# Harry Elderfield: a brief scientific biography

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Harry Elderfield collected data, and offered interpretations, that greatly enhanced our knowledge of the (bio)geochemistry of seawater and the role of the oceans in global climate change. Early in his career, Harry studied IR absorption spectra of minerals found in deep-sea sediments, marine manganese geochemistry, long-distance dust transport, seawater-basalt reactions in hydrothermal systems, and iodine geochemistry. Some of these topics were to receive great attention in later years.

Around 1980, Harry pioneered research on seawater strontium concentrations and isotopes. He also began an extensive program to measure and understand variations in seawater concentrations of rare earth elements.

A decade later, Harry turned attention to seawater-basalt reactions. With Kastner, he examined the composition of subduction zone waters squeezed out of the sediment. He also began studies of the geochemistry of hydrothermal processes along the crest of the Mid-Atlantic Ridge. He extended this work to include ridge-flank hydrothermal processes, most notably carrying out a classic study of seawater-basalt interactions on the flank of the Juan de Fuca Ridge.

Around the turn of the century, Harry began work on proxy reconstructions of ocean circulation and chemistry. He and his collaborators advanced the use of Mg/Ca and B/Ca ratios in foraminifera for reconstructing histories of seawater temperature and bottom water carbonate ion concentration. The temporal focus was often the last glacial cycle, and the domains extended from the North Atlantic to the tropics to the Southern Ocean. Perhaps most influential was his paper showing an abupt decrease in glacial temperatures at ~900 ka, but his group obtained many other important results.

Harry contributed by organizing influential meetings, by editing, and especially by mentoring a cadre of students and postdocs who have gone on to impressive careers of their own.