4.1.P13

Geochemical and mineralogical sedimentary palaeoenvironmental records in the Douro estuary - Portugal

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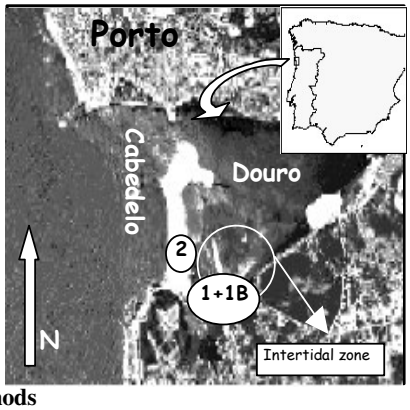
Introduction

A study on the stratigraphic succession of the sedimentary record of Douro estuary is being carried out aiming the recognition and distinction of the environmental changes, which have occurred during the Late Quaternary. Chemical and mineralogical variations in sediment fragments down to -40m depth are used to characterise the sediment distribution patterns and allow to recognise and evaluate some temporal changes occurred during the last 14000 years.



Methods

Cores were sampled by rotary drilling in the barrier of the Douro estuary. Around 60 sub-samples were selected for chemical (EDXRF and INAA) and mineralogical (X-Ray Diffraction) analysis.

Results and Discussion

Elemental and mineralogical distribution patterns, including, Al, K, Ca, Ti, Sr, Zr, REE, feldspars, carbonates and clay minerals evidenced the granitic nature of the studied sediment records. Distribution patterns of particular elements (Al, Si; Ti, Zr; K, Rb; Ca, Sr) and minerals give relevant information on the identification of sedimentary sequences along the core. An anomalous Ca, Sr and carbonate enrichment, measured at a core depth ranging from -20.5 to -22.7m, is indicative of a marine influence. A consistent Eu depletion observed in the REE normalised (NASC) distribution patterns is due to chemical fractionation related to the K-rich granitic rocks.

4.1.P14

The carbon and oxygen isotopic characteristics of the Cambrian carbonate rocks in Jiangshan, Zhejiang, China and its paleo-environment significance

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The studied carbonate rocks were collected from the classic section of Cambrian and lower Ordovician at Duibian of Jiangshan, Zhejiang, China. Variation range of $\delta^{13}C$ and $\delta^{18}O$ are respectively -1.9‰—3.7‰, -13.0‰—-1.3‰, and their average are 0.86‰ and -9.76‰, respectively. The shape of the strata curve of Carbon and Oxygen isotopes resembles with that of isotopes curve in the geological time given by Veizer J. *et al*. (1986)[1]. No obvious shift of $\delta^{13}C$ and $\delta^{18}O$ was found near the borderline between Cambrian and Ordovician. The strata curve of $\delta^{13}C$ has characterized with obvious cyclicity variety. Dachenling Formation's and Yangliugang Formation's cyclic evolution coincide with the variation curve of sea level inferred by outcrop sequence stratigraphy. The deepening of sea-water conform to the peak of $\delta^{13}C$ value. An obvious positive excursion happened in the early stage of late Cambrian (lower part of Huayansi Formation). It conforms to the SPICE (The Steptoean Positive Carbon Isotope Excursion) from the report of Matthew R.S. *et al*.(2000)[2], which was found in Middle-East of Nevada of USA, Malyi Karatau of Kazakhstan, North-west of Queensland of Australia, Wa`ergang of Taoyuan in the west part of Hunan Province of China, and coincides with the peak of carbon isotopes evolution curve from Veizer J. *et al*. (1986)[1]. It is a case in point of global positive excursion of carbon isotopes in late Cambrian.

References

[1] Veizer J, Fritz P, Jones B.(1986) *GCA* **50**, 1679-1691.
[2] Matthew R. S., Robert L. R., M.D. Brasier, Kyger C. L., Richard A. R., W.T. Chang, Shanchi Peng, E.K. Ergaliev, Bruce Runnegar (2000) *Palaeogeography, Palaeoclimatology, Palaeoecology* **162**,211-223.