Monday, May 21, 2001
SECULAR VARIATIONS IN THE STABLE ISOTOPE COMPOSITION OF
ORGANIC MATTER AND CARBONATES II
3:55 p.m. Stratford Room

Chairs: M. Engel
E. Grossman

Buggisch W. *
Whole-Rock Carbon Isotope Analysis of Mississippian to Early Pennsylvanian Carbonates from Europe and
Laurentia — An Appropriate Tool for Detecting Global Variations in δ13C? [#3543]
δ3C whole rock data of Carboniferous carbonates from Laurentia and Europe are presented. They exhibit an
Early Tournaisian positive excursion up to more than +6‰. A sudden increase of about 2‰ is observed in the
early Namurian.

Saltzman M. R. *
Lower Mississippian (Kinderhookian-Osagean) Carbon Isotope Stratigraphy: Evidence for a Global
Oceanographic Event [#3041]
Kinderhookian (Lower Mississippian) carbonates consistently record carbon isotope values worldwide that are
among the heaviest known in the Phanerozoic (+7‰).

Grossman E. L. * Mazzullo S. J. Yancey T. E. Mii H-S.
A 70-Million-Year Record of δ18O Variation in the Permo-Carboniferous: Implications for Seawater
δ18O [#3822]
We present a new compilation of the isotopic record for the Permo-Carboniferous, which includes much new
δ18O data for the Lower Permian of North America. These data argue for minimal change in seawater δ18O over
the last 350 million years.

Mii H.-S. *
Carboniferous Brachiopod Shell Carbon and Oxygen Isotope Records from China [#3541]
Carbon and oxygen isotope records of Carboniferous brachiopod shells collected from China were studied to
characterize the paleoenvironments during the formation of Pangea.

Andrusevich V. E. Engel M. H. * Zumberge J. E.
Secular, Isotopic Trends Exhibited by Crude Oils: The Importance of Paleogeographic
Reconstructions [#3121]
An important parameter that may account for the isotopic variability of Upper Jurassic crude oils is the effect of
paleolatitude on the stable isotope composition of the biomass from which the oils were derived.

Kurtz A. C. * Kump L. R. Arthur M. A. Zachos J. C.
Importance of Terrestrial Organic Carbon Burial in the Paleocene: Evidence from Marine Carbon and Sulfur
Isotope Records [#3654]
A C and S isotope mass-balance model indicates a Cenozoic maximum in the global organic carbon/pyrite
burial ratio in the Paleocene, followed by an early Eocene minimum. We infer early Cenozoic changes in
predominant organic carbon burial environments.

Popp B. N. * Bidigare R. R. Laws E. A.
Controls on Carbon Isotope Fractionation in Marine Microalgae: Implications for Interpretation of Secular
Variations in δ13C of Organic Matter [#3098]
We review results of laboratory and field studies on carbon isotopic fractionation in marine microalgae and
discuss the implications of the results for interpretation of secular variations in the isotopic composition of
sedimentary organic matter.
Trueman C. N. * Chenery C. A. Spiro B. F. Eberth D. E.

*Early Diagenetic Stable Isotope Signals in Fossil Bone Apatite as Paleoenvironmental Indicators* [#3784]

Stable isotope signals (O,C) are reset during early diagenesis of bone apatite, and may be used for environmental reconstruction. We present an example where fossil bone isotope signals track paleosalinity gradients.

Neumann T. * Heiser U. Leosson M. Stüben D.

*Is the Oxygen Isotopic Composition of Authigenic Mn-Carbonates a Bottom-Water Salinity Indicator or a Reflection of Early Burial Diagenetic Processes: Evidence from Recent Sapropelic Sediments of the Baltic Sea* [#3335]

Our study emphasizes the important control of diagenetic MnO$_2$-reduction on the oxygen isotopic composition of sedimentary Mn-carbonates. In the Baltic Sea, the effect of MnO$_2$-reduction even exceeds the isotope modification by deepwater renewal processes.

Chang V. T.-C. * Galy A. O’Nions R. K.

*Mg Isotopic Composition of Modern Planktonic Foraminifera* [#3426]

This is a first report of Mg isotopic composition of modern foraminifera which are measured by MC-ICPMS. Within the limited numbers of samples, a range of 4.5‰ difference in $\delta^{26}$Mg/$^{24}$Mg has already been found.