SUBAQUEOUS VOLCANICLASTIC SUCCESSIONS IN THE MIDDLE TRIASSIC OF WESTERN HUNGARY

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Abstract

In western Hungary Middle Triassic sedimentation was already from the Peramian/Triassic till the end of the Early Anisian that was followed by carbonate platform disruption. Abalonids and volcanism started due to Late Anisian tectonism. The Middle Anisian Lower cyclothematic platform carbonate rocks are sharply overlain by mudstone, grey-orange clastic volcanioclastic breccia with ammonites. The sequence is overlain by a few cm thick altered volcanoclastic “pietre verde”. These beds are mottled/biostromal, biotomic with green, yellowish, red matrix and slates, and micro-nodules/marbleine crystals. The K-rich tuffite becomes pyroclastic with increasing ash-fall. These beds are thicker in the Anisian basin (10 m) than above the platforms (5-6 m). The Upper Ladinian sequence consists of subrounded (some red, grey, biotomic with layers, and with alternate layers of tuff, sand and thin breccia layers (‘position beds’). This sequence (as Buchenstein Formation) is deposited in a pelagic basin, where carbonate deposition was overlain by volcanism. The deposition of these sequences (50 m) occurred during the Longobardian substage in condensed sedimentation. In contrast in the Southern Alps the Upper Ladinian volcanic rocks are represented by subaqueous sandstone-elliptical volcanoclasts. In western Hungary the Upper Anisian to Lower Ladinian volcanoclasts are thick while they are subordinate in the Upper Ladinian. Similarly, the thickness of the sequences between volcanoclastic rocks of the Lower Ladinian of western Hungary (trms of m) with the Livinallongo Formation (Dolomites, Italy) (180-200 m). The wide distribution of Lower Ladinian pyroclastics related to the higher explosivity of the magma and/or subaqueous reworking/redistribution. The volcanism became less and episode during the Late Ladinian in the Southern Alps. In Hungary the sequence consists of volcanoclastic sandstones (‘wengen group’). Southern Alps. Volcanic rocks are subordinate to the volcanic sequence.

Middle Triassic Stratigraphy in Western Hungary

Middle Triassic Volcanoclastic Successions in Western Hungary

Facies Relationship to Southern Alps / Latemar

Eruptive Mechanism

A classic volcanoclastic bed called Tuff interbedded in a pelagic carbonate mud. The volcanoclastic unit (VDH) is a 1-3 cm thick layer rich in angular to subrounded glassy volcanic fragments, impact rinds, pellets, juvenile tuffs and tuff breccias. The facies relationship to the Southern Alps is shown in the Figures. These beds have been responsible for the formation of volcaniclastic channels in the Southern Alps. In the centre of the Latemar (Southern Alps) 2 types are known: a) volcanoclastic breccia zones, with fluidal channels, collapsed and rock blocks, emplaced by hot pyroclastic eruptions and identified as differentiation of phreatomagmatic volcanism. The link between thesealer “felsos” and these tuff breccia-pyroclastic eruptions is not established yet, however it seems plausible.

Typical phreatomagmatic facies include: a) tuff breccia-pyroclastic eruptions: the volcaniclastic rocks are generally thin (dm-scale) and situated between turbidite and pyroclastic breccia. b) Tuff breccia: the volcaniclastic rocks are generally well-packed and intimately mixed with volcanoclastic rocks. The volcanoclastic rocks are generally thin (dm-scale) and situated between turbidite and pyroclastic breccia. c) Tuff breccia: the volcanoclastic rocks are generally thin (dm-scale) and situated between turbidite and pyroclastic breccia. d) Tuff breccia: the volcanoclastic rocks are generally thin (dm-scale) and situated between turbidite and pyroclastic breccia. e) Tuff breccia: the volcanoclastic rocks are generally thin (dm-scale) and situated between turbidite and pyroclastic breccia. f) Tuff breccia: the volcanoclastic rocks are generally thin (dm-scale) and situated between turbidite and pyroclastic breccia. g) Tuff breccia: the volcanoclastic rocks are generally thin (dm-scale) and situated between turbidite and pyroclastic breccia. h) Tuff breccia: the volcanoclastic rocks are generally thin (dm-scale) and situated between turbidite and pyroclastic breccia. i) Tuff breccia: the volcanoclastic rocks are generally thin (dm-scale) and situated between turbidite and pyroclastic breccia. j) Tuff breccia: the volcanoclastic rocks are generally thin (dm-scale) and situated between turbidite and pyroclastic breccia. k) Tuff breccia: the volcanoclastic rocks are generally thin (dm-scale) and situated between turbidite and pyroclastic breccia. l) Tuff breccia: the volcanoclastic rocks are generally thin (dm-scale) and situated between turbidite and pyroclastic breccia. m) Tuff breccia: the volcanoclastic rocks are generally thin (dm-scale) and situated between turbidite and pyroclastic breccia. n) Tuff breccia: the volcanoclastic rocks are generally thin (dm-scale) and situated between turbidite and pyroclastic breccia. o) Tuff breccia: the volcanoclastic rocks are generally thin (dm-scale) and situated between turbidite and pyroclastic breccia. p) Tuff breccia: the volcanoclastic rocks are generally thin (dm-scale) and situated between turbidite and pyroclastic breccia. q) Tuff breccia: the volcanoclastic rocks are generally thin (dm-scale) and situated between turbidite and pyroclastic breccia. r) Tuff breccia: the volcanoclastic rocks are generally thin (dm-scale) and situated between turbidite and pyroclastic breccia. s) Tuff breccia: the volcanoclastic rocks are generally thin (dm-scale) and situated between turbidite and pyroclastic breccia. t) Tuff breccia: the volcanoclastic rocks are generally thin (dm-scale) and situated between turbidite and pyroclastic breccia. u) Tuff breccia: the volcanoclastic rocks are generally thin (dm-scale) and situated between turbidite and pyroclastic breccia. v) Tuff breccia: the volcanoclastic rocks are generally thin (dm-scale) and situated between turbidite and pyroclastic breccia. w) Tuff breccia: the volcanoclastic rocks are generally thin (dm-scale) and situated between turbidite and pyroclastic breccia. x) Tuff breccia: the volcanoclastic rocks are generally thin (dm-scale) and situated between turbidite and pyroclastic breccia.
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