



A Critical Assessment of Current Sequence Stratigraphic Models

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Abstract

The lack of formal inclusion of sequence stratigraphic concepts in the current international stratigraphic codes may be attributed largely to trivial differences in terminology and the style of conceptual packaging of the rock record into sequences and systems tracts. The choice of how we name the packages of strata between specific sequence stratigraphic surfaces varies with the model, which is why the systems tract nomenclature becomes less important than the correct identification of the type of shoreline shift that is associated with that particular package of strata. Even the selection of what surface (or set of surfaces) should serve as the 'sequence boundary' becomes subjective and trivial to some extent, as the correct interpretation of sequence stratigraphic surfaces and of the origin of strata that separate them is far more important for the success of the sequence stratigraphic method. Irrespective of the model of choice, the 'pulse' of sequence stratigraphy is fundamentally represented by *shoreline shifts*, whose type and timing control the formation of all genetic packages of strata (systems tracts) and bounding surfaces. Beyond nomenclatural preferences, each stage of shoreline shift (normal regression, forced regression, transgression) corresponds to the formation of a systems tract with unique characteristics in terms of the nature of processes and products across a sedimentary basin. These fundamental principles are common among all models, and allow for a unified sequence stratigraphic approach. Finding the common ground between the various 'schools' is the key for making real progress towards standardizing the fundamental concepts of sequence stratigraphy.