



In search of the best model: Uncertainties in Mesozoic to present day plate kinematics and implications for global analysis

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The understanding of global plate kinematics for the present day and since the Cretaceous time has been enriched in the last decades due to new data and methods which led to more detailed and complete regional tectonic models. However, in order to merge these models into a self consistent, global kinematic model, they have to be re-evaluated according to regional or/and global implications of the suggested scenario. We have created a series of global reconstructions that depict the evolution of oceanic arcs for the last 150 million years. Our models consist of rotation parameters and isochrons. We have also created “synthetic plates” whose locations and geometry is established on the basis of preserved ocean crust (magnetic lineations and fracture zones), geological data, paleogeography, and the rules of plate tectonics. In order to construct this model we have investigated different scenarios of the tectonic evolution of several “problematic” areas, like the Arctic, the Caribbean, north Pacific and East Mediterranean Sea. Based on the new global kinematic model, we have created a set of global oceanic palaeo-isochrons and palaeo-oceanic age grids. This new model is used for computing seafloor spreading rates, oceanic crust ages, and volumes of oceans and the implications of using different models is discussed.