
Integrated Stratigraphy of the Austin Chalk Group across the San Marcos Arch, Bexar County, Texas

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GCAGS Explore & Discover Article #00057*

http://www.gcags.org/exploreanddiscover/2016/00057_cooper_et_al.pdf

Posted September 13, 2016.

*Article based on an extended abstract published in the *GCAGS Transactions* (see footnote reference below), which is available as part of the entire 2016 *GCAGS Transactions* volume via the GCAGS Bookstore at the Bureau of Economic Geology (www.beg.utexas.edu) or as an individual document via AAPG Datapages, Inc. (www.datapages.com), and delivered a poster presentation at the 66th Annual GCAGS Convention and 63rd Annual GCSSEPM Meeting in Corpus Christi, Texas, September 18–20, 2016.

EXTENDED ABSTRACT

The Cretaceous Period was punctuated by a series of perturbations of the global carbon cycle that culminated in the installation of oceanic anoxia and affected marine ecosystems (Schlanger and Jenkyns, 1976; Weissert et al., 1998; Erba, 2004; Weissert and Erba, 2004). One of these oceanic anoxic events (OAE), the OAE3, developed during the Coniacian to early Campanian time period and lasted for almost 5 Myr, although its extent is regional compared to other OAEs, such as the OAE2 at the Cenomanian – Turonian boundary (Wagner et al., 2004; Locklair et al., 2011; Wagreich, 2012). The OAE3 is depicted by a series of 5 short-amplitude, high-frequency positive peaks in the evolution of carbon stable isotope ($\delta^{13}\text{C}$; Wagreich, 2009). During this part of the Late Cretaceous, the epicontinental Western Interior Seaway covered central Texas, resulting in the deposition of a thick series of fine-grained carbonate sediments known as the Austin Chalk. Despite a relatively well-constrained biostratigraphic framework (e.g., Young, 1963; Pessagno, 1969; Jiang, 1989; Lundquist, 2000), the Austin Chalk lacks a robust integrated stratigraphic framework in which the impact of the aforementioned paleoenvironmental crisis as well as more local parameters (e.g., local submarine topography, nutrient and detrital input) on carbonate bio- and lithofacies could be assessed.

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