CoreWall: A Scalable Interactive Tool for Visual Core Description, Data Visualization, and Stratigraphic Correlation

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A primary need for studies of sediment, ice and rock cores is an integrated environment for visual core description. CoreWall is a tool that uses digital line-scan images of split-core surfaces as the fundamental template for all sediment descriptive work. Textual and image annotations support description about structures, lithologic variation, macroscopic grain size variation, bioturbation intensity, chemical composition, and micropaleontology at points of interest registered within the core image itself. The integration of core-section images with discrete data streams and nested annotations provide a robust approach to the description of sediment and rock cores. This project provides for the real-time and/or simultaneous display of multiple integrated databases, with all the data rectified (co-registered) to the fundamental template of the core image. This visualization tool enables rapid multidisciplinary interpretation during the Initial Core Description process.

A prototype computer environment for working with the high-resolution data is the Personal GeoWall-2, a single computer used to drive six tiled LCD screens. As a wideband display, the Personal GeoWall-2 can show more content then a single display system. This new visualization tool is both scaleable and portable from the Personal GeoWall-2 environment down to a single screen driven by a laptop computer. Using the screen resolution, core sections are drawn at a life size scale with both core and downhole wireline logging data drawn alongside. Using standard computer interfaces, individuals can pan through meters of core imagery and data, annotating along the length of the core itself. They can zoom in on a high-resolution core image to see details that appear under the proper lighting in which the images were taken. Using the Internet, CoreWall can retrieve images and data files from remote databases or web portals/services, such as CHRONOS, allowing individuals from ship to shore to look at data and annotations in near real time. Using a plug-in system, CoreWall will gain added functionality by porting legacy software such as IODP's Splicer/Sagan, accessing multiple databases (i.e. Janus, Chronos, dbSeabed, Rigde, Andrill, ICDP etc.), and enhancing description of cores and collaborative capabilities.