Oceanographic Mooring Systems

compound synthetic solutions

Cortland's deepwater Oceanographic Mooring Line Systems are responsible for holding many of the world's most important data collection buoys in place. From offshore tsunami warnings to meteorological observations, our custom buoy mooring systems are designed and constructed to stay in position in harsh marine environments.

Each Cortland mooring line system is custom engineered to ensure full functionality and secure placement of the attached buoy. Mooring sections can be constructed to any length necessary using a wide array of synthetic high strength, low stretch, high modulus fibers, as well as more traditional Nylon or Polyester. Individual sections can also be either positively buoyant or weighted using a core of a lead string. Cortland's exclusive outer extruded jacket technology can also be added to reduce strumming or provide fish bite protection.

As a world leader in custom deepwater mooring line systems, Cortland has the experience and manufacturing capabilities to create exactly the type of mooring system needed for your application.

Acoustic Doppler Current Profiler
Tropical Atmosphere Ocean (TAO) Array Equatorial Moorings

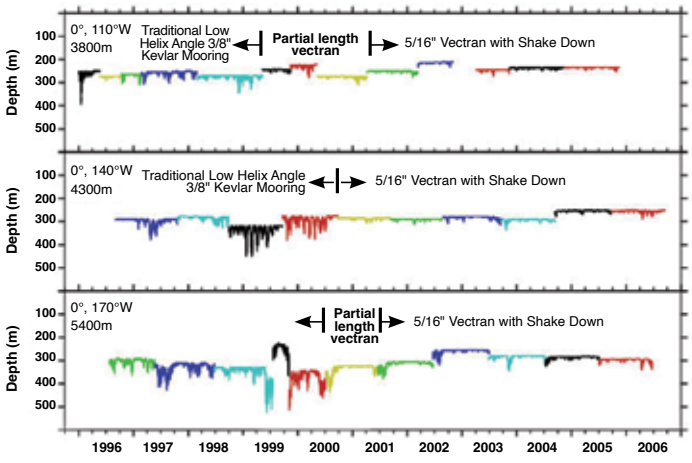
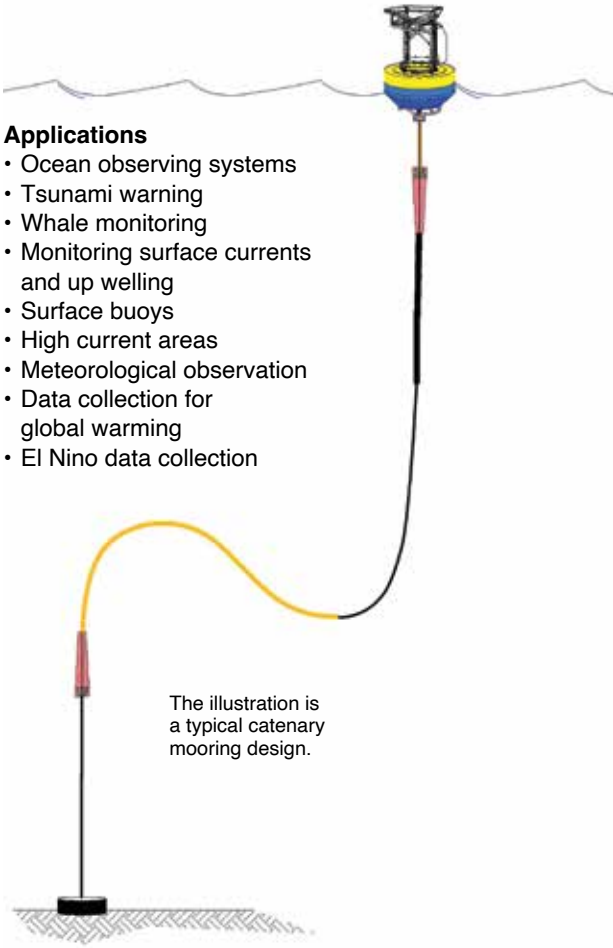


Chart furnished by NOAA, but does not constitute an endorsement of any commercial company or product.



Applications

- Ocean observing systems
- Tsunami warning
- Whale monitoring
- Monitoring surface currents and up welling
- Surface buoys
- High current areas
- Meteorological observation
- Data collection for global warming
- El Nino data collection

The illustration is a typical catenary mooring design.

In the 1990's, NOAA used traditional low helix angle Kevlar mooring lines on subsurface ADCP moorings. As this chart shows, vertical excursions of the subsurface mooring float, presumably due to drag on the mooring line, were at times relatively large. NOAA began switching to Vectran mooring lines with "Shake Down" extrusions in the late 90's and early 2000's. As this chart shows, the subsurface buoys experienced far less severe depth excursions after the change in mooring line.

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Oceanographic Mooring Systems

Design Options

Buoyant or Weighted Sections – Depending on need, sections can incorporated that are either positively buoyant or weighted. Weighted sections use an environmentally safe core of a “lead string” that is encapsulated in a watertight polyurethane jacket.

Reduced Strumming* – Cortland’s exclusive Rumsey Ridge™ extruded jacket is designed to reduce strumming when towed through water or moored in high currents. Proven in over 20 years of field use, Cortland’s Rumsey Ridge extrusion technology is more durable than hair fairing and is less troublesome during winching operations. Alternatively, Cortland can provide up to 4-sided hair fairings for continued compatibility with existing systems.

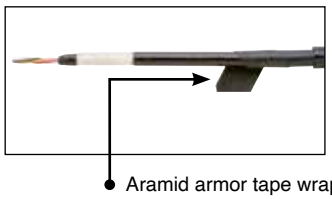
Rumsey Ridge™ extruded jacket

Shake-Down Cable Profile – From extruded jackets to hair fairings, there are many types of Shake-Down systems available. These profiles reduce water resistance to improve station keeping, minimize data “noise” interference and further limit strumming; these can be added to individual sections as needed. Towed mooring arrays also benefit from this technology.

Hair fairing

Fish Bite Protection – Our manufacturing techniques create a protective system cover that can be added anywhere along the system length to prevent marine life damage.

Fish bite pierced outer layer, but did not penetrate the aramid armor *(photo courtesy Woods Hole Oceanographic Institute)*



Aramid armor tape wrap for fish bite protection

Jacket Marking – Letters, numbers, or words can be printed on outer jackets for cable identification, and/or for depth measurement.

Jacket marking

No Diameter Change Transition Zones – Our manufacturing techniques can create a seamless transition between different system materials that eliminates bulky hardware connections. This reduces water flow resistance and allows for smooth deployment and retrieval operations.

Transitions with no diameter change

Molded Eye Splice Terminations – Factory installed eye splices eliminate field splices providing secure buoy and mooring anchor connection points.

Taut or Catenary System Geometry – Cortland can engineer taut (straight down) systems for depth control, or reverse catenary (curved) systems for high stretch and energy absorption applications.

Molded eye splice terminations

Electrical or Fiber Optic Functionality – No matter what the specific needs of your mooring system are, Cortland can incorporate the necessary supplied cable into the mooring system.

**Strumming: The vibration or “shake” of a cable caused by water flowing around it due to current or towing.*

For further information or a custom quotation,
email us at cortland@cortlandcompany.com.

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