Is India’s dominant vegetation savannah?

Reforesting in India for climate change mitigation without compromising native savannas

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What?

India is known for its forest centric vegetation, mainly because how land was managed in colonial times[1]. However, recent studies have shown that the dominant vegetation type in India is savannas and grasslands[2]. These Indian savannah and grasslands will be compromised when reforested for climate change mitigation benefits.

Here I model the bioclimatic envelope of forest systems of India (includes current forest area) and areas that have (1) deterministically low and high tree cover and (2) areas that could have savannas and trees (bi-stable states)[3] and hence should be reforested with caution.

How?

Boosted Regression Trees Algorithm using 9073 ground control forest points

10 fold cross validated data partitions

n.trees=1000, interaction depth=5, min nodes=10, shrinkage=0.001

Generalized Additive Modelling with tweedie distribution

19 environmental variables used in modelling bioclimatic envelop of forests, 4 (including fire presence) used to model savannas

So?

Of the 93 Mha of the bioclimatic envelope of forest, 40% (38 Mha) lies in areas that could be forests and/or savannahs. Reforestation activities in these areas need to be planned strategically, such that India’s savannahs and grasslands are not compromised. Else, there is a great chance of losing endemic fauna, flora and ecosystem functions and services from non-forest ecosystems.


Thank you!

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