SUBDUCTION POLARITY REVERSAL EVENT IN THE EARLY HISTORY OF THE CARIBBEAN; TIMING, CAUSES AND SUBSEQUENT EVOLUTION

DRAPER, G. Department of Geology, Florida International University, Miami, FL 33199, U.S.A.

Many tectonic models require a subduction polarity reversal (SPR) of the early Caribbean volcanic arc. Many authors suggest that this was a result of the buoyant, 89Ma Caribbean Oceanic Plateau province entering SW-facing subduction zone in the late Cretaceous. Recent evidence from Cuba, Hispaniola, Tobago and Venezuela suggests that the SPR event must have taken place about 110-120 Ma (Aptian). The event resulted in emplacement of ophiolitic bodies and penetrative deformation of the early primitive island arc (PIA) volcanic sequence. Albian or later unconformities cover the deformed sequences.. As this timing pre-dates the formation of the Caribbean Ocean plateau other explanations for the SPR event must be sought. It is suggested that the entry of continental crust into the SW-facing subduction zone was the major cause. This crust is now preserved in the southern metamorphic terranes of Cuba. It is further suggested that the crustal thickness in the arc was significantly increased by the SPR event. Subduction resumed on the northern side of the arc as a NE facing system. It is suggested that extension of this thickened arc edifice took place some where in the interval 80-90Ma. The extension resulted in the uplift and further deformation of the southern Cuban metamorphic terranes as metamorphic core complexes. In Hispaniola, similar extension probably uplifted and deformed the Duarte Complex. Extensional structures in these regions were later refolded and faulted during the diachronous, oblique collision of the Greater Antilles with the North American continent.