ABUNDANCE OF TITHONIAN-BERRIASIAN TINTINNIDS IN WESTERN CARPATHIANS AND LIMITS OF THEIR DISTRIBUTION

D. Reháková (Geological Institute, Slovak Academy of Sciences, Bratislava, CSFR) and J. Michalík

Tintinnids became an important constituent of the planktic associations during Middle Tithonian. Small chitinnoidellas occur in the *Saccocoma* and *Globochaete* microfacies of the *Dobeni* Subzone. Later, they disappeared: only reduced association of Lower Tithonian planktic organisms characterize the "barren interval" between the *Dobeni* and *Boneti* Subzones. Later, *Chitinoidella* appeared again. Greater tests of the *chitinoidellas* are dispersed in *Saccocoma, Globochaete, Cadosina* and *Colomisphaera* association in packstones. The *Chitinoidella* Zone is represented irregularly in the Western Carpathian section, being often poorly identifiable. It remains a question whether this anomality is caused by primary unequal distribution of microplankton in the Tethyan Seas, or if the *Chitinoidella* tests were dissolved (the statement on their chitine composition seems to be problematic). Similar conclusions are applicable in the *Praetintinnopsella* distribution, although the test ultra-structure of this form is different.

Late Tithonian *Crassicollaria* and *Calpionella* association occurs in different types of sediment (wackestones). The share of *saccocomas* and *globochaetes* decreased; *crassicollarians* form relatively abundant accumulations.

Tithonian/Berriasian boundary is indicated by an explosion in calpionellid abundance. Elongated forms of *Calpionella* were substituted by small spherical *C. Alpina* Lorenz tests. They co-occur with *globochaetes, cadosinids* and radiolarians, which controlled the microfacies type. The middle Berriasian sequence is characterized by the presence of *Remaniella*, the upper one by *Calpionella elliptica* Cadisch. Decrease in calpionellid abundance started in the top Berriasian/early Valanginian *Calpionellopsis* Zone. Gradual decline of the calpionellid plankton continued till late Hauterivian, when the calpionellides were substituted by planktonic foraminifers.

The interpretation of sudden changes of tintinnid abundance and of their time and spatial distribution depends on the taxonomical concepts of this group. It is desirable to support and refine its taxonomy by the test ultra-structure study with the use of SEM. Provisional results of this study seem to be positive.

THE LAPTEV SEA POLYNYA AS SEDIMENT SOURCE FOR THE TRANSPOLAR DRIFT?

E. Reimnitz (U.S. Geological Survey, Menlo Park, CA, USA), D. Dethleff, D. Nürnberg, and Y.P. Savchenko

Suspension freezing, the principal sea-ice, sediment-entrainment mechanism, requires shallow, open water or thin ice, wind, and low temperatures. Under these conditions, frazil and anchor ice forms, and then floats sediments to the surface. The discovery of an 1,800-km-long, recurring polynya in the Laptev Sea, already well known to the Russians, initially was thought to answer the question of sediment sources for Arctic sea ice.

The polynya borders the edge of the fast ice, which in early winter lies inshore at 10 m water depth, but by January extends to 20-30 m depth, over 200 km from land. The configuration of the inner edge of the sinuous polynya is controlled by bathymetry. Covered by nilas to grey ice (<15cm), its width from January through April typically is 15 km, but fluctuates with changing wind regime. Wind-parallel streaks of frazil extend to the fast ice edge, which lacks compressional ridges. All indications, therefore, are that the Laptev Sea remains an area of ice divergence and high ice production- and export rates throughout winter. The polynya, therefore, is indeed important for the Arctic Ocean's ice budget and its intermediate and deep water.

The new ice advected offshore, constituting one of the tails for the Transpolar Drift, appears to contain little sediment during April. This fact may be due to fresh-water discharge of the Lena River, causing stable water stratification, and preventing super-cooled water and suspension freezing to reach the bottom at 20-30 m. However, Zakharov (1966) stated that, even in the southern part of the Laptev Sea, the 22 m depth of convection is quite sufficient to reach the bottom, and that this promotes aeration of bottom waters and also benthic life. These contradictions: lack of sediment inclusions and the apparently sufficient convection depth in the polynya, call for specific winter studies of entrainment processes to be made. Early winter, before the fast-ice covers the extensive shallows and when stormy weather and water turbulence prevail, is thought to provide optimum conditions for sediment incorporation into this tail of the Transpolar Drift.

Zakharov, V.F., 1966, The role of flaw leads off the edge of fast ice in the hydrological and ice regime of the Laptev Sea: Academy of Sciences of the USSR, v.6, n.1. p.815-821.

MODELING UNCONFORMITY-BOUND SEQUENCES AT PASSIVE CONTINENTAL MARGINS: IMPLICATIONS FOR THE MEASUREMENT OF CENOZOIC SEA-LEVEL CHANGE

D.J. Reynolds (Lamont-Doherty Geological Observatory, Palisades, NY, USA), M.S. Steckler, N. Christie-Blick, G.S. Mountain, K.G. Miller, and B.J. Coakley

It is now widely recognized that the stratal geometry and arrangement of sedimentary facies at passive continental margins are a result of a complex interplay between subsidence, sediment supply and eustasy. This interplay involves both positive and negative feedback and consequently both leads and lags are developed between the sedimentary response and any driving perturbation. This means that even if eustasy is assumed to dominate the stratigraphic record for the Oligocene to Recent, neither the timing nor the amplitude of eustatic change can be directly inferred from the stratigraphic record without making assumptions about tectonic subsidence, sediment supply, isostasy and compaction. Forward models provide key insights about the sensitivity of sedimentation to variations in key parameters, and therefore clues about how the stratigraphic record ought to be interpreted.

We have produced simple, physically-based models that illustrate the importance of the sediment load and compaction on the development and partitioning of accommodation across a passive margin. We conclude that a sequence boundary may be diachronous and may pass laterally into correlative conformities of different age. Variations in the rate of subsidence and sediment supply and the existence of a break in depositional slope influence the partitioning of sequences into systems tracts.

The complexities of measuring sea-level change are well illustrated in the vicinity of the mid-Atlantic Transect, New Jersey margin. We have backstripped an interpreted seismic section using a two-dimensional routine that includes compaction and isostasy. Reconstruction of the margin at intervals throughout the Cenozoic shows an evolution of sequence geometry from ramp to a profile with a distinct shelf-slope break. Along the New Jersey margin, observations