
Volume Fractions of Lithologic Units Deposited per Geologic Epoch in the Cenozoic, Keathley Canyon and Walker Ridge, Deepwater Gulf of Mexico: Part 1—Sand, Shale, and Siltstone

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GCAGS Explore & Discover Article #00318*

http://www.gcags.org/exploreanddiscover/2018/00318_cornelius_and_emmet.pdf

Posted September 29, 2018.

*Article based on a full paper published in the *GCAGS Journal* (see footnote reference below), which is available at www.gcags.org.

ABSTRACT

Borehole mudlog data from 80 wells in conjunction with 35 paleontological reports are used to define Cenozoic geological epochs within each borehole, both above and below the allochthonous salt canopy where salt is present. Isochore contour maps show how sediment depositional volumes vary within the study area on a per epoch (Paleocene, Eocene, Oligocene, Miocene, Pliocene, and Pleistocene) basis. The volume fractions of sandstone, shale, siltstone, limestone, and marl were also calculated by epoch, and contoured on a regional basis to understand the changes in the regional distribution of lithologies through time. These maps show how local deposition compares on a regional basis; and how depositional patterns change over the Cenozoic era. From the Paleocene to the Pleistocene, the volume fraction of sandstone in the study area has continuously decreased while during the same time period, the volume fraction of shale has increased. Sand volume fractions appear to have an inverse relationship with both shale and siltstone, meaning where there is a large volume fraction of sandstone present, the volume fraction of both shale and siltstone will be small. Volcanic tuff is present in fourteen wells, but there is insufficient data to map the regional distribution of volcanic tuff that is either Miocene, Oligocene, or Eocene in age according to the paleontological age of encasing sediments. In Part 1, the distribution and depositional histories of sandstone, shale and siltstone are discussed and in Part 2 the distribution and depositional history of Cenozoic limestone and marl is discussed.

Originally published as: Cornelius, S., and P. A. Emmet, 2018, Volume fractions of lithologic units deposited per geologic epoch in the Cenozoic, Keathley Canyon and Walker Ridge, deepwater Gulf of Mexico: Part 1—Sand, shale, and siltstone: Gulf Coast Association of Geological Societies Journal, v. 7, p. 121–150.