1. Comparing field measurements of strain to trajectories of finite strain.
2. Drawing contour maps of the maxima of extension and contraction across a region. This should help in determining how reasonable the structural model is.
3. In clarifying what are the likely relationships between regional transport directions and the micro and macro-structural features we can determine from rock samples.

In summary, strain calculations in plan view give us a "2D" impression of effects out of the plane of the cross-sections we draw.

To demonstrate these techniques more thoroughly, the Andes and Jura mountains are used as two examples at quite different scales, but with many similar features

Magnetic fabric indication of Rhenohercynian deformations in the Silesian Zone of the NE Bohemian Massif

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In the Lower Carboniferous flysch rocks of the Rhenohercynian Zone in the NE Bohemian Massif, the magnetic fabric ranges from virtually sedimentary to strongly deformational in origin. The ductile deformation, indicated by magnetic fabric, gradually increases from the east to the west, being associated with the development of the spaced cleavage and slaty cleavage passing into metamorphic schistosity at the boundary with the Silesian Zone. In the crystalline rocks of the Silesian Zone, the magnetic fabric shows signs of multiple origin. In some metamorphic rocks, the magnetic foliation is parallel to the metamorphic schistosity, probably indicating that the magnetic fabric originated during metamorphic processes in which the recrystallization in an anisotropic stress field was the most important. In addition, in many metamorphic rocks, the magnetic foliation deviates from the metamorphic schistosity, sometimes very strongly. The magnetic fabric of these rocks was evidently affected by ductile deformations, much younger than the metamorphism of the rocks.

The orientations of the magnetic fabric elements are very similar in the sedimentary rocks of the Rhenohercynian Zone and in those metamorphic rocks of the Silesian Zone, which show the post-metamorphic deformational magnetic fabrics. This implies at least one strong deformation phase that affected both the Rhenohercynian and Silesian rocks. A hypothesis can be thrown out that the stresses responsible for creation of the structure of the Rhenohercynian propagated also into the Silesian Zone.

The origin and evolution the seismic belts of northeast Russia

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Two large seismic belts traverse Yakutia: the Baikal–Stanovoy (BSB) to the south and the Cherskiy (CSB) to the northeast. These extensive epicentral belts mark the Eurasian–North American–Amur lithospheric plate boundaries in northeast Asia. In the Late Cenozoic the boundaries represented fault systems of specific kinematics and different morphology and growth dynamics. The BSB marks the Eurasian–Amur boundary stretching from Lake Baikal to the Sea of Okhotsk. The crust experiences tension in the western BSB (the Baikal rift) and compression in its eastern part (the Stanovaya folded area). Therefore, normal faults common in the western part grade eastward, from the mid-section of the Olekma river, into dextral sublatitudinal strike-slip faults and associated thrusts.

In southern Yakutia, compression has led to a specific mountain relief, e.g., the Jugjur–Stanovaya folded area and continuous Predstanovoy foredeep to the north, including several Meso-Cenozoic basins flanked by thrusts on one or both sides.

The CSB marks the Eurasian–North American plate boundary extending from the Sea of Okhotsk to Kamchatka. It connects seismoactive zones of the Arctic and the Pacific. Seismoactive in it are sinistral, northwest-trending strike-slip faults bordered by trusts to the northeast and southwest. The CSB is dominated by compressive tectonic stresses that replace tension of the mid-ocean Gakkel Ridge near Buor–Khaya Bay of the Okhotsk shelf. The present-day topography of the Cherskiy Range is also due to Late Cenozoic compression.

High tectonic activity of the BSB and CSB faults is confirmed by epicenter clusters along their paths and seismic dislocations confined to them. Their kinematics is well-established on the basis of focal mechanisms, displacements of geological bodies in fault-affected zones, observations of fracturing and slickensides, study of seismodislocations, and imagery data. The development of definite types of active rupture dislocations in BSB and CSB fits well into geodynamic models for major strike-slip faults forming in an environment of large, convergent plates. The squeezed boundary area is uplifted to become dissected by strike-slip and bounded by thrusts. This is exactly the case at the boundary between the plates considered.

Kinematic evolution of the Subtatric–Ružbachy Fault System in the Spišská Magura region (Slovakia)

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The Spišská Magura region is a part of the Central-Carpathian Paleogene basin representing the northernmost part of the Central–West Carpathians. It consists of Paleogene deposits transgressively overlying the carbonate of the KríŽna Nappe, belonging to the Central–West Carpathians, and tectonically bounded to the Pieniny Klippen Belt in the north and to the East-Slovakian Neogene Basin in the east. The deposits have a wide stratigraphic span ranging from the Middle Eocene to the Late Oligocene

The Subtatric–RuŽbachy Fault System played a considerable role in Cenozoic evolution of the northern part of the Central-Carpathian Paleogene Basin. The system, which represents a shear zone with NE–SW direction, restricts the eastern continuation of the Mesozoic rocks of the Tatra Mts., bounds the Mesozoic RuŽbachy Island to the Paleogene deposits having governed the deposition in the area since the Paleogene.

In the area neighboring the system, we distinguished four deformation stages:

The oldest deformation stage is connected with NNW–SSE compression resulting in overthrust structures of NE–SW direction dipping toward NW. The compression induced activity of the Subtatric–RuŽbachy Fault System. This resulted in uplift of the Paleogene deposits in the Spišská Magura region and subsequent erosion of their uppermost parts which probably were analogous to the deposits occurring south of the Fault System in the Levoča Mts. today. The extensional component of this stage was of E–W strike. The effect of extension is more pronounced north of the Subtatric–RuŽbachy Fault System, in the central domain of the studied area, where extensional component has NW-SE orientation. The extension resulted in the formation of NW–SE normal faults dipping toward NNE and SSW. It also governed origin of mesoscopic fold structures with fold axes dipping toward NE. The age of the deformation is suggested by timing of the Tatra Mts. uplift (some 15 Ma, Král' 1977). The proved Quaternary uplift also suggests the recent activity of the Fault System. The Miocene uplift also determined exposure of the oldest Paleogene sequences in the Spišská Magura region due to subsequent erosion of overlying younger deposits and subhorozontal indication of Paleogene formation toward N.

The second deformation stage in the SE part of the region is related to the E–W activity of the maximal compressional stress component. It resulted in NE–SW strike-slip faults of the Subtatric–RuŽbachy system with dextral movements. The occurrence of travertine on the structures suggests their recent activity continuing from the Neogene.

The third deformation stage in the central part of the studied region is related to the maximum compresional stress component in NNE–SSW direction and with the maximum extensional stress component in WNW–SES direction. We assume almost synchronous development with the NNW–SSE shear zone.

The youngest deformation stage on the SE