

Orogenic systems, including their external fold-and-thrust belts and foreland basin systems are influenced by pre-existing structures due to inherited extension, variations in thermal regime, presence or absence of evaporitic sequences, syn-tectonic sedimentation, imbrication of sub-thrust units, or climatic changes. These factors have a fundamental impact on structural styles as well as the distribution of deformation in space and time. Defining the correct structural style of fold-and-thrust belts including its uncertainty, and understanding the controlling factors are necessary steps towards predicting their long- and short-term evolution, with implications for crustal/lithospheric rheology, mountain building processes and seismic hazard, and for the correct assessment of their potential for hydrocarbon exploration. For these reasons, fold-and-thrust belts and adjacent foreland basin systems represent outstanding places to investigate (active) deformation and surface processes and the way these processes interact to shape mountain belts. On a short-time scale, the pattern of deformation of fold-and-thrust belts provides information on crustal mechanics, the sequence of active faulting and its relation to earthquakes; on a long-time scale, the structure and dynamics of the fold-and-thrust belt - foreland basin systems offers unique insights into the influence of structural, thermal and rheological inheritance, together with coupling between surface and deep processes. Thermochronology has brought new constraints on paleo-burial, exhumation and vertical movements, as well as sediment routing in fold-and-thrust belt-foreland basin systems. In addition, 2D-3D dynamic modeling by means of analog experiments and numerical simulation has been increasingly used as a tool to validate kinematic restorations and to test the influence of varying boundary conditions and material rheology on mountain building at the lithospheric scale.

This session brings together geoscientists to present and discuss multidisciplinary approaches in which a wide range of tools are integrated. We welcome contributions reporting regional case studies and their links to hinterland portions of mountain belts, as well as more topical works on structural uncertainty analysis, seismology, mechanics, temperature evolution, structural geology, geomorphology, exhumation and paleo-elevation, sediment transport and mass balance, surface processes and basin dynamics during pre- and syn-collision stages, together with analogue or numerical modeling approaches. We aim at providing a forum for all disciplines concerned with building and shaping of orogenic wedges by tectonics and climate to meet and discuss their views.