



*Arctic LTER monitors
Lake Toolik with PME and
Campbell Scientific gear*

Monitoring Mixing Dynamics and Water Quality in Alaska

Toolik Lake is 130 miles south of Prudhoe Bay in northern Alaska. It is one of the main monitoring sites of the Arctic Long-Term Ecological Research (LTER) project and a site for studies led by Sally MacIntyre of the University of California investigating the linkages between hydrodynamics and ecosystem function. Both studies are funded by the U.S. National Science Foundation. It is classified as a dimictic lake, meaning a lake that undergoes two mixing periods—one in the spring and one in the fall. The lake is thermally stratified during the summer since the sun warms the upper layers. A thermocline (a layer with a rapid change in temperature) separates the warm upper layer with the cold deeper layers. The lake is ice-covered in winter.

Toolik Lake is a Global Lakes Ecological Observatory Network (GLEON) site. At present, there are 22 sites worldwide, with new members joining each year. The goal is for all sites to be instrumented with thermistor chains combined with meteorological stations, transmitting data in real time to a central computing facility. Ideally, oxygen will also be measured in real time at these sites.

In an effort to better understand Lake Toolik's mixing dynamics, a T-Chain (vertical series of temperature sensors, from Precision Measurement Engineering, Inc.) was installed in conjunction with a Campbell CR10X datalogger. (The T-Chain can also interface with our CR1000 and CR800 dataloggers.)

APPLICATION AT A GLANCE

Application type

Monitoring lake heat content and water column mixing

Project area

Toolik Lake, Alaska

Contributors

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Datalogger used

CR10X

Measured parameters

Water temperature at various depths

