PROJECT
Wind power generation

DATE
2025/7/17

PROJECT REPORT

Using ST-GCN technology to supplement the meteorological data of power plants

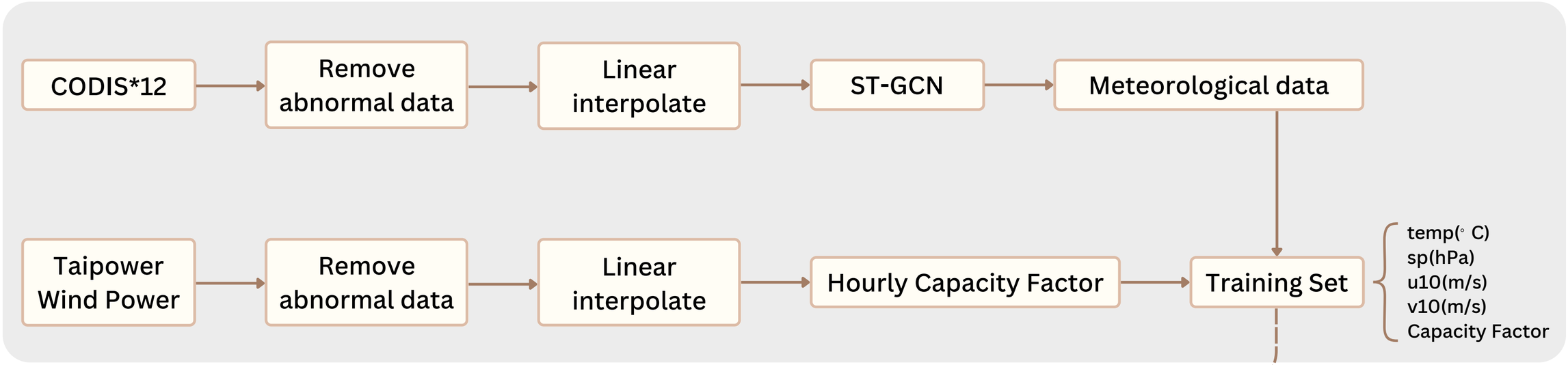
PRESENTED BY
鄭至亞

本週工作進度

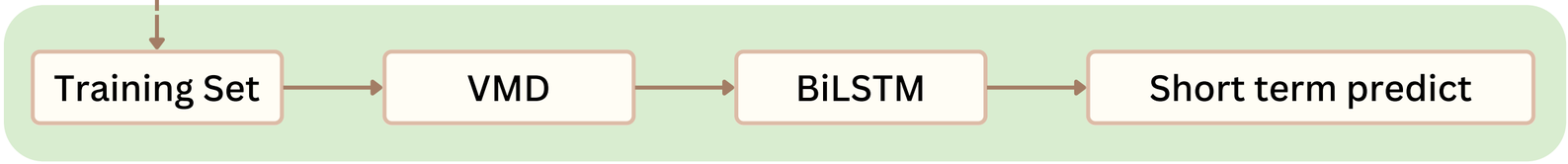
Task	Status	Notes
檢查風速內插狀況	✅ Completed	發現有站點插值結果很差
將風速資料調整成統一高度	✅ Completed	風場統一調整為海拔100米
僅依線性插值重建評估	✅ Completed	ST-GCN略佳
評估線性插值重建數據品質	✅ Completed	線性插值跟ST-GCN表現差不多（要再調整）
	⏳ Not started	

Framework

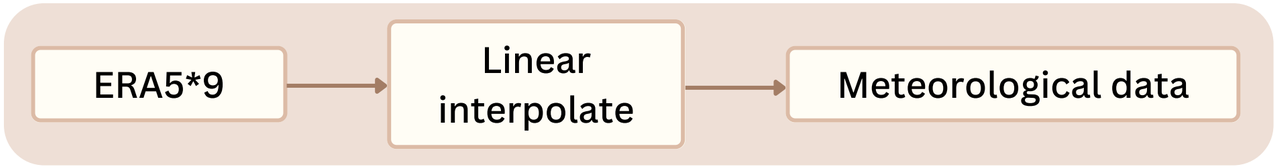
重建氣象特徵＆訓練集



預測



與ERA5比較 or 將其當成輔助資料

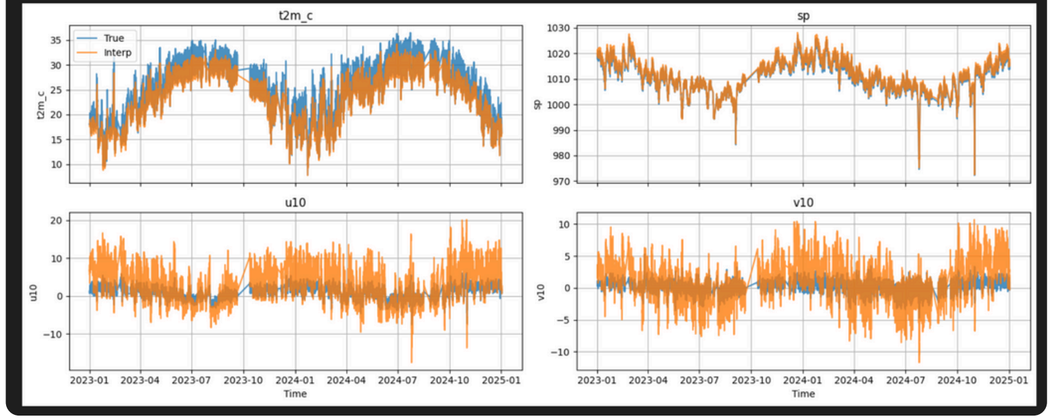


遇到的問題

距離插值有些很差（距離很近但風場資料差距很大）
統一風場後沒有明顯改善

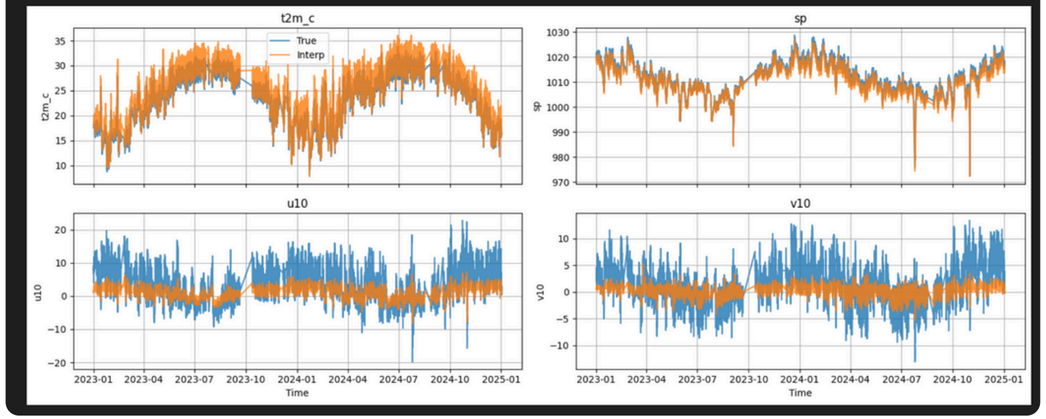
已知節點 0: (24.0413, 120.4377)
Self-weight W_all[0,0] = 0.0

	neighbor_idx	coord	weight
0	1	(24.0443, 120.3814)	0.718913
1	2	(24.1434, 120.4435)	0.162424
2	3	(24.1489, 120.4844)	0.092666
3	4	(24.1835, 120.4871)	0.017108
4	5	(24.1845, 120.529)	0.006350



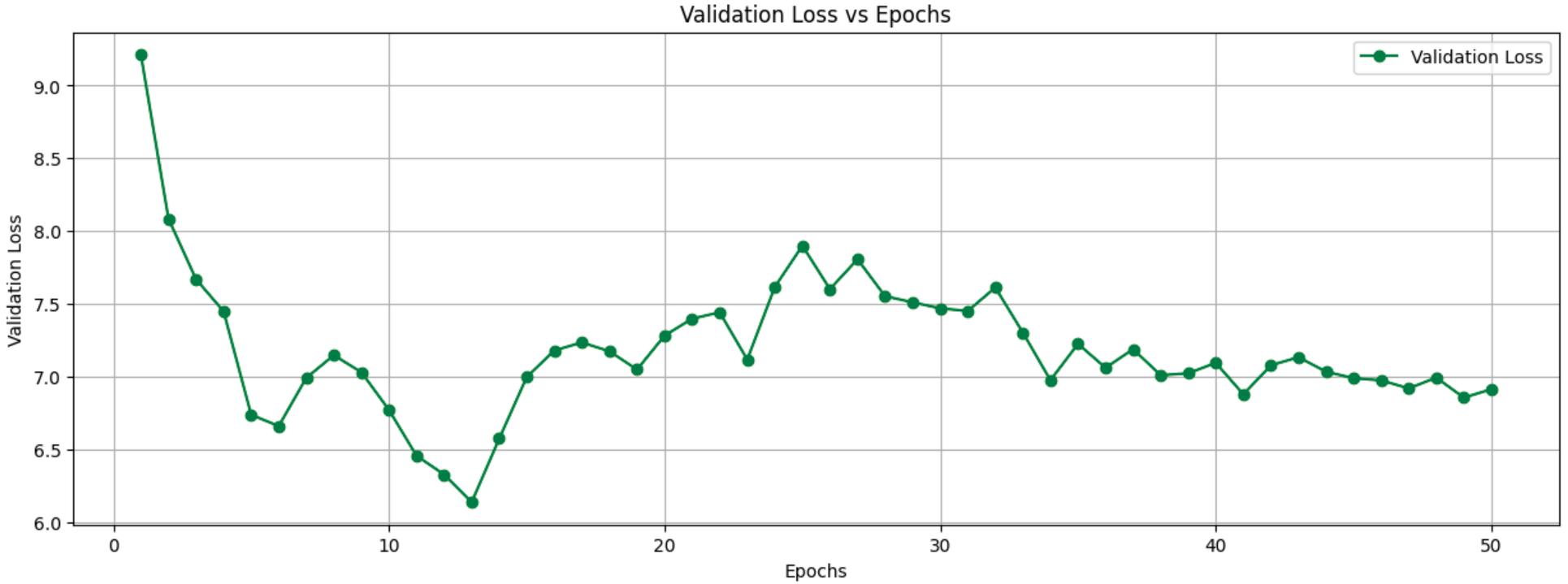
已知節點 1: (24.0443, 120.3814)
Self-weight W_all[1,1] = 0.0

	neighbor_idx	coord	weight
0	0	(24.0413, 120.4377)	0.843590
1	2	(24.1434, 120.4435)	0.116478
2	3	(24.1489, 120.4844)	0.032167
3	4	(24.1835, 120.4871)	0.005889
4	5	(24.1845, 120.529)	0.001034



遇到的問題

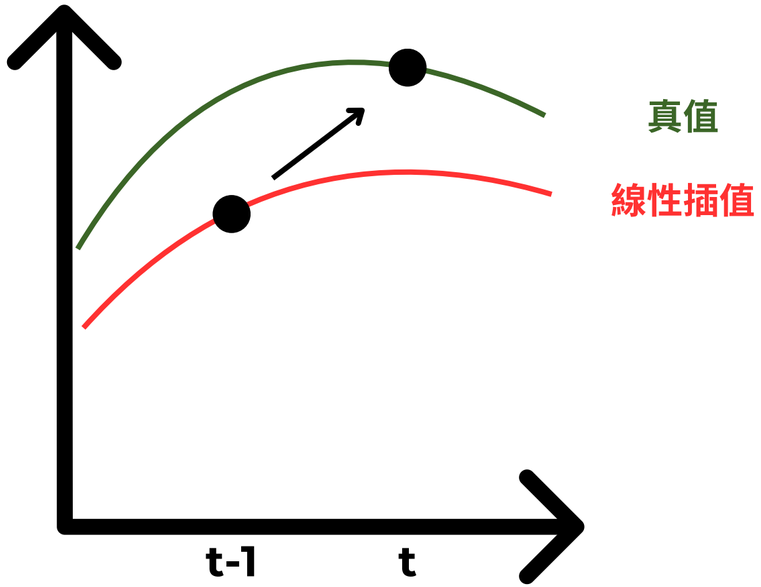
BiLSTM訓練不穩定



遇到的問題

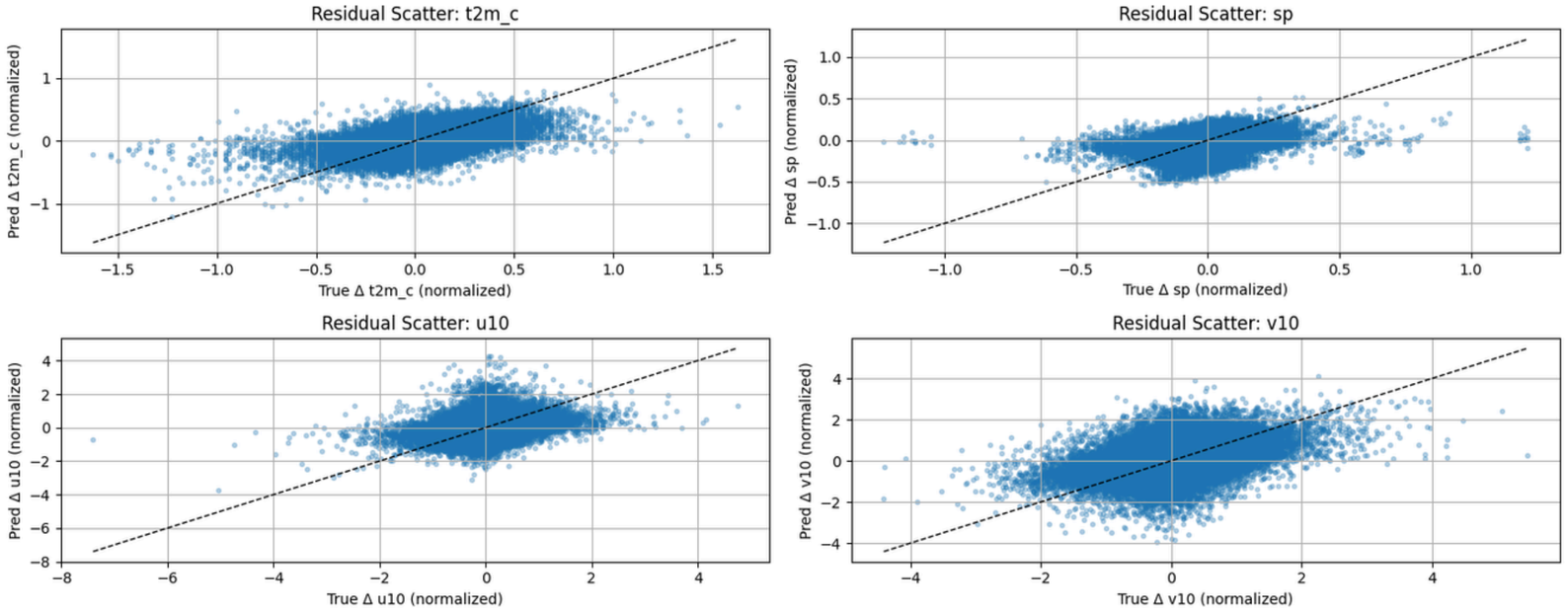
模型表現不夠好，可能要擴大模型架構

Y_true(t)	=	線性插值Y(t-1)	+	pred(t)



真值

線性插值



想要討論的內容

1. **模型優化方向**
2. **如何考慮地形資料**

下週&之後預計的工作進度與預期成果

Task	Status	Notes
優化模型	✏️ In progress	
思考如何用ERA5輔助模型	✏️ In progress	目前是用插值當作特徵
稍微擴大數據集	😶‍🌫️ To be continued	看了一下CODIS點位，發現沒有更多可用點位
加入地形特徵	👀 Under review	