



## **Searching for hidden Mesozoic crust in the magnetic data and implications for the plate motions and oceanic production rates**

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The oldest oceanic crust preserved today is of Mesozoic age (around 180 million years), but not all the old oceanic crust is properly identified and mapped. New data and techniques collected and developed in the last few years prompted the scientists to re-evaluate the age and the amount of the global old oceanic crust. Here we examine the magnetic record in order to identify the age and evolution of few areas on the globe that have unclear interpretations. These areas (the Bering Sea in North Pacific, the Venezuelan Basin in the Caribbean, the Amerasian Basin in the Arctic, and some stranded oceanic pieces in the Pacific and Indian oceans) are mostly displaced from the tectonic plate they originated by ridge jumps or trenches, therefore the simple technique of identifying the age of this crust by recognizing the magnetic anomalies patterns could lead to non-unique results. Additional geophysical data and geological information were analysed and the tectonic evolution scenario examined within a regional and global context. The new interpretation has been used to update the global plate kinematic parameters and oceanic isochrons that were used for constructing global oceanic palaeo-age grids. The palaeo-age grids are used for computing the seafloor spreading rates since 180 million years ago. This model provides constraints for geodynamic models, for the heat loss of the Earth, and for estimates of plate driving forces through time.