# Characterization of Glacially Derived Sediments in the Eastern Weddell Sea: $^{40}Ar/^{39}Ar$ Age Distributions of Hornblende Grains

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East Antarctic Ice Sheet dynamics are an important area of study in the field of paleoclimate today. As the current trend of increasing average global temperature continues, it becomes ever more important to understand the current and past dynamics of the Antarctic Ice Sheet. The purpose of this project is to learn more about the subglacial geology around the Eastern Weddell Sea and by doing so characterize the source areas of ice rafted detritus in an effort to support future research to reconstruct past ice sheet dynamics. The relatively high closure temperature of hornblende (~500ºC) records the last major tectonothermal event to effect a body of Antarctic rock such as orogenic metamorphism or, often, initial crystallization from magma. This allows for K/Ar dating, using the $^{40}Ar/^{39}Ar$ method, of hornblende grains from glacially derived sediments or ice rafted detritus deposited on the Southern Ocean floor. Then a comparison of their ages to those of known rock outcrops can be made to determine provenance. Here we use the $^{40}Ar/^{39}Ar$ method to date detrital hornblende from ten cores (eight of them from the Eastern Weddell Sea and off the coast of Dronning Maud Land). $^{40}Ar/^{39}Ar$ hornblende ages are consistent with limited on-land ages showing dominant populations of 25-100 Ma, 400-600 Ma, 900-1100 Ma, and 2800-3200 Ma. Through examining the Antarctic geological literature and the $^{40}Ar/^{39}Ar$ ages of the hornblende grains, we are able to simply interpret the source of most of the grains from the glacially derived sediment as locally derived.