

# Freshwater variability in the Arctic: Tracing freshwater sources and quantities

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The Switchyard project has gathered data across the Canadian Basin to be measured for multiple constituents determine the freshwater variability of the Arctic. Freshwater in the Arctic can be traced to origins of Pacific freshwater, meteoric (river runoff and precipitation), or sea ice melt water. With a database of the project extending to 2005 as well as adopting other projects' data to date back further, we can view trends and visualize changes in the freshwater content of the Arctic. In the past decade the Arctic has experienced increases in freshwater with the largest increases from meteoric fractions. In 2008 there was a major increase in meteoric fractions and decreases in Pacific freshwater fractions. As Jones and others [2008] have observed, freshwater inventories across the Canadian Basin vary over the years and show a relationship in the mixed layer of increasing when the Arctic Oscillation (AO) is positive and the Beaufort Gyre weakened and decreasing when the AO is negative and freshwater is entrained in the gyre. Increases in the quantity of freshwater in the Arctic could lead to greater freshwater exports to the North Atlantic Ocean. This can inhibit the formation of North Atlantic Deep Water and so effect the global thermohaline circulation [Morison et al. 1998] which moderates much of our planet's climate.