

Appendix 1.

Straub et al. (2009) developed a quantitative metric for the detection of compensational stacking of sedimentary successions based on their proposal that the standard deviation of the sedimentation rate (σ_{ss}) of deposits obeys a power-law function within a given measurement time window. Uramoto and Seike (2012) modified the Straub method for the σ_{ss} measurement of discretized terrestrial outcrop data:

$$\sigma_{ss}(T_k) = \left(\frac{1}{N} \sum_{j=1}^N \left[\frac{\frac{h(T_k; x_j, y_j)}{\hat{h}_h}}{\frac{H(x_j, y_j)}{\hat{H}_h}} - 1 \right]^2 \right)^{1/2} \quad (1)$$

$$\sigma_{ss}(T) = aT_k^{-\kappa} \quad (2)$$

where N is the number of measured sections, \hat{h}_h is the accumulated thickness of hemipelagic mudstone, x_j and y_j are horizontal coordinates, $h(T_k; x_j, y_j)$ is the thickness of the analyzed sedimentary succession at locality (x_j, y_j) , T_k is the stratigraphic time difference (measurement time window), $H(x_j, y_j)$ is the total thickness of the analyzed sedimentary succession at locality (x_j, y_j) , \hat{H}_h is the total thickness of hemipelagic mudstone in the analyzed sedimentary succession, $h(T_k; x_j, y_j)/\hat{h}_h$ is the average sedimentation rate measured over the T_k , $H(x_j, y_j)/\hat{H}_h$ is the long-term averaged sedimentation rate, a is the coefficient (>0), and κ is the exponent in the power law, termed compensation index. κ can be a quantitative indicator of the degree of compensational stacking, where $\kappa = 1.0$ for perfect compensational stacking, $\kappa = 0.5$ for random stacking, and $\kappa = 0$ for anti-compensational stacking.

Uramoto and Seike (2012) modified the stratigraphic time difference and calculated σ_{ss} based on the detection of precise time lines within the studied succession. In the deep marine turbidite systems, the settling processes of hemipelagic mudstones can be assumed to be uniform throughout a sedimentary basin, meaning that the thickness of hemipelagic mudstone can be regarded as a linear timeline. We calculated σ_{ss} by substituting the measurement time window T_k for \hat{h}_h and obtained the ratio of the accumulated thickness of the sedimentary succession to the accumulated thickness of hemipelagite. We then obtained κ and the associated standard error by fitting the calculated σ_{ss} with a power-law trend line. We used the maximum value of \hat{h}_h among the measured sections as a stratigraphic time difference for localized erosion of hemipelagite which may be related to the depositional processes of sheet-like turbidite.