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FOREST ECOSYSTEM DYNAMICS ASSESSMENT AND PREDICTIVE MODELLING IN EASTERN HIMALAYA

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Abstract. This study focused on the forest ecosystem dynamics assessment and predictive modelling deforestation and forest cover prediction in a part of north-eastern India *i.e.* forest areas along West Bengal, Bhutan, Arunachal Pradesh and Assam border in Eastern Himalaya using temporal satellite imagery of 1975, 1990 and 2009 and predicted forest cover for the period 2028 using Cellular Automata Markov Modedel (CAMM). The exercise highlighted large-scale deforestation in the study area during 1975– 1990 as well as 1990– 2009 forest cover vectors. A net loss of 2,334.28 km² forest cover was noticed between 1975 and 2009, and with current rate of deforestation, a forest area of 4,563.34 km² will be lost by 2028. The annual rate of deforestation worked out to be 0.35 and 0.78% during 1975– 1990 and 1990– 2009 respectively. Bamboo forest increased by 24.98% between 1975 and 2009 due to opening up of the forests. Forests in Kokrajhar, Barpeta, Darrang, Sonitpur, and Dhemaji districts in Assam were noticed to be worst-affected while Lower Subansiri, West and East Siang, Dibang Valley, Lohit and Changlang in Arunachal Pradesh were severely affected. Among different forest types, the maximum loss was seen in case of sal forest (37.97%) between 1975 and 2009 and is expected to deplete further to 60.39% by 2028. The tropical moist deciduous forest was the next category, which decreased from 5,208.11 km² to 3,447.28 (33.81%) during same period with further chances of depletion to 2,288.81 km² (56.05%) by 2028. It noted progressive loss of forests in the study area between 1975 and 2009 through 1990 and predicted that, unless checked, the area is in for further depletion of the invaluable climax forests in the region, especially sal and moist deciduous forests. The exercise demonstrated high potential of remote sensing and geographic information system for forest ecosystem dynamics assessment and the efficacy of CAMM to predict the forest cover change.

[Conference Paper](#) (PDF, 423 KB)

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