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An Irminger Ring Mooring in the Labrador Sea

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In September 2007, a heavily instrumented mooring was deployed in the eastern Labrador Sea near 60.6N, 52.4W for two years to study the structure and evolution of warm Irminger Rings. The mooring was placed in the path of these rings, which drift southward from their formation site along the west coast of Greenland. The mooring has about nine Micro Cats and 8 acoustic current meters at depths between 100 and 3000 meters. Two carousels attached to the mooring at about 500 meters depth were loaded with 11 APEX profiling floats. A controller inside the carousels is programmed to release the floats, one at a time, into passing rings based on a time-dependent set of criteria. Initially, floats were released based on temperature and pressure, the latter an indication of the velocity associated with the passage of the core of a ring. Later, if only a few floats have been deployed, the criteria will be relaxed, and only a warm temperature anomaly will be required to release a float. If there are still floats in the carousels near the end of the deployment, they will be released at a prescribed time interval. After being released from the mooring, the floats are ballasted to "park" at 300 dbar and profile from 0-1000 dbar every five days. As of January 2009, five floats have released from the mooring, 2 by the dual T/P criteria, 2 by the T only criterion and 1 on a timer. A sixth float was released from the R/V Knorr during the mooring deployment cruise. So far, none of these floats have been strongly trapped in the core of an eddy, although there are frequent interactions with both cyclonic and anticyclonic eddies. One float observed a thick layer of cold, relatively fresh water near where the 2000-m isobath turns away from the Greenland slope during the spring of 2008 as it looped in and out of several cyclonic and anticyclonic eddies.