

鐵路沿線客製化天氣警示訊息

Customized Weather Alerts for Taiwan Railway

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摘要

全球氣候變遷下，極端天氣事件的頻率逐漸增加；當環境因素超過工程防護設計標準時，必須配合非工程防護措施，例如氣象科技的協助，才能降低災害損失。臺灣大學天氣團隊自2024年起和臺灣鐵路公司合作，依據鐵路沿線氣象資訊需求，提供客製化的研判資訊與諮詢服務，以協助應對氣象災害。即時氣象資訊包括全天候天氣監測、颱風動態和影響情形研判、豪雨分析等。

根據過去因天氣肇致鐵路沿線事故分析，颱風仍然是威脅最大的天氣系統，能引發大範圍之多元類型災害(積淹水、邊坡崩塌、設備因強風導致損壞等)。但分析結果也指出，局部劇烈對流引發之暴雨、強風和雷擊，可能導致相同程度之災害。臺大團隊適時運用中央氣象署QPEplus以及大雷雨即時訊息，分析對鐵路影響區間，即時發布警示提醒。期望增強臺鐵公司的防災應變能力，保障鐵路運輸安全。

關鍵字：鐵路、客製化QPEplus、大雷雨即時訊息

Abstract

Under global climate change, the frequency of extreme weather events is gradually increasing. When environmental factors exceed engineering protection design standards, non-engineering protective methods, such as the assistance of meteorological technology, are necessary to reduce disaster losses. Since 2024, the National Taiwan University (NTU) Weather Group has collaborated with Taiwan Railway Company (TR) to provide customized meteorological information and consulting services based on the needs along the railway lines to assist in coping with meteorological disasters. Real-time meteorological information includes around-the-clock weather monitoring, typhoon news with impact assessment, and heavy rain analysis.

According to past analyses of railway incidents caused by weather, typhoons remain the most significant threat, capable of causing various types of widespread disasters (flooding, landslides, and equipment damage due to strong winds, etc.). However, the analysis also indicates that localized severe convection, including heavy rainfall, wind gusts, and lightning, can cause similar levels of disaster. The NTU group utilizes the QPEplus and Instant Torrential Rain Alert issued by the Central Weather Administration (CWA) on time to analyze the affected railway sections, promptly issuing warnings. This effort aims to enhance Taiwan Railway Company's disaster response capabilities and ensure railway transportation safety.

Keywords: Railway, Customized QPEplus, Instant Torrential Rain Alert