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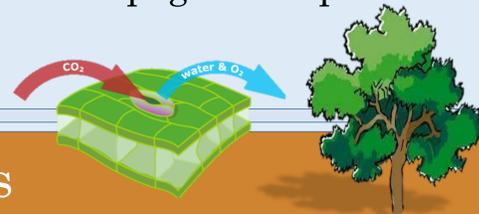
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Introduction

- ✓ Climate change and anthropogenic activities have put tremendous pressure on terrestrial ecosystem (TE) dynamics.
- ✓ Net Primary Production (NPP) is one of the most extensively used indicators for assessing TE functioning.
- ✓ Understanding the NPP dynamics provides valuable knowledge for ensuring food security and environmental protection.

Objectives

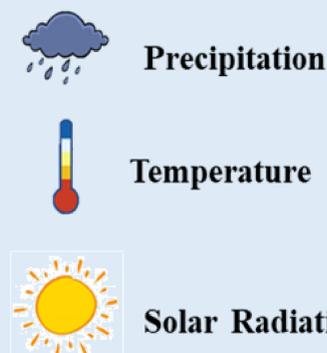
- ✓ To analyse the spatiotemporal variation in NPP
- ✓ To quantify the impact of climate factors on NPP
- ✓ Assessing relative impact of climate change and anthropogenic impacts on NPP



Materials & Methods

- ✓ Mann-Kendall (MK) trend test and Theil-Sen slope estimator test are performed to study the trend in the NPP.
- ✓ To analyze the individual contributions of climate factors, Pearson's partial correlation analysis is performed.
- ✓ Residual Trend analysis (RESTREND) is performed to examine the contributions of other climate factors and anthropogenic activities.
- ✓ MODIS-based MOD17 NPP product was used for the analysis from 2001-2019.

Climate Factors



Anthropogenic Factors



Results

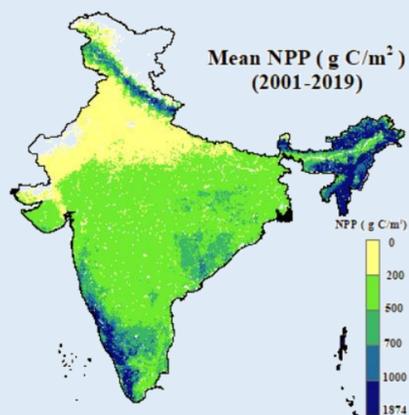


Figure 1: Spatial variation in mean annual NPP.

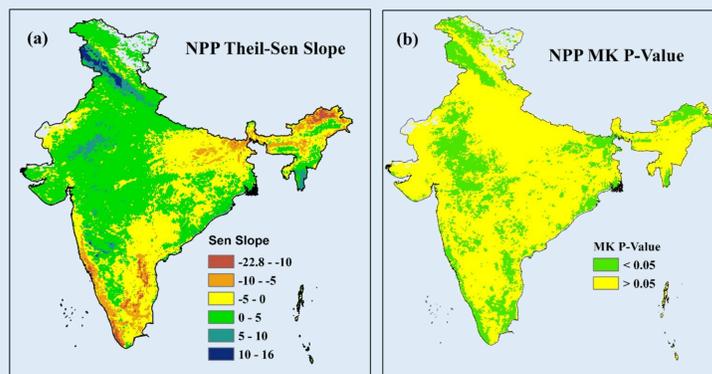


Figure 2: Trend analysis of NPP (a) Sen Slope, (b) Mann Kendall p-value

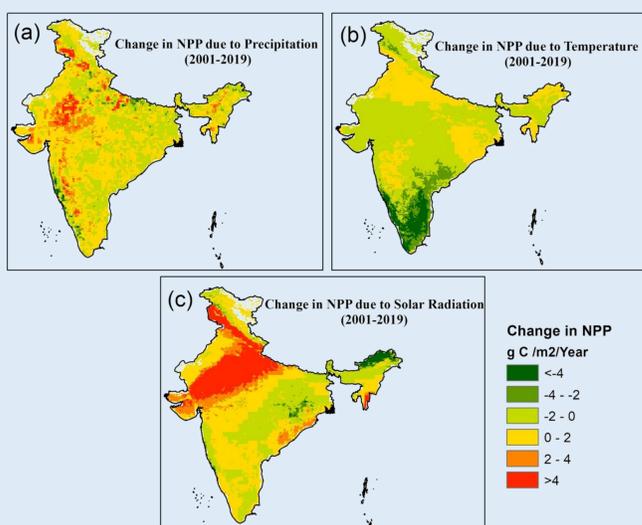


Figure 3: Change in NPP due to (a) Precipitation (b) Temperature (c) Solar Radiation

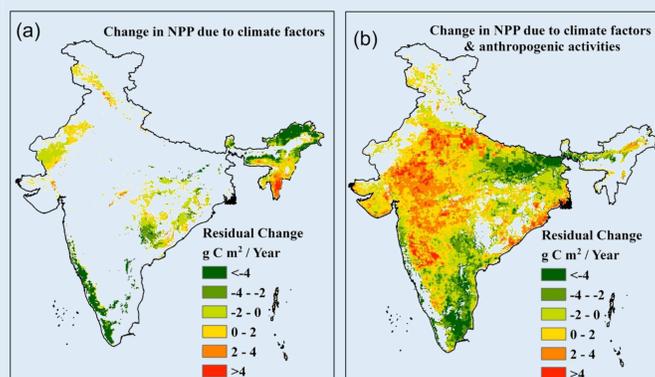


Figure 4: Change in NPP due to (a) climate factors, and (b) human activities

Findings

- ✓ About 72% area had an increase in NPP and 27.9% area have decrease.
- ✓ Climate change had a positive effect on NPP in about 55% of the area.
- ✓ About 57% of the total area had a positive contribution due to human activities such as farming and plantations.
- ✓ Climate factors increased NPP by 1.32 g C/m²/yr
- ✓ Human activities decreased NPP by 0.52 g C/m²/yr

Limitations

- ✓ RESTREND ignores the non-linear relationship between vegetation dynamics and influencing factors
- ✓ The spatial resolution of the analysis is restricted to 10km, which may affect land cover classification.