D-25: Origin of the basinal synforms in the central part of the high-grade basement of Sri Lanka

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Large-scale, elliptical basinal synforms (so-called "Arenas") occurred in the western and central part of the basement of Sri Lanka. The origin of these doubly plunging synforms was not properly understood. The rocks exposed within these structures belong to the Kadugannawa Complex (KC) which had recently been included in the Wanni Complex (WC). The reassignment led to a better understanding of the mechanism of their formation. The present elliptical and basinal map pattern of these buckle folds, which represent type I interference folds of Ramsay, was a result of superimposition of D_5 folds on D_4 folds.

These broad synforms (class I) were alternately separated by very narrow sharp-crested antiforms (class 3). The rocks - quartzite, pink-fesldpar granites, thick basic rocks (Kandy intrusion) and calc-silicate gneiss - folded by these synforms formed a thick, more competent lithological unit making the base of the WC. The rocks that folded into the narrow antiforms were mostly marble, metapelites, granitic rocks and thin quartzite layers. These rocks belonged to the Highland Complex (HC) and formed a less competent lithological unit having layers of different thickness. The viscosity contrast between the rocks on each side of the boundary between the WC and HC resulted in the formation of large scale cuspatelobate folds during D_5 buckling. The broad basinal synforms represented lobates and the intervening sharp crested antiforms formed cuspates.

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