

INTERPRETING GLAUCONY AND ASSOCIATED DEPOSITS: STATE OF THE ART

AMOROSI, A. Dipartimento di Scienze della Terra e Geologico-Ambientali, University of Bologna, Italy

Glaucony is an authigenic marine component that is commonly used as an indicator of stratigraphic condensation. Despite the abundant literature on glaucony, the construction of a detailed predictive framework of glaucony distribution within depositional sequences is still a matter of debate. The reasons for this include: i) lack or scarcity of information about abundance, maturity, and spatial/temporal attributes of glaucony, and ii) equivocal sequence stratigraphic interpretations of glaucony-bearing deposits, due to misapplications and abuses of sequence stratigraphic concepts. Evidence from Cretaceous to Quaternary glaucony-bearing deposits shows that an additional key point to decipher the significance of glaucony in the stratigraphic record is the relationship between covariant attributes of autochthonous glaucony and the hierarchy of the associated depositional units, which enables the identification of three distinct kinds of deposits: i) glaucony-bearing horizons including poorly evolved glaucony can be encountered throughout the depositional sequence and are associated to local breaks in sedimentation, ii) glaucony-rich horizons including evolved glaucony generally mark the major sites of condensation within the depositional sequence (MFS and TS), iii) thick deposits hosting high amounts of highly evolved glaucony ("glauconites") represent complex, laterally extensive condensed intervals corresponding to significant portions of one or more third-order depositional sequences. The use of glaucony-rich horizons and glauconites as reliable stratigraphic markers provides a fundamental operational tool for the stratigraphic subdivision of sedimentary successions. The cyclic units identified on the basis of glaucony distribution appear to fit the transgressive-regressive and genetic stratigraphic sequence models much better than the traditional Exxon models.