

**臺灣西部沿岸海水透視度調查應用於
測深光達測量先期研究**
**Application of Transparency Survey to the Seawater
along West-shore of Taiwan**

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【摘要】

臺灣西部寬廣的潮間帶區域，受海洋及陸地雙向影響，型塑出特殊的地形、地貌與生態環境，雙向環境變遷均直接或間接影響此處，亦造就複雜性高且變動劇烈的特性，惟該區域因傳統測量技術的限制，船測不易測到淺水灘地，陸測無法履泥而行，測量作業實施困難，故一般海圖與陸圖均缺乏區域內之地形資料，有賴以適當之測深工具以測繪潮間帶地形圖資。

裝於飛行載具之高科技測深光達已可測得水下若干深度，惟儀器造價高昂且受海水濁度影響測深能力，國外主要以衛星影像或以沙奇盤進行作業前評估，其中衛星影像適合大範圍區域作業評估，惟其精度對於小範圍區域尚顯不足，而沙奇盤係以接觸式方式調查，需投入大量人力辦理相關工作，其準確度較高，對於臺灣西部潮間帶地區以沙奇盤進行測深光達作業前評估是較佳方式。

一般以沙奇盤調查深度之 2 至 3 倍之程度為測深參考與運用範圍，為規劃選擇最適當之測深工具以測繪潮間帶地形資料，本研究以沙奇盤進行約 20 處沿岸海水透視度調查，分析結果發現臺灣西部海岸沿岸如採用空載測深光達可測量至水下 0.6-10 公尺，各個區域差異很大，引進測深光達作業需考量測區實際情形規劃辦理。

關鍵詞：海水透視度調查；沙奇盤；衛星影像

ABSTRACT

The Tidal zone along the Taiwan western shore spreads broad. It is in turn deeply influenced directly or indirectly by bilateral forces of land and ocean. This has made a specific type of terrain, landscape, and biological environment with the character of drastic change around here. Traditionally, on-boat sounders were operated to produce the marital chart, but it was difficult and dangerous to sail because of shallow. The mud also obstructs the surveyors to walk on for surveying from the land. Both map and chart did not have complete terrain information in this zone.

In the recent years, airborne LiDAR has been proved with the ability to detect terrain in detail under water to reach to the depth of tens of meters. This high technological instrument not only is very expensive but also its performance depends upon the turbidity of the water at the scanning time. A performance possibility before the action was usually estimated according to bathymetric satellite images or data of Secchi depths. Satellite imagery is suitable for estimation over large region. For small area, it can not precisely display the real situation in detail. Secchi depth investigation on the sites could offer more precise information.

Generally, 2 to 3 times of Secchi depth can be the estimation criteria for air-borne bathymetric LiDAR, but the real turbidity are varying at all times referring to the weather and others. Twenty sites were chosen to proceed the transparency investigation along the western shore of Taiwan in this study, it values from 0.6 to 10 meters. To scheme the tidal zone survey with air-borne bathymetric LiDAR must consider the real situation of the interested region. Secchi Depth investigation offers its useful information.

Keywords: Seawater Transparency Survey, Secchi Disk, Satellite Image