US Army Corps of Engineers

The Coastal Data Information Program

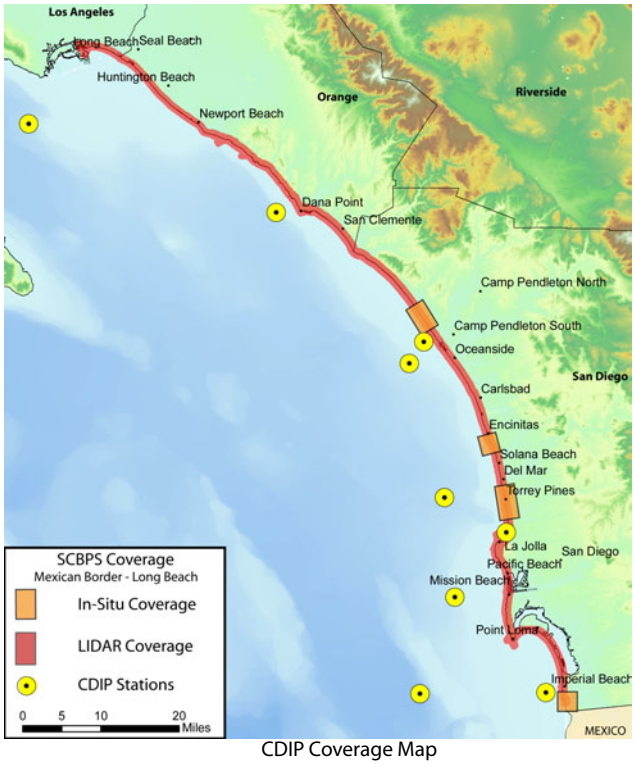
Integrative Oceanography Division

SCRIPPS Institution of Oceanography

CAL BOATING

Monitoring and Prediction of Waves and Shoreline Change

The Coastal Data Information Program (CDIP) is designed to improve our understanding of beach sand transport by waves and currents, thus improving local and regional management of sandy shorelines. The study's goal is to develop and implement strategies for monitoring and modeling beach erosion. CDIP is jointly sponsored by the State of California Department of Boating and Waterways, and the United States Army Corps of Engineers.



CDIP Coverage Map

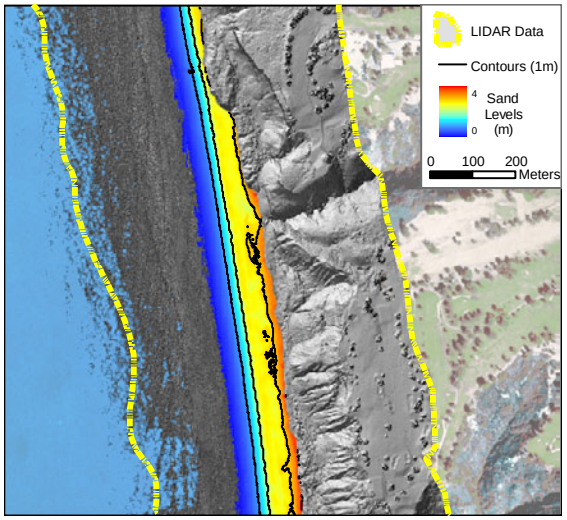
Begun in 2002, CDIP has collected insitu and remote observations of sand level changes on both nourished and natural beaches. Airborne topographic LIDAR (Light Detection and Ranging) has been used to repeatedly survey the beach between the low tide waterline and the backbeach from the Mexican Border to Long Beach (about 170 km). The surveys, at the approximate times of maximum (early Fall) and minimum (early Spring) beach width, are used to quantify alongshore variations in the seasonal cycle of changes in beach width and sand volume. Collaborative efforts with the University of Texas continue in the development of sophisticated LIDAR classification/editing techniques.

The spatially dense (multiple data points per square meter), bi-annual LIDAR surveys are supplemented with more frequent monthly surveys at several focus sites, selected for their contrasting exposure to sea and swell. The monthly surveys, spanning 4 km on average, at Torrey Pines Beach, San Onofre Beach, Solana Beach/Cardiff, and Imperial Beach are obtained with GPS-equipped all terrain vehicles and personal watercraft. The insitu and LIDAR surveys have similar vertical accuracy, approximately 10 cm.

Wave observations from the Coastal Data Information Program (CDIP) are combined with a numerical model to estimate a wave field with high alongshore and temporal resolution, suitable for testing models for sand erosion and accretion at regional beaches.

The website given below documents the project and includes seasonally updated contour change maps.


CDIP Survey Methods. Clockwise from upper left: Dolly; Airborne LIDAR; JetSki; ATV



LIDAR Data Collected September 2004 at Torrey Pines State Reserve.

Robert Guza, Richard Seymour, Co-Principal Investigators / William O'Reilly, Associate Investigator / Julie Thomas, Program Manager
Scripps Institution of Oceanography, Ocean Engineering Research Group
University California San Diego MC 0214, La Jolla, CA 92093
858-534-3032, 858-455-5575(fax), http://cdip.ucsd.edu

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