

DISCUSSION

SARASWATI NADI IN HARYANA AND ITS LINKAGE WITH THE VEDIC SARASWATI RIVER – INTEGRATED STUDY BASED ON SATELLITE IMAGES AND GROUND BASED INFORMATION by B.K. Bhadra, A.K. Gupta and J.R. Sharma. Jour. Geol. Soc. India, v.73, 2009, pp.273-288.

Kamal Kant Sharma, Government Post-graduate College, Sirohi - 307 001; *Email*: sharmasirohi@yahoo.com, comments:

I appreciate authors for making an attempt to establish relationship between present Sarasvati Nadi and Vedic Sarasvati of the Haryana region. I would like to make the following comments on this paper.

1. The authors used the word “Saraswati” instead of “Sarasvati” in the text of the paper. The word “Sarasvati” is accepted and widely used in the publication of the Geological Society of India, Bangalore. Contrary to this, in reference section the word Sarasvati is frequently used. It is expected that the terminology should be clear and consistent in the peer reviewed papers.
2. The authors are not clear about the river course of Vedic Sarasvati in the study region. In Fig.1, Sarasvati Nadi is shown as Vedic Saraswati. In Fig.2, Ghaggar is marked as Vedic Sarasvati and on page 287 (vii) Yamuna River is referred as Vedic Sarasvati. In the beginning of the paper, opinion from different workers on the course of Vedic Saraswati should be discussed. It is strange that the reference of Rigveda or any hymn on Vedic Sarasvati is not presented, to establish the course of the river. The other Vedic river Drishadvati was also originated from Adi Badri region. It is believed that the present Chautang River is relict course of Vedic Drishadvati (Sridhar et al. 1999). Figure 1 clearly indicates common catchment area of Saraswati Nadi and Chautang. There is a possibility of linkage between present Sarasvati Nadi with Vedic Drishadvati instead of Sarasvati Nadi. The authors are silent on the status of other Rivers of Vedic time flown in Haryana.
3. The detail presented on Adi Badri is not original one and reproduces the work of Puri and Verma (1998), Puri (2001) and contents from <http://yamunanagar.ni>. Website. The site hosts a web page entitled – Presence of Vedic Saraswati Signature in Adi Badri Area, District Yamunanagar, Haryana by V.M.K. Puri. The authors neither referred the site nor made any reference of this. Dr. Vijay Mohan Kumar Puri, an expert on Himalayan glaciers, reported metamorphic rocks on the terraces created by Himalayan glacial River Sarasvati and proved that Adi Badri was the site where the river entered the plains from its Himalayan home. Further, Dr. Puri opined that origin of Sarasvati from Rupin-Supin glaciers north of Paonta Saheb, where a Yamuna tear occurred on account of plate tectonics and caused a lateral shift of the Siwalik ranges and consequent eastward migration of the Yamuna, a tributary of Sarasvati, taking the Sarasvati waters to join the Ganga at Prayag and create the Triveni Sangam. Contrary to this, the paper infers that Adi Badri as the place of origin of Vedic Sarasvati without giving any logic for this.
4. The facts presented to establish linkage between present Sarasvati Nadi with Vedic Sarasvati are vague and unscientific. There are several streams and rivers named as Sarasvati in India. There are references of Vedic Sarasvati from Afghanistan. Besides this, there is prominent river course in Gujarat named as Sarasvati. Several religious spots, historical villages are situated on the banks of Gujarat Sarasvati River. Sidhpur is an ancient township on the banks of Sarasvati in Gujarat. Even Ganga-Yamuna confluence is religiously named as Ganga-Yamuna-Sarasvati. In such a situation merely on the basis of a channel named, as Sarasvati Nadi of Haryana cannot be considered as an evidence for existence of the Vedic Sarasvati.
5. Figure 2 indicates existence of several palaeochannels in Haryana. These channels do not show any relationship between Sarasvati Nadi and the Vedic Sarasvati. The authors presented IMD rainfall data of last 50 years (1951 to 2003) of northern Haryana. Similarly annual discharge data of 1972-1989 is discussed. These data are irrelevant for establishing linkage between rivers of Vedic period.
6. The authors described presence of historical remnants of Budha Stupa near Sarasvati Nadi of Haryana. This evidence proves Buddhism and in no way confirms Vedic culture in the region. Corroborating this with Veda is miserable. Similarly, Asthi immersion, Buddhist artifacts,

brick stupa, Buddhist vihar etc identified by ASI, New Delhi, cannot be taken as substantial proof to establish the channel as the Vedic Saraswati.

7. The authors presented a detailed discussion on river sediments. The sediments of study area were identified by Puri and Verma (1998), Puri (2001) and Dwivedi et al. (2006). These earlier workers described that these pebbles are of glacial origin and belong to Higher Himalayan metamorphic rocks. This confirms origin of Saraswati Nadi is from higher Himalayan region. The present authors described calcareous sandstone and quartzite petrography and presented sample photographs and microphotographs. On this basis, it is ascertained that calcareous sandstone is of sedimentary origin and quartzite is of metamorphic origin. I failed to understand the aim of the authors for giving the difference between sandstone and quartzite in this paper. This information is unwarranted and unrelated to theme and objective of the paper.
8. There is a discussion on possible linkage of Saraswati Nadi with Yamuna River (p.286) as a summary part prior to conclusion. It seems that the authors either deviated or stopped thinking about the title of the paper, which was – Saraswati Nadi in Haryana and its linkage with the Vedic Saraswati River. The conclusion section does not provide any punch line of the paper.

Summarising, the paper seems to be a passionately written print media news article rather than a scientific reporting. The authors could have worked out precise tectonic details of the study area with the help of aerial photographs, satellite data, etc in support of the hypothesis. The evidences like Asthi immersion, Buddhist artifacts, brick stupa, Buddhist Vihar etc cannot be considered as strong evidence for the assumption. The thin section details of quartzite and sandstone or the difference between them do not prove any linkage between Saraswati Nadi and Vedic Saraswati.

B.K. Bhadra, A.K. Gupta and J.R. Sharma, reply:

Authors are thankful to Dr. K. K. Sharma for his comments and keen interest on the paper. From the comments, it seems that Dr. Sharma assumed it to be a paper on Vedic Saraswati. Basically the paper aims for Saraswati Nadi of northern Haryana which has been a tributary of Vedic Saraswati River.

Further, it is to mention that the paper has been peer-reviewed by the eminent referees and has been improved for the content of the paper twice based on referees'

advice. They have gone through the contents of the paper critically and based on which the paper was thoroughly modified.

1. Authors are very much clear of the terminology of the words like 'Saraswati' and 'Sarasvati' used in different literature. For 'Vedic Saraswati River' though the name 'Sarasvati' is used by the Geological Society of India (Memoir No.42), but there are number of publications by eminent authors like K.S. Valdiya (2002) and other references like Puri and Verma (1998) and Puri (2001), the word 'Saraswati' has been used for the same river. Hence, there may not be any objection for use of this name in the present paper. The same has been clarified in reference to a similar comment by the referee's and has been accepted by the *JGSI*.

- The local name 'Saraswati Nadi' is mentioned in Survey of India toposheet (1:50k) of Haryana. In the present paper consistently the name 'Vedic Saraswati' has been used for the Vedic Saraswati River and 'Saraswati Nadi' for the Saraswati drainage of Haryana which is made clear at the beginning of the paper itself. As the authors have no right to change the name of the papers published by the other authors, the name 'Sarasvati' is retained where ever it appeared.
2. In the present paper, the findings in relation to the Saraswati Nadi of Haryana (a tributary to the Vedic Saraswati) have been discussed in detail and only a few references to Vedic Saraswati River have been made. Hence, the question does not arise in discussing Vedic Saraswati in detail. Ghaggar River is considered to be the palaeodrainage course of Vedic Saraswati which is already accepted by the majority of workers like Yashpal et al. (1980), Gupta et al. (2004) and others whose reference is already given in the paper. Reference of palaeo Yamuna course as Vedic Saraswati is also from the Yashpal et al. (1980).

Further, as research is on Saraswati Nadi and not on Vedic Saraswati River, authors did not feel the need of quoting Rigvedic Hymns as suggested by Dr. Sharma. The present paper focused only on the status of Saraswati Nadi in Haryana and its possible linkage with other drainages in the catchment region. Since, the location of Drishadvati River falls outside the study area, no discussion is done on this river.

3. After revisiting Adi Badri area by the authors in 2005-06, a brief discussion of the region is made in the paper with appropriate references, appeared in standard referred Journals (Puri and Verma, 1998; Puri, 2001 and Dwivedi et al., 2006). The scientific evidences

(geomorphic features, SRTM DEM, contour pattern and image anomaly) given by the authors are the original one which are not mentioned earlier. Dr. V. M. K. Puri is a great researcher on Himalayan glaciological studies. However, his findings can not be the binding on the views of other researchers and the outcome need not tally with findings of previous workers.

Further, contrary to the comments, the authors have never said Adi Badri as the place of origin of 'Vedic Saraswati' but of the opined the likelihood of Adi Badri as enroute to the origin place of 'Saraswati Nadi' of Haryana.

4. The comment is irrelevant as the paper discussed only the Saraswati Nadi of Haryana and no other rivers in other states or nation with the same nomenclature.
 5. IRS satellite images are used to delineate possible palaeochannels in northern Haryana (Fig.2). These NE-SW trending palaeochannels can be traced up to Kurukshetra-Kaithal-Karnal border where Saraswati Nadi was possibly joined in the past. Presently, Saraswati Nadi is flowing to the west and joins Ghaggar River at Rasauli (Fig.1). Since, Ghaggar River is considered by many authors as the old palaeochannels of Vedic Saraswati, it was necessary to show the entire palaeochannel map of northern Haryana.
- In the present paper, analysis of rainfall data (1951-2003) and annual discharge data (1972-1989) were done to show the changes in rainfall and discharge patterns along Saraswati Nadi in northern Haryana in the last 50 years. The relationship shows the deteriorating stage of Saraswati Nadi with time.
6. The comment is improper. The presence of historic and

archaeological artifacts like Buddhist stupa etc. at Adi Badri are indicated to highlight the importance and antiquity of 'Saraswati Nadi' and may not be directly related to the culture of Vedic Saraswati.

7. Detailed petrographic study under the microscope shows the textural and mineralogical composition of the pebbles, collected by the authors from ABR-II during 2005-06. The study shows the occurrence of a few metamorphic pebbles among the large number of sedimentary pebbles. But the authors do not agree with the conclusion of Puri and Verma (1998) and Puri (2001), drawn based on only a single parameter that some of the boulders are of Higher Himalayan origin and were derived by the course of Vedic Saraswati. As per Puri and Verma (1998), the palaeo-Yamuna flowed through Bata valley in the past and joined Saraswati Nadi via Adi Badri. However, present day topography of Siwalik Hills does not support the connectivity.

Further, the place Adi Badri is located on Somb Nadi (a different catchment than Saraswati Nadi), which joins present-day Yamuna River and not on the Saraswati Nadi. Hence, authors have a different opinion on the theory proposed by Puri and Verma (1998). Different researchers need not agree with each other's opinion. The conclusions are drawn based on the evidences and the studies conducted and data analyzed, whether these are liked or disliked by the readers.

8. Titles are always shorter than the contents discussed. The abstract of the paper however clearly brings out what has been discussed inside including the linkage of Saraswati Nadi with other river systems present in the area.

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