the domain observed as being dominated by simple-shear is much thinner, due to the more effective accumulation of the pure-shear type of deformation.

Such a deformation history is accompanied by strike-slip partitioning, which develops in areas with strong vertical anisotropy originating in more distant pure-shear dominated areas. As the indenter approaches this domain, instantaneous simple-shear dominated deformation creates high shear stress on pre-existing planes thus enhancing possible strike-slip faulting. We therefore, define a critical distance from the indenting zone where strike-slip zones parallel to the indenter develop.

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Intraplate collisional regimes on the eastern margin of Barguzin microcontinent (Baikal region) in Early–Middle Paleozoic

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Arc of the Baikal orogen belt was formed due to destruction of continental crust in Late Proterozoic, accretion of island arc and microcontinental terranes in Late Riphean time and intraplate collision in Early–Middle Paleozoic. In the inner part of this orogen belt are areas of granitic pluton formation, that are evidence of existence large massif with continental crust (Barguzin microcontinent). The structure of Paleozoic tectono-sedimentary units on the eastern edge of Barguzin microcontinent formed due to collision of it with southerly laying passive margin of Siberia in Early–Middle Paleozoic times. There two types of intraplate collisional regimes occurred, that controlled settings in regional tectonic framework. (1) The evolution of post-collisional basins along Precambrian suture was terminated by intraplate transpression. Internal structure of these transpression zones such as Kelyana–Irakinda may be interpreted as a group of numerous blocks which are bounded and separated by thrust, reverse-slip, strike-slip and oblique slip faults. (2) The structure of Early and Middle (?) Paleozoic sedimentary cover in internal part and eastern margin of the Barguzin microcontinent are defined by thrust development as a result of basement - cover interaction. Strain data collected from Upper Riphean–Paleozoic tectono-stratigraphic units demonstrate that complex regional strain pattern was created by northward displacement of Barguzin microcontinent or composite terrain during the Early–Middle Paleozoic stage. This massif may be interpreted as indenter, that defined collisional faulting and deformation.

Tertiary evolution of the Carpatho-Pannonian region: an interplay of subduction and back-arc diapiric upraise in the mantle

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The Tertiary evolution of the Carpathian arc and Pannonian Basin is generally interpreted as a coupled system of the (1) gravity driven subduction of oceanic or suboceanic lithosphere underlying former flysch basins, (2) back arc extension associated with the diapiric upraise of asthenospheric mantle and (3) lateral escape of lithosphere from the Alpine collision assisted by transform faults. The gravity driven subduction involves an exchange of space, which requires a free passage for compensating asthenospheric flow below or on sides of the subducting slab. In the case of the Carpathian arc confining continental lithosphere represents an obstacle for the asthenospheric "sideflow", which is more efficient than the "bottom" flow. However, evolution of the arc type andesite volcanism testifies about division of the subducting slab into three major segments, corresponding roughly to the West Carpathians, northern part of the East Carpathians and southern part of the East Carpathians, allowing the asthenospheric "sideflow" to take place via "windows" between the segments.

Subduction affected first during the Late Oligocene to Early Miocene time internally situated Penninic/Magura and Transcarpathia /Szolnok flysch zones, later during the Early Miocene to Pliocene time externally situated Silesian/ Krosno/Moldavian flysch zone. Subduction in the external zone is considered as a new subduction zone formed following accretion of the Silesian Cordillera to the upper plate. It started at the West during Early Miocene (20 Ma) and sinking slab has reached the magma generation depth of 120–150 km during the Early Sarmatian (12.5 Ma), while at the East it started during Badenian (16–15 Ma) and sinking slab has reached the magma generation depth during the Late Pannonian to Pleistocene (9–1 Ma). Such the timing sets the average subduction rate at 1.5–2 cm a year. With the exception of NE Carpathians the subducting slab has reached the "magma generation" depth during the last stage of convergence in the almost vertical position. The short-term volcanic activity implies a limited width of the subducted crust (less than 150 km) or a progressive detachment of the sinking slab from the platform margin. The final detachment of the sinking slab is confirmed by results of seismic tomography, while it is still in progress at the Vrancea seismic zone.

Migration of subduction processes eastward was reflected in corresponding migration and reorientation of back arc extension zones. The arc type andesite volcanism associated in individual segments with the subsidence of extension basins, which are situated at the back of the accretion prism, parallel to the arc, as an immediate product of the subduction pull. The areal type silicic and andesitic volcanism associated with the evolution of the pull-apart and basin & range (horst/graben) type structures further in the hinterland of the arc. Areas of thinned Crust and Lithosphere corresponding to Tertiary extension basins localize places of the diapiric upraise of asthenospheric mantle, which was coupled intimately with subduction processes in the outer flysch zone of the Carpathian arc. Late stage alkali basalt volcanics testify, that during the final stage in evolution of the arc the compensating asthenospheric flow has reached the zone of back arc extension and diapiric upraise of asthenosphere incorporated unmetasomatized mantle material.

Migration of subduction processes eastward caused also a reorientation of the upper plate movement and of the lateral escape of lithosphere from the Alpine collision. While it was northerly during the Early Miocene (combined with anticlockwise rotation due to oblique collision with the continental margin), it was northeasterly during the Middle Miocene and easterly during the Late Miocene time.

Lateral variations along the Apennine and Dinaride foreland basins

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The elongated mountain belts of the Apennines and the Dinarides and the basins at their flanks, associated with opposite directed subduction of the Adriatic plate, are an excellent location to study lateral variations in basin shape and internal organization. A wealth of new, high quality seismic data enables us to systematically analyze such variations. The basins developed during the Neogene and Quarternary. The present-day foreland basin of the Apennines is continuous along the entire belt and is characterized by its highly variable shape along strike. At present a foreland basin is lacking along most of the Dinarides, except in the South Adriatic Sea, where an uncharacteristically deep basin has developed. Despite large differences in basin infill and organisation, they are everywhere covered by a relatively large package of Quarternary sediments, often forming distinct progradational fans.

Six sections covering the entire belt of the Apennines and extending far into the foreland towards the Dinarides and the Alps are modeled using an elastic flexural model. The lateral varia-