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Neogene faulting along the S margin of the Shillong Plateau and its influence on the basin formation of the Sylhet Trough (Bangladesh).

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A number of seismic sections, depth converted profiles, time horizons, borehole logs and other geophysical and geological data were used to establish a 3D geodatabase in order to understand the feedback between the Dauki Fault and the tectonic subsidence/sedimentation of Sylhet Trough, S of the Shillong Plateau. The construction of a 3D structural model was supported by regional structural field data. The 3D structural subsurface model of the Sylhet Trough (in Mio-Pliocene rocks) shows two sets of sub-cylindrical fold trains, which are separated by few synclines: (i) A NS trending set is clearly related to the westward propagation of Indo Burman Fold and Thrust Belt. (ii) An EW trending set developed due to southward thrusting of the Dauki Fault. As predicted by kinematic forward modeling, Type 1 refold structures developed by the superposition of the NS and EW trending fold trains, which has been visualized by a structural model of the Upper Marine Shale (Early Pliocene). A dramatic switch of the depocenter during the Late Miocene has been forced by depressions along the Dauki Fault and the associated northward dip of the surface Upper Marine Shale, which could be interpreted as a reverse fault drag. Our 3D structural model of the Upper Marine Shale therefore suggests that the Dauki Fault has already been active before the Late Miocene demonstrating the powerful influence of the tectonic movements on subsidence and basin formation of the Sylhet Trough. The interpretation from the seismic lines does not show good reflection below the Miocene. However, balanced cross sections constructed for the NE corner of the Sylhet Trough suggest a strong thickness of the pre-Miocene sediments especially in the synclines separating the NS and EW trending fold trains.