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Translation of indentation into lateral extrusion across a restraining bend: The western Tauern Window, Eastern Alps

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In the Oligocene–Miocene, the western Tauern Window accommodated shortening along the tip of the South Alpine intender and translated this deformation into eastward lateral extrusion. Deformation, comprises tight and upright folds within a network of sinistral shear zones. The folds refold Cretaceous foliations in the Austroalpine units and Early Alpine foliations inside the western Tauern Window and extend from the Meran-Mauls basement across the western Tauern Window until Mittersill, where they bend into the SEMP Fault Zone. The tight folds of the western Tauern Window strike ENE, have sub-horizontal double-plunging fold axes, sub-vertical axial planes often associated with axial plane foliations, and large amplitudes (ca. 20 km). In contrast, in the central and eastern Tauern Window the folds strike E to ESE, have smaller amplitudes (ca. 10 km), and no axial plane foliation.
The structural results point to a large-scale sigmoidal fold and shear zone pattern centered within the western Tauern Window, having its northeastern termination in the area of Sterzing/Mauls and its southwestern termination in the area of Krimml/Mittersill. Therefore, the western Tauern Window, characterized by a transpressional strain field, links the sinistral-transpressive, NNE-striking Giudicarie Fault Belt with the sinistral-transpressive, E-striking SEMP Fault Zone, forming a large-scale restraining bend.
The inferred amounts of sinistral displacement along the Giudicarie and the SEMP Fault Zones are similar (ca. 70 and 60 km, respectively). Of the 70 km of NNE-directed displacement along the Giudicarie Belt, ca. 55 km of shortening were accommodated in the western Tauern Window (including the Austroalpine units to the south). Shortening estimate based on the amplitude of upright folds is in the order of 32-38 km suggesting that the remaining 17-23 km were accommodated by the sinistral transpressive shear zones. Therefore, sinistral shears zones in the western Tauern Window contribute to E-W extension in the range of 20-15 km.