Structural contacts in the Late Paleozoic accretionary wedge of central Chile and their tectonic significance for the evolution of the accretionary complex *Vortrag*

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The Chilean accretionary wedge is part of a Late Paleozoic subduction complex that developed during subduction of the Pacific plate underneath South America. The wedge is commonly subdivided into a structurally lower Western Series and an upper Eastern Series. Understanding the contact between both series has been a long standing problem and is fundamental for the understanding of the evolution of the wedge system. We show the progressive development of structures and finite strain from the least-deformed rocks in the eastern part of the Eastern Series of the accretionary wedge to higher grade schist of the Western Series at the Pacific coast. Upright chevron folds of sedimentary layering are associated with a penetrative axial-plane foliation, S_1. As the F_1 folds became slightly overturned to the west, S_1 was folded about recumbent open F_2 folds and an S_2 axial-plane foliation developed. Near the contact between the Western and Eastern series S_2 represents a prominent subhorizontal transposition foliation. Towards the structural deepest units in the west the transposition foliation became progressively flattened. Finite-strain data as obtained by R_f/ϕ analysis in metagreywacke and X-ray texture goniometry in phyllosilicate-rich rocks show a smooth and gradual increase in strain magnitude from east to west. There is no evidence for normal faulting or significant structural breaks across the contact. We interpret the progressive structural and strain evolution between both series to reflect a continuous change in the mode of accretion in the subduction wedge. Before ca. 320-290 Ma the rocks of the Eastern Series were frontally accreted to the Andean margin. Frontal accretion caused horizontal shortening and upright folds and axial-plane foliations developed. At ca. 320–290 Ma the mode of accretion changed and the rocks of the Western Series were underplated below the Andean margin. This basal accretion caused a major change in the flow field within the wedge and gave rise to vertical shortening and the development of the penetrative subhorizontal transposition foliation.

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