processes increases in the given order: the Hellenic arc being the youngest and the Carpathian arc being the oldest (evolved) version. Finally, a very noteworthy result is that - for all three arcs - the migration patterns associated with the inferred lateral migration of slab detachment appear to originate in the region of the present-day Alps.

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## The complex evolution of the Western Outer Carpathians: implications of flexure- and gravity modelling

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Vertical movements in the Western Outer Carpathian foreland system are investigated by lithospheric flexure- and gravity- models carried out along 5 profiles crossing the foredeep and thrust belt. Special attention is paid to the possible influence of pre- and post- orogenic processes on the deflection of the foredeep and thrust belt.

In the west the Neogene foredeep, resulting from the SE underthrusting or subduction of the North European plate under the Carpathian mountain belt, is very steep and narrow. This implies weak lithosphere and high bending stresses. Seismic observations of nearly horizontal Moho are explained with two possible scenarios: (1) a post- orogenic process of slab detachment and (2) the subduction of thinned lithosphere (pre-orogenic passive margin). Furthermore, post-orogenic regional scale uplift, about 150 to 300 m, is proposed for profiles crossing the Western and Central Carpathian foreland, in order to explain erosional surface, elevated distal foreland deposits and the low amplitude of the Bouguer gravity anomaly. A possible thermal uplift, associated with the Pannonian basin evolution is ruled out as possible explanation. Such uplift would imply a negative contribution to the gravity anomaly.

In the eastern part, the foredeep becomes more wider. Although the lithosphere is proposed to be slightly stronger, the effect of widening is explained by the interference of the East European plate, underthrusting or subducting the Carpathians to the SW.

## Jointing in the Polish Outer Carpathians: hints for stress field reorientation

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The Polish segment of the Outer Carpathian fold-and-thrust belt is composed of a number of north-verging nappes. Studies of joint pattern within the different lithostratigraphical units of these nappes, as well as within the discordantly overlying younger strata, enable one to constrain the Late Cretaceous through Pliocene stress field of that region.

In the medial segment of the area studied, joints have been analyzed in several nappes, most of the data coming from the Magura nappe. In the last one, joint pattern reveals a clockwise rotation of the reconstructed maximum stress axis (s1) from the Late Cretaceous through the Middle Miocene strata. The maximum stress axis, inferred from the position of the acute bisector between conjugate Coulomb-shear or hybrid-shear fractures, is oriented N-S within the Turonian-Campanian strata, NNE-SSW in the Maastrichtian strata, ENE-WSW within the Palaeocene strata, and NNW-SSE within the Eocene through Middle Miocene strata. This gives 150° of clockwise rotation of s1 in the time-span considered. The maximum stress axes reconstructed for post-Cretaceous strata of other nappes are oriented NNE-SSW to NE-SW, being nearly perpendicular to fold axes.

On the other hand, the Pliocene molasses of the Podhale region display joint pattern indicating the N30-40°E oriented s1. This suggests a further clockwise rotation of the maximum stress axis by