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218-6: PALEOENVIRONMENTAL CHANGE RECORDED IN THE MAGNETIC PROPERTIES OF MARINE SEDIMENTS CORED OFF THE MARGIN OF SPAIN AND PORTUGAL DURING IODP EXPEDITION 339

Tuesday, 24 October 2017
09:15 AM - 09:30 AM
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Integrated Ocean Drilling Program (IODP) Expedition 339 cored multiple sites along the Iberian Margin to investigate the paleoclimatic influence of discharge of warm and salty Mediterranean Outflow Water (MOW) into the Atlantic Ocean. As the MOW current flowed out of the Straits of Gibraltar and along the Iberian Peninsula, it deposited sediments, which have accumulated over the past 5 million years into thick sedimentary sections. The strength and position of the MOW current through time can be reconstructed using proxy data such as changes in sediment grain size and composition. In this study, we use magnetic susceptibility, anhysteretic remanent magnetization, and hysteresis properties of samples from drill cores collected at Sites U1386 and U1387 to estimate how magnetic grain size, magnetic concentration, and magnetic composition changes through time at these sites. Magnetic concentration highs correlate with Heinrich events and the lows correlate with Greenland interstadials. These peaks and troughs can be further correlated among the other Expedition 339 sites down to depths of about 100 meters below seafloor, spanning about the past 250 k.y., allowing comparison of paleocurrent strength and position along the Iberian Margin through time. As with the physical grain size, coarser magnetic grain sizes are associated with turbiditic intervals, which are deposited when MOW current speeds were high. Superparamagnetic grains, which have diameters less than about 30 nanometers, only have significant concentrations in the upper 30 m or so of the stratigraphic sections. Their abundance appears to be controlled mostly by reduction diagenesis, which acts progressively downhole eventually altering a significant proportion of iron oxide grains of all sizes into iron sulfides. This is evidenced by the downhole decrease in the bulk susceptibility, particularly in the upper 100 m or so of the stratigraphic sections.

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