

Relationships between lithology and chemical properties: mining the IODP databas

LAUREL B CHILDRESS, GARY ACTON, VINCENT P PERCUOCO AND MARGARET HASTEDT

International Ocean Discovery Program/Texas A&M University
Presenting Author: childress@iodp.tamu.edu

During each International Ocean Discovery Program (IODP) expedition a vast array of data, typically amounting to hundreds of gigabytes to several terabytes of information, are collected from drill cores. These data include organic and inorganic geochemical analyses such as carbonate, organic carbon, nitrogen, and sulfur content, and interstitial water measurements of pH, alkalinity, nutrients, numerous cations and anions, and major and minor elemental constituents. Hydrocarbon data are also collected for safety monitoring and data can include source, amount and maturity of organic matter. Additionally, since 2009, core description data is collected in a digital tabular data format and is accessible through the Laboratory Information Management System (LIMS) database for over 85 km of core. These descriptions include major and minor lithologies, color, and a wide variety of other descriptive information, such as bioturbation and drilling disturbance. As part of an ongoing study to mine the physical, chemical, and magnetic properties of the IODP database for interconnections, here we investigate the relationships between lithologic observations and geochemical data. With a wide variety of lithologies tied to geochemical parameters, global and regional trends are discernable and furthermore, connections between geochemical, physical, and magnetic properties not determinable in the current data structure can be made across a wide variety of environmental and lithologic settings.