Mathematical evaluation of the benthic larger foraminifera transport.

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During the last decade, several depositional models have been proposed to give advantages in understanding the paleoecology, paleoenvironment and biology of nummulitids. Many outcrops with giant *Nummulites* and *Assilina* or the large foraminifera distribution on a slope or ramp, are still a question mark on many aspects. Many theories take into account only the biological aspect and partially the foraminifera distribution acted by *post mortem* events. The hydrodynamic approach seems to complete the biological one and seems to fit the models for the different depositions of large foraminifera.

Hydrodynamics controls the transport and the accumulation rate of sediment, and indirectly, the diversity and the ecology of benthic communities. In order to determine the maximum post-depositional current velocity from the distribution of foraminifera, the erosion velocity and the maximum transport velocity must be known.

Erosional velocity is only weakly correlated with grain size and do not correlate well with various shape factors. Thus, the mathematical evaluation of the maximum transport velocity (maximum settling velocity) can be used to understand the hydrodynamic distribution of foraminifera both in recent and in fossil environments.

The calculation of hydrodynamic parameters could approximately explain the “particle” answer to an energetic input, could quantify the post mortem transport and the paleodepth of every test depending on the environment where it lived.

Thus, combining the form and intensity of energy input with the hydrodynamic response of the test, will give an upgrade on the paleoenvironmental reconstruction in terms of physical variables and the geographic setting in each area.

Considering both the ecological and the biological approach together with the transport function, a larger foraminifera depth estimation is now possible for every environment.