(that included temperature and oxygen sensors) located 1 meter above the bottom, and a meteorological station. The clockwise circulation observed through day 214 (August 1) is due to internal inertial waves. The data show that the oxygen concentration decreased steadily until about noon on day 216 (August 3). Both the water temperature and the oxygen concentration then increased for about the next 24 hours, before declining again.

The short duration of the hypoxic episode illustrates the value of using real-time data provided by the ReCON buoys to trigger field sampling, since more traditional monitoring methods (using a small boat to go out once a week to measure the oxygen concentration, for example) would likely have missed the event. Recent studies have suggested that even short term hypoxic events in western Lake Erie can have adverse effects on benthic organisms [*Bridgeman et al.*, 2006].

The same Lake Erie ReCON station is also used to transfer hourly imagery. The pan and tilt internet camera, located 12.5 meters above the water level, has a horizontal field of view (FOV) of 71.3° and a vertical FOV of 53.1°. The camera is capable of providing image resolution up to 1280 by 960 pixels. During winter, ice imagery (Figure 2) is used to develop ice cover estimates for use by Great Lakes shipping. GLERL and Jet Propulsion Laboratory scientists have also used this winter imagery to provide ‘ground truth’ information for the development and validation of algorithms for satellite synthetic aperture radar (SAR) and scatterometer ice cover classification and mapping. Great Lakes ice cover information—including spatial coverage, concentration, ice type, thickness, freezeup and breakup dates, and ice duration—is a necessary input for ice control and ice breaking operations and ice forecasting and modeling efforts. In addition, ReCON provides real-time estimates of local conditions during cloud cover.

A separate ReCON node located on Lake Huron at the Thunder Bay National Marine Sanctuary (TBNMS) in Alpena, Mich., provides buoy-based streaming imagery of underwater historic artifacts and conventional composite video from a remotely operated vehicle (ROV) operated from the deck of a research vessel. The webcam is plugged directly into the underwater network hub connected to a surface buoy located approximately 16 kilometers offshore providing shipwreck observations to TBNMS visitors.

The system is also used to transfer audio and video over the Internet to multiple classrooms across the country for use in real-time ‘live dives’ providing historic and scientific educational opportunities. The composite video and audio signal from the ROV and scientific narrators on deck is digitally reduced in size using a hardware compression device. The compressed information is transferred over the Internet to host computers where it is restored to original quality for use with any video display device. Students and teachers in the classroom are then able to interact with onsite researchers using internet audio and text messaging techniques in wide use today.

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