

Peri-Adriatic mélanges and their evolution in the Tethyan realm

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(Accepted 2 April 2009)

In the peri-Adriatic region, mélanges represent a significant component of the Apennine and Dinaride–Albanide–Hellenide orogenic belts as well as ancient and present-day accretionary wedges. Different mélange types in this broad region provide an excellent case study to investigate the mode and nature of main processes (tectonic, sedimentary, and diapiric) involved in mélange formation in contrasting geodynamic settings. We present a preliminary subdivision and classification of the peri-Adriatic mélanges based on several years of field studies on chaotic rock bodies, including detailed structural and stratigraphic analyses. Six main categories of mélanges are distinguished on the basis of the processes and geodynamic settings of their formation. These mélange types are spatially and temporally associated with extensional tectonics, passive margin evolution, strike-slip tectonics, oceanic crust subduction, continental collision, and deformation. There appears to have been a strong interplay and some overlap between tectonic, sedimentary, and diapiric processes during mélange formation; however, in highly deformed regions, it is still possible to distinguish those mélanges that formed in different geodynamic environments and their main processes of formation. This study shows that a strong relationship exists between mélange-forming processes and the palaeogeographic settings and conditions of mélange formation. Given the differences in age, geographic location, and evolutionary patterns, we document the relative importance of mélanges and broken formations in the tectonic evolution of the peri-Adriatic mountain belts.

Keywords: olistostromes; broken formation; mud diapirs; subduction processes; subduction channels; obduction

Introduction

In the peri-Adriatic region (Figure 1), mélanges are common as part of the Apennines and Dinaride–Albanide–Hellenide orogenic belts and accretionary wedges. Their formation and incorporation into these orogenic systems played a significant role in the Mesozoic–Cenozoic tectonic evolution of the central Mediterranean region.

The term ‘mélange’ was first coined by Greenly (1919) to describe a unit of highly disrupted rocks in North Wales (Anglesey Island). After its reintroduction by Hsu (1968), the term mélange has been applied worldwide to indicate chaotic, block-in-matrix rocks.

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