

## **The global asymmetry of island arc distribution and the supercontinental cycles.**

LOMIZE M.G. Faculty of Geology, Moscow Lomonosov State University, Moscow, Russia.

Present-day island arcs are largely confined to the western periphery of the Pacific, whereas the subduction beneath its eastern frame is not followed by any back-arc opening (Andean-type continental margins). This global asymmetry reflects the essential difference between the regimes of current westward and eastward subduction, it is usually explained by the planetary rotational strains. However, more and more data suggest that in the past, at least in the Early Mesozoic, island arcs existed on both sides of the Paleo-Pacific ocean.

The present-day asymmetry has developed during the Late Mesozoic in correlation with the breakup of Pangaea. The observed absolute motion of continental fragments may be regarded as superposition of their radial drift upon the westward net lithospheric rotation. The latitudinal absolute motion has doubled on the western margin of Pangaea but it became nearly zero on the eastern margin where the two components of motion were opposite (see the global plate motion model HS2-NUVEL1A). As the American continents were overriding the increasingly younger oceanic lithosphere, the island arc/ back-arc systems turned into the continental margins of Andean type.

Taking into consideration the concept of the supercontinental cycles, we assume that the breakup stages of the earlier cycles could be marked by the same global asymmetry of island arc distribution. The most probable is the span 1.95-1.45 Ga of the Middle Proterozoic, as evidenced by wide distribution of Andean-type magmatic belts of this age.