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The relations between Cadomian peri-Gondwana blocks and the interior of Gondwana

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The Variscan and Alpine orogenic edifices of Europe-Turkey contain many blocks that were located along the periphery of Gondwana in Late Neoproterozoic and Early Paleozoic times. In particular the Cadomian-type blocks were probably located next to the West and North Africa and Arabia (WNAA) part of Gondwana. Here the relations between them, and their implications for the plate tectonic setting and paleogeography, are examined.
As the WNAA formed by assembly of many originally separate terranes 650-620 Ma ago or somewhat later, it was only then a continuous peripheral array of terranes could form along the margin of this part of Gondwana. In earlier periods these terranes were most likely not adjacent to the components of WNAA. To accrete to the WNAA, oceanic areas between them had to be eliminated. When positioned next to the WNAA, the peripheral terranes were delimited by a subduction zone, whereas the plate boundaries that separated the components of the WNAA were eliminated. In the Ediacaran WNAA was stabilized and considerably eroded in the aftermath of the Pan African orogeny, while in the peripheral domain igneous activity occurred in many places, and sedimentary basins formed. Then many areas were affected to various extents by the Cadomian orogenic phase. Since the Cambrian the WNAA became a stable platform, usually without any igneous activity, and was covered by an extensive veneer of mature silici-clastics. In contrast, in the Cambrian and Ordovician igneous activity occurred in the peripheral domain, while differential vertical motions and faulting created sedimentary basins and eroded highs. Most likely this activity was usually related to extension or transtension.
During these periods the WNAA supplied abundant sediments to the peripheral domain. However, it appears that some sediments had sources located within the peripheral domain or along the junction of the two domains. Examination of the conditions that were required to allow the dispersal of the sediments provides important constrains on the paleogeography of the peripheral domain.
Though the available information is still incomplete, an a wide zone along the junction between the WNAA and the peri-Gondwana domains is not exposed, examination of their relation can provided significant insights regarding the plate tectonic setting in which they developed. Moreover, the information regarding the nature and the dispersal of sediments over these domains provides important insights regarding their paleogeography and structure.