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Title: Pop-Up Buoys – Developing Low-Cost Instrumentation for Under-Ice Research

Abstract: Large ice keels, constantly shifting floes, and broad inaccessibility make data collection under sea ice notoriously difficult. PMEL’s “Pop-Up Buoys” have been designed to measure conditions directly under sea ice, especially during periods of break-up and melting, which play a critical role in shaping one of the world’s most highly productive ecosystems. The newest generation of instruments will collect daily images; measure temperature, depth, PAR, and fluorescence; and transmit all data to shore using Iridium Short Burst Data. We will discuss how a number of novel design elements have been integrated to create low-cost, high quality instruments and the challenges that have emerged throughout the process.