

HOW TO DELIMIT CRYSTALLINE NAPPES? AN EXAMPLE FROM THE CIMA LUNGA AND ASSOCIATED UNITS IN THE CENTRAL ALPS (SWITZERLAND)

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In the crystalline nappe stack of the internal part of the Alps, metasedimentary rocks have long been used as nappe separators. In areas where such metasedimentary nappe separators are missing, tracing a nappe boundary may be ambiguous and may lead to different interpretations of the nappe stack. We are trying to re-examine and delimit general tectonic units on the basis of their lithological content and their metamorphic and kinematic evolution. In the Central Alps we distinguish two groups of units: (1) coherent continental basement units, some of them still containing prealpine features; (2) fragmented units including Alpine HP-rocks and oceanic parts. We propose that the second group includes slices of the subduction channel that underwent intense deformation during subduction. For example, a representative element of Type 2 is the Cima Lunga unit, which is defined here by its rock association (marble, calcsilicates, ultramafic rocks and eclogitic amphibolites) and by the evidence of HP-metamorphism. In the remapped southern part, the Cima Lunga unit is only some 100 meters thick. It separates the underlying Simano nappe from the clearly overlying Maggia nappe. The thickness and differences in metamorphic evolution, as compared to surrounding units, characterize the Cima Lunga unit as nappe-divider rather than a proper nappe. The Maggia and the Simano nappes are both Type 1 units, as they include a basement with prealpine structures and leucocratic metagranitoids. Further west, the corresponding European basement units (Maggia and Antigorio nappes) are separated by the Someo zone, which includes mesozoic metasediments. Newer findings even indicate

eclogitic relics inside this zone. Those data in combination with structure of the Someo zone may indicate also between Maggia and Antigorio nappes relicts of a Type 2 unit.

In terms of metamorphic evolution and lithological contents, the Cima Lunga unit can be compared with other units of the Central Alps (i.e. parts of the Southern Steep Belt; Adula), but those units show different sizes and different final tectonic positions. Type 2 units have a similar early history, but they are tectonically transported into continental basement at different levels. Tectonic transport may also include „out of sequence“ thrusting. We recognize different pieces of oceanic fragments in the Central Alps (i.e. Cima Lunga unit; Adula nappe; Southern Steep Belt; Antrona unit), but we emphasize that their role during nappe stacking may differ. Some oceanic- and mantle fragments are welded to the continental basement early (e.g. Adula and Monte Rosa nappes), other pieces (Cima Lunga unit) may act as a nappe separators. The different history of oceanic fragments puts a question mark behind the use of such units as paleogeographic markers.

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