3:45 PM Nelson, K. D.

INDEPITH II (1994) DEEP CRUSTAL PROFILING IN SOUTHERN TIBET


In 1994 Project INDEPITH (International Deep Profiling of Tibet and the Himalaya) collected 200 km of new CRRF data, wide-angle reflection/refraction, and teleseismic and surface geophysical data in southern Tibet. These data, together with the ~100 km acquired during INDEPITH I, constitute a discontinuous deep seismic section extending along the eastern margin of the Kunlun Shan, at least 100 km inside the crust of the Danang graben. Some key results are as follows: 1) The delimitation along which India is underthrusting southern Tibet is tractable as a distinct, gently N-dipping, reflector bound, a fault, approximately 220 km north of the Himalayan thrust front; and to a depth of approximately 45 km (approximately the center of the Tsangpo basin). 2) The Kangmar Donor appears to be a duplex ramp associated with a crustal reflector; but the South Tsangpo Moho window where such reflectors may be present appears to be down to 50 km. 3) The N-dipping reflector is underthrusting the Napailong block along the Fenghuang fault, 4) Discontinuous, anomalously high-amplitude, reflections are observed beneath the Kangsang/Danang graben. These high-amplitude reflections are qualitatively similar in depth and character to anomalously high-amplitude mid-crustal reflections that have been associated with magma bodies beneath active rifts (e.g. Rio Grande Rift). Moho is clearly observed on INDEPITH CRRF profiles only beneath the southern Tsangpo basin (Dogan valley), which is offset to the north by approximately 50 km. We conclude that Moho depth determinations along the Yangtze-Gula rift, however, are consistent in the 75-80 km range, implying a regionally flat Moho between the crest of the Himalaya and the north end of the Danang graben. 7) Preliminary analysis of PS-P (teleseismic) converted phases suggests a "shingled" structure in the lower crust beneath the region, and a major, moderately steeply north-dipping, structure (fault?) within the upper mantle. The latter appears to intersect (project) to the base of the crust beneath southern Tibet Himalaya, well south of the Yangtze suture.
4:30 PM  Lehmann, Christoph
DEPOSITIONAL FACIES, SEQUENCE STRATIGRAPHY AND DRAINING OF THE COAHUILA CARBONATE PLATFORM, NORTHERN MEXICO. CHRISTOPHE LEHMANN, Christoph. OSLTERGER, David A.; MONTAÑÉS, Isbel P.
Dep. of Earth Sciences. University of California, Riverside, CA 92521
The Lower Cretaceous (Albian) Coahuila carbonate platform of northeastern Mexico is coeval with the economically-significant Valles and Golden Lane (Tulane) platforms to the south and the Giant Reef Complex described in Texas. Approximately 10,000 feet of the Coahuila carbonate sequence was studied and the Acadian/Cretaceous upper Tamaulipas Facies Formations have been logged on a decimeter-scale over an area of 100,000 km² to determine platform geometry and facies relationships, and to develop a sequence stratigraphic model of the carbonate platform. The Coahuila carbonate platform is a distally steepened ramp attached to the Coahuila basement block. Three distinct facies assemblages characterize the three major parastratigraphic elements of the Coahuila ramp. 1) The ramp interior (Acadian Formation) is composed of more than 60 evaporative parasequences deposited in a hypersaline lagomarginal environment; 2) the ramp onlap parasequences, deposited in a small-scale evaporate basin; and 3) overbank parasequences, deposited in a high-energy, tidal, peloidal packstone/grainstone. 2) The ramp margin (Aurora Formation) is composed of a massive coeval peloidal grainstone that exhibits progradational geometry. Seismic data indicate a barrier shelf. Up to 140 parastratigraphic parasequences overlie the massive grainstone, reflecting protected tidal-zone environments in the lee of the barrier shelf. Meter-scale parasequences are composed of a basal, skeletal, peloidal grainstone containing rudists, forming and shallowing-upward into a domalominated fenestral mudstone or tidal-flat laminites. 3) The deep ramp (Upper Tamaulipas Facies Formation) is underlain by a muddy hemipelagic limestone and includes subtidal progradational limestones and a deltaic hemipelagic facies separated by a locally-developed steepened slope.
Both the evaporative and parastratigraphic parasequences are interpreted to represent high-frequency accommodation events (10^-5 year range). These parasequences are arranged in several parasequence sets and form a pattern of long-term decrease in accommodation space, culminating in a major sequence boundary (mid-Albian), followed by an increase in accommodation space. The Coahuila carbonate platform was abruptly drowned, marked by the deposition of a 20 m thick, peliticoarenal, domally laminated mudstone. This drowning event terminated Cretaceous platform development in the region and might coincide with the late Albian globally recognizable Oceanic Anoxic Event (OAE-1C).

4:45 PM  Prothero, D. R.
MAGNETIC STRATIGRAPHY OF THE LATE MIDDLE EOCENE COLDWATER FORMATION, CENTRAL VENTURA COUNTY, CALIFORNIA: IMPLICATIONS FOR SEQUENCE STRATIGRAPHY
PROTHERO, D. R. and VANCE, E. H., Jr., Department of Geology, Occidental College, Los Angeles, CA 90041
Until recently, the middle Eocene Coldwater Sandstone could not be precisely dated beyond its "Tejon Stage" molluscs (which range from 33-44 Ma). Yet the upper Coldwater red beds (which grade into the the overlying middle Eocene Sespe Formation in upper Sespe Creek, Ventura County, California) produces several mammalian faunas which greatly improve the biostratinographic control. After removal of magnetic overprinting by stepwise thermal demagnetization, most samples yielded a stable primary remanence that persist through and fold test, and shows a clockwise rotation of about 10° ± 17° (consistent with other pre-Miocene units in the western Transverse Ranges). Magnetic stratigraphy and refined chronostratigraphy of the late Oligocene Dunesheman mammals found within the red beds in the Coldwater show that the upper Cozy Delli-Coldwater-Sespe sequence in central Ventura County spans Chrons C19r-C19n (approximately 39.5-42.5 Ma). The late Oligocene Hartman Ranch f.l. occurs near the top of Chron C19n (approximately 41.5 Ma). In good agreement with the published ages of the similar Tapo Canyon and Buena Local faunas in Simi Valley. Several Dunesheman localities (with Dunesheman and Amyonolitoptera) are known in this area; these all occur in early Oligocene (about 40 Ma).

These new biostratigraphic and magnetic stratigraphic data allow a test of two recent sequence-stratigraphic models proposed for the Cozy Delli-Coldwater-Sespe Formations. Campion et al. (1994) interpreted three sequence boundaries in this interval, which they correlated with the Taz-6.4a.4a.3 is stable from the Paq et al. (1997) curve. With better core stratigraphy, it is clear that none of these three sequence boundaries are eustatically controlled, and they are correlated with 4.5 million years (they actually occur within Taz-6.4 and Taz-5). Clark (1994) recognized three different sequence boundaries in the same sections, but did not suggest eustatic control; indeed, none of his sequence boundaries match the Paq et al. (1997) curve, either. Such mismatches further reinforce the case that sequence-stratigraphic correlations are only as good as the biostratigraphic data on which they are based.

SESSION 120, 1:30 PM
Wednesday, November 08, 1995
Tectonics: Himalayan Tectonics
ENM 39

5:00 PM  Pinous, O. V.
Upper Eocene - Lower Miocene Facies, Sequences, and Sea-Level Change Interpretation From the Strata of the Northern Aral Sea Region (Kazakhstan).
PINOUS, O. V., SAHAGIAN, D.L., ZAKHAROV, V.A., AKIMETZEV, A.M.
1Dep. of Earth Sci. & Geol., Reshetnev State Univ. of New Hampshire
2Institute of Geology, Russian Academy of Sciences, Novosibirsk
3Institute of Geology, Russian Academy of Sciences, Moscow
The Northern Aral region was the northeastern part of Upper Eocene - Early Miocene Tethys, and was a transitional zone between continental and marine depositional environments on a passive margin. Clastic and carbonate depositional environments included clastic and carbonate depocenters, at the foredeep of facies from fluvial and lacustrine plains (Turgai Trough) and continental marine with condensed sections and turbidites (Ustert Plateau). The section is characterized by explicit cyclicity which is interpreted to be caused by tectonic subsidence, sedimentation and eustatic variability. Parasequences (different facies, lacustrine, eustatic), that comprise the transition zone from continental to marine sedimentation are especially sensitive to the relative sea-level change. The excellent exposure of these strata in numerous outcrops and the presence of a number of wells drilled throughout the area makes it possible to examine in detail different facies successions and trace their lateral and vertical transitions within the stratigraphic units. Preliminary stratigraphic and sedimentologic analyses of outcrops and wells make it possible to subdivide the section into depositional sequences and reconstruct development of the depositional systems and their response to sea level change. Despite significant spatial in tectonic subsidence and sediment supply rates, sequences and systems tracks can easily be traced throughout the margin. Preliminary results suggest that the margin developed in a tectonic and sedimentary regime generally similar to the U.S. Atlantic and Gulf margins, and that eustasy played a major role in controlling sedimentation. However, in some biostratigraphically poorly correlated intervals, sea-level events reflected in the Aral sections do not correspond to those reported from Atlantic and Gulf Coast margins. For example, the most significant sea-level fall in the Aral region appears at the Eocene/Oligocene boundary or is Lower Oligocene (according to present biostratigraphic data), but in the U.S., a similar sea-level fall is inferred in the Middle Oligocene. While it is possible that the interplay between subsidence and sedimentation caused the basal Oligocene event in the Aral region and the Middle Oligocene event in the Atlantic and Gulf margins independently, we consider it more likely that they were caused by the same eustatic event, and that the biostratigraphic correlation of the Aral strata be re-examined. The detailed stratigraphic analysis of the Aral sections may provide important data for identification of true Eocene-Miocene eustatic events.

5:15 PM  Guerzin, Laura A.
HIGHSTAND? MOBILIZATION AND DEPOSITION OF NEOGEO SICLISCTIC SEDIMENTS, SOUTHEAST FLORIDA
GUERZIN, Laura A.; MCNEIL, Donald F.; Univ. of Miami, RMSAS-MGG. 4600 Biscayne Blvd., Miami, FL 33149; LIDZ, Barbara H., USGS Center for Coastal Geology, 600 4th St. South, St. Petersburg, FL 33701.
Two new continuous cores from a shallow thinning deposit (<100 m) package of siliciclastic sediments in the shallow subsurface of the Florida Keys. The siliciclastic sediments are underlain by middle Miocene (?) limestones and overlain by late Pleistocene (?)- and Holocene (?) limestones, serving as the foundation for modern Florida Keys. Initial results indicate that marine deposition of these siliciclastic sediments on the southeast Florida peninsular occurred during the middle Pleistocene (about 150,000 yr B.P.). Age-depth plots have been generated from constraining biochrons of first and last appearances keys species in the siliciclastic sequence of both cores (Cashion). The plots suggest that the deposition of the siliciclastics in southeastern Florida was at a relatively high sedimentation rate (10-11.4 cm/kyr), within a 0.5 m.y. interval. The middle Pleistocene age for the siliciclastics is also consistent with a proposed highstand in sea level (mid-Pleistocene warm period) and the initial lowering of sea level associated with the onset of Northern Hemisphere glaciation (~3.2 Ma). If confirmed, these results suggest that the mobilization and re-deposition of both the fine- and coarse-grained siliciclastic sediments of southeast Florida occurred during a highstand and/or during the subsequent, initial fall in sea level.

1:30 PM  Pivnik, David A.
TECTONICS AND SEDIMENTATION IN THE PAKISTAN FORELAND DURING THE Plio-PLIO-PLEISTOCENE
PIVNIK, David A., Amoco Production Company, P.O. Box 800, Denver, CO 80201-0800.
Pleistocene and Plaeocene syntectonic sedimentation in Pakistan occurred in response to tectonically and geographically complex episodes related to the most recent stages of Himalayan convergence. The availability of accurate magnetostratigraphic, fission-track, and biostratigraphic ages of the upper Siwalik Group allows for the continuous and uninterrupted record of basin-margin evolution and the Himalayan orogeny. Superimposed on the background of deposition of the main foreland fluvial system, the Indus River, were numerous basins which received sediment in response to epeirogeny, local tectonism which partitioned the foreland. In the hingeline region, intermontane basins such as the Skardu Basin rapidly aggraded from 3.0 to 0.75 Ma in response to sediment ponding behind the uplifting Nanga Parbat Massif. The Karovuen sequence in the Kashmir intermontane basin records uplift of the Pir Panjal Range from 4.0 to 1.5 Ma. In the Campbellore and Peshawar intermontane basins, deposition
ABSTRACTS WITH PROGRAMS

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