

## **CDIP Observations of Coastal Wave Conditions and Climate**

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US CLIVAR Optimizing Ocean Observing Networks for Detecting the Coastal Climate Signal Workshop









#### **SUMMARY**

The Coastal Data Information Program (CDIP), at Scripps Institution of Oceanography, UC San Diego, maintains a network of moored wave data buoy stations in US waters worldwide. With key funding from US Army Corps of Engineers (USACE) and the State of California, CDIP has been creating and curating a coastal wave climate data set since the 1970s.

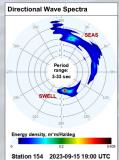
High precision, quality controlled directional spectral wave data from CDIP are used to validate global models, in particular USACE's Wave Information Study project which provides a national resource of long-term wave climatologies for all US coastal waters. The spectra, plus displacement path data, served to the public freely, with an emphasis on high availability, are regularly referenced in academic publications and technical reports worldwide.

CDIP stations are providing baselines and trends for understanding coastal wave climate, plus valuable in situ reference data on sea surface temperature and surface currents. CDIP works with dozens of partners, including IOOS Regional Associations as well as various federal and state agencies, energy and maritime entities, universities, and vessel operators of all kinds.

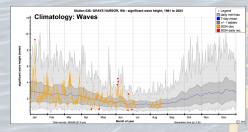
#### DATA

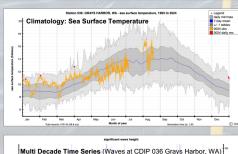
- · Stations are instrumented with Datawell Waveriders.
- · Wave spectra, height, period, direction, and displacement time series.
- Sea surface temperature, plus surface currents and air temperature.
- Rigorous QA: calibration facility, mooring components, station maintenance.
- Rigorous QC: real-time data alerts, research-grade archives.
- Climate signals can be discerned from decades of high-precision data.

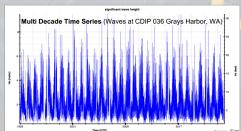










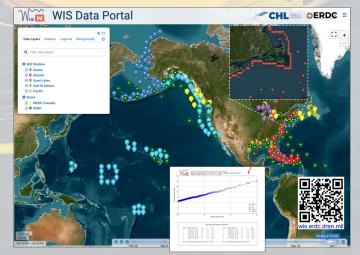


# September 23-25, 2024, Boulder, CO and virtual



#### WAVE INFORMATION STUDY

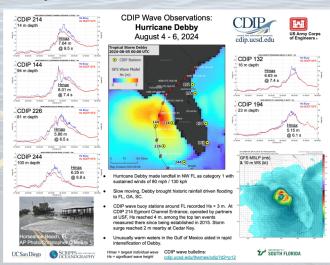
- Primary sponsor for CDIP is USACE.
- Data are used for evaluation of Wave Information Study (WIS).
- WIS provides a national resource of long-term wave climatologies for all US coastal waters to aid in the planning, design, construction, and maintenance of USACE projects along the US coastal zone.
- CDIP provides point source wave measurements at locations over time periods long enough to be statistically significant, which validates remotely measured and
- WIS provides high-quality coastal wave hindcast model estimates, extreme wave analyses products, and decision tools.
- Multi-decade hindcasts and storm event archives are generated to meet tomorrow's coastal engineering needs today.



#### Underwater cables Cloud computing Telephone modems Directional wave buoys introduced Surface current data Nine-track tapes Internet data dissemination Operational California wave model Printed reports 1980s 2000s 2020s 1970s 1990s Non-directional wave buoys Satellite communication Antifouling Sun workstations HF radio shore stations Air temperature data x86 PC data archive Calibration facility Individual wave archive Extreme wave event bulletins

#### **EXTREME EVENTS**

- Wave models commonly underestimate the most energetic wave events.
- · CDIP issues wave event bulletins to regional stakeholders following notable wave events: agencies, researchers, etc.



### CDIP STAFF 2024

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