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Generic Classification of Hoars in the Northeastern Part of Bengal Basin, Bangladesh

Mohammed Masum¹ and Mohammad Omer Faruk Khan²

Geological Survey of Bangladesh (GSB)
153, Pioneer Road, Shegunbagicha, Dhaka-1000
Bangladesh.
masum613@yahoo.com

Abstract

The northeastern part of Bangladesh which is also the northeastern part of the Bengal Basin is an area of interest for many disciplines for its unique geologic, tectonic, structural, ecologic, environmental and socio-economic aspects. This part of the country is important for its richness in wetland resources locally termed as haors. The current study analyzed the wetlands from a generic aspect and attempts to classify them according to the dominant tectonic and structural influence. It is expected that such a study would reveal new understanding about these haors.

Keywords: Haor, Basin, Tectonic and Generic.

1. Introduction

The northeastern part of Bangladesh which is under the jurisdiction of the Sylhet Division (fig-1) is well known for its richness in wetland resources locally termed as haors. The areas underlain by haors are generally discussed under a unique framework such that the term 'haor basin' is widely used for this part of the country. However, while there is a very little visible difference among the haors being enormous sweet water bodies, geological factors such as tectonic settings and structural conditions reveal that the haor basin can be broadly subdivided into two areas and their mode of origin may vary accordingly. In Bangladesh, the local term haor is applied to a bowl-shaped depression that goes under water for about half the year during the wet period. The term haor is a corrupted form of its Bengali word 'Sagar' or Arabic word 'Bahar' meaning 'Sea' (Choudhury and Nishat, 2005). However, during the rest of the year i.e. the dry period, the haors get dried up but only some localized places still retain some water which is termed as 'beels' (shallow water body). The haor areas are important from socio-bio-geo-economic point of views. There are more than four hundred haors in the area which occupy more than 6000 sq. km of land (Salaudhin and Islam, 2011). The haors spans over the districts of Sunamganj, Kishoreganj, Netrokona, Sylhet, Habiganj, Moulvibazar and B. Baria (Alam et al., 2010). Most of the people that live by the haor area are poor. The people in the haor areas have no or little access to the basic

services compared to that of the people in the mainland (BHWDB). The poverty is mainly caused by natural disaster such as flood, flash flood, drought etc. The biodiversity of haor areas are ample and many rare and endangered species of birds, reptiles and mammals thrive in the areas. Swamp forests are also very important natural resource that contributes significantly to the uniqueness of haor areas. The landscapes of haor areas are also very prospective for tourism development (IUCN-Bangladesh, CNRS, 2006). A generic classification is a geoscientific approach to characterize the areas dominated by haors depending on their mode of formation. This approach should give more insight as to the generation of the lowlands.

2. Structure and Tectonics

Tectonically the Sylhet Division is situated on the Sylhet Trough which is in the northern end of the Central Deep Basin geo-tectonic province of the Bengal Basin. The trough terminates against the Shillong Massif in the north truncated by the Dauki Fault. On the western part of the trough is the Hinge Zone and on the further west the Stable Shelf geo-tectonic province of the Bengal Basin. The trough is bounded by the Chandpur High on the southwest and on the further south by the Faridpur Trough. The trough is closed on the south and east by the westward migrating Indo-Burman Range (Alam et. al. 2003). The import tectonic elements are shown in Figure 2.



Fig1: Location map of the northeastern haor dominated area.

Structurally the trough is a basin shaped depression filled with thick sediments. The sediments are folded into a series of anticlines and synclines in the southern and eastern parts which are mere northern extensions of the western part of the Indo-Burman Range. The Dauki Fault is a reverse fault (Alam et. al., 2003) along which the Shillong Massif is popped-up and acts as a major source of sediments and water for the northern part of the Haor Basin. The sediments of the Haor Basin is folded to form an isolated anticline in the middle of the Sylhet Trough. The Sylhet Trough in general and its northern half in particular are mostly influenced by subsidence as the trough is under thrusting against the uplifting Shillong Massif (Murshed et al., 2011).

3. Methodology

Ideally an observational approach has been implemented in categorizing the haor areas. Aerial imagery from Google Earth has been used for their ease of access and clarity. Maps have been generated using the Free and Open Source (FLOSS) GIS software QGIS. The authors experience from working in haor areas helped tremendously in the development of concepts and ideas approached in the current study.

4. The Classification and its Basis

The Haor Basin of the northeastern Sylhet Division can be broadly subdivided into two depression areas as i) Northern Depression and ii) Southern Depression. Most of the haors occur in the Northern Depression and are represented by many numbers of closely spaced; often interconnected haors, while the Southern Depression is represented by only several haors that are separated from each other for considerable distances by intervening hill ranges. The haors of the Northern Depression are clustered while in the Southern Depressions they are distributed in a sequential manner. The haors in the former area are distributed following an east-west direction while the haors of the later area are distributed following a loosely northeast south direction.

The above mentioned characteristics of those two areas are closely related to their tectono-structural setting. The important tectonic elements around the Sylhet Trough are shown in (fig-2) and structural features are shown in (fig-3). The Northern Depression is located to the immediate south of the Dauki Fault. As the Sylhet Trough is a slowly subsiding area against the uplifted Shillong Massif the Northern Depression is dominated by subsidence. As a result, the haors occupying the areas i.e. the Northern Depression can be classified as “Subsidence Haors” owing to the subsidence of the Sylhet Trough which greatly influences their development.

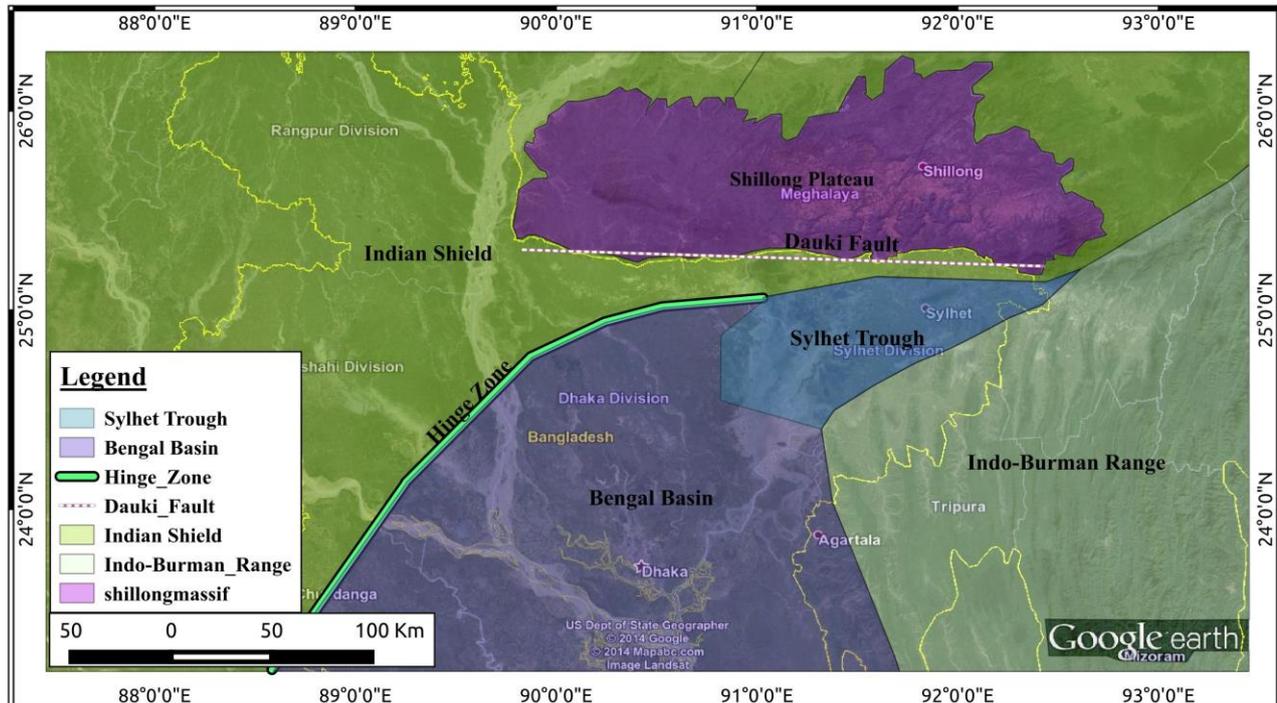


Fig 2: Important tectonic elements surrounding Sylhet Trough.

In contrast, the haors of the Southern Depression are located largely in the synclines between the anticlines of the Indo-Burman Range. These anticlines are expressed as north-south elongated hills and plunge in the north into the southern and eastern margin of Sylhet Trough. Thus, the depressions created by these anticline-syncline systems are occupied by the characteristic haor of the Southern Depression which can be classified as “Synclinal Haors”.

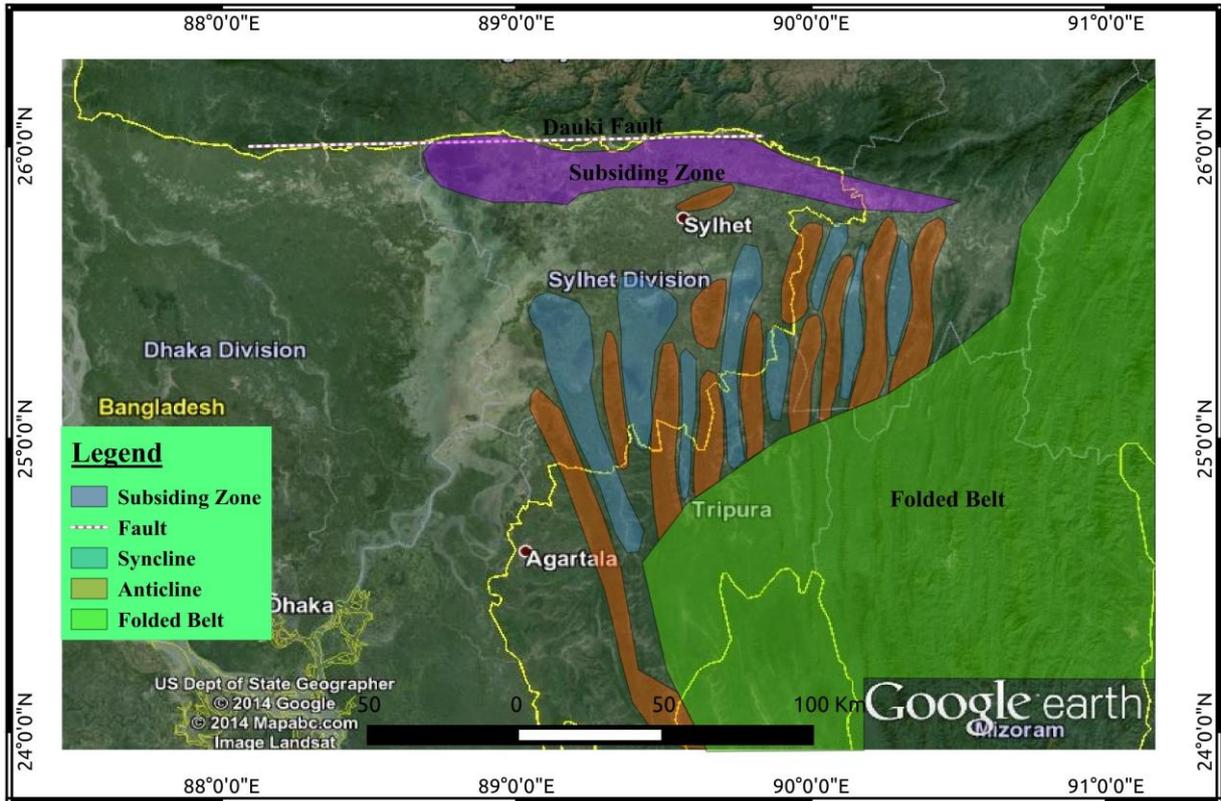


Fig 3: Major structural features influencing the study area.

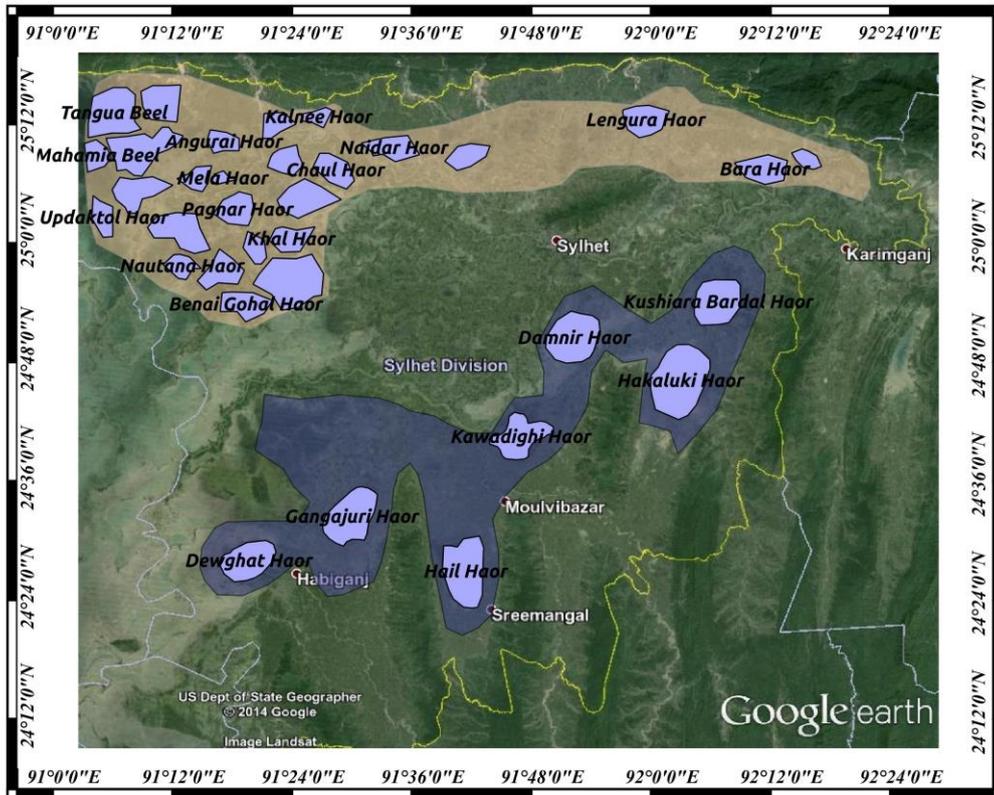


Fig 4: Classification of the haors based on dominant tectonic and structural signatures.

5. Conclusion

The Subsidence Haors are mainly tectonic controlled while the Synclinal Haors are mainly structure controlled. These facts may subtly influence the geologic, environmental and socio-economic aspects of the areas and special consideration should be given to any future studies with these facts in mind.

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