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View Full-Text (/2072-4292/12/15/2491/htm)   Download PDF (/2072-4292/12/15/2491/pdf)   Browse Figures   (/remotesensing/remotesensing-12-02491/article_deploy/html/images/remotesensing-12-02491-ag.png) (/remotesensing/remotesensing-12-02491/article_deploy/html/images/remotesensing-12-02491-g001.png) (/remotesensing/remotesensing-12-02491/article_deploy/html/images/remotesensing-12-02491-g002.png) (/remotesensing/remotesensing-12-02491/article_deploy/html/images/remotesensing-12-02491-g003.png) (/remotesensing/remotesensing-12-02491/article_deploy/html/images/remotesensing-12-02491-g004.png) (/remotesensing/remotesensing-12-02491/article_deploy/html/images/remotesensing-12-02491-g005.png) (/remotesensing/remotesensing-12-02491/article_deploy/html/images/remotesensing-12-02491-g006.png) (/remotesensing/remotesensing-12-02491/article_deploy/html/images/remotesensing-12-02491-g007.png) (/remotesensing/remotesensin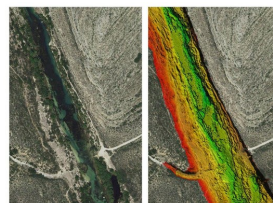g-12-02491/article_deploy/html/images/remotesensing-12-02491-g008.png) (/remotesensing/remotesensing-12-02491/article_deploy/html/images/remotesensing-12-02491-g009.png) (/remotesensing/remotesensing-12-02491/article_deploy/html/images/remotesensing-12-02491-g010.png) (/remotesensing/remotesensing-12-02491/article_deploy/html/images/remotesensing-12-02491-g011.png) (/remotesensing/remotesensing-12-02491/article_deploy/html/images/remotesensing-12-02491-g012.png) (/remotesensing/remotesensing-12-02491/article_deploy/html/images/remotesensing-12-02491-g013.png) (/remotesensing/remotesensing-12-02491/article_deploy/html/images/remotesensing-12-02491-g014.png) (/remotesensing/remotesensing-12-02491/article_deploy/html/images/remotesensing-12-02491-g015.png) (/remotesensing/remotesensing-12-02491/article_deploy/html/images/remotesensing-12-02491-g016.png) (/remotesensing/remotesensing-12-02491/article_deploy/html/images/remotesensing-12-02491-g017.png) (/remotesensing/remotesensing-12-02491/article_deploy/html/images/remotesensing-12-02491-g018.png) (/remotesensing/remotesensing-12-02491/article_deploy/html/images/remotesensing-12-02491-g019.png) (/remotesensing/remotesensing-12-02491/article_deploy/html/images/remotesensing-12-02491-g020a.png) (/remotesensing/remotesensing-12-02491/article_deploy/html/images/remotesensing-12-02491-g020b.png) (/remotesensing/remotesensing-12-02491/article_deploy/html/images/remotesensing-12-02491-g020c.png) (/remotesensing/remotesensing-12-02491/article_deploy/html/images/remotesensing-12-02491-g020d.png)   Cite This Paper

Abstract

Remote sensing technology enables detecting, acquiring, and recording certain information about objects and locations from distances relative to their geographic locations. Airborne Lidar bathymetry (ALB) is an active, non-imaging, remote sensing technology for measuring the depths of shallow and relatively transparent water bodies using light beams from an airborne platform. In this study, we acquired Lidar datasets using near-infrared and visible (green) wavelength with the Leica Airborne Hydrography AB Chiroptera-I system over the Devils River basin of southwestern Texas. Devils River is a highly groundwater-dependent stream that flows 150 km from source springs to Lake Amistad on the lower Rio Grande. To improve spatially distributed stream bathymetry in aquatic habitats of species of state and federal conservation interest, we conducted supplementary water-depth observations using other remote sensing technologies integrated with the airborne Lidar datasets. Ground penetrating radar (GPR) mapped the river bottom where vegetation impeded other active sensors in attaining depth measurements. We confirmed the accuracy of bathymetric Lidar datasets with a differential global positioning system (GPS) and compared the findings to sonar and GPR measurements. The study revealed that seamless bathymetric and geomorphic mapping of karst environments in complex settings (e.g., aquatic vegetation, entrained air bubbles, riparian zone obstructions) require the integration of a variety of terrestrial and remotely operated survey methods. We apply this approach to Devils River of Texas. However, the methods are applicable to similar streams globally. **View Full-Text (/2072-4292/12/15 /2491/htm)**

Keywords: **karst (/search?q=karst)**; **ground penetrating radar (/search?q=ground%20penetrating%20radar)**; **remote sensing (/search?q=remote%20sensing)**; **bathymetry (/search?q=bathymetry)**; **hydrography (/search?q=hydrography)**

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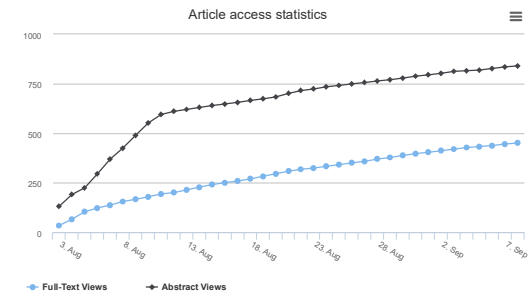
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