CoreWall – integrated environment for interpretation of geoscientific data from sediment, ice, and crystalline cores

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The CoreWall Suite is an integrated environment for real-time stratigraphic correlation, core description and data visualization to be used by the marine, terrestrial and Antarctic science communities. The tools are being developed to work with marine, lake, and polar studies of sediment and rock cores.

Within the last few years, digital images of cores, microfossils, thin sections, etc. are being routinely collected, replacing traditional photography. This dramatic change to digital imagery is creating a huge change and opportunity in the way scientific measurements are captured, collected, analyzed, and distributed by the scientific community. These images provide the fundamental template for all sediment descriptive work, including annotations about structures, lithologic variation, macroscopic grain size variation, bioturbation intensity, chemical composition, and micropaleontology, among other features. Hard-rock visual core descriptions have corresponding requirements. The integration of core-section images with discrete data streams and 'nested' images (e.g., smear slides, photomicrographs, thin sections) provides a robust approach to the description of sediment and rock cores. Integration of value-added data, later acquired in a timely manner by individuals and teams of scientists is another major priority. 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, is sorely needed to expedite the process that currently takes months to

years. The cost of wasted time and lost opportunity for science caused by the lack of integrated data and image management is enormous and the challenge exists for all current geoscience coring programs.

The central component of the CoreWall Suite is the Core Workflow Database whose role is to intercept queries from end-users and retrieve the relevant pieces of data and meta-data, and stage it for rapid and frequent access by the users. CoreClip enables the ability to see all of these data in a common visualization environment requires adequate space to be available on the screen - much more than can be provided by workstation monitors - as s one well as sufficient resolution to compare several individual environmental signals spanning 10s of meters of core in multiple holes at the same time. Corelyzer integrates all of the core-based data within one platform independent visualization environment. CoreNavigator allows users to browse (and literally fly) through the available data-sets in the proper topographic-geographic and subsurface-context using the stereoscopic capabilities of the Personal GeoWall-2

The work model forged by the CoreWall Suite will significantly alter and enhance the current approaches used for core description and analysis of sediment and rock cores by providing an integrated environment for these activities, for both field and repository environments.

The development of the CoreWall Suite is being carried out in broad collaboration with JOI-Alliance, ANDRILL, LacCore and DOSECC and the database projects JANUS, CHRONOS, PetDB, SedDB, and USGS/ONR supported dbSEABED.