、觀測變異 < 預報變異



範例九：觀測平均 < 預報平均、觀測變異 < 預報變異





03 / 評估結果

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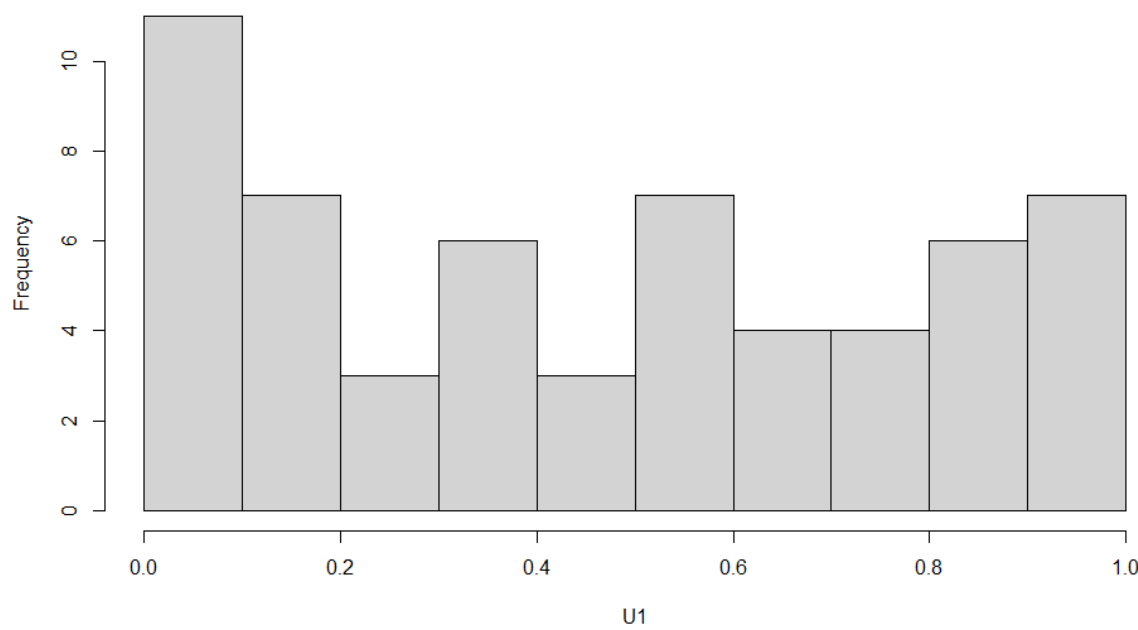
Kolmogorov -Smirnov (K -S) 適合度檢定結果

梅雨期(5-6月)、颱風期 (7-10月)、枯水期 (11-4月)

不同時期觀測入流量之累積機率值，以 K-S 適合度檢定之，結果皆不拒絕 H_0 (符合 $U[0,1]$ 分布)

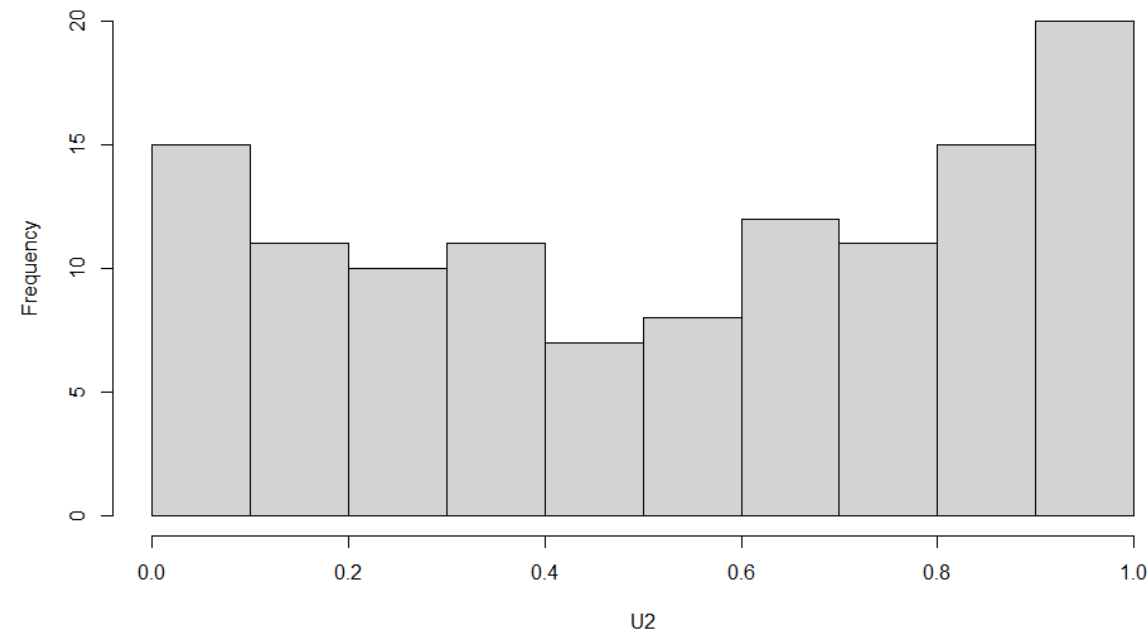
(5-6月)

Histogram of U1



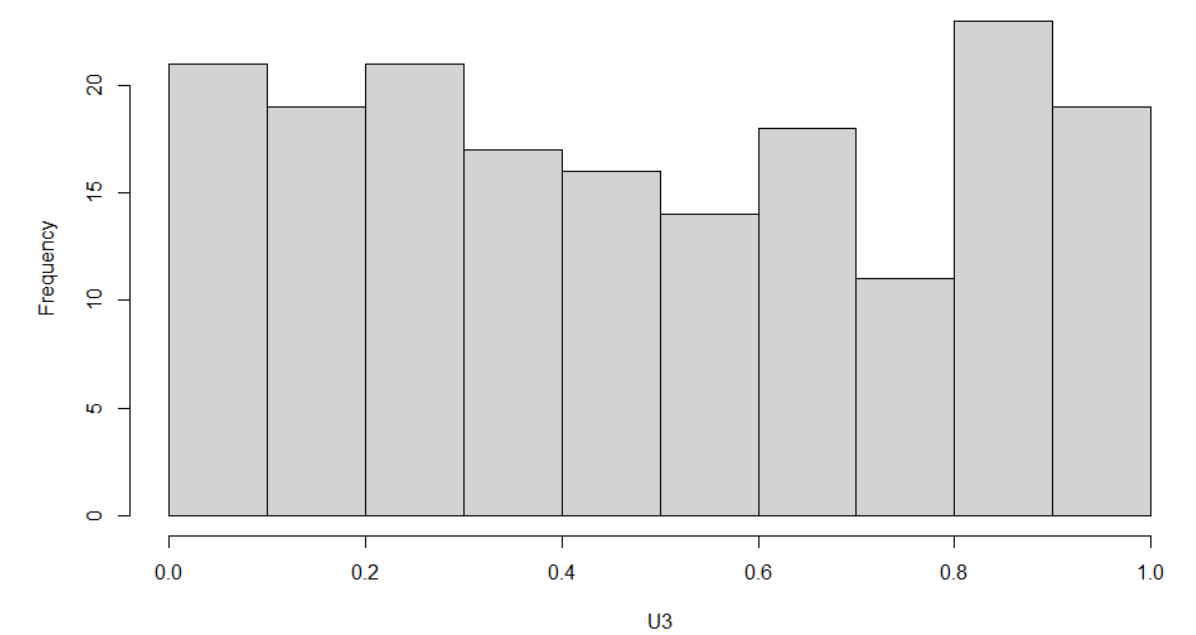
(7-10月)

Histogram of U2



(11-4月)

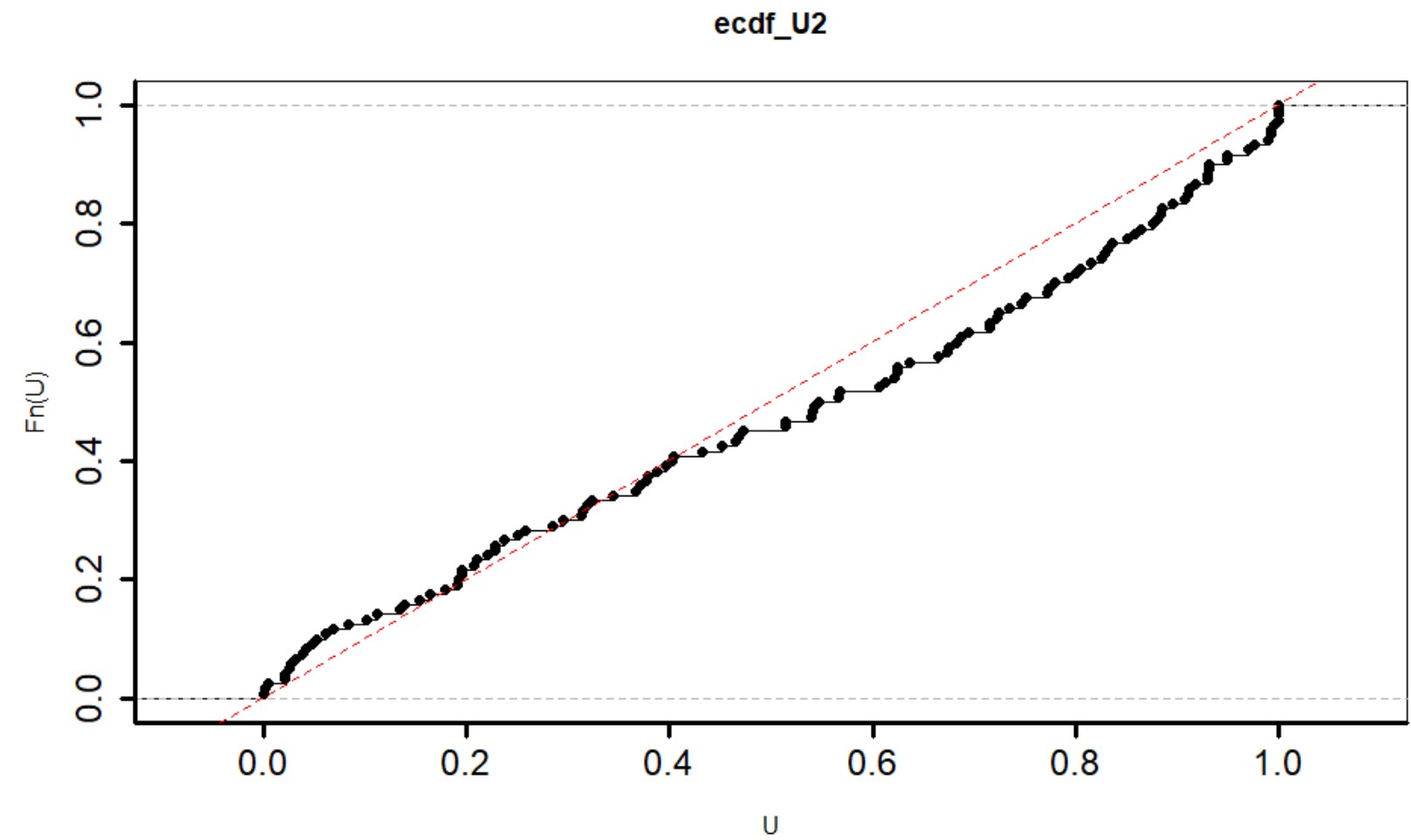
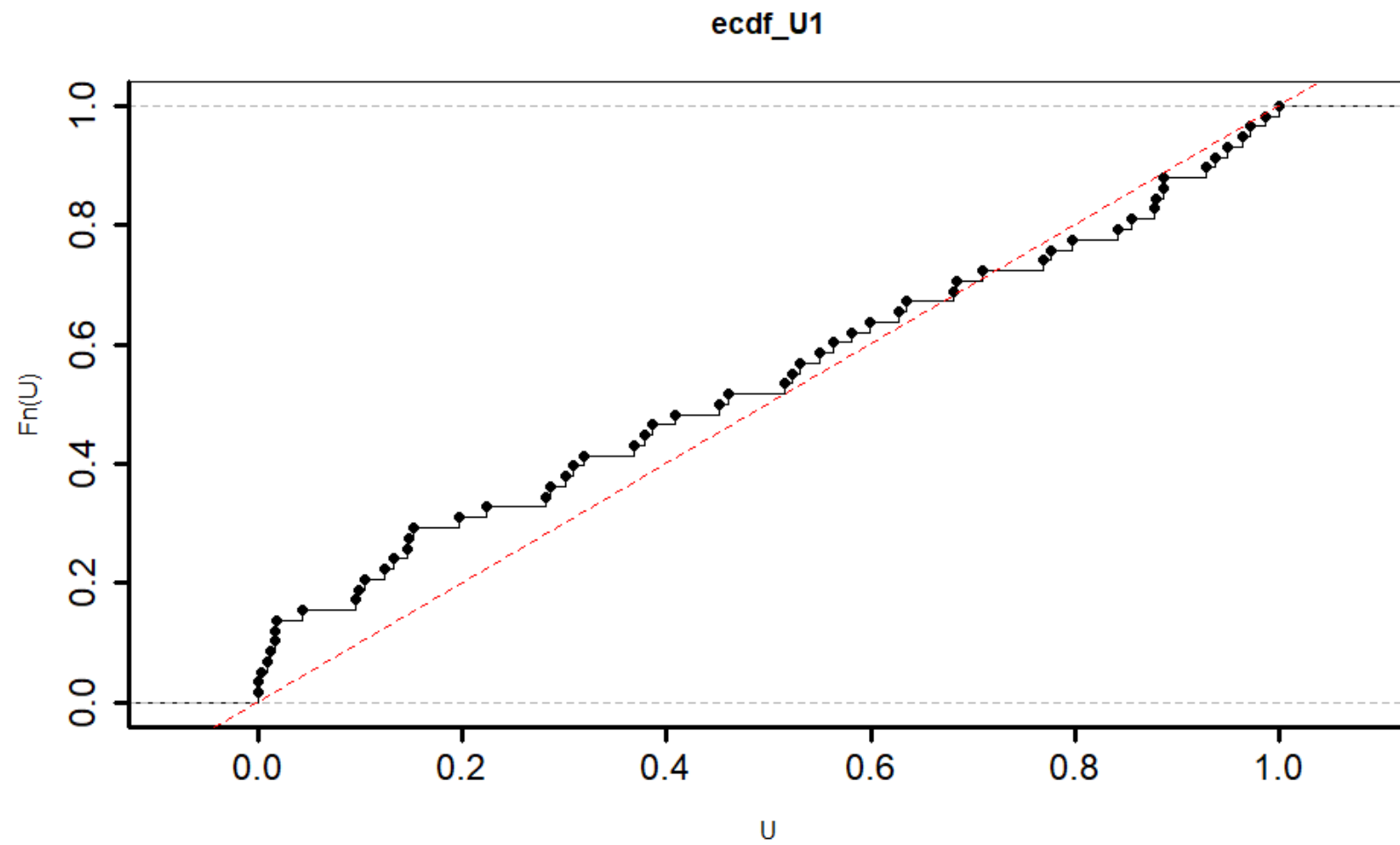
Histogram of U3



03 / 評估結果

觀測入流量累積機率圖分布情形評估

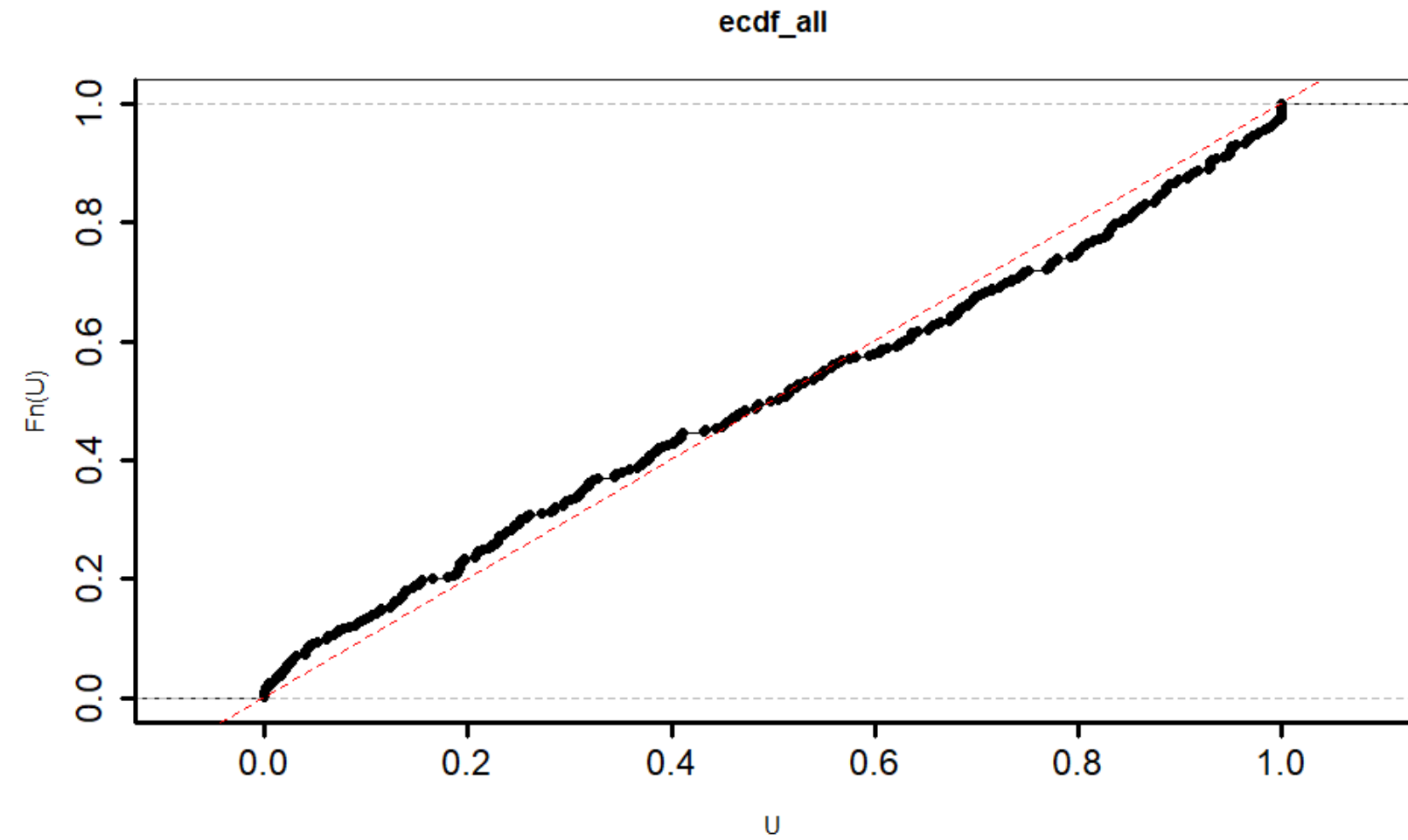
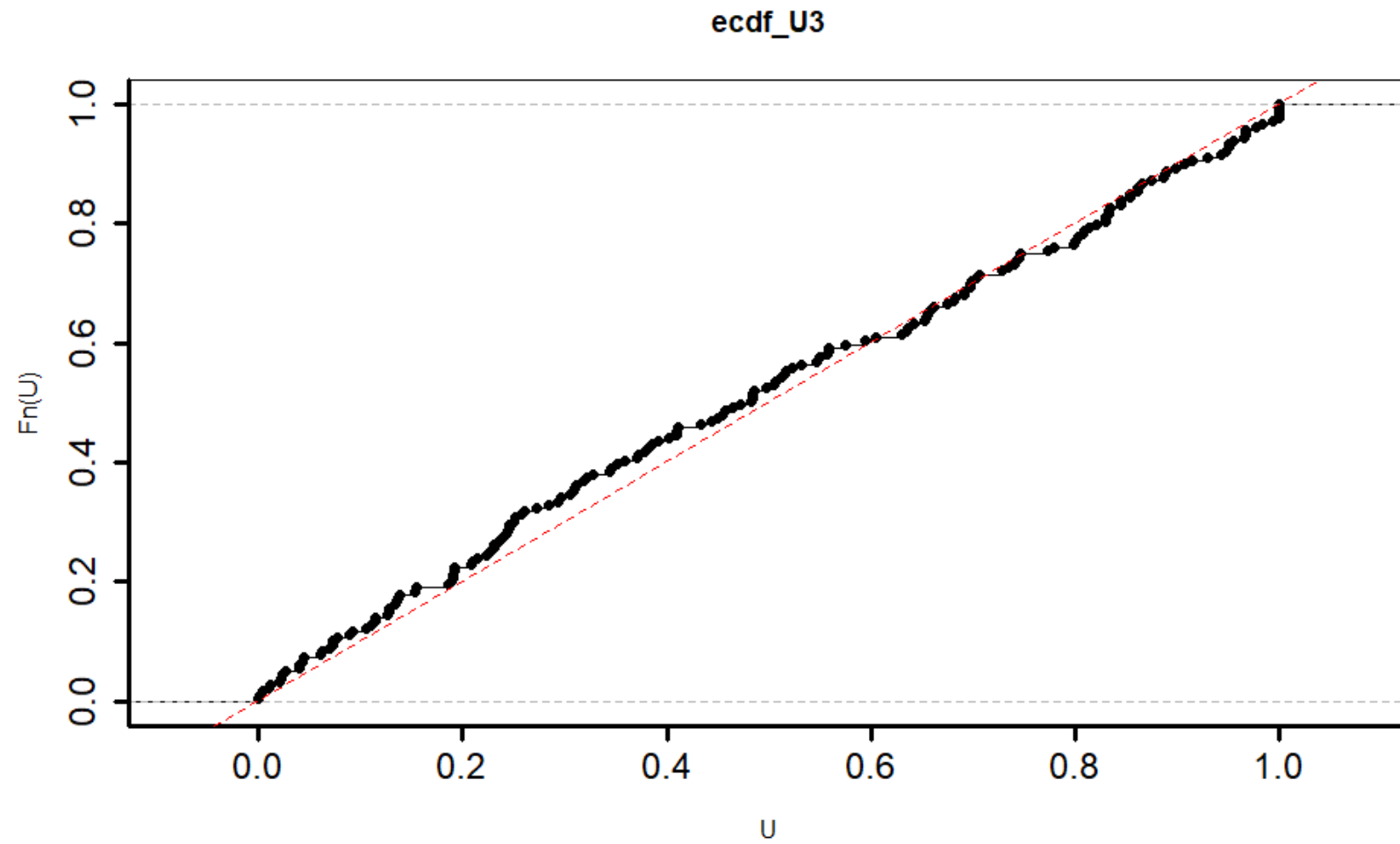
- □ □ (5-6□) □ 觀測入流量**平均值較低、變異較大**
- □ □ (7-10□) □ 觀測入流量**平均值較高、變異較大**

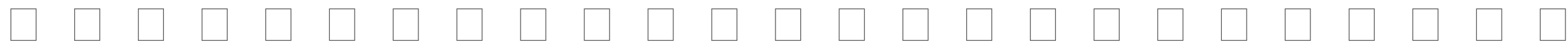


03 / 評估結果

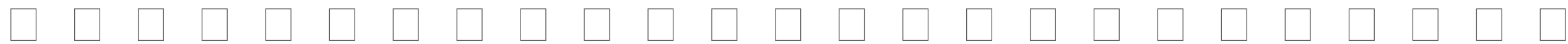
觀測入流量累積機率圖分布情形評估

- □ □ (11-4□) □ 觀測入流量與預報特性一致
- □ □ 觀測入流量變異較大





04 / 結論



簡報結束

敬請指教