Geophysical Research Abstracts
Vol. 13, EGU2011-10309, 2011
EGU General Assembly 2011


# A simple thermodynamic model for Earth's hydrosphere.

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A thermodynamic analysis of the energy exchanges between Sea and Cryosphere allows to demonstrate that time derivative of Oxygen isotopic composition of the Ocean Bottom Water, as recorded by Phanerozoic deep sea sediments, equals the time derivative of the energy received by whole Hydrosphere from the Sun. The model accounts also for major variations in the continental ice oxygen isotopic composition as deduced from Cenozoic subglacial hyaloclastites and hydrothermal mineralizations in Northern Victoria Land.

If this signal, under various assumptions, is purged by the albedo effects, the "energy" signal may be relate to the Earth-Sun distance since the energy intercepted by our planet is proportional to the square of its radius and inversely proportional to the square root of its mean distance from the Sun.

I derived a temporal series for the variation of the mean distance of the Earth from the Sun during Phanerozoic, which is compared with the temporal distribution of mantle Superplumes related to the occurrence of basaltic plateaux or continental break-up. Strikingly most of the Superplumes may be related to periods in which the mean Earth-Sun distance is at minimum values. It is suggested that in this periods, tidal effects of the Sun may reach peak values on the Earth-Moon system whose centre of mass falls within the mantle. Integration of the gravitational effects of the solar system on both Climate evolutio and Plate Motion theory, may help to explain largely debated questions like the break up of supercontinents and the mechanism the induce inversions in the Earth magnetic field.