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[Mg/Ca Paleothermometry in the Central Gulf of Cadiz During Heinrich Events](#)

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During the last glacial and deglacial period (16kya-46kya), the Iberian Margin experienced local sea surface temperature fluctuations as a result of melting icebergs from catastrophic calvings of the Laurentide Ice Sheet (Heinrich Events). Using Mg/Ca in species of planktonic foraminifera, we are reconstructing temperature for Heinrich Events one (H1), four (H4) and five (H5) from core MD99 2339 in the Gulf of Cadiz (35.88°N; 7.53°W, 1170m). Locally, all three of these events are quite intense showing O-18 excursions of approximately 1.5 parts per mil. Low Mg/Ca values during the Heinrich Events imply significant local and possibly regional cooling. For example, temperatures derived from Mg/Ca during H1 show a temperature oscillation of approximately 7°C between the start and end of the Heinrich Event. While this is a large temperature oscillation, it is of slightly smaller amplitude than the 11°C swing implied by assemblage data for winters (Voelker et al., 2006). By comparing a suite of temperature proxies in the same region (Mg/Ca, planktonic foraminiferal assemblage data and alkenones), we hope to better constrain the climate fluctuations during these time periods as well as gain insight into secondary environmental effects that complicate interpretation of the proxies strictly as temperature. Mg/Ca variations through an entire Heinrich event imply that temperatures in this subtropical region are quite variable and highly dependent on the amount of subpolar waters advected into the Gulf. Using multiple species of foraminifera, we are now attempting to construct a vertical temperature profile prior to, during and after the episode to get a better indication of the penetration of colder temperatures - although investigations are challenging due to low absolute foraminiferal abundances surrounding Heinrich events. Looking at Cd/Ca, we also have new clues about nutrient changes during these time periods, which we hope will lead to a more complete picture of the local and regional environment during Heinrich Events.

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