強化氣象災害數據智能化預警技術

Strengthen the intelligent early warning technology of meteorological disaster

主管單位：國家災害防救科技中心

| 于宜強 [1] | 徐理寰 [1] | 黃麗蓉 [1] |
| Yu, Yi-Chiang | Hsu, Li-Huan | Hwang,Li-Rung |

廖信豪 [1]　　　　王潔如 [1]　　　　林忠義 [1]
Liao, Hsin-Hao　　Wang, Chieh-Ju　　Lin, Chung-Yi

劉嘉騏 [1]　　　　蔡直謙 [1]　　　　江宙君
Liou, Jia-Chyi　　Tsai, Chih-Chien　　Chiang,Chou-Chun

吳宜昭 [1]　　　　朱容練 [1]　　　　林冠伶
Wu, Yi-chao　　　Chu ,Jung-Lien　　Lin, Kuan-Ling

[1] 國家災害防救科技中心

摘要

台灣地區氣象災害以颱風、豪雨、旱災與寒害最常見，預警技術的研發可分為，極短期預警、颱洪預警、長期氣候等三方面。在極短期預警，利用即時觀測的雷達進行災害的監測與評估，自動化與資料處理的優化是強化預警首要工作。颱洪預警技術，利用雷達資料同化，系集雨量預報系統及全球模式(MPAS)等多模式的作業化研究，達到無接縫預警技術研發的目的。極端氣候預警技術研究，現行氣候預報技術仍有許多瓶頸尚待突破，除了強化氣候監測技術研發外，也參考國際次季節與季節預報計畫的方法與成果，強化極端氣候與其前兆分析的技術進行研究。引進大數據科學的概念，利用異質性的資料與 AI 演算法開發未來災害預警新的想法與架構。

關鍵詞：預警技術、人工智慧

Abstract

The most common meteorological disasters in Taiwan are typhoons, heavy rain, drought, and cold damage. The research and development of early warning technology can be divided into three parts: very short-term early warning, typhoon flood warning, and long-term climate. In very short-term early warning, using real-time observation radar for disaster monitoring and evaluation; the automation and optimization of data processing are the primary tasks to strengthen early warning. The typhoon flood early warning technology uses multi-model for operational research such as radar data assimilation, the rainfall ensemble forecast system, and the global model MPAS to achieve the purpose of seamless early warning technology research and development. Research on extreme climate early warning technology, the current

climate forecast technology still has many bottlenecks to be broken through. In addition to strengthening the research and development of climate monitoring technology, it also refers to the methods and achievements of the international sub-seasonal to seasonal forecasting plan to enhance the precursor analysis of extreme climate. Furthermore, big data science is introduced, using heterogeneous data and artificial intelligence (AI) algorithms to develop new ideas and structures for future disaster warnings.

Keywords：early warning technology, artificial intelligence