

GPS 反射訊號應用於蘭陽溪水面測高之研究

The Research of Reflected GPS Signals Applied in Estimating Water Surface Height for LanYang River

陳建翰¹徐博賢²曾清涼³

Chien-Han Chen

Po-Hsien Hsu

Ching-Liang Tseng

摘要

本研究內容包含對於GPS衛星訊號接收儀與RHCP、LHCP雙頻接收天線之配置與設計；利用RHCP與LHCP雙頻天線接收直接與反射訊號，同時建置可對單一或多顆衛星訊號經海面或陸面反射後之訊號處理軟體，藉由自行撰寫的軟體針對地表反射面或水面的高度變化進行偵測，並於蘭陽溪進行實地測試。由於水利單位的高程為正高系統，因此將施測成果轉換成同一高程系統，並與傳統水位計之水位資料進行分析比較，並希望藉此研究帶給GPS應用一個不同的新思維。

關鍵字：GPS 反射訊號、右旋圓極化天線、左旋圓極化天線

Abstract

This research contents include the disposition and design of the GPS receiver and RHCP&LHCP dual frequency antennas and the utilization of RHCP & LHCP to receive signals directly and reflect signals as well. Furthermore, the software dealing with the signals, which emitted from one satellite and multiple satellites, reflecting from the sea or the land surface is developed. It can examine the height variation from the surface of the sea or the land. The experiment was performed at LanYang Hsi. Because the height system used by the water conservancy unit belong to orthometric height, it is necessary to transform to the same height system and then to analyze and compare with the water level materials of the traditional fluvigraph, and hope to make use of this research to bring GPS to use a different new thinking

Key word : Reflected GPS Signals、RHCP、LHCP

¹ 國立成功大學衛星資訊研究中心國防役 protosschen@gmail.com

² 嘉南藥理科技大學空間科技中心副教授 phhsu1688@mail.chna.edu.tw

³ 嘉南藥理科技大學空間科技中心主任/特聘教授 chnagrc@mail.chna.edu.tw