During the main-late and neo tectonic phases, progressive westward advance of the orogenic front was coupled with a westwards shift of the foredeep basin axis to its present location at the margin of Adriatic Sea. The External Albanides evolved out of the Ionian Mesozoic shelf sedimentary prism and the superimposed foredeep wedge. The Albanides are underlain by autochtonous continental basement was little deformed during their evolution.

The ophiolites of the Mirdita nape give rise to major gravity and magnetic anomalies, indicating that its thickness ranges between 2 and 14 km. Reflection seismic and gravity surveys carried out in the External Albanides and the Adriatic Sea define distinct structural belts which are related to different tectono-stratigraphic units.

Structuration of the Ionian and Sazani zones occurred during the late and neo-tectonic phases The carbonate dominated Late Triassic to Late Cretaceous series of the Ionian, Kruja and Krasta-Cukali zones contain several rich to very source rock intervals. In the Ionian zone Late Cretaceous, Paleocene and Eocene carbonates, Oligocene flysch type sandstone. The Tortonian Pliocene Molasse type clastics of the Periadriatic Depression.

Seismotectonic comparison of alpine collision structures: examples of recent extrusion in the Eastern Alps and in Turkey

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Introduction. The well known comparison of the movement of India towards the Himalyas with the deformation of an indenter against a plate, has allready been made by TAPONIER & MOLNAR twenty years ago. The fault pattern is similar in different parts of the Alpine chain. Two examples of „extrusion" are given:

(1) The movement of Arabia agaist Anatolia and Iran (we focus on the border zone of Arabia near the East Anatolian Fault and the extrusion of Anatolia).

(2) The movement of the African promonetory (Italy) against the Alps (In this part we focus on the interpretation of earthquake data in Austria and the Pannonian Basin).

As a consequence, an extrusion of crustal parts can be observed more or less normal to the maximum pressure axis. This movement continues until now.

The following features are discussed: (1) Earthquake data and length of seismic catalogues. (2) Faults from geologic investigation and from satellite images. Can the activity be checked properly? (3) Measurement of the velocity of plates. Magnitudes of velocity can be given by GPS and SLR measurement which indicate that Italy moves relative to Europe with 0.7 cm/year and that Arabia moves relative to Anatolia with 3-4 cm/year. (4) Fault plane solutions. Examples of fault plane solutions are given to characterize the kind of motion. The two types of earthquakes can be distinguished due to fault plane solution: strike slip movement and thrust-type movement.A tectonic interpretation is given.

The common inversion of the seismological and DSS data - New traveltime tomography method and results for Europe

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A new method of Taylor approximation of non-linearity of 3-D problems of seismics based on the wave equation and eikonal equation solution has been worked. It is shown that Taylor approximation of 3-D inverse traveltime problems has the following advantages over the linearization method. (1) It ensures a considerable gain as to the non-linearity approach accuracy. (2) It is valid with fewer constraints imposed on the velocity. (3) It is not need by the choice of reference velocity approach. (4) It does result in a problem correct by Tikhonov, instead of an essential incorrect one. (5) It involves significant reduction in the dimension of the problem for numerical inversion. (6) It is equally valid for the solution in Cartesian and spherical coordinates. The method is easily applied to interpret 3-D data of seismology and 2-D DSS data as well profile and spatial CMP data of seismic reflection and refraction wave exploration.

We describe processing and inversion of the observed seismic data by new method. The principled detailing of P-velocity model of the mantle obtained from the Bulletins of the ISC is only possible when using following additional data for every region: (a) the arrival and second times of the P-wave observed on long-range and DSS profiles, (b) data (absent in the Bulletins of the ISC) on the arrival and second times of the P-wave from a weak near earthquakes observed by seismic stations of the regional networks, (c) the second times of the P-wave in the range of epicentral distances of 12-25 degree determinate from records of major earthquakes, (d) the arrival times of the P-wave from the Bulletins of the ISC for teleseismic distances (these data in the theory of inversion that we use are similar to those of deep foci earthquakes or deep reflections). The employment of the data of points (a) and (b) enables detailing of the structure of lithosphere and asthenosphere and those of points (c) and (d) ensure specify the depth and the character of 410 and 670 km discontinuities. The new method provides common inversion of the main data (from Bulletins of ISC) and data of points (a)-(d) even in cases when crust and mantle contain low-velocity zones. The obtained 3-D P-velocity model of the mantle beneath Europe is considered.

Paleomagnetic constraints for paleogeographic position of Tatricum and Fatricum (Central West Carpathians) in the Late Mesozoic

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During last 10 years paleomagnetic data were obtained from the Mesozoic (Lower Jurassic - Lower Cretaceous) rocks in the Central West Carpathians of Poland and Slovakia (Kadzialko-Hofmokl and Kruczyk, 1987, Kruczyk et al., 1992, Grabowski, 1995). The samples were taken from the KriŸna unit (Fatricum) of the Tatra Mts., NiŸne Tatry, Choæ Mts., Spiœka Magura and Mala Fatra and from the Cover unit (Tatricum) of the Tatra Mts. All characteristic directions are of normal polarity, they reveal predominantly clockwise rotated declinations (except the directions from the Mala Fatra) and inclinations corresponding to the expected values for the European Platform. It is very likely that these directions represent a remagnetization of Early Cretaceous age. These data differ significantly from the Middle Jurassic - Early Cretaceous paleomagnetic directions from the Apulian realm (Marton & Marton, 1983, Channel, 1992). Comparison of declinations and inclinations from the Central West Carpathians and Apulia suggest that an oceanic separation between them existed at least in the early Cretaceous. Similarly as the Northern Calcareous Alps, the Central West Carpathians did not participate in the counter-clockwise rotation of Apulia.

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Thermal effects of the exhumation of metamorphic core complex on syn-rift sediments - an example from the Rechnitz Window (Austria)

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The Rechnitz Window is situated at the Alpine/Pannonian borderand represents the easternmost Penninc window of the Alps. During the Miocene the window was exhumed by tectonic denudation. The Austroalpine crystalline cover was removed by top-to-ENE normal faulting. This extension produced the Pannonian basin system where the earliest sediments of the this depositional cycle were formed in Middle Miocene. The sediments of the syn-rift stage are mainly conglomerates, fanglomerates and sandstones with thin coal bands. A high level of the organic maturation (Sachsenhofer, 1991) indicates that the bottom of the sedimentary sequence suffered a post-depositional thermal overprint. Heating was able to anneal the fission tracks (FT) in the detrital apatite grains of the sediments. The 13.6 million years average of the FT ages expresses the termination of the period of an increased heat flow. The aim of the presented two-dimensional numerical thermal model is a quantitative qualification of possible thermal surface heat flow within the hanging wall during the exhumation of the Rechnitz Window along normal faults.

As the chosen initial conditions as well as the boundary conditions clearly influence the results of such a mathematical model only such parameter configurations were used, where the program records of the cooling history fit the actual thermochronological measured data of the footwall of the Rechnitz Window (Dunkl and Demény, in press). During the model calculations a chosen sample within the footwall was exhumed with various faulting velocities (2.5 - 11.5 mm/a) along normal faults with various dip angles (10° - 50°). After each time step the temperature and the location of the sample were recorded resulting in a calculated cooling curve of the footwall. All model calculations reveal a typical convex-concave cooling curve and suggest an Early Miocene rapid exhumation of 2mm/a of the footwall followed by slow exhumation