Albania. The main oil play type are Ionian Carbonates of an Upper Cretaceous to Eocene age in a ramp anticline or imbricate structure. Porosity and permeability are mainly created by fractures in the crestal part of the anticline. In near platform or slope settings, dolomitisation is likely to enhance porosity and fracture density. Shaly and marly Oligocene Flysch sediments act as lateral and top seals. Sourcing is possible from a variety of Upper Triassic to Upper Cretaceous, moderate - high quality, high TOC, oil-prone source rocks within the individual imbricate or duplex.

A variety of structural and stratigraphic plays in the Neogene has been defined in the Periadriatic Depression. Reservoir rocks were deposited in shallow marine to deep water environments. Shaly intervals within the Neogene section act as lateral and top seals. Play types include lateral and up dip pinch-outs, four-way dip closed drapes, fault bounded sandbodies and four-way dip closed backthrust ramp anticlines.

Both oil and gas have been discovered in the Neogene. Gas is mainly of a biogenic origin from disseminated organic matter in the Neogene, with some admixture of thermogenic gas. Oil is sourced from source rocks in the carbonate section and migrates along carbonate structures and breached seals and fracture zones into the Neogene above.

Neogene superterranes of Dinarides and Carpatho-Balkanides in SR Yugoslavia

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Two regions of the Miocene lacustrine sedimentation on Balkan Peninsula are known for more than 100 years. Better studied is the Dinaridic realm of ancient K&K. The lacustrine Miocene between the Drina and Timok rivers were often, but unsuccessfully equalized to the Dinaridic one. After the recognition of the older terranes (Karamata et al., 1994) was possible to deliminate two large Neogene superterranes, one in the Dinarides and the other in the central Balkan Peninsula.

On the deep seismic profile (from Petrovac-na-Moru to Negotin) there is a sign of a dislocation in the region of Tutin delimiting, possibly, the two Neogene superterranes.

The sediments of the two lacustrine systems belong to two large sedimentary cycles, the single cyclotheme each. In SR Yugoslavia the older cyclotheme is developed in Northern Montenegro and, as a "gulf" (trench?), it cross from Pranjani, via Cacak and Trstenik to Alcksinac. In that area there is overlapping of the two cyclothemes. The younger cyclotheme covers all of Serbian area. ('Serbian Lake') reaching in some time portions to the Skopic surroundings in the South. It is in places ca. 1000 m thick; because of the great depth of burial the vitrinite reflectance is 0,77-0,91 for the Ibar coal (Ercegovac, 1991).

The age of the western Balkan lacustrine system was determined as Karpathian equivalents while covered by the marine Upper Karpathian and Badenien (Kochansky and Sliskovic, 1978) The age of the central Balkan lacustrine system ('Serbian Lake') is determinable by the findings of the ostracode genus *Mediocypris,* the key fossil for the lacustrine Middle Miocene for Eurasia (Kheil, 1968). Some controversy of the age determination by flora and mammals were caused by the great stratigraphical reach of these land fossils (Pavlovic, 1995).

Several thick tuff beds appear in the upper part of the Serbian Lake cyclotheme. Some of its measurements gave 15-16 Ma of age (Duraki, in press). The tuff was extruded from the few large volcanic centres like Kontlenik and Borac. That ancient volcanic activity, placed mostly in the Vardar Zone Composite Terrane, are the result of the collision and following relaxation (Cvetkovic et al., 1995). Differential neotectonic movement complicate present geological structure.

From compression through extension to inversion - Miocene tectonics of the Polish Carpathian Foredeep basin

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Polish Carpathian Foredeep (PCF) basin developed in Miocene times in front of the advancing Carpathian thrust belt (Oszczypko, Slaczka, 1989).

Recently completed structural interpretation of four regional, basin-wide seismic profiles located between Kraków and Przemyœl provided information on large-scale framework of Miocene tectonic development of this part of the PCF.

For the western part of the study area located between Kraków and Rzeszów it was concluded that only minor tectonic deformations of Miocene age can be observed within the PCFs' Mesozoic basement. They developed in form of normal faults located NW-SE. Immediately in front of the Carpathians, particularly between Bochnia and Tarnów, series of frontal thrusts developed within the foredeep sediments. Gentle flexure of

basement in this part of the PCF suggests that bending of the lithosphere below the thrust belt was dominant process that has created present-day large-scale architecture of the PCF.

Very different results were obtained for the eastern part of the study area located between Rzeszów and Przemycel. Seismic data revealed large amount of tectonic deformations present within the Palaeozoic and Precambrian basement of the PCF. They consist of either horst-and-graben structures related probably to strike-slip movements or systems of large normal faults and rotated blocks located NW-SE. Also, it was concluded that normal faults present in the easternmost part of PCF developed partly as a synsedimentary features and were slightly inverted during late Sarmatian. Moreover, maximum of extension controlled by these faults was located not immediately in front of the thrust belt but significantly further towards the north. This implies that extension was not only related to the lithosphere fracturing due to its flexure below the Carpathians but was also controlled by intense faulting related to Miocene reactivation of the Tornquist-Teisseyre tectonic line. Tectonic inversion of normal faults can be attributed to last stages of compression within the Carpathian thrust belt.

Oszczypko N., Slaczka A., 1989. The Evolution of the Miocene Basin in the Polish Outer Carpathians and Their Foreland. Geologica Carpathica, 40(1): 23-36.

Basin evolution of several sub-basins of the Pannonian Basin System - constraints from subsidence analyses and basin modelling

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Subsidence histories of the Vienna Basin, the Danube-Kisalfold Basin (Little Hungarian Plain Basin), the Styrian Basin and the East Slovakian Basin (Trans Carpathian Basin), in total based on over a hundred individual wells, are compared.

Striking is the contemporaneous onset of basin subsidence in all basins, together with the Karpatian maximum in subsidence rate for all basins. The Karpatian subsidence maximum indicates that Karpatian extension was the major feature governing basin evolution and all later phases are of lesser magnitude. In some cases aditional subsidence accelarations are observed, mainly for Pannonian times.

Uncertainties arize from the difficulties on excact quantification of age and paleowaterdepth. These problems are directly related to the time-transgressive character of the Pannoninan units. Karpatian and Badenian ages and paleowaterdepths are much better constrained.

Numerical absin modelling, adopting a modified McKenzie type extensional basin model is capable of explaining the observed subsidence reasonable well. Key features of the model are: (1) Karpatian extension only, (2) -Badenian-Pannonian postrift cooling, (3) relative small basins allow fast cooling, and (4) different amounts of crustal v.s. subcrustal extension.

Modelling also indicates that the Karpatian extension was the main basin forming process. However, there are numerous excellent documentations of later tectonics and changing stress fields. Apparently these are of a lesser magnitude with respect to basin subsidence.

Diversions from the postrift cooling trend in subsidence can be caused by: (1) uncertainties in data; (2) renewed extension phase in Pannonian times, with different impact; (3) lateral and temporal changes in rheology. Due to the problems age and waterdepth it was difficult to constrain the post-Karpatian evolution of the individual subbasins in detail.

Heat flow in the PANCARDI region and its geodynamic significance

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Heat flow is closely related to the structure and evolution of the Earth's lithosphere. More than 600 heat flow determinations and many thousands heat flow estimations were carried out in the PANCARDI region. The average heat flow in the Pannonian basin is about 90-100 mW/m^2, in contrast with a characteristic value of about 50-60 mW/m^2 in the surrounding region. The only exception is the central part of the Eastern Alps, where the heat flow is above 100 mW/m^2. Towards the Dinarides the heat flow is decreasing rapidly, and the Outer Dinarides is an extremely cold zone characterized by values of 30-40 mW/m^2. In the Inner Dinarides and in the transition zone towards the Pannonian basin geothermal highs occur. A large positive heat flow anomaly can be found at the southern part of the Pannonian basin, around Belgrade, which continues to the SE along the Vardar zone.

The heat flow is influenced by near surface geological processes, like groundwater flow and sedimentation and erosion. Intensive karstic water flow is the reason of the low heat flow in the Outer