Geologica Sinica, **74**: 632-631.
Dong, Q., Feng, B. & Li, X. (1996): The lithofacies and palaeographical setting of Haicheng- Dashiqiao superlarge magnesite deposits, Liaoning province. - J. Changcun Univ. Earth Sci., **26** (Supp.): 69-73.
Jiang, S.Y., Chen, C.X., Chen, Y.Q., Jiang, Y.H., Dai, B.Z. & Ni, P. (2004): Geochemistry and genetic model for the giant magnesite deposits in the eastern Liaoning province, China. - Acta Petrologica Sinica, **72**: 765-772.
Wu, G., Zhang, D., Li, J. & Zhang, M. (1996): Structural and petrophysical analysis of granite pluton; an example of Dandong Sanguliu Pluton in Liaoling Province. - 1-280, (International Geological Congress, Abstracts, **30**).

The evolution of the Austroalpine nappe stack in the hanging wall of the Giudicarie fault system

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During the Eoalpine orogenic cycle S-Apulia overthrusted N-Apulia along a SE dipping intracontinental shear zone (Schmid et al. 2004). High pressure metamorphic overprint affected the south-eastern-most parts of N-Apulia: the Texel complex experienced pressures of 12-14 kbar (Habler et al. 2006), the Schneeberg complex 8-10 kbar (Konzett & Hoinkes 1996) during this stage. In the hanging wall of this pressure-dominated corridor a nappe stack formed on top of the Ötztal nappe. The Cretaceous metamorphism within the SE-dipping Ötztal nappe increased from NW to SE, whereas the higher nappes (i.e. Meran-Mauls basement, Tonale nappe, Mesozoic Blaser nappe, Paleozoic Steinacher nappe) were almost unaffected.
At app. 80 Ma the Schneeberg- and the Texel complex were isothermally exhumed within the shear zone to reach a similar position as the Ötztal nappe, as indicated by time-temperature-, and pressure constraints. Probably during this stage the Schneeberg complex was highly deformed to form a megascopic sheath fold.
Late-Cretaceous E-SE directed normal faulting (e.g., Froitzheim et al. 1994, Wagreich 1995) brings the Ötztal nappe and its Mesozoic cover in the footwall in contact with the Mesozoic Blaser nappe, the Paleozoic Steinacher nappe and the Meran Mauls basement.
During the Tertiary this Cretaceous-age nappe stack overthrusted Penninic units and rather open folds developed within this orogenic lid (Meier 2003). In the hanging wall of the Meran-Mauls fault the wide folds were narrowed and finally overturned during NNW-ward indentation of the Southern Alps. This resulted in the present NW-dipping orientation of the Jaufen fault and the formation of a narrow syncline between the Jaufen and the Meran-Mauls fault. On the other hand in the hanging wall of the sinistral transpressive Northern Giudicarie fault less shortening due to the indentation of the Southern Alps occurred. The Paleogene folds of the Austroalpine nappes stack were only slightly affected and not overturned. Also the Pejo fault, separating the Campo nappe and the Tonale nappe, was not overturned and still dips towards SE, i.e. it preserved its original orientation.
A comparison of the evolution of the Austroalpine nappe stack in the hanging wall of the Meran-Mauls fault and the Northern Giudicarie fault argues for similar geometries and orientations during the Cretaceous and Tertiary deformation, with the present-day differences caused only by the Miocene indentation of the Southern Alps.

Froitzheim, N., Schmid, S.M. & Conti, P. (1994): Repeated change from crustal shortening to orogen-parallel extension in the Austroalpine units of Graubünden. - Eclogae Geologicae Helvetiae, **87**: 559-612.
Habler, G., Thöni, M. & Sölva, H. (2006): Tracing the high pressure stage in the polymetamorphic Texel Complex (Austroalpine basement unit, Eastern Alps): P-T-t-d constraints. - Mineralogy and Petrology, **88**: 269-296.
Meier, A. (2003): The Periadriatic fault system in Valtellina (N-Italy) and the evolution of the southwest-ern segment of the Eastern Alps. - 1-190, PhD-Thesis ETH Zürich, Zürich.
Schmid, S.M., Fügenschuh, B., Kissling, E. & Schuster, R. (2004): Tectonic map and overall architecture of the Alpine orogen. - Eclogae Geologicae Helvetiae, **97**: 93-117.
Wagreich, M. (1995): Subduction tectonic erosion and Late Cretaceous subsidence along the northern Austroalpine margin (Eastern Alps, Austria). - Tectonophysics, **242**: 63-78.

The thermochronological evolution in the area of the Giudicarie fault system

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Based on 129 zircon fission track (ZFT) data a contour map of the present day ZFT age distribution in the area around the Giudicarie fault system was constructed. The most eye-catching feature is the corridor of young, Miocene ZFT ages, formed by small tonalitic intrusions along the Northern Giudicarie fault. This corridor connects Early Miocene (17-23 Ma) ZFT ages of the NE-Adamello with the Miocene (23-9 Ma) ZFT ages of the Meran-Mauls basement and the Tauern window. This narrow corridor is bounded to the SE by Southalpine sediments characterized by partially reset ZFT ages and towards NW by Oligocene ZFT cooling ages found in the Austroalpine units. This requires a tectonic model capable of explaining the presence of young tonalitic lenses, or, more generally speaking, a corridor of younger low-T cooling ages between two earlier or less exhumed blocks. The Eo- to Oligocene intrusion ages of the tonalities (32±1 Ma - 38.9±0.4 Ma, U/Pb dating on zircon using LA ICP-MS; Pomella 2010), their granitic texture, and the lack of contact metamorphism around the lenses argue against a late and/or shallow intrusion of the tonalites in a fault zone already cooled below the zircon partial annealing zone (ZPAZ, 180-300 °C; Hurford & Green 1983).
As the small intrusive bodies are considered to be sheared