

## **Supplementary Material**

### **Temporal variation in chemical composition of size-segregated aerosols over the Northeastern Arabian Sea**

**Ankush Kaushik<sup>1</sup>, Ashwini Kumar<sup>1\*</sup>, Aswini M. A<sup>1</sup>, Panda, P. P.<sup>1</sup>, Garima Shukla<sup>1,2</sup>, N.C. Gupta<sup>3</sup>**

*<sup>1</sup>CSIR-National Institute of Oceanography, Dona Paula, Goa, India*

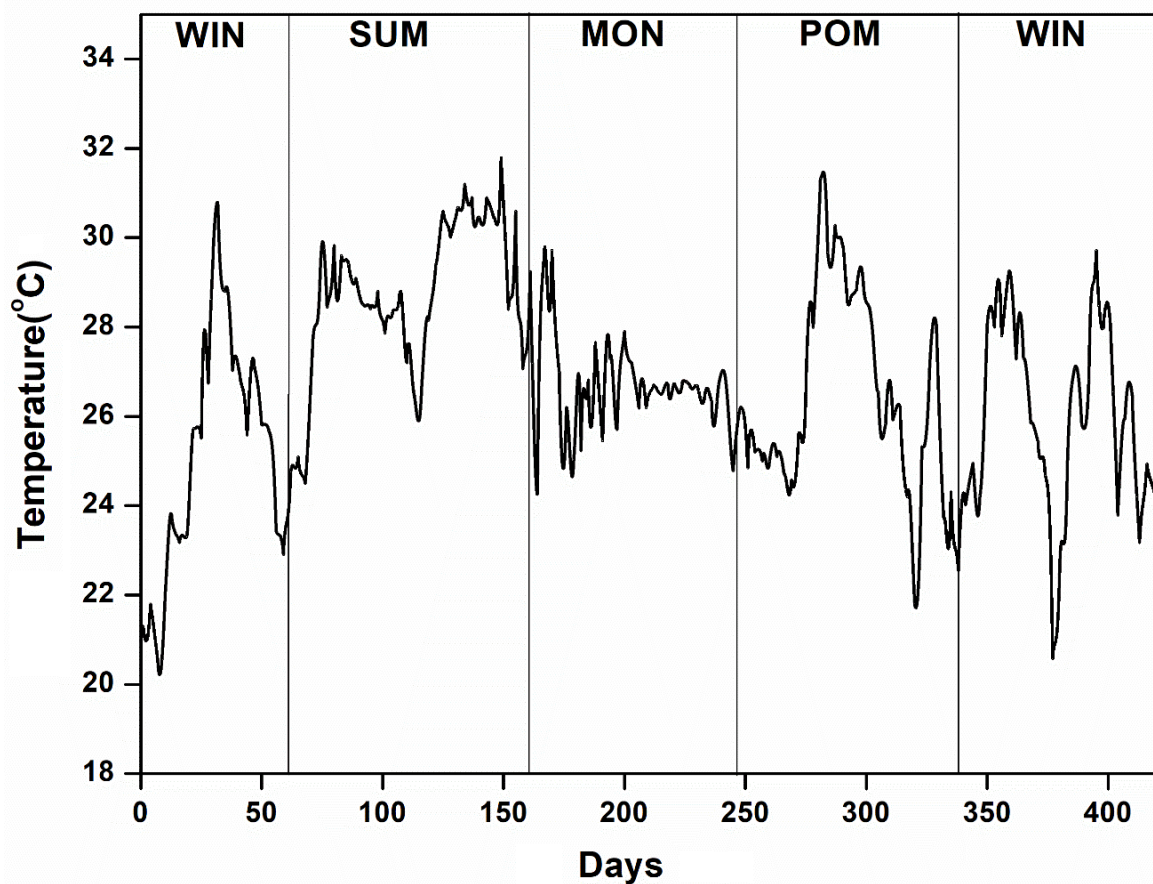
*<sup>2</sup>Academy of Scientific and Innovative Research (AcSIR), CSIR-National Institute of Oceanography, Goa, India*

*<sup>3</sup>Guru Gobind Singh Indraprastha University, Dwarka Sector-16C, New Delhi, India*

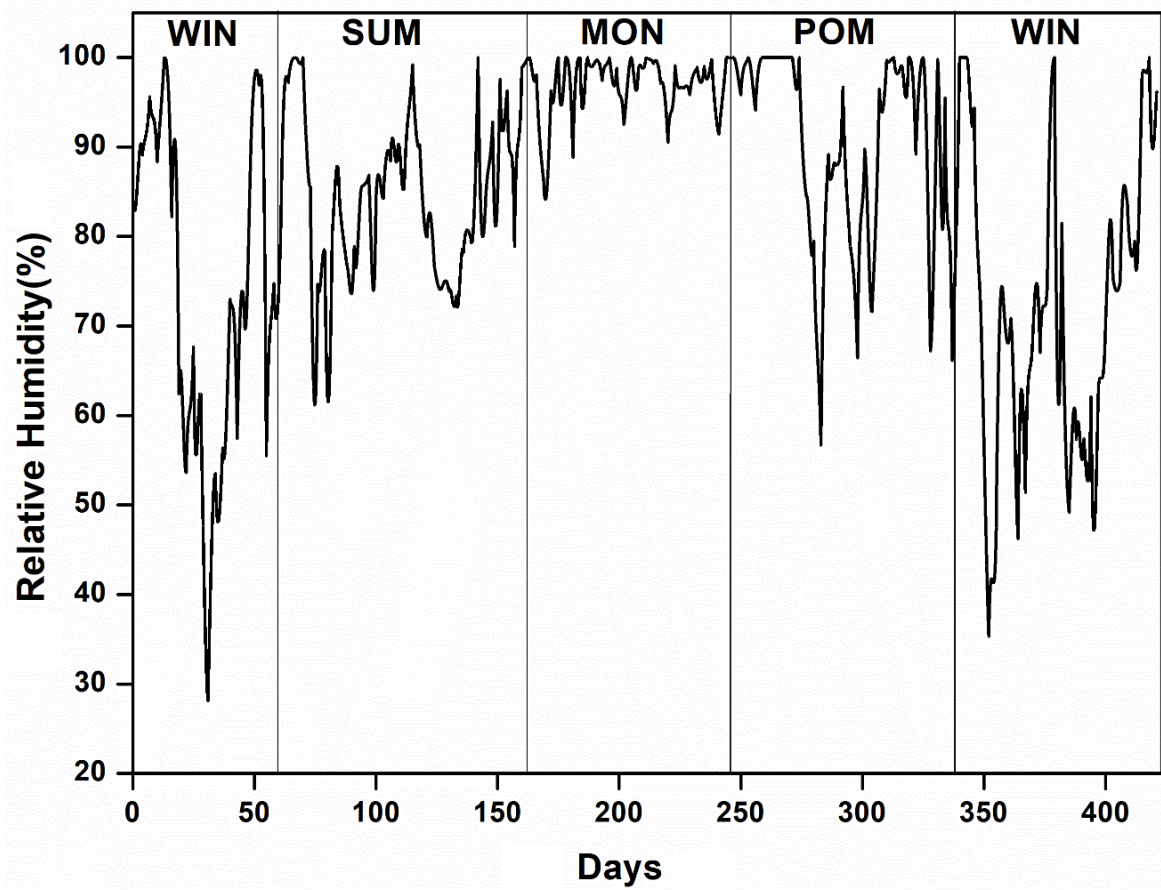
**\*Corresponding author:**

Ashwini Kumar  
Geological Oceanography Division  
CSIR-National Institute of Oceanography  
Dona Paula, Goa-403 004  
E-mail: ashwinikumarjha@gmail.com,  
ashwinik@nio.org  
Tel: +91 832 2450368, Fax: +91 832 2450602

**Supplementary material S1: Meteorological parameter measured at sampling site using automatic weather station.**

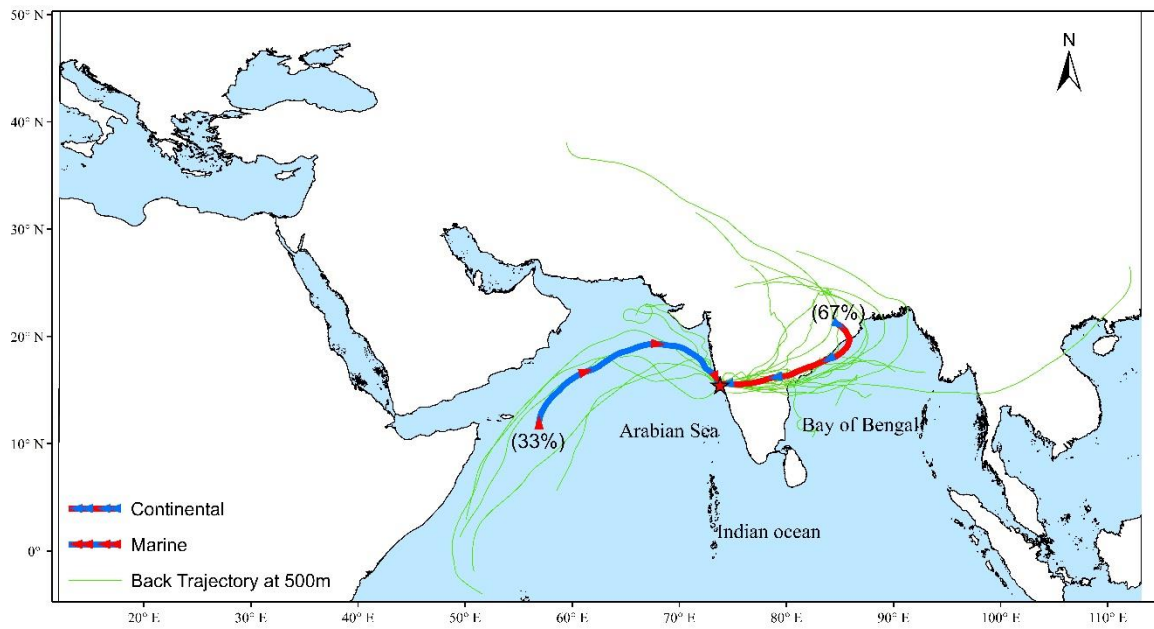


*Fig S1: Variation of temperature during the study period. WIN, SUM, MON and POM are winter (December-February), summer (March-May), monsoon (June-August) and post-monsoon (September-November) season. No aerosol samples were collected during monsoon period and thus, results from three seasons only are discussed in the main text.*



*Fig S2: Variation of relative humidity (%) during the study period. Details of season are described in figure caption of Fig. S1.*

**Supplementary material S2:**



*Fig. S3: Cluster analyses of air-mass back trajectories for post-monsoon months.*

Supplementary material S3: Correlation plots between important chemical species

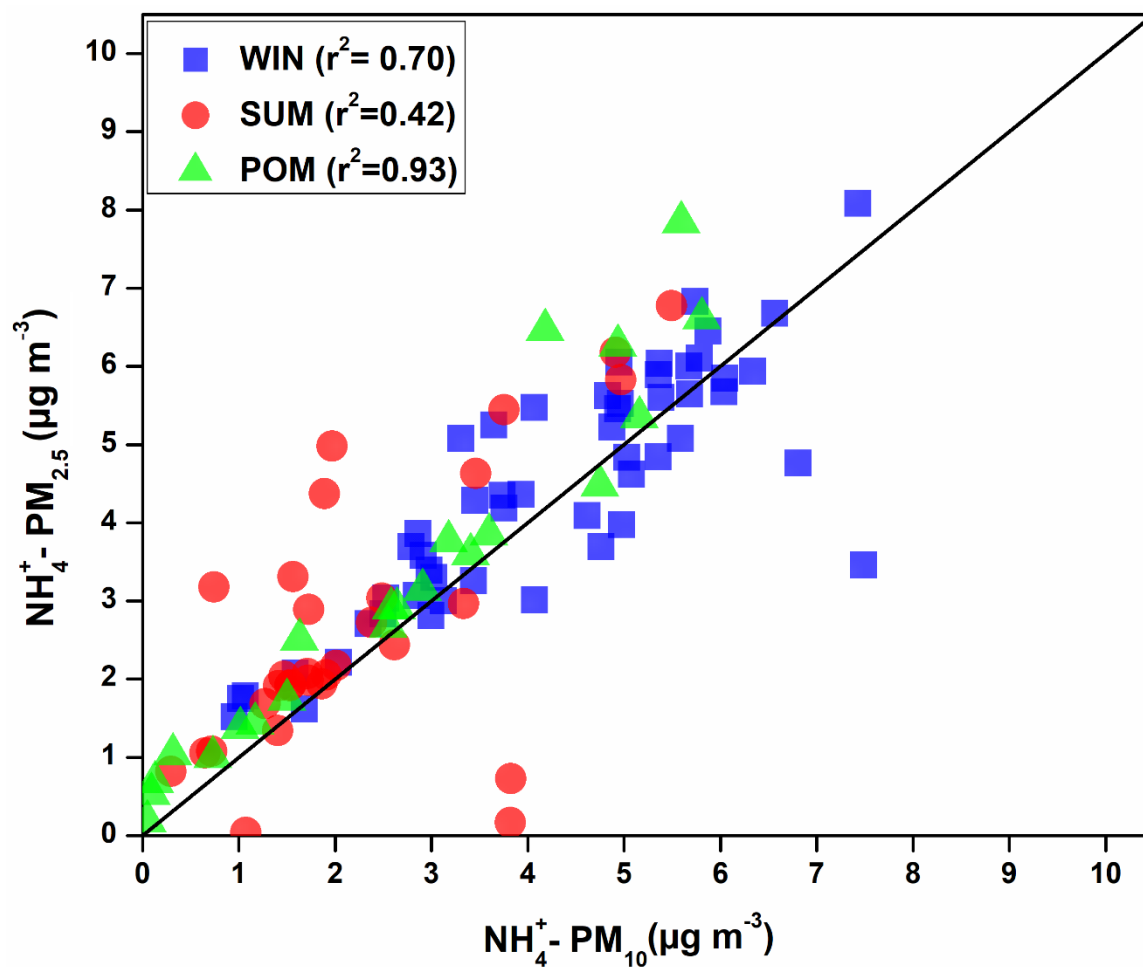


Fig. S4: Seasonal correlation between  $\text{PM}_{10} \text{NH}_4^+$  and  $\text{PM}_{2.5} \text{NH}_4^+$  ion.

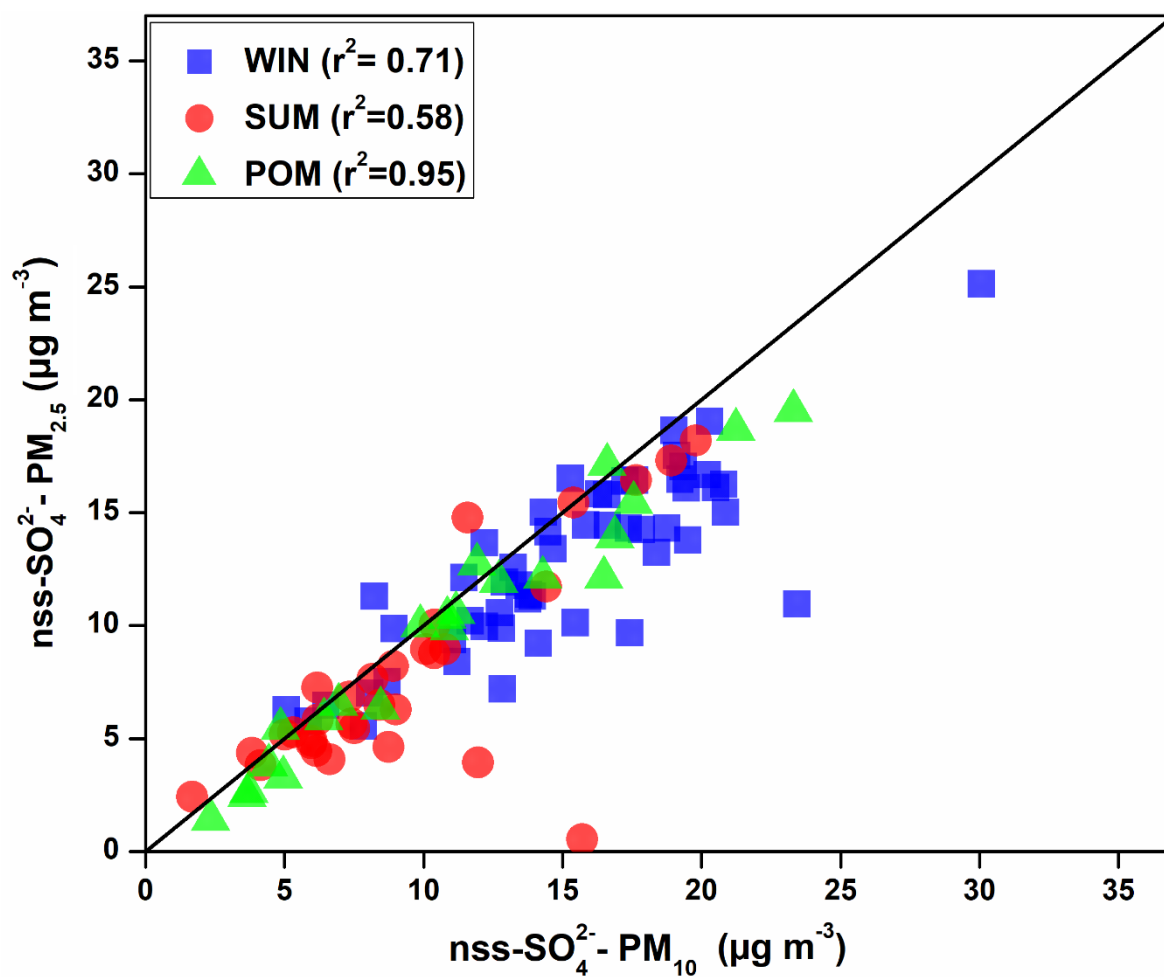


Fig. S5: Seasonal correlation between  $\text{PM}_{10} \text{nss-SO}_4^{2-}$  and  $\text{PM}_{2.5} \text{nss-SO}_4^{2-}$  ion.

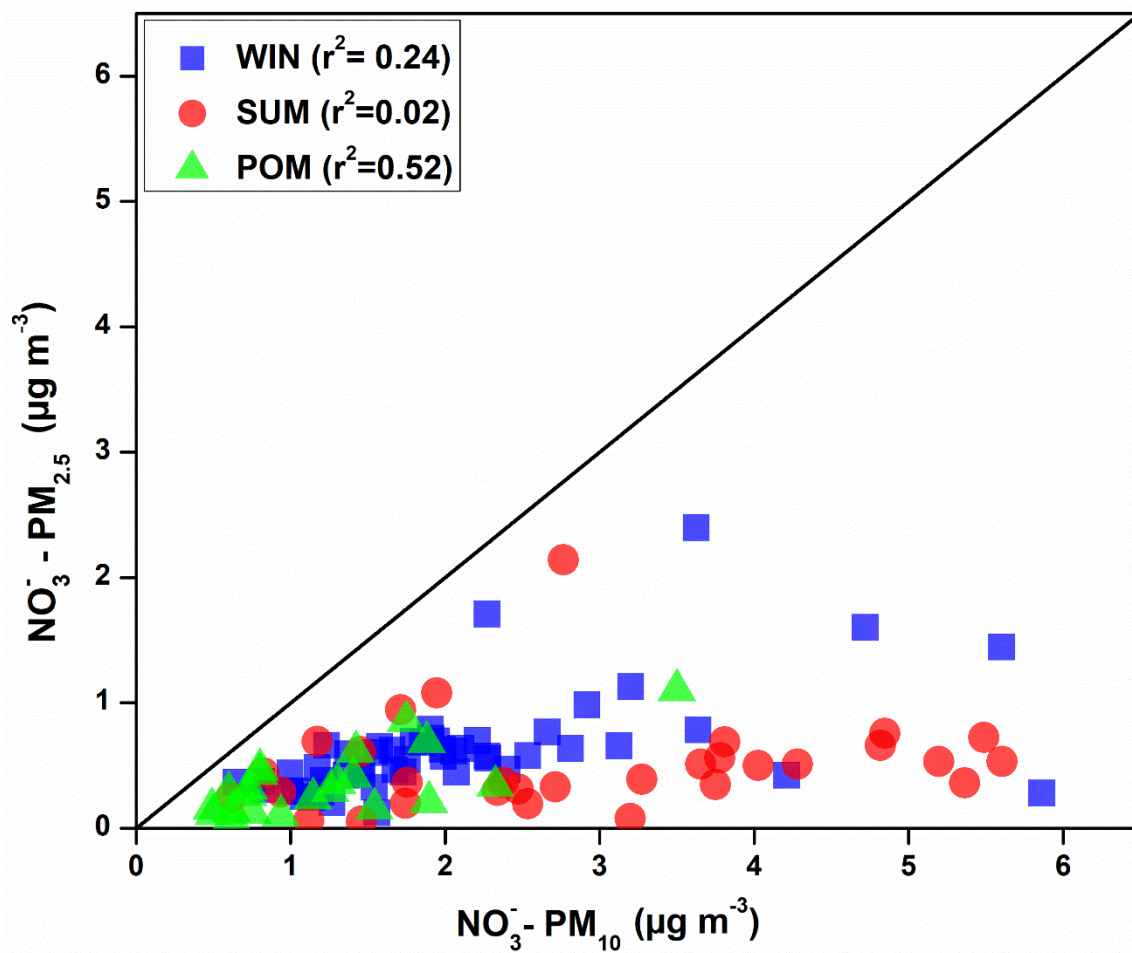


Fig. S6: Seasonal correlation plot between  $\text{PM}_{10} \text{NO}_3^-$  and  $\text{PM}_{2.5} \text{NO}_3^-$ .



Supplementary material S4

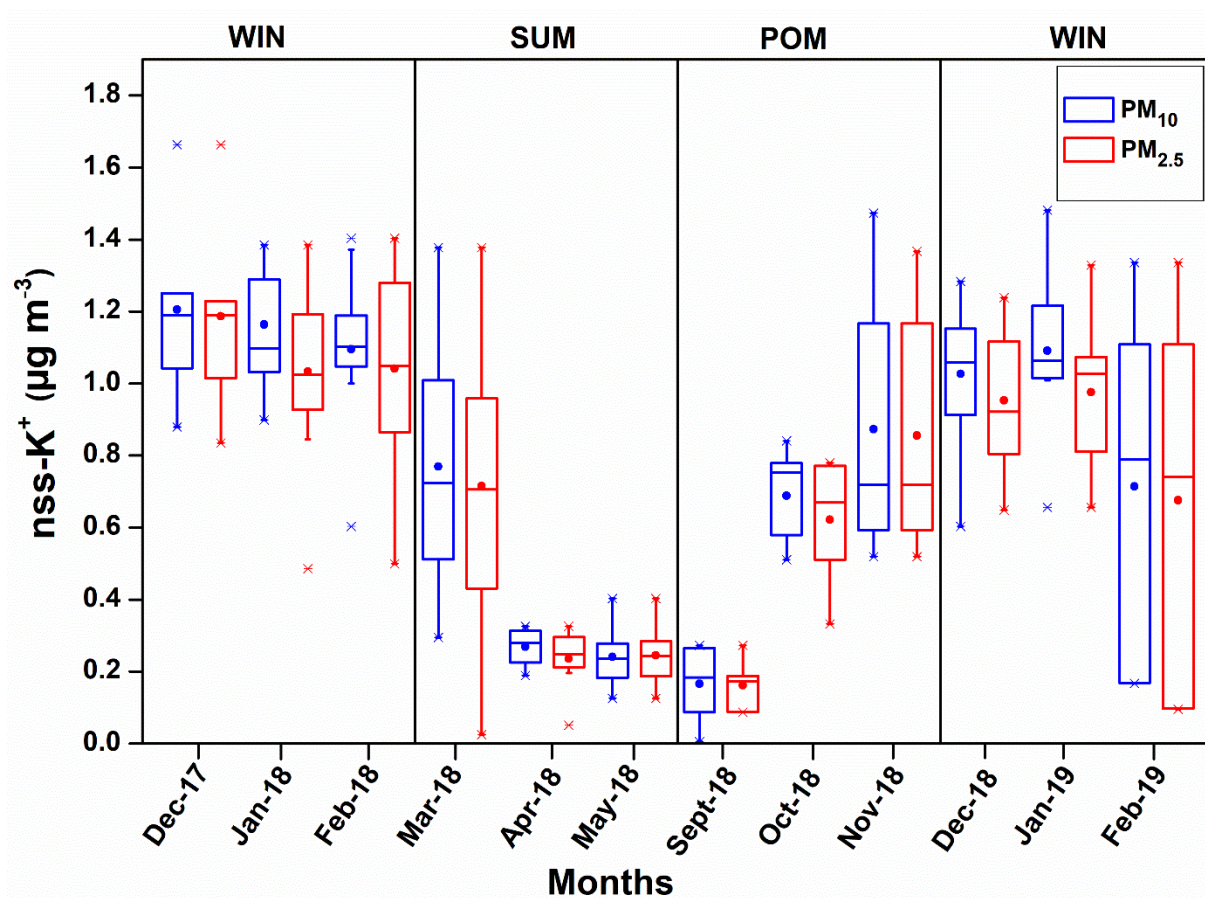


Fig. S7: Seasonal variability of  $nss-K^+$  ion in the present study.



Supplementary Material S5: Correlation plot between mass concentrations of ionic species for source identification

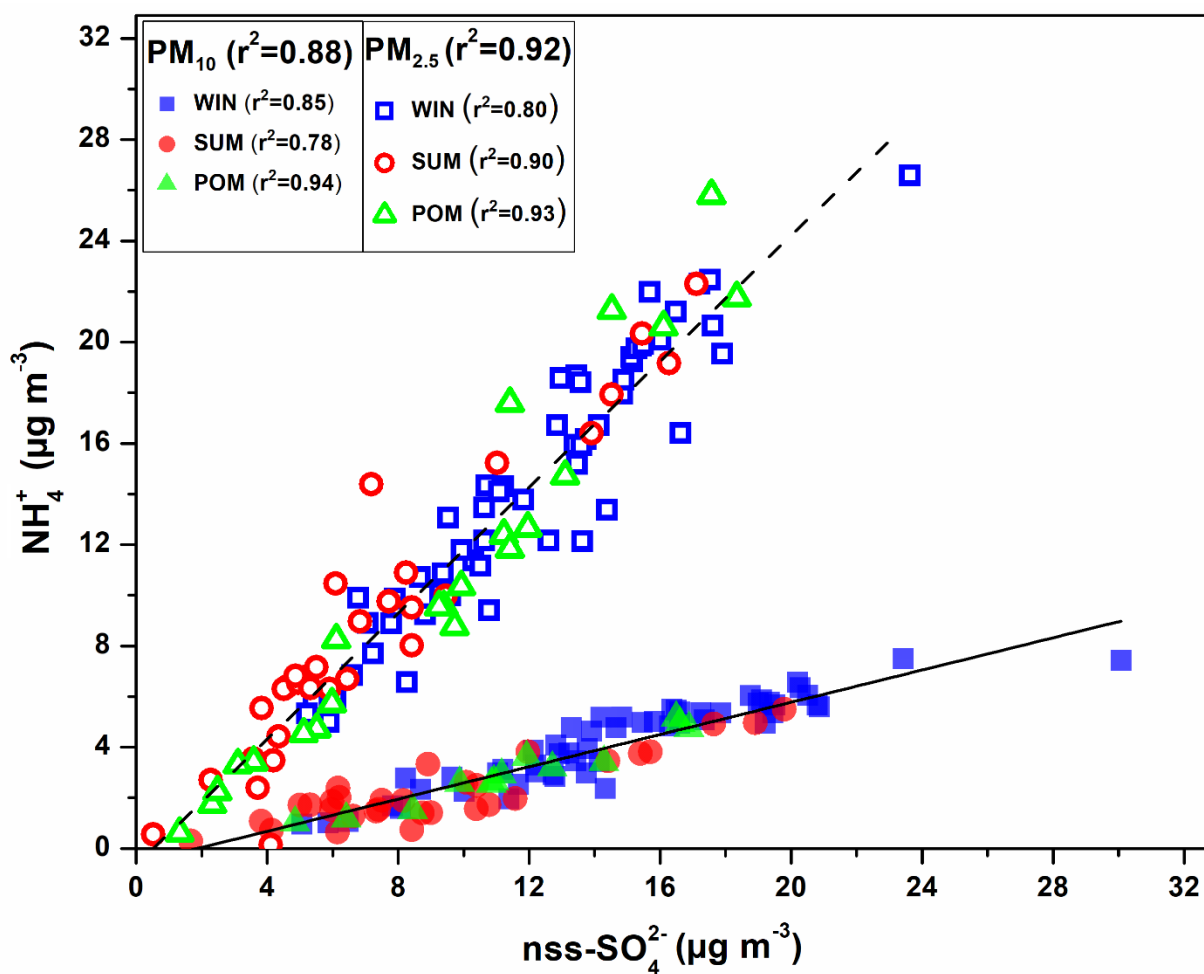


Fig. S8: Correlation plot between  $nss-SO_4^{2-}$  and  $NH_4^+$  during three different season at coastal location in Goa. Overall correlation coefficient ( $r^2$ ) for total PM10 and PM2.5 is given in bold letters in the legend box.

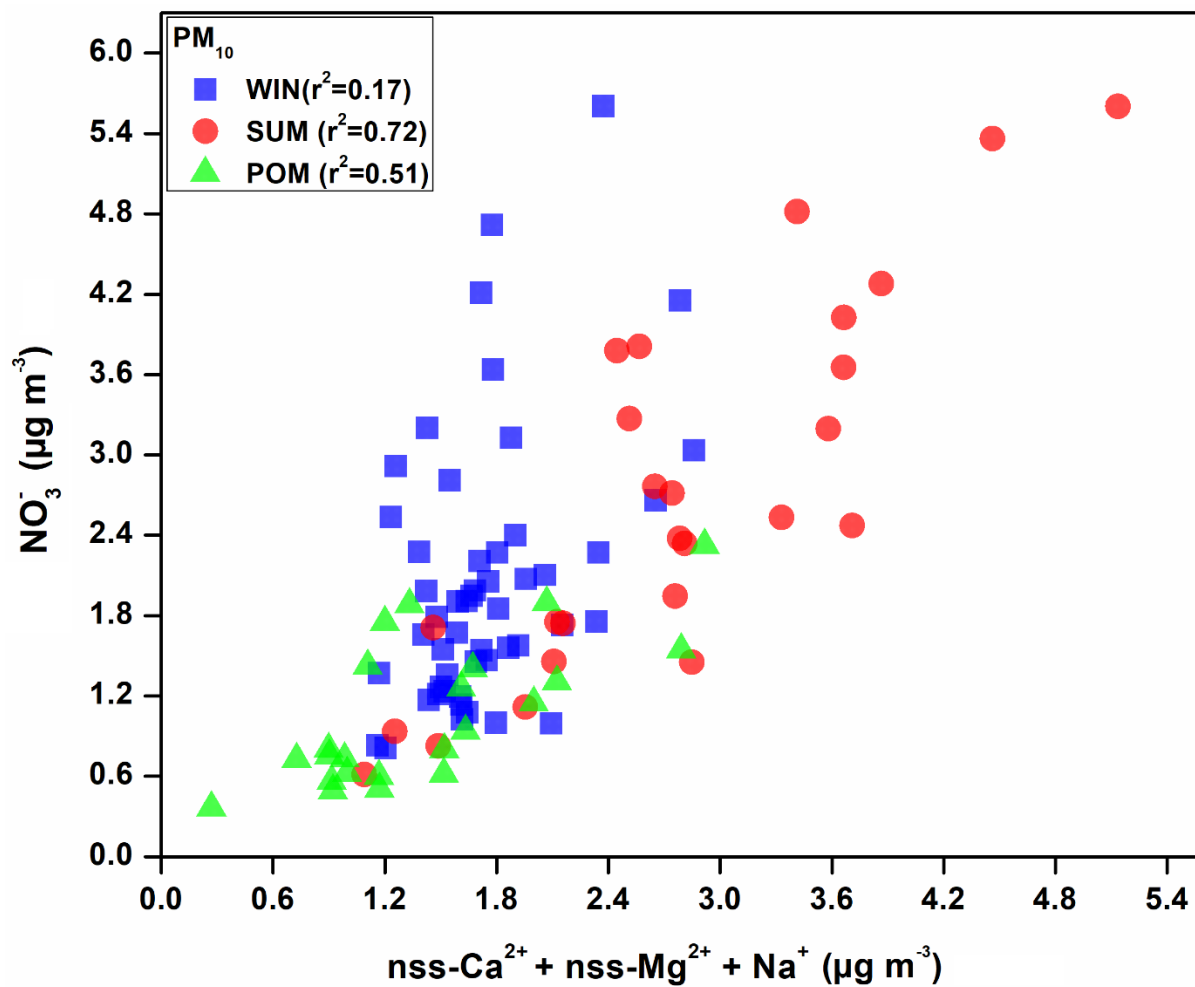


Fig. S9: Correlation plot between  $\text{NO}_3^-$  and major cations in  $\text{PM}_{10}$  during three different season at coastal location in Goa.

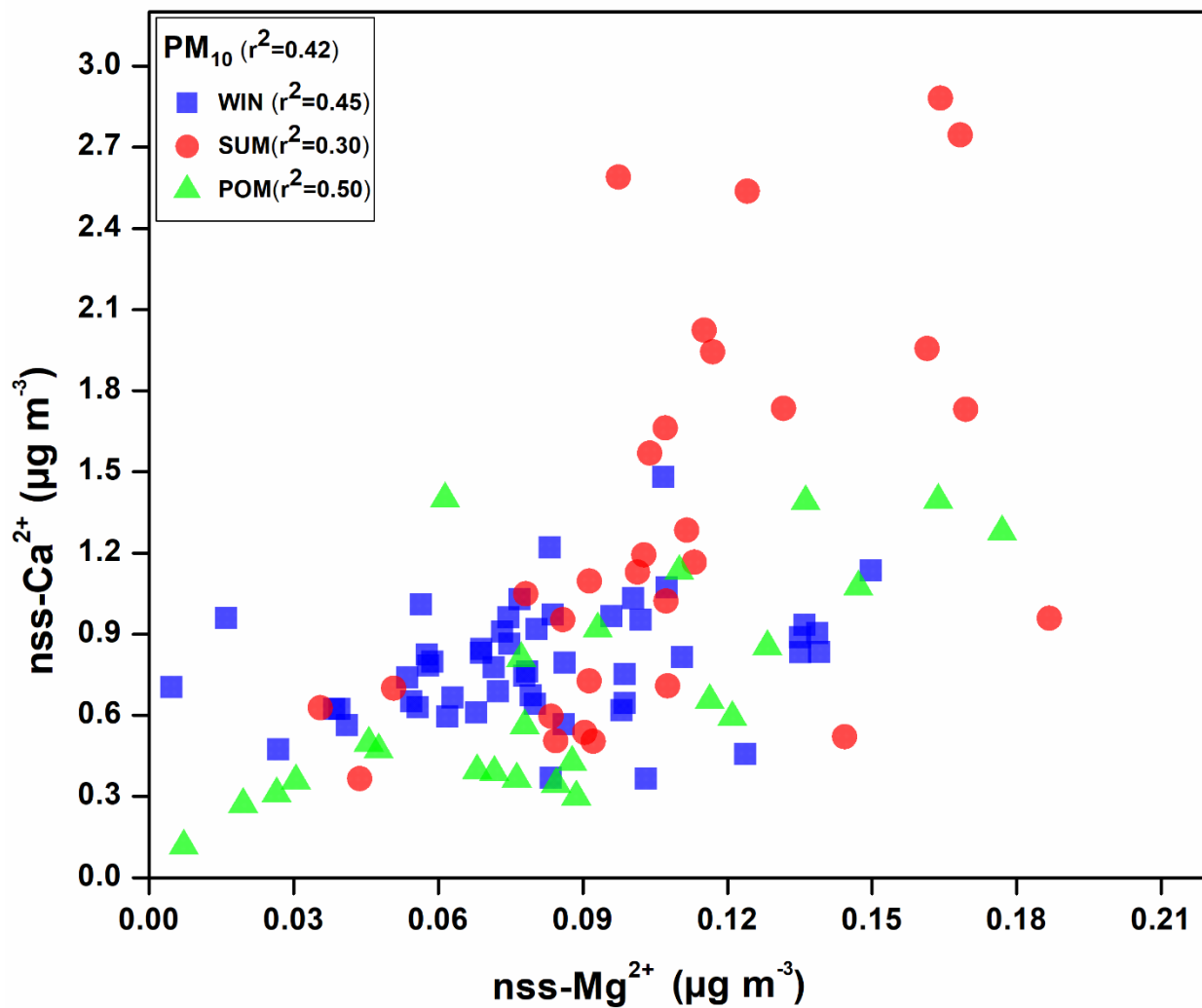


Fig. S10: Correlation plot between crustal species (sea-salt corrected Ca<sup>2+</sup> and Mg<sup>2+</sup>) in PM<sub>10</sub> during three different season at coastal location in Goa.