



Cretaceous-Tertiary plate boundaries in the North Atlantic and Arctic

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A new kinematic model from the pre-breakup to present day has been developed for the Arctic-North Atlantic region. Using potential field data (magnetic and gravity), published seismic interpretation and geological data we have re-interpreted the continent ocean boundaries and transition zones. Seafloor spreading has been quantitatively determined and new palaeo-age grids have been constructed for the oceanic area. Kinematic parameters have been used in the case of a triple junction to estimate the errors of continent ocean boundary location. The Oligocene plate boundary reorganization (and microcontinent formation) might have been precluded by various ridge propagations NE and possible SW of Jan Mayen microcontinent. The existence of additional (short lived) plate boundaries within the North Atlantic oceanic area has been tested using statistical methods.

In the Arctic realm, several kinematic scenarios have been explored in order to better understand the complex architecture of the Amerasian oceanic basin. We suggest that the Canada Basin oceanic crust formed between 143 and 126 million years as seafloor spreading occurred between the North American plate margin and the North Slope/Northwind Ridge. The rest of the Amerasian basin (Alpha Ridge, Makarov and Podvodnikov basins) are interpreted to be underlain by Cretaceous oceanic crust, or a combination of extended continental crust and Cenozoic oceanic crust. We postulate that a number of microcontinents were stranded within the Amerasian basin as a consequence of continuous adjustment between plate boundaries of North America and Eurasia.