HLY0404 Video Plankton Recorder Data

AUTHOR:
C. J. Ashjian and S.M Gallager
Department of Biology
Woods Hole Oceanographic Institution
Woods Hole, MA 02543
Tel: (508) 289-3457
Fax: (508) 457-2134
Email: cashjian@whoi.edu

DATA SET OVERVIEW:

Data were collected on cruise HLY0404 to the Chukchi and Beaufort Seas on the USCGC Healy from September 2 – October 1, 2004 as part of the Shelf Basin Interactions program. The primary sampling instrument was a self-contained, battery powered, single camera Auto Video Plankton Recorder (AutoVPR; SeaScan, Inc.) that was deployed from the stern of the ship in a stainless-steel cage. The AutoVPR records video image frames from a Pulnix TM7 CCD camera at 720 x 640 pixels at 30 Hz as a wavelet compressed data stream together with coincident data from a SeaBird SBE49 CTD operating at 10Hz. The image field of view was calibrated to 1.4 x 1.5 x 6.0 cm (length x width x depth) with a precision of $\pm$ 0.02 cm giving an image volume of 12.649 ml. With a vertical profiling speed of 0.5 ms^{-1}, a new image volume was recorded every 1.6 cm providing nearly contiguous vertical coverage by video information and CTD data at an interval of 5 cm. Profiles were conducted between the surface to 10 m off the bottom or to a maximum depth of 350 m. Immediately following a deployment, video files were down loaded from the internal PC104 computer to a desk top PC via Ethernet. Video files were decompressed and in-focus targets extracted as Regions of Interest (ROI) and written to disk as tagged interchange files (tif) using software provided with the instrument. Extracted images were identified to taxon or particle type automatically using the Woods Hole Oceanographic Institution developed program Visual Plankton (Davis et al., 2005) and merged by time with pressure, temperature, salinity, and density data from the CTD using Matlab (Mathworks, Inc.) routines. Average pressure, temperature, salinity, and density and taxon or particle concentrations (# L^{-1}) were calculated in 1-second intervals.

Thirty-seven deployments of the AutoVPR were conducted, of which thirty-six were analyzed (the unalyzed cast was conducted at a test station located outside of the primary study area). Twelve taxa or particle types were identified (terms in parentheses indicate codes used in the data for each category): algal mats (algalmat), appendicularians/larvaceans (appendicularians), Chaetoceros diatoms (chaetoc), copepods (copes), coil-shaped diatom chains (Diatoms_coils), rod-shaped diatom chains (Diatoms_rods), euphausiids (krill), marine snow (marsnow), medusae (medusae), nauplii (nauplii), radiolarians (radio), and polchaete worms (worms).

There is a single data file for each cast using the AutoVPR. The data files are named according to the cruise and station number. Station numbers correspond to those

in the event log. Header information notes the geographic location, time, and date of each cast as well as the variable in each column. Each data file contains the abundances of different taxa or particles, depending on those present at that location. Each data file contains data from both the up and down cast of the instrument. No correction for drag of water with the instrument during the upcast was made.

Davis, C.S., Thwaites, F.T., Gallager, S.M, Hu, Q. 2005. A three-axis fast-tow digital Video Plankton Recorder for rapid surveys of plankton taxa and hydrography. Limnology and Oceanography: Methods 3, 59-74.