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1. INTRODUCTION

- ✓ The Indo-Gangetic Plains (IGP) in India is one of the largest NH_3 emission hotspots of the world.
- ✓ Atmospheric NH_3 is challenging to measure because of its high reactivity, solubility, and its stickiness to the measuring instruments.
- ✓ Continuous development in satellite observations have provided great insights on spatial variability.
- ✓ But temporal coverage is better only with ground observations.
- ✓ Indian monitoring body(CPCB), has started monitoring multiple pollutants including gaseous NH_3 across Indian region.
- ✓ Present study, shows the spatial and temporal variability of NH_3 across Indian region using CPCB data.

2. DATA & METHODOLOGY

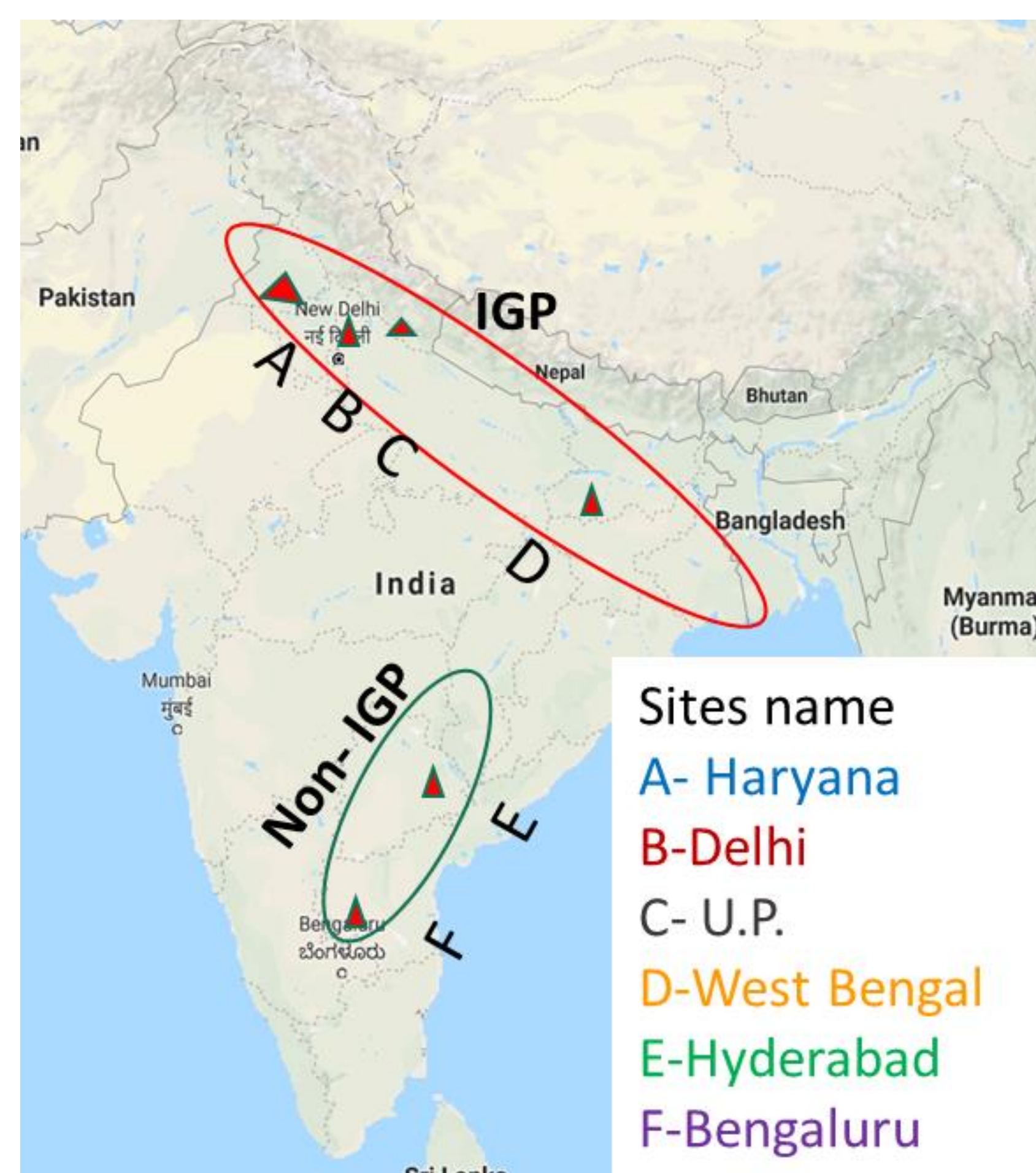


Fig: Map showing study locations.

- ✓ Hourly data from CPCB site.
- ✓ Data period: Jan-Dec, 2019
- ✓ Chemiluminescence technique
- ✓ Strict QA-QC was applied

3. RESULTS

3.1. Spatial variability

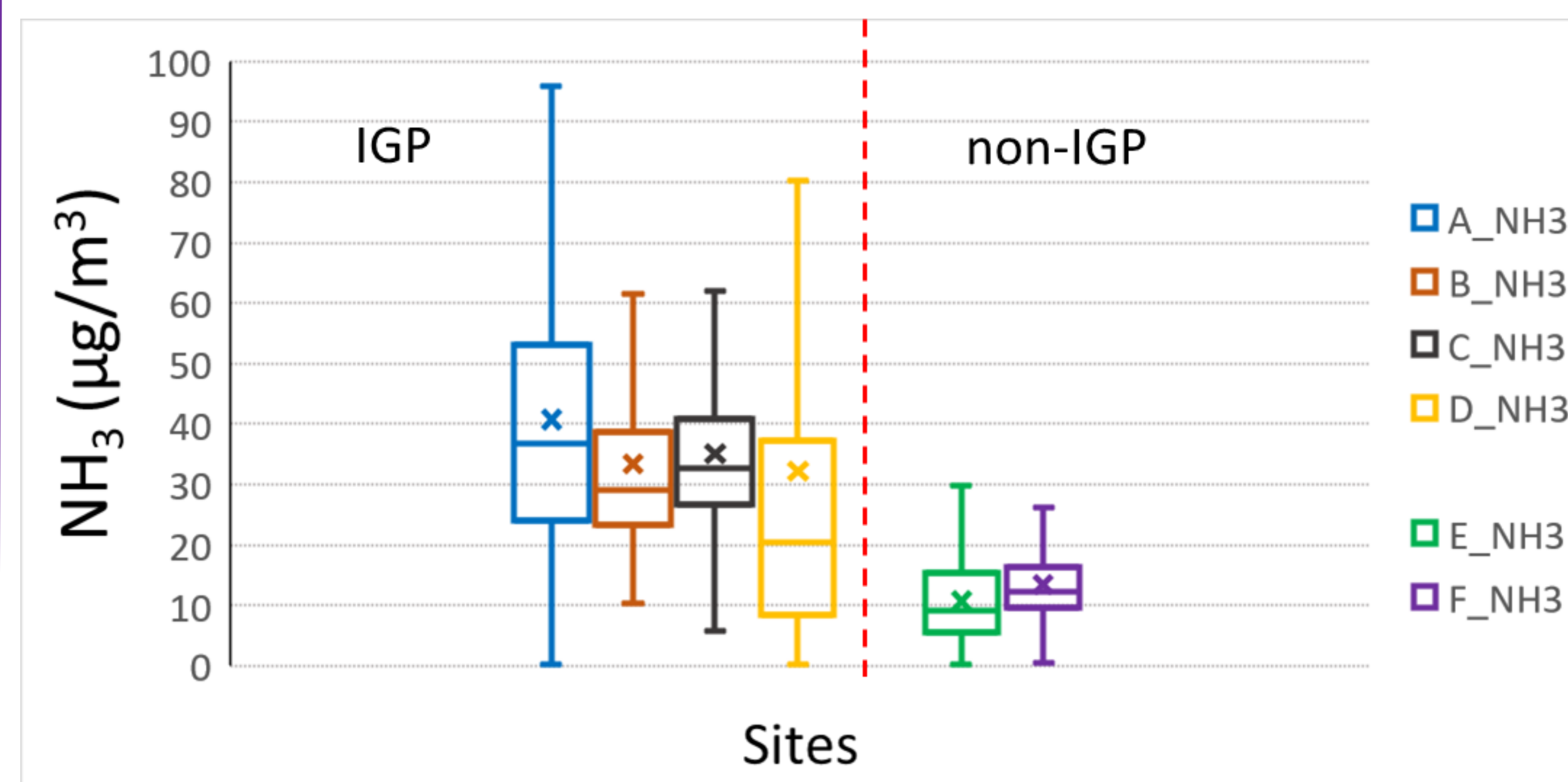


Fig: Box plots of NH_3 concentrations at different sites ..

- ✓ IGP observed higher level of NH_3 than non-IGP region.
- ✓ IGP region are dominated by agricultural activities- reason for higher level of NH_3
- ✓ With in IGP, sites showed higher variability.

3.2. Seasonal –Diurnal variation

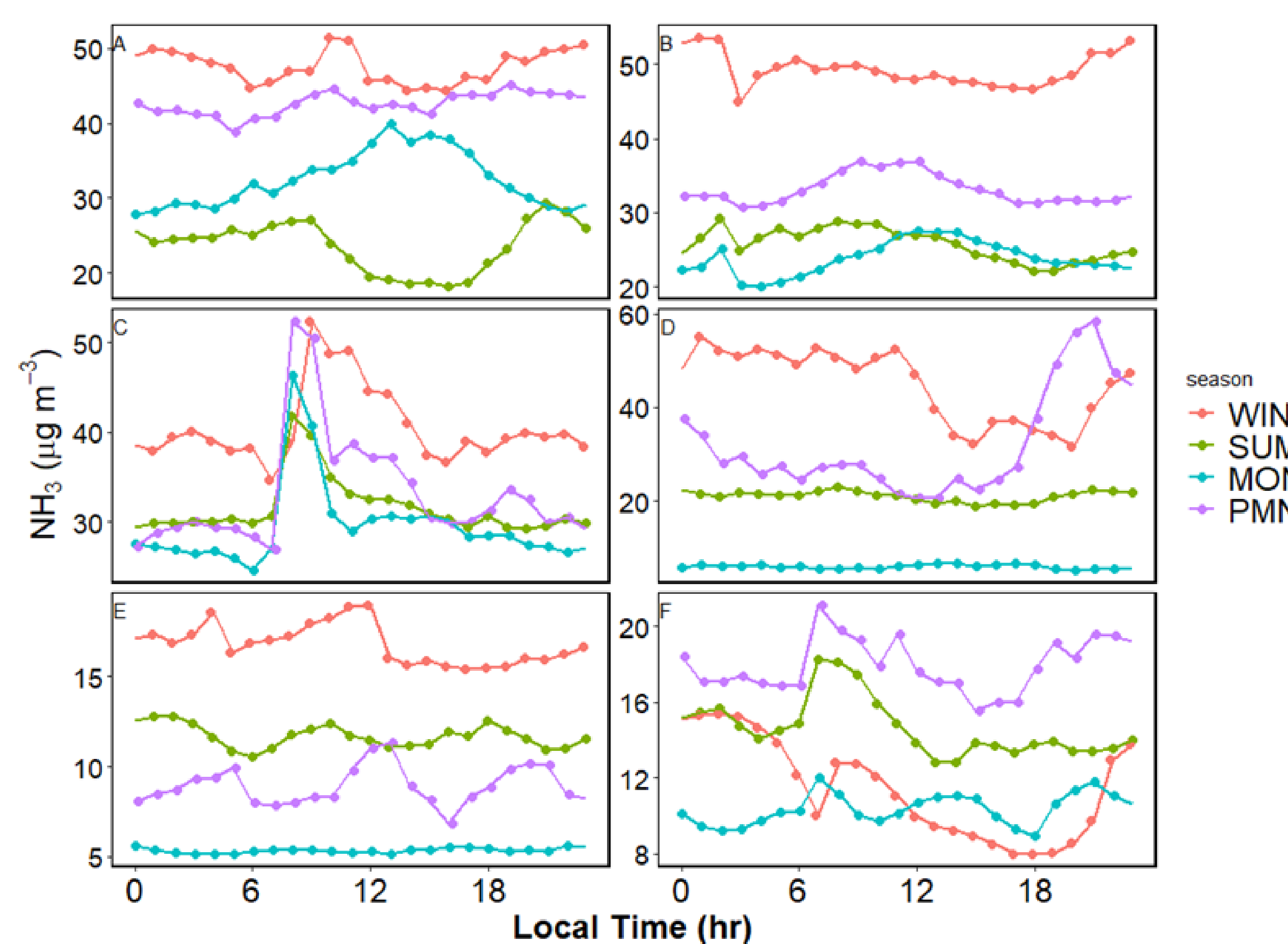


Fig: (a) to (f) Diurnal variability in seasons at all sites.

- ✓ A clear seasonal variability was observed at each sites- due to combination of meteorology and sources.
- ✓ Postmonsoon and winter season showed highest level of NH_3 at IGP sites is due to higher amount of fertilizer application, boundary layer condition and biomass burning.
- ✓ Most of the sites did not observe any distinct diurnal variability except a site in UP.

3.3 Monthly Variation

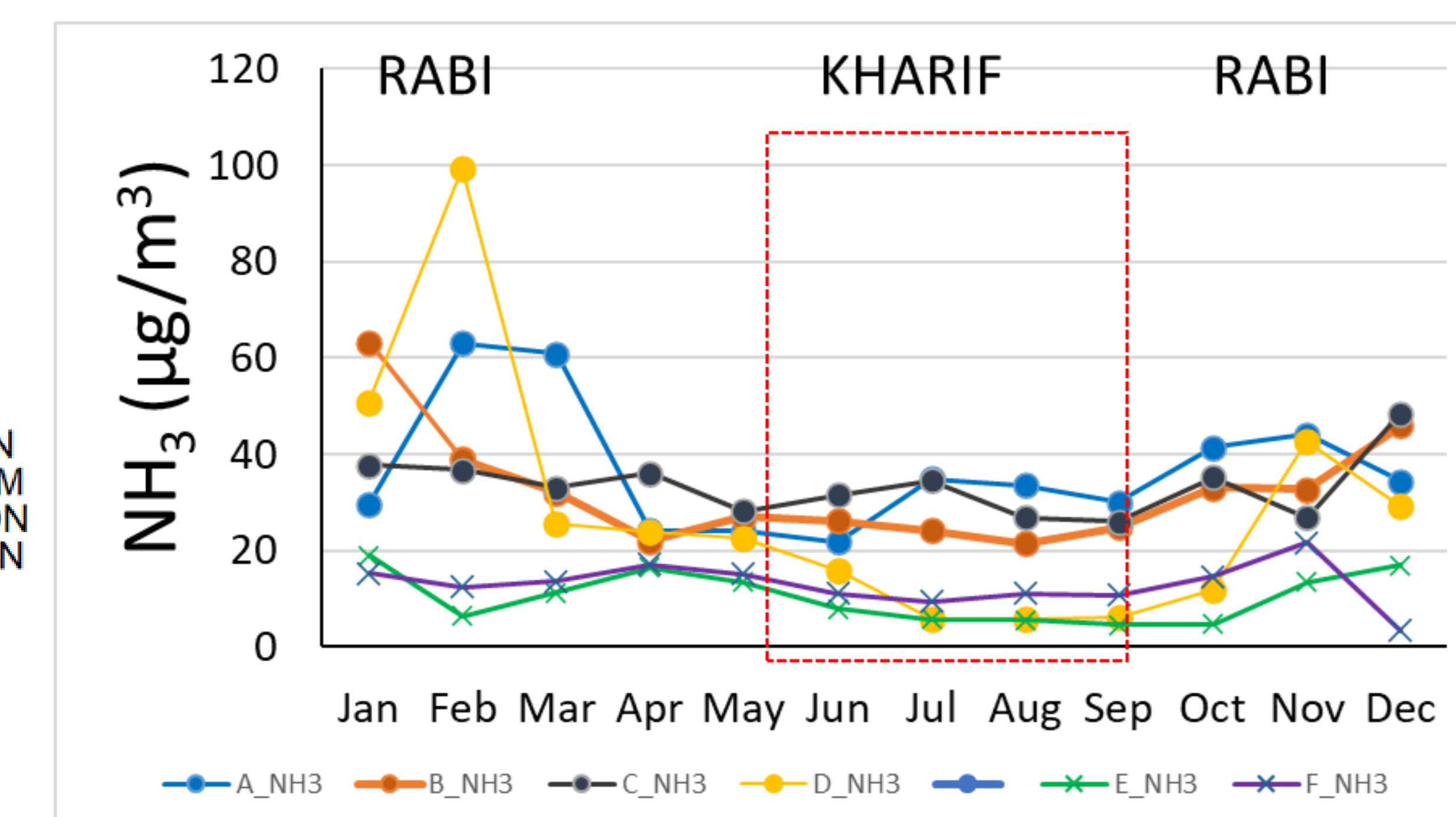


Fig: Monthly variation of NH_3 at different sites.

- ✓ Rabi and Kharif are two main cropping season in India.

4. CONCLUSIONS

- ✓ Higher spatial and temporal variability at IGP region as compared to non-IGP region in India.
- ✓ Higher level of NH_3 observed in Rabi season than Kharif.
- ✓ Ground observations are not always in agreement with satellite observations reported (results not presented here).
- ✓ To understand major sources in the region, other forms of NH_3 needs to be regularly monitored.

REFERENCES

- ✓ <https://app.cpcbcr.com/ccr/#/caaqm595dashboard-all/caaqm-landing/data>
- ✓ Behera, S.N., et al., 2013., Singh, S., Kulshrestha, U.C., 2012., Singh, S., Kulshrestha, U.C., 2014., Sutton, M.A., et al., 1993., Van Damme, M., et al., 2015., Kuttippurath et al., 2020.