

THREE ORDER GLOBAL TECTONIC CYCLICITY AND ITS POSSIBLE MANTLE ROOTS

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The geological and geochronological evidence permit to distinguish three orders of global tectonic cyclicity. First order cycles are manifested in the formation and breakup of supercontinents and, respectively, in the opening and closure of new oceans, like Paleoasian ocean or Tethys. Their duration is ca. 500-600 Ma and they correspond to J.T. Wilson's cycles. Second order cycles are those established by M. Bertran - Caledonian, Hercinian etc. They are expressed in the partial closure of large oceans due to the collision of microcontinents and island arcs with main continents. Their duration is ca. 150-200 Ma. Third order cycles of ca. 30 Ma are divided by orogenic phases of H. Stille, due to the collision of island arcs with each other and with microcontinents, to opening and closure of back- and intra-arc basins. It could be suggested that first order cycles are initiated by whole mantle convection and/or advection, second order cycles to processes in the transition zone and third order cycles - in the asthenosphere.