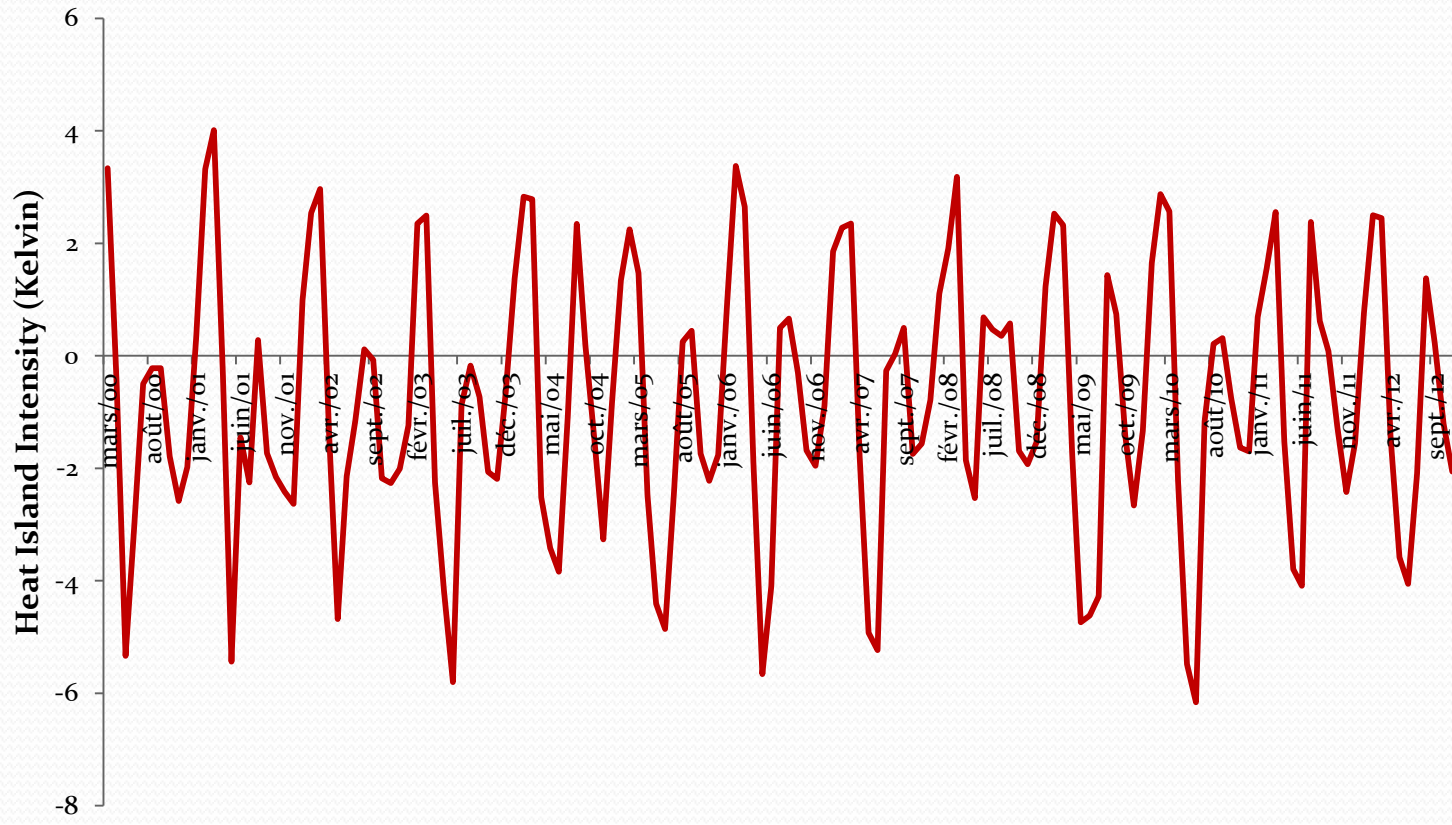


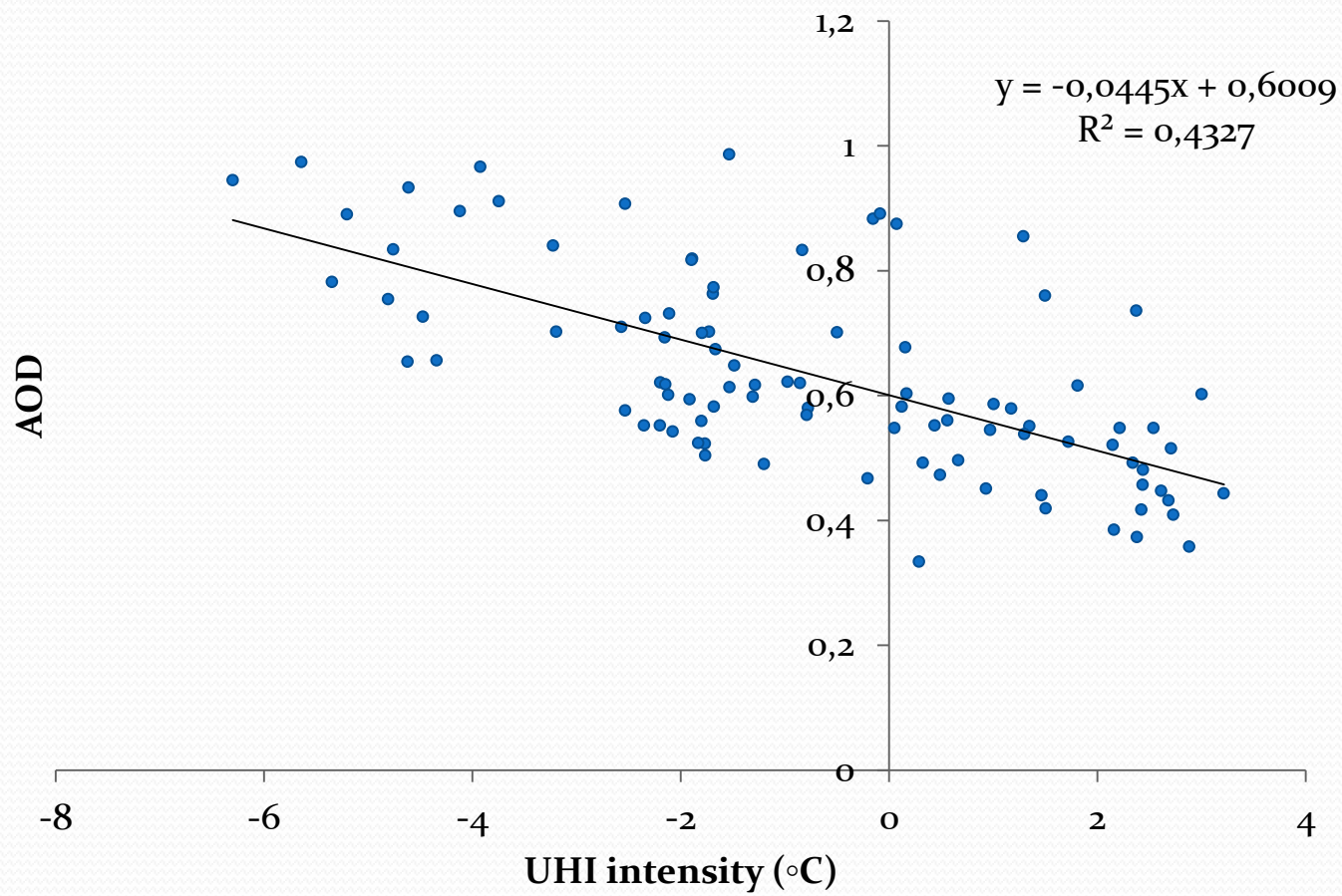
Directional analyses of UHI intensity over Delhi with respect to variations in vegetation cover in the National Capital Region of India

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Our Earlier Findings Delhi SUHI

- Positive night time UHI intensity throughout the year.
- During daytime, UHI intensity changes from positive to negative showing strong periodic behaviour.
- We examined the role of aerosol optical depth in explaining the observed negative daytime UHI intensity.





- The variations in AOD however, explained the observed variations in daytime SUHI only partially.
- In this study, we examine the role of variations in vegetation cover in the surrounding regions of Delhi to explain the variations in daytime UHI over Delhi
- Strips of 0.1 degree outside Delhi are used to obtain NDVI values from the MOD13C2.005 and LST from the MOD11C3.005 product of MODIS

Study Area

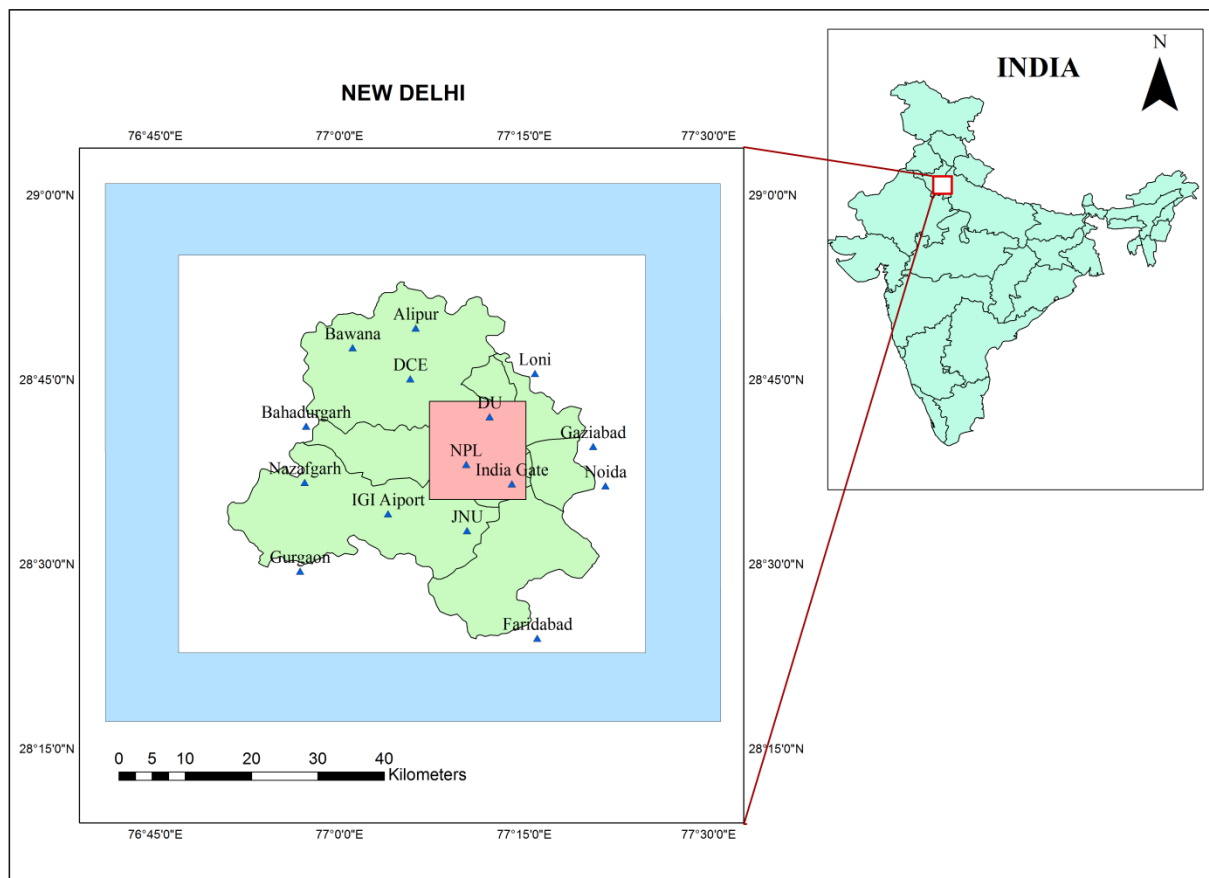
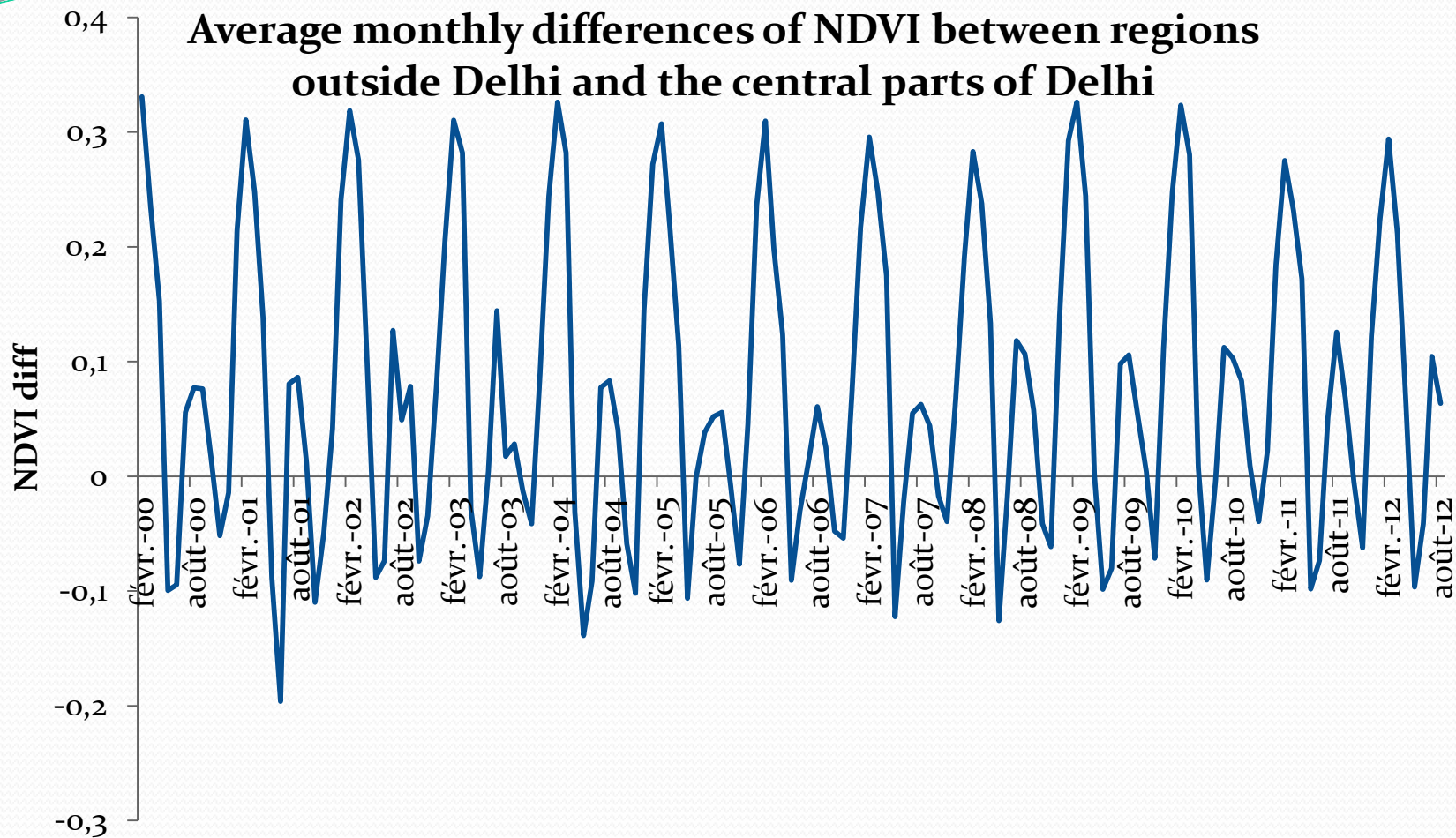
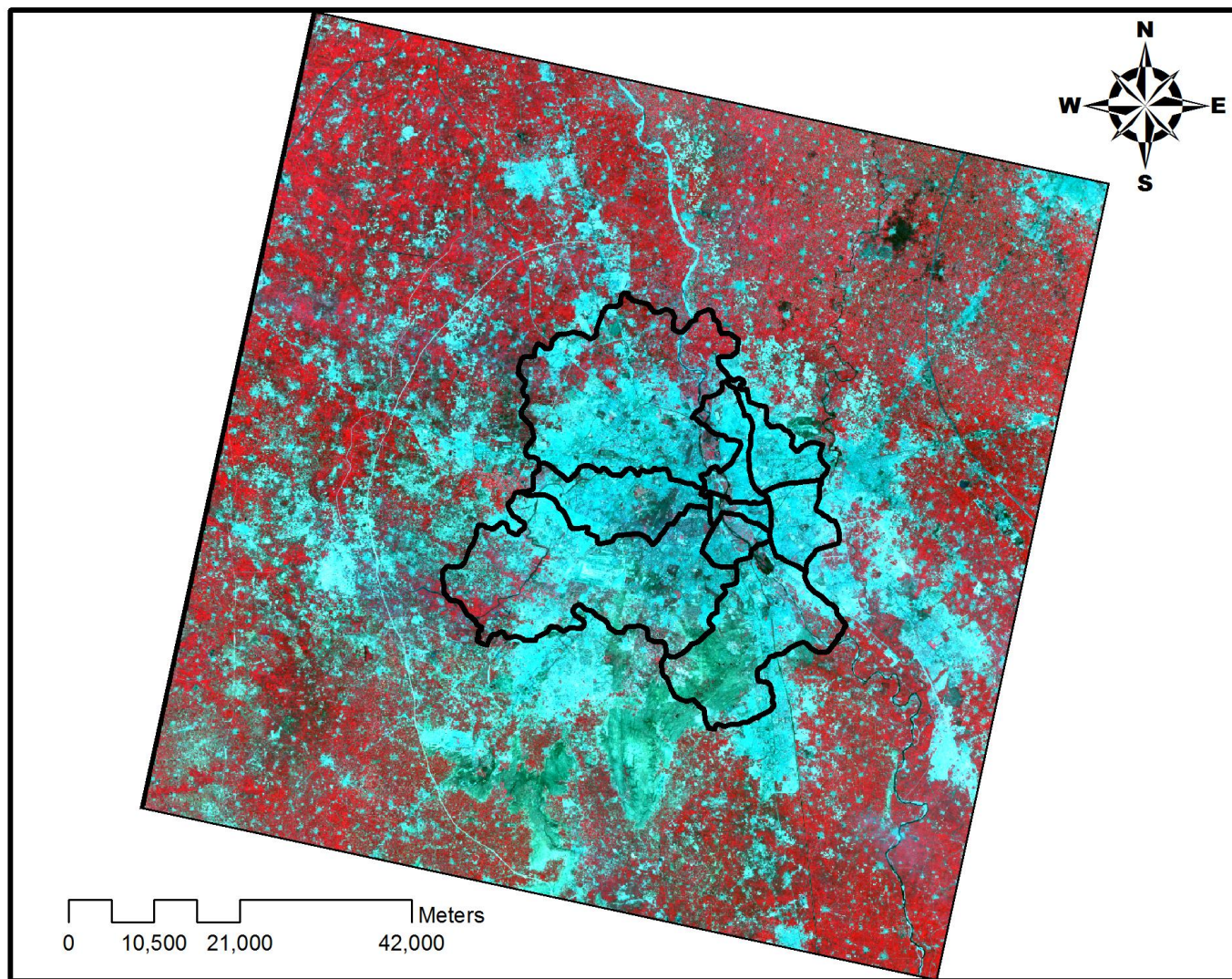


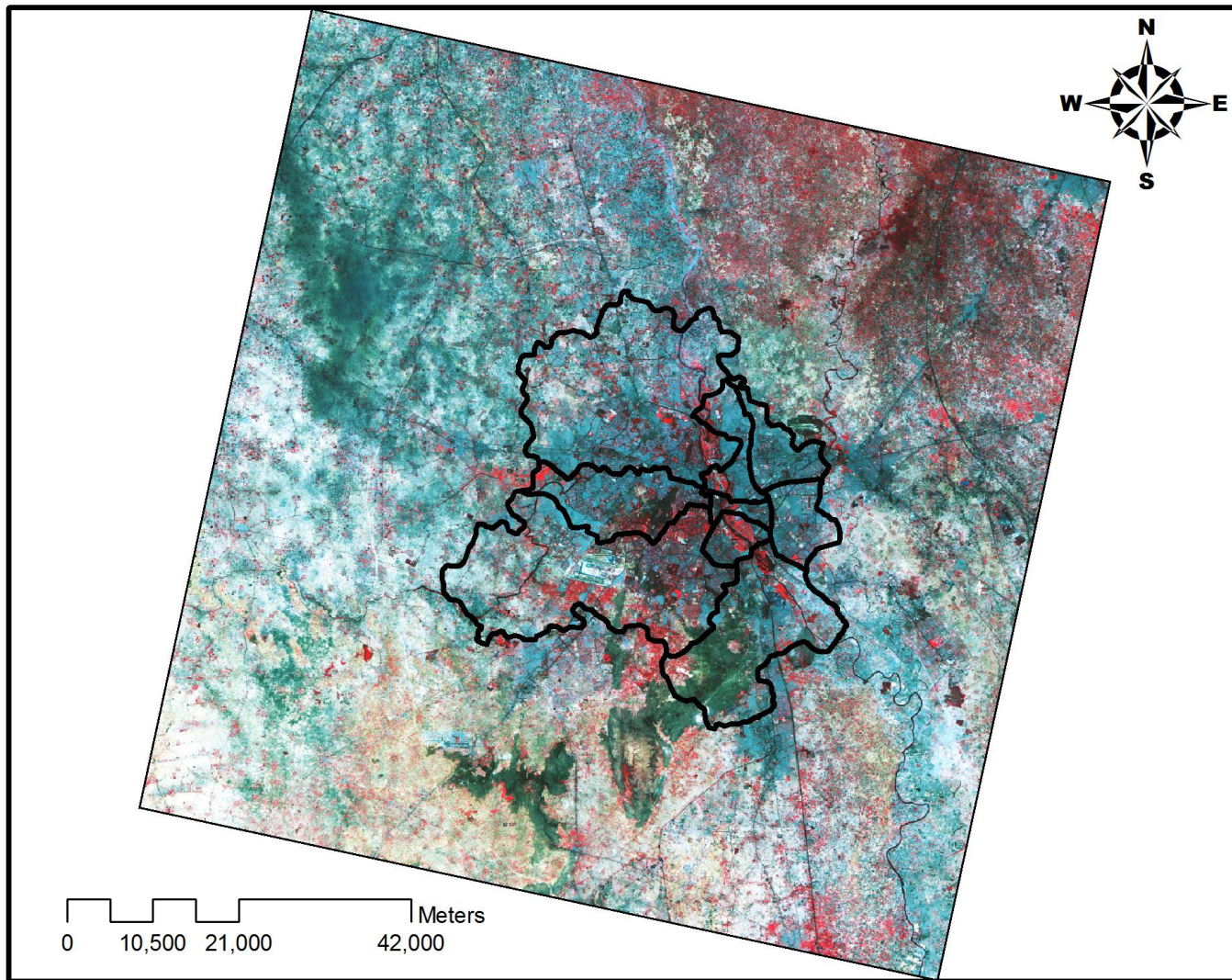
Figure 1 - Schematic diagram showing regions selected in Delhi and outside for the estimation of heat island intensity



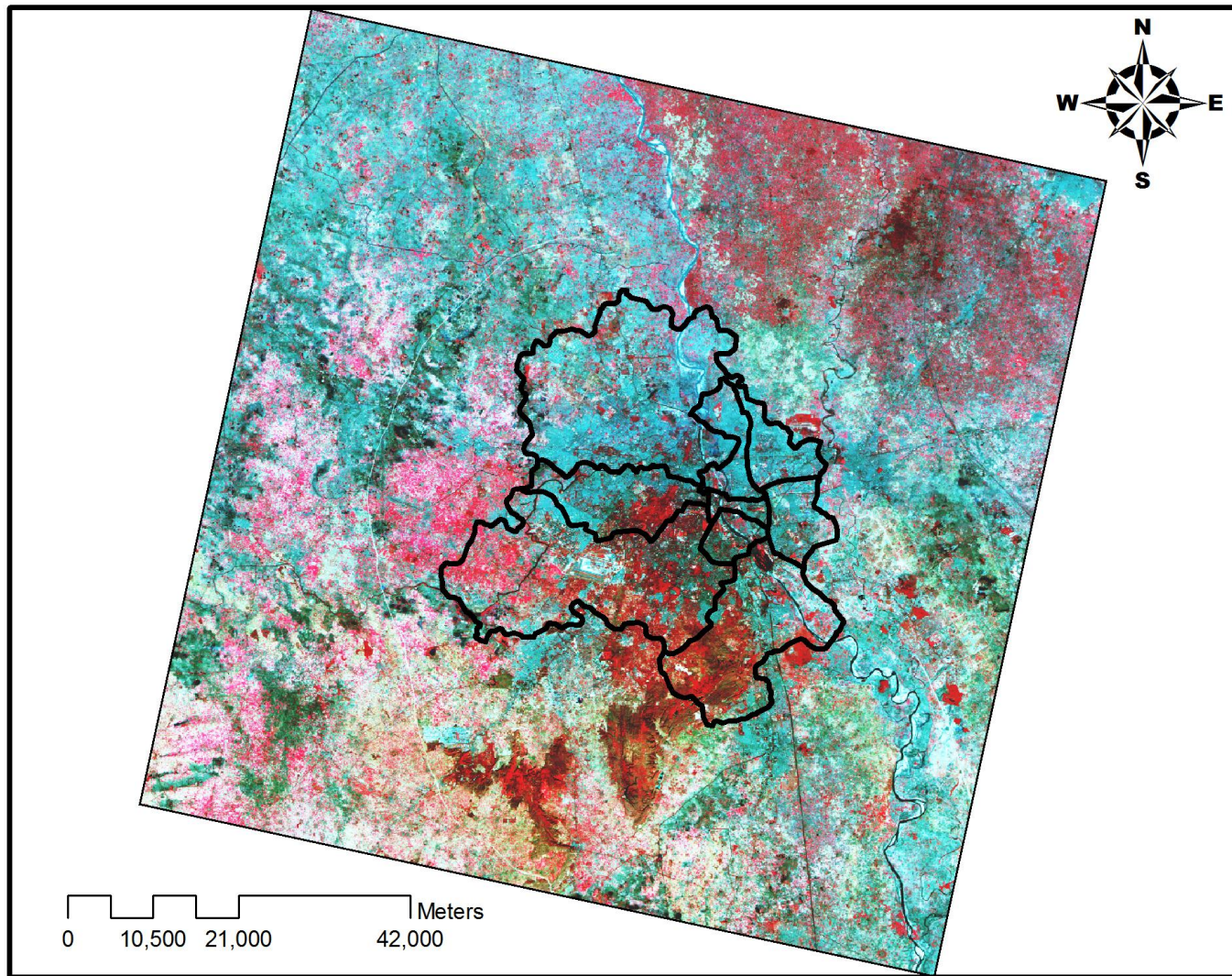
- NDVI difference between regions outside Delhi and the Central Parts of Delhi.
- Major peak in NDVI diff observed during Feb-March and a minor peak is observed during Monsoon Months of July-August
- Negative NDVI diff is observed during May and November
- These differences originate from the crop cycle dynamics around Delhi.



LISS-III FCC for the month of March

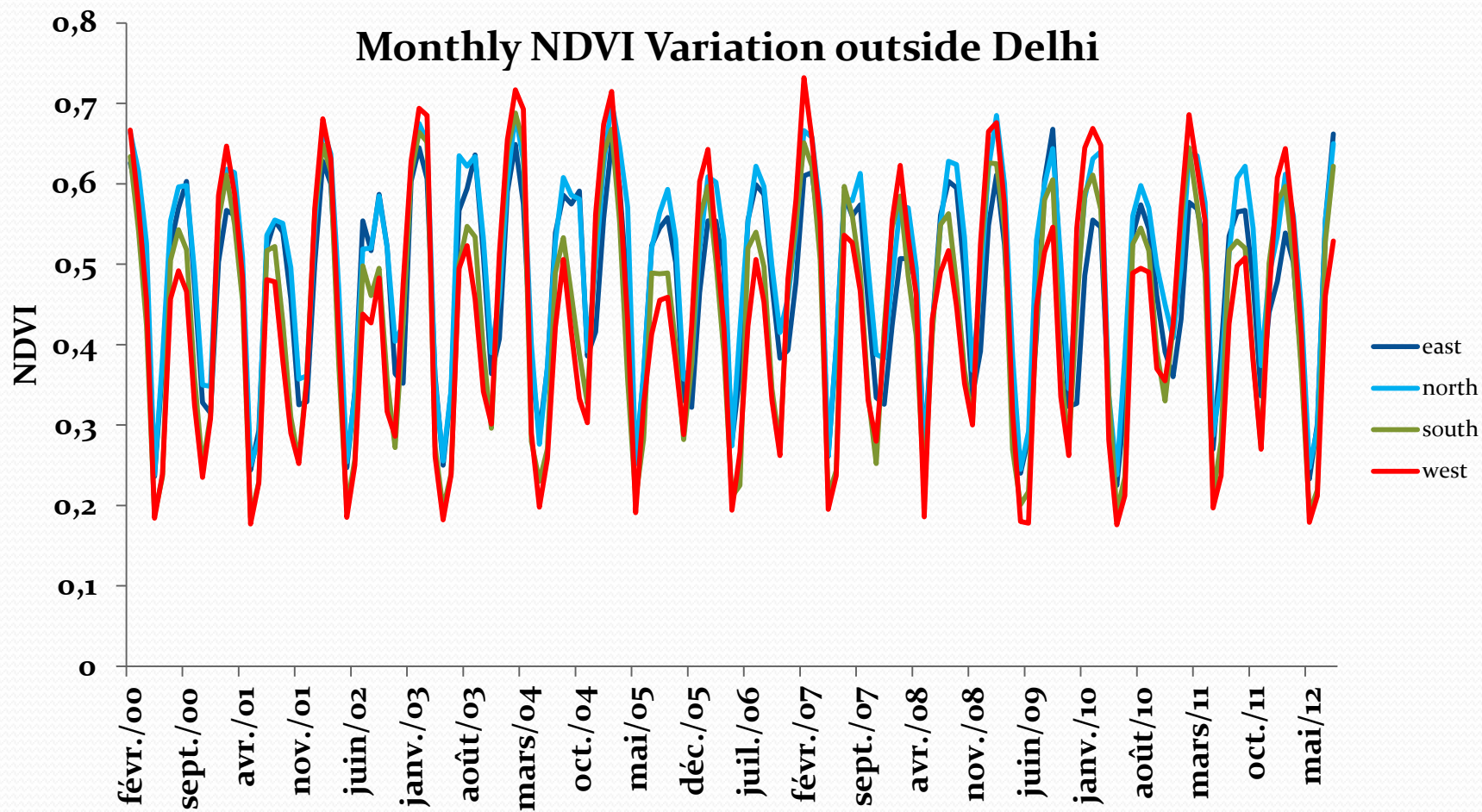


LISS-III FCC for May



LISS-III FCC for November

- Kharif crops sown in July and harvested in November
- Rabi Crops sown in November end/December and harvested in April.
- The region lying north-east of Delhi is a major sugar-cane growing belt because of availability of high soil moisture content in the flood plains of river Yamuna
- There exists a climatic gradient from north east of Delhi to south west of Delhi with the latter being more arid.



- The regions lying on the four sides of Delhi differ in terms of their average NDVI values.
- The regions lying north and west of Delhi tend to have higher NDVI values in March. But during the monsoon season, the regions lying north and east of Delhi have higher NDVI values.
- The regions lying west and south of Delhi have lower NDVI values in May and November.

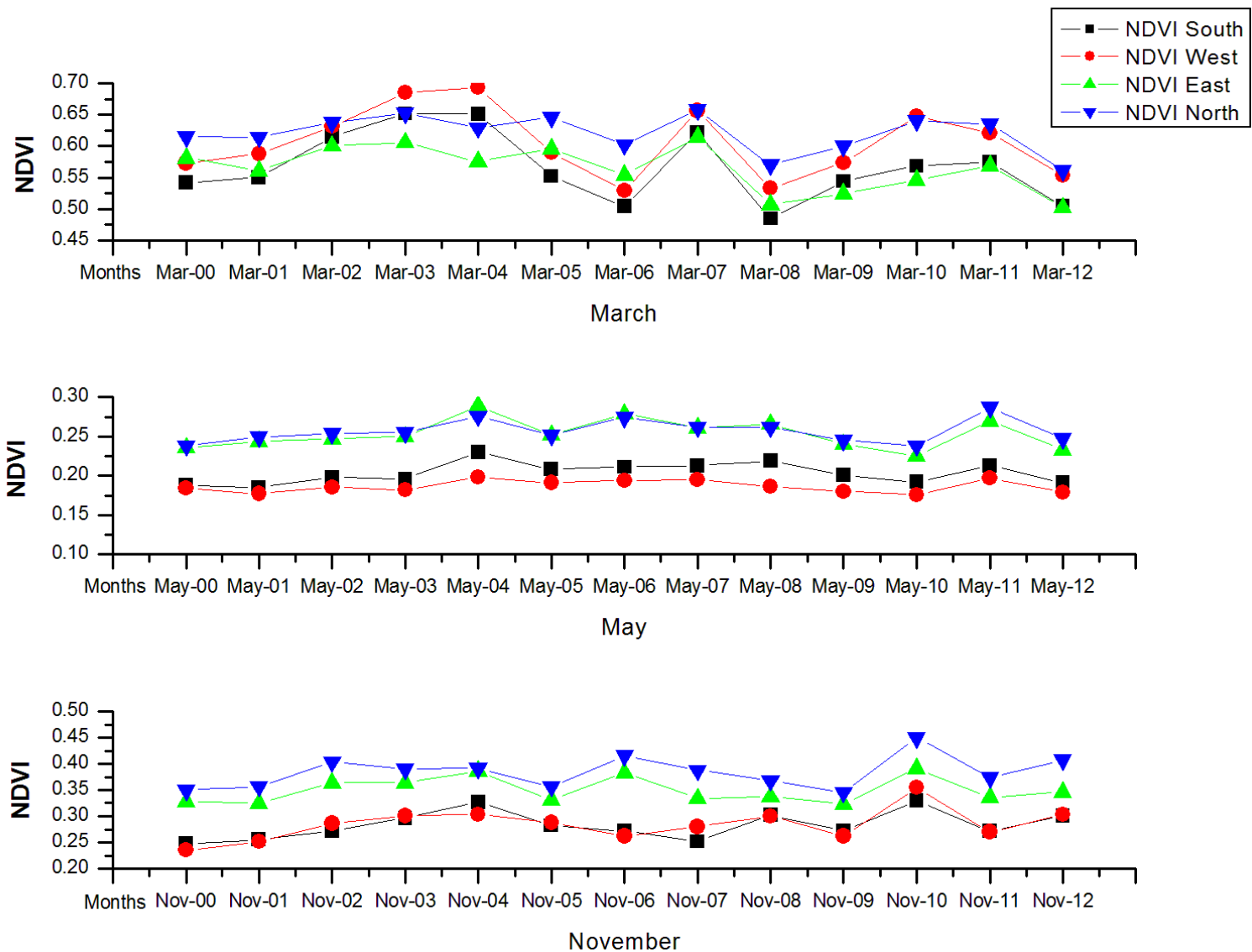
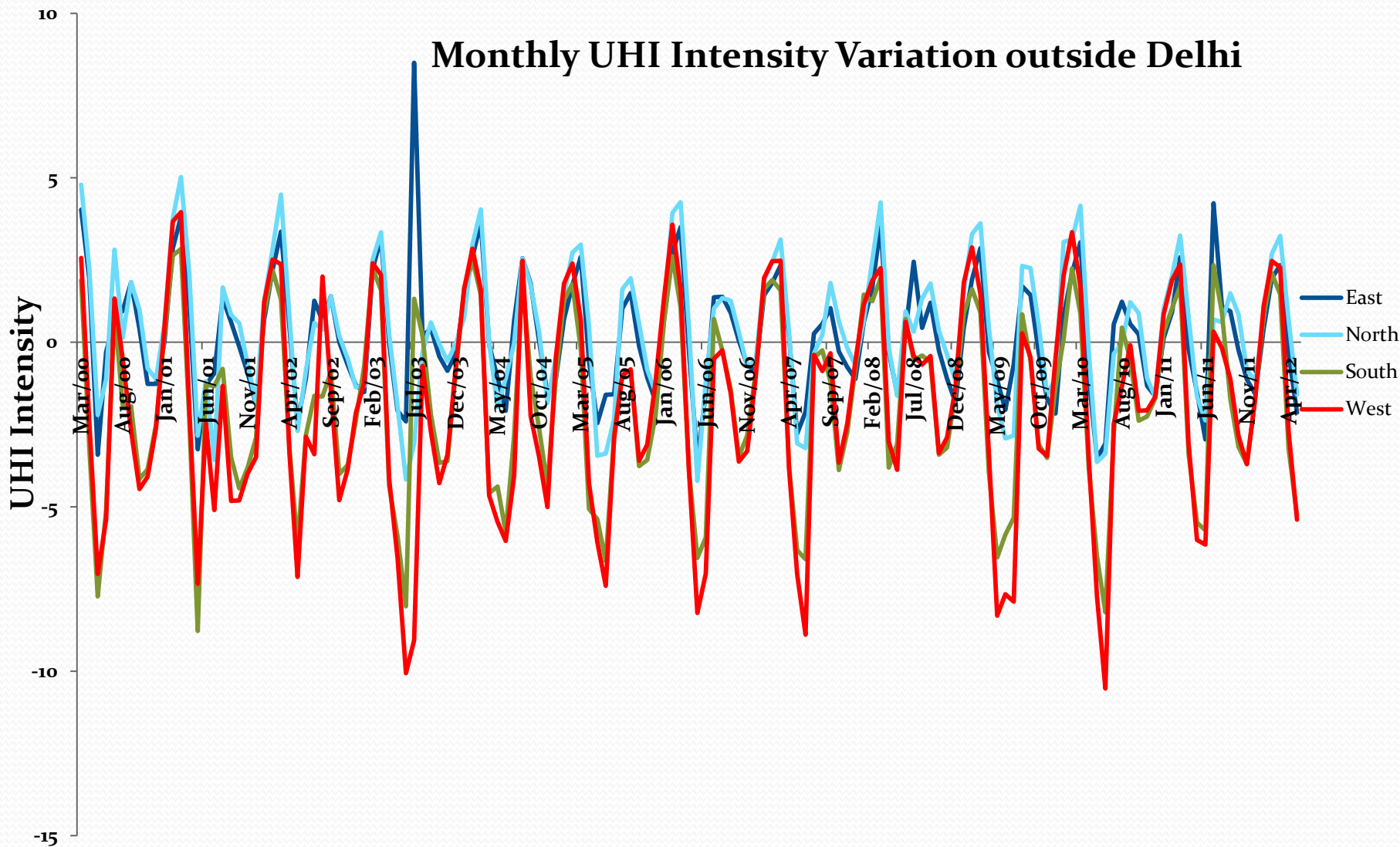


Figure - Average monthly NDVI in relation to surrounding areas lying east, west, north and south of Delhi during (a) March, (b) May and (c) November



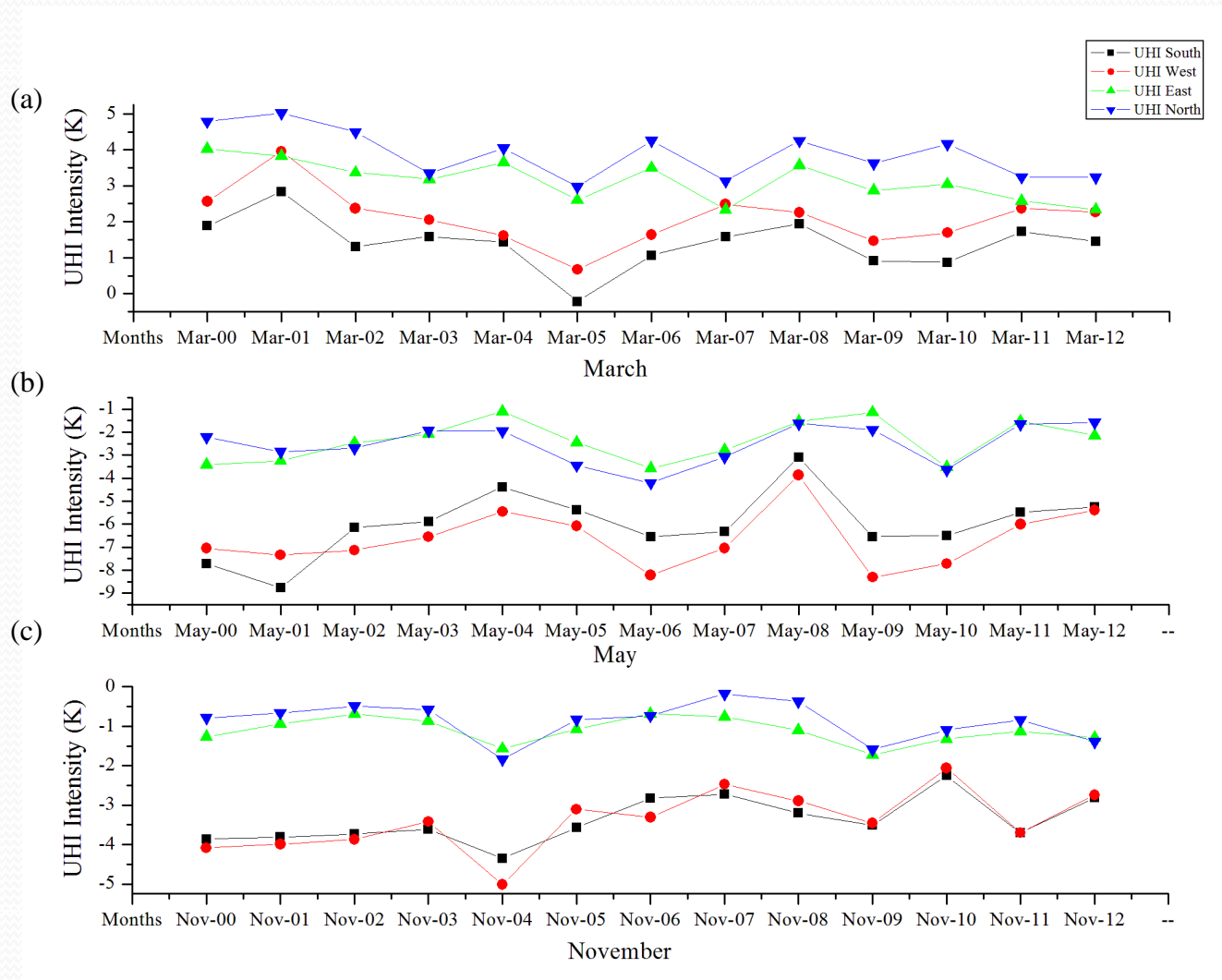
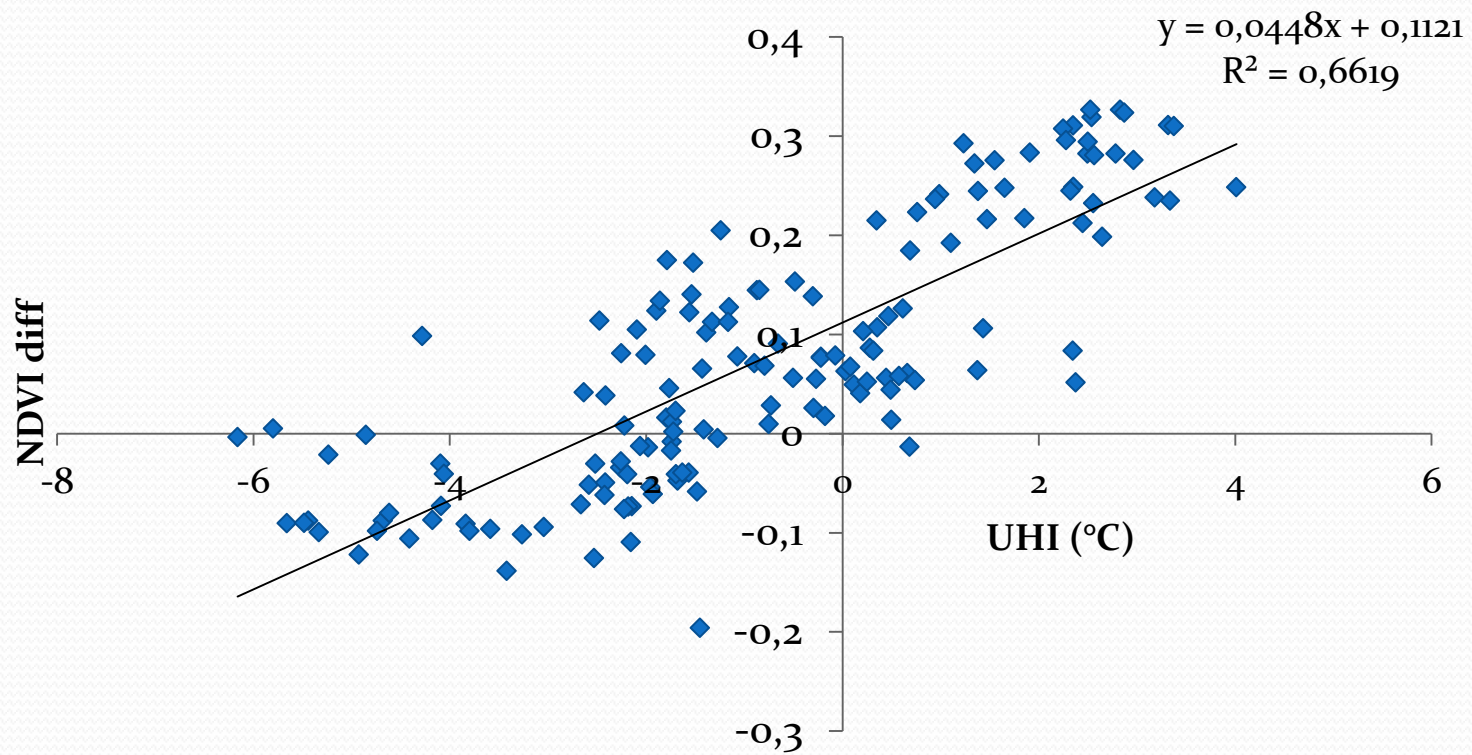


Figure - Average monthly UHI intensity in relation to surrounding areas lying east, west, north and south of Delhi during (a) March, (b) May and (c) November

- UHI intensity is positive and greater with respect to regions lying north and east of Delhi in March.
- UHI intensity is negative and greater in magnitude with respect to the regions lying south and west of Delhi.
- A strong association is observed between NDVI difference and UHI intensity.





Thank you