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[\[地球物理\] 台灣地震預警系統技術重要突破受國際重視](#)

[地球物理] 台灣地震預警系統技術重要突破受國際重視

台大地質系副教授吳逸民花費10多年時間所完成的地震預警系統，配合中央氣象局的即時強力動態網絡（real-time strong-motion network），可搶在地震波擴散到各地前的10到30秒左右發布警報，提早預警以降低傷亡和財產損失。這項研究受到國際重視，美、日、韓目前均以該系統及其演算法為基礎，進行地震預警監測系統發展。

該儀器的微型感應裝置能感測鄰近地區的地震源狀態，利用S波（水平震波）與P波（垂直震波）之間的速度差，迅速計算出震央、強度、規模等訊息，並以比地震波傳遞速度還快的速度向地震波擴散範圍發出警報。吳逸民指出，由於P波比S波快1.73倍，且破壞力較小，又與S波有一定關聯性，據此他設計出解讀P波就能掌握地震規模、震度的程式，並利用預警網路，搶先提前發出預警。例如，在花蓮偵測到P波訊息，程式花費7秒計算、3秒利用網路傳送至台北，而台北在地震實際發生的前30秒就可以作警報與緊急疏散動作。這項程式陸續在[《地球物理研究通訊》](#)等國際知名期刊發表，引起美、日、韓和義大利極大的興趣，美國夏威夷太平洋海嘯警報中心2008年就已採用這套電腦程式，進行海嘯預警監測。

深入資訊：

[《地球物理研究通訊》〈台灣地震預警系統發展報告書〉2009/01/30發表](#)（英文）[今日新聞 2009/04/06](#)[雅虎奇摩新聞 2009/04/06](#)

#### [Geophysics] New Breakthrough of Earthquake Early Warning in Taiwan Draws International Regards

Associate Professor Yih-Min WU of the Dept. of Geosciences, NTU, presents the Earthquake Early Warning System, on which over ten years has he spent. Associated with Central Weather Bureau's real-time strong-motion network, the system can give warning ten to thirty seconds earlier than the occurrence of seismic waves. Early warning allows people to get prepared and decreases the damage. The research result draws international attentions. The system and its algorithm have been taken as the basic model for further modification and development in the United States, Japan and Korea.

The sensor of the device can detect the state of the focus of the earthquake nearby since the initial P waves (vertical waves) have been successfully utilized for the identification of seismic state, and due to the propagation speed difference between S waves (horizontal waves) and P waves, it can steal some critical time before the occurrence of seismic waves counting on the faster speed of digital information communication and the quick analysis of the algorithm. Yih-Min WU points out, because P waves are 1.73 times faster and less violent than S waves, as well as because there nonetheless exist certain correlations between P waves and S waves, he accordingly designs an algorithm analyzing initial P waves and identifying the information about the earthquake magnitude, scale etc. for Central Weather Bureau's warning network. For instance, when an initial P wave is detected in Hualian, seven seconds are spent on calculation, and three seconds on information transmission to Taipei, so that Taipei can issue the warning thirty seconds earlier than the actual arrival of violent seismic waves. The research result has been released in Geophysical Research Letters and other international journals. The United States, Japan, and Korea show great interest in this algorithm. The American Pacific Tsunami Warning Center in Hawaii has adopted the algorithm in 2008.

Further Information:

["Development of earthquake early warning system in Taiwan" in Geophysical Research Letters published on 2009/01/30](#)[NOWNews 2009/04/06](#) (in Chinese)[Yahoo! News 2009/04/06](#) (In Chinses)

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