

# **Atmospheric noble gas ratios as a whole-ocean thermometer: advances and nuances of the mean ocean temperature ice core proxy**

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Due to their chemical inertness, noble gases are valuable tracers of (thermo)dynamic processes. The partitioning of krypton and xenon between the ocean and the atmosphere is controlled by their unique temperature-dependent solubilities in seawater. It is under this principle that the mean ocean temperature proxy was established from measurements of atmospheric noble gas ratios in ice cores (Headly & Severinghaus, 2007). Since its development, advances in analytical techniques and new ice core records have enabled the reconstruction of high precision, high resolution mean ocean temperature records. In this presentation, we will discuss the physical basis of the proxy, some of the recent advances and applications, as well as challenges in the interpretations of these noble gas records.