

臺灣地區 GNSS 連續觀測站資料解算探討

陳國華 教授

摘 要

臺灣地區共設置 400 餘座 GNSS 連續觀測站，經由歷年觀測資料的解算可以作為地表變位量與地表速度場之估計使用，以建立臺灣地區的變形模式，提供各界參考應用。近年來，本團隊以 Bernese 5.2 軟體解算臺灣地區 GNSS 連續觀測站資料，獲得各連續觀測站相對於金門連續站以及相對於國際參考框架(ITRF)的地表速度；同時，亦獲得歷次 e-GNSS 基準站相對於測繪中心頂樓站(LSB0)坐標的更新及修正成果，提供各界辦理 GNSS 動態定位使用。

另外，為了與 ITRF 同步，進一步探討新增臺灣時變參考框架(Taiwan Time-dependent Reference Frame, TTRF)的作法，讓使用者可以根據不同用途選擇適合的框架，並建立 TWD97 與 TTRF 雙框架之間的轉換模式，在這樣的雙框架結構下，精密單點定位(PPP)的使用者也可將其得到的 ITRF 坐標(與 TTRF 框架一致)，經轉換模式轉換到 TWD97 系統之下。而為了推廣本團隊計畫的執行成果，已將歷年成果投稿於國內知名期刊以及國內知名的測量學術研討會。

關鍵字：GNSS 連續觀測站、變位量、速度場、變形模式。

A study on the estimation of the GNSS CORS observations in Taiwan

Kwo-Hwa Chen

Abstract

There are more than 400 GNSS CORS set up in Taiwan. By means of estimating the observations of these 400 GNSS CORS, the surface displacements and the surface velocities of CORS can be regressed to establish the deformation model of Taiwan. Recently, we finished the estimations for the GNSS CORS observations by using the Bernese 5.2 software to obtain the surface velocity of CORS from the minimum constrained to the KMNM station and the fiducial constrained to the ITRF, respectively. The updates of the e-GNSS base-station coordinates constrained to the LSB0 station were also obtained for the usages on the application of the GNSS kinematic positioning.

In addition, the Taiwan Time-dependent Reference Frame (TTRF) was also considered to combine the ITRF for the applications. By using the transformation model between the TWD97 and the TTRF, the general users and also the PPP users could select the appropriate coordinate frame successfully. Finally, the results of these projects were published in several famous journal papers and also in several surveying conferences.

Keywords: GNSS CORS, displacement, velocity, deformation model.