



## **Magnetostratigraphic study of a continental succession in the Alessandria Basin: contribution to the chronological reconstruction of the Pliocene-Pleistocene transition in Northern Italy.**

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In this work we present the results of a detailed magnetostratigraphic study carried out on fine-grained lenses of a fluvial succession, exposed in the southern border of the Alessandria Basin (NW Italy), of Plio-Quaternary age. The studied succession mainly consists of coarse sands and gravels. Several fine-grained lenses, related to abandoned channels, also occur.

For palaeomagnetic analyses, five laminated clayey and silty lenses were sampled, following a systematic 5-10 cm sampling interval. All samples were oriented in situ using a magnetic compass and an inclinometer. Isothermal remanent magnetization measurements show that for most of the samples saturation is reached at low applied fields, varying from 0.3 to 0.4 T, indicating the presence of a low-coercivity mineral such as magnetite. No systematic variation of the magnetic properties along the whole section has been registered, except for samples coming 8.5 to 10 m from the base of the fluvial succession, where the presence of sulphurs such as greigite has been identified. All samples were systematically stepwise demagnetized in alternating field (AF) following 7 to 9 steps in the range 5 to 80 mT. AF demagnetizations show that in most cases the NRM consists of a soft, low-coercivity component erased at around 10-15 mT, probably of viscous origin, and a more stable component isolated from 15 to 60 mT that can be confidently considered as the Characteristic Remanent Magnetization (ChRM).

Interpretation of the demagnetization results based on principal component analysis shows a polarity reversal for the upper part of the section, while the lower part of the section is characterized by normal polarities. The results from the part of the section where the presence of greigite has been identified have not been taken into consideration as they may be unreliable due to remagnetization procedures.

The obtained palaeomagnetic data, combined with stratigraphic and biostratigraphic evidences, suggest that the normal polarity detected in the lower portion of the section can be ascribed to the upper part of the Gauss epoch (i.e. latest Piacenzian) as also supported by the macroflora and pollen assemblages. As a consequence the inversion detected in the upper portion can be ascribed to the Matuyama epoch (Reunion or at most Olduvai), since the stratigraphic distribution of many taxa in the macroflora and in the mollusk assemblages do not reach the Calabrian.

The magnetostratigraphic analyses combined with biostratigraphic data further restrict the age interval of the succession to the late Piacenzian and the middle/upper part of the Gelasian.