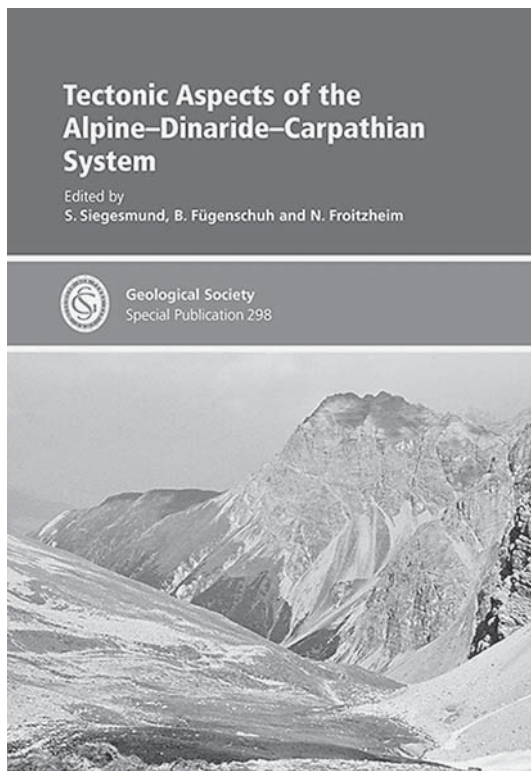


## Book reviews

Tectonic aspects of the Alpine Dinaride Carpathian system, edited by S. Siegesmund, B. Fuegenschuh & N. Froitzheim, 2008. Geological Society (London) Special Publication 298. Hardback, 448 pages. Price GBP 90.00 (fellows: GBP 45.00; corporate affiliates: GBP 72.00; other societies' price: GBP 54.00). ISBN 978-18-6239-252-6.



This book is a valiant attempt by the three editors to turn interest towards the key aspects of the tectonic evolution of the three mountain chains, and it is a welcome addition to Alpine literature. The book is dedicated to the Swiss geologist Stefan Schmid in recognition of his merits in structural geology and tectonics.

The editors' foreword is well written; it is also a good introduction to seven sets of contributions: Pre-Alpine heritage and Alpine reactivation (4 contributions); Mesozoic palaeogeography and Alpine subduction and collision processes (2 contributions); Extrusion tectonics – from the Eastern Alps to the Carpathians and

the Pannonian Basin (4 contributions); Orogen parallel and orogen perpendicular extension (3 contributions); Record of orogeny in foreland basins (2 contributions); Tectonometamorphic evolution (2 contributions); and Relations between Alps, Apennines and Corsica (1 contribution). The volume thus consists of 18 independent contributions, written by 76 authors. Some authors are represented more than once. Thirty eight authors are from Germany, twelve from Switzerland, six from Austria, five from Hungary, three from Italy and Romania, two from Brazil and the United States, and one from Croatia, France, Great Britain, Netherlands and Norway.

The contributions represent an analysis of studies that are largely based on combinations of fieldwork and a wide variety of laboratory analyses, including whole-rock and trace-element geochemistry, geochronology, structural and microstructural analysis, sedimentary basin analysis, geodynamic modeling, palaeomagnetism, thermochronology, seismics, nanofossil analysis, and petrography.

The first, lengthy, contribution is by Schulz, Steenken & Siegesmund, who present the geodynamic evolution of the Austroalpine basement south of the Tauern Window, from Early Palaeozoic active to passive margin evolution, to Variscan-to-Permian metamorphic events, and to Alpine deformation, metamorphism and uplift. Siegesmund, Layer, Dunkl, Vollbrecht, Steenken, Wemmer & Ahrendt combine structural and microstructural analysis and geochronology. Their nicely illustrated contribution provides new constraints on the timing and kinematics of the Ivrea Zone of the

Southern Alps. Noteworthy is the contribution by Froitzheim, Derks, Walter & Sciunnach on the extensional character of Permian tectonics: they are the first to identify a Permian detachment fault in the Alpine basement. According to Veselá, Lammerer, Wetzels, Söllner & Gerdes, the post-Variscan Permo-Carboniferous clastics of the Tauern Window accumulated in elongate intramontane basins.

The Mesozoic palaeogeography and subduction and collision processes are discussed in two contributions. Dallmeyer, Neubauer & Fritz present new  $^{40}\text{Ar}/^{39}\text{Ar}$  and structural data from the Meliata unit of the Western Carpathians, an important blueschist-bearing structural element within the Alpine Carpathian system. Berger & Bousquet compile already published data on the ages of the high pressure/low temperature metamorphic evolution of the Western Alps, and discuss possible models for the geodynamic evolution of the Alps.

Based mostly on structural and palaeomagnetic data from the Medvednica Mt. in northern Croatia, Tomljenovic, Csontos, Márton & Márton propose a kinematic scheme for the tectonic evolution of the northwestern Internal Dinarides, with four deformational events of pre-Miocene age. Numerous data on fission tracks and apatite (U-Th)/He dating of samples derived from the pre-Mesozoic basement and the autochthonous sedimentary cover of the Tisza Dacia block in Romania are presented by Gröger, Fügenschuh, Tischler, Schmid & Föcken. The first of the two contributions that focus on the Tauern Window in the eastern Alps is by Rosenberg & Schneider. Based on new structural and microstructural data, they analyse the 300 km long sinistral strike slip Salzach Ennstal Mariazell Puchberg fault and the internal deformation and exhumation of the Tauern Window. The second contribution on the Tauern Window, by Lammerer, Gebrande, Löschen & Veselá, is based on a combination of fieldwork and seismics. The authors construct a depth-extrapolated cross-section and query the presently accepted escape model by proposing a new idea of transpressive movements within the Tauern Window.

Two contributions, one by Ustaszewski & Pfiffner, and the other by Pleuger, Nagel, Wal-

ter, Jansen & Froitzheim, concentrate on the western Central Alps. While Ustaszewski & Pfiffner explore the postglacial tectonic activity, Pleuger et al. focus on the orogen-parallel and orogen-perpendicular extension, and orogen perpendicular shortening in the Monte Rosa nappe and the southern Steep Belt.

Ciulavu, Ferreiro Mählmann, Schmid, Hofmann, Seghedi & Frey combine microscopy, electron microprobe analysis, XRD, and organic-matter reflectance to produce the first systematic study that maps the grade of metamorphism in the Danubian Window, South Carpathians. Tischler, Matenco, Filipescu, Gröger, Wetzels & Fügenschuh provide new constraints on the thrusting of ALCAPA onto Tisza Dacia, based on a detailed sedimentary analysis of the Oligocene to Early Miocene (Burdigalian) foreland-basin siliciclastics in northern Romania. In a calcareous nannofossil study of the Dinaric flysch of coastal Croatia, Mikes, Báldi Beke, Kázmér, Dunkl & Von Ey-natten indicate that the flysch sedimentation lasted at least up to the mid-Miocene, which bears important implications for the Cenozoic palaeogeography and deformation history of the Outer or Karst Dinarides.

The last three contributions in the volume are review papers. Nagel's overview of metamorphic and structural record of the Adula nappe in the central Alps is followed by a multi-authored review of metamorphism and metasediments in the Alps. The volume is concluded with the contribution by Molli: an overview of the Northern Apennine Corsica orogenic system. The subject of this study seems to make this last contribution completely out of place.

This handsome volume comes with 188 figures, most of them in black and white, 31 tables, two appendix figures and two appendix lists. Although some of the figures are crammed full, which makes it difficult to discern some features that are discussed, most of the illustrations are well done, sharp and clear, with adequate captions and labelling of features. Three folded pull out sheets with maps turn out very nice. The volume is well produced and a six-page subject index adds to the value of this book.

The greatest shortcoming of this book is the lack of contributions focused on the Carpathians and the Dinarides, the two mid-size European mountain chains that are poorly known outside of their area. The volume's title is consequently somewhat misleading, as the Alps are treated in a fair amount of contributions, while the Carpathians and the Dinarides are not. I believe that a volume entitled "Tectonic aspects of the Alpine Dinaride Carpathian system" should find room for more than two contributions related to the Dinarides.

In conclusion, despite the predominance of Alpine literature, this up-to-date book yields many new data. It includes results obtained by the application of new laboratory methods, and it gives answers to some of the old questions, while asking new ones. It is to be recommended mostly to geologists interested in Alpine tectonics and regional geology. In these times of economic hardship, its cost is probably prohibitive to most students.

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