

## DISCUSSION

### LITHO-TECTONIC SEQUENCE AND THEIR REGIONAL CORRELATION ALONG THE LOHIT AND DIBANG VALLEYS, EASTERN ARUNACHAL PRADESH by D.K. Misra. Jour. Geol. Soc. India, 2009, v.73, pp.213-219.

V. Srinivasan, GSI, Chennai – 600 032; *Email:* v.Srinivasan\_geo@rediffmail.com comments:

This paper covers the area between Dibang River and Lohit River in the eastern part of Arunachal Himalaya. I worked in the area lying west of Dibang River or Siang River (Srinivasan, 2003) and south of Lohit River (Srinivasan, 2007). So this paper fills the gap area between my two works. I congratulate the author for bringing out a good geological map in this landslide prone hazardous stretch.

I synthesized the geological details in these three works (Srinivasan, 2003; Srinivasan, 2007; Misra, 2009) and I arrived at the following conclusion:

The Main Boundary Fault (MBF) that separates the Siwaliks (Tertiary) from the structurally overlying Gondwana slices and Miri meta-quartzite extends towards east into the area mapped by the author as Mishmi thrust. The inversion of metamorphism reported by him above Mishmi thrust is also observed above MBF between Miri meta-quartzites and Ziro gneiss. The exact lithology in the group of rocks bounded between two thrusts can vary laterally and what we have to see is the 'inversion of metamorphism' and it is observed above MBF also.

South of the Lohit River also the 'inversion of metamorphism' is observed between Tilung Formation (low-grade metamorphics) and relatively high-grade Nam Dapha Crystalline Complex above the Mishmi thrust (Srinivasan, 2007). Here (right bank of Noa Dihing River) the low-grade metamorphics (Tilung Formation) is exposed as a narrow belt as in the case of Sewak Group of the author. The lower Mishmi thrust of Srinivasan (2007) can be correlated with Mishmi thrust and the upper Mishmi thrust of Srinivasan (op.cit.) can be correlated with Lalpani thrust. I am of the opinion that these two close-spaced thrusts (lower Mishmi and upper Mishmi thrust of Srinivasan, 2007; Mishmi thrust and Lalpani thrust of Misra, 2009) should be considered as belonging to a single thrust system as the low-grade metamorphics bounded by these two close-spaced thrusts is narrow and at many places tapers out.

Srinivasan (2007) reported that the Mishmi thrust continues into Myanmar as 'Sagaing Fault', which is an

active fault with dextral strike-slip movement (Vigny et al. 2003). So the MBF traced by Srinivasan (2003) from Bhutan border to Dibang River in the east, the Mishmi thrust between the Dibang River and Lohit River by Misra (2009), the Mishmi thrust traced south of Lohit River along the foothill of Mishmi hills and in the right bank of Noa-Dihing River by Srinivasan (2007) and the Sagaing fault in Myanmar represent the same tectonic break. In the roughly E-W trending segment of this regional scale tectonic break (plate boundary?) we find more evidences of thrusting and in the N-S trending segment more evidences for dextral strike-slip movement and this could be due to northward movement of Indian plate.

I wish to differ with the author on the point of thrusting of low-grade metamorphics (Sewak Group) over Quaternary sediments along Mishmi thrust. The Mishmi thrust actually separates the Tertiary from the structurally overlying metamorphics (Sewak Group and Lalpani Group) and since the Tertiary in this area (between Dibang River and Lohit River) is covered beneath huge thickness of colluvium and alluvium, it looks as if the Mishmi thrust separates the Quaternary from the metamorphics. In this area, there are plenty of evidences for neo-tectonism and based on my field experience in the foothill part of Arunachal Himalaya, I can state that these Recent faults are not thrusts.

**D.K. Misra**, Wadia Institute of Himalayan Geology, Dehra Dun- 248001, replies:

I thank Dr. Srinivasan for his interest and careful reading of my paper "Litho-tectonic Sequence and their Regional Correlation along the Lohit and Dibang Valleys, Eastern Arunachal Pradesh". My reactions against some of the specific comments made by him are as under:

Besides the present work, I also worked in the area lying west of Dibang River up to the Bhutan border, west of Kalatang, in Kameng valley. The Main Boundary Thrust (MBT) which separates the Tertiary sediments of the Siwaliks from the tectonically overlying Lesser Himalayan Gondwana slices and Miri meta-quartzite (Misra, 2007a; Srivastava and Misra, 2008; Srivastava et al. 2009). The MBT extends towards east into Dibang and Lohit valleys as

Mishmi thrust. It is to note that the Siwalik Group of rocks does not extend beyond Mebo in the Siang valley, where they are probably overlapped or cut-off by the Main Boundary Thrust. Similarly the Miri quartzite does not extend eastward beyond NNW-SSE trending Dibang River fault. The fault has caused dextral displacement of the MBT. Most significant feature of this fault is that it has restricted the Miri quartzite to its west. Therefore, In the Dibang and Lohit valleys, the low-grade Sewak Group of rocks, thrust over the Brahmaputra

Alluvium along the Mishmi thrust. I agree with Dr. Srinivasan regarding the neo-tectonism along the Mishmi thrust but it is a later phenomena developed due to reactivation of the earlier thrust (Misra, 2007b). I do not agree with Dr. Srinivasan on the point regarding eastward extension of Mishmi thrust in Myanmar as Sagaing Fault because these two faults belong to two different tectonic domains. The Sagaing fault delimiting the Mogok Gneissic Belt of central Burma, while the Mishmi thrust belongs to the Himalayan part.

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