

## HOW HYPERPYCNAL DEPOSITS AND SURGE-LIKE TURBIDITES COEXIST? AN EXAMPLE FROM THE OLIGOCENE MONASTERO FM. (TERTIARY PIEDMONT BASIN, NW ITALY)

**Simone Reguzzi<sup>1\*</sup>◊, Mattia Marini<sup>2</sup>, Fabrizio Felletti<sup>2</sup>, and Massimo Rossi<sup>3</sup>**

<sup>1</sup>Eni Natural Resources, ENI S.p.A., San Donato Milanese, 20097, Italy

<sup>2</sup>University of Milan, Department of Earth Sciences "A. Desio", 20133 Milan, Italy

<sup>3</sup>University of Milan-Bicocca, Department of Environment and Earth Sciences, 26900 Lodi, Italy

\*Corresponding Author: [simone.reguzzi@eni.com](mailto:simone.reguzzi@eni.com)

◊Presenter

### ABSTRACT

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Although poorly studied in the sedimentary record, deposits of sediment gravity flows generated at river mouths are being increasingly recognised as an important component of deep-water clastic successions. Yet, distinguishing them from surge-like turbidites might be problematic and requires accurate facies and architectural analyses besides the thorough contextualisation within the palaeodepositional framework.

This contribution focusses on 1100 m-thick succession of the Monastero Fm. (Rupelian, MF hereafter), which crops out in the eastern Tertiary Piedmont Basin (NW Italy), representing the fill of a partly confined basin supplied with sediments by coeval conglomeratic fan-deltas.

Facies analysis of representative sections shows that nearly 65% of the MF thickness is constituted by thin-bedded medium/fine-grained normally graded sandstones fining up into mud caps with repeated grain size breaks and sedimentary structures. This facies forms the background of volumetrically subordinate coarse-grained and thicker-bedded amalgamated sandstone sheets and erosional-based lenticularly-shaped gravel bodies (lobe and channel deposits, respectively).

Correlations and relative facies proportions indicate that the background facies is hardly interpretable as laterally equivalent to coarser-grained facies (e.g., turbidite lobe fringes or levees), and hardly matches with short-lived surge-type flow models. Rather, repeated normal grading, grain size breaks, and sedimentary structures suggest deposition by long-lived pulsating flows of hyperpycnal origin.

Several lines of evidence indicate MF was deposited on a laterally confined clastic ramp supplied with sediments by multiple entry points that conveyed hyperpycnal flows and, subordinately (at times of high-sediment input and/or degradation of up-dip sections of the system) more classical surge-like turbidity currents. Ongoing research on MF seeks to provide criteria for distinguishing hyperpycnal deposits from classical surge-like turbidites and assess whether the two can coexist as a result of parent flow transformations.