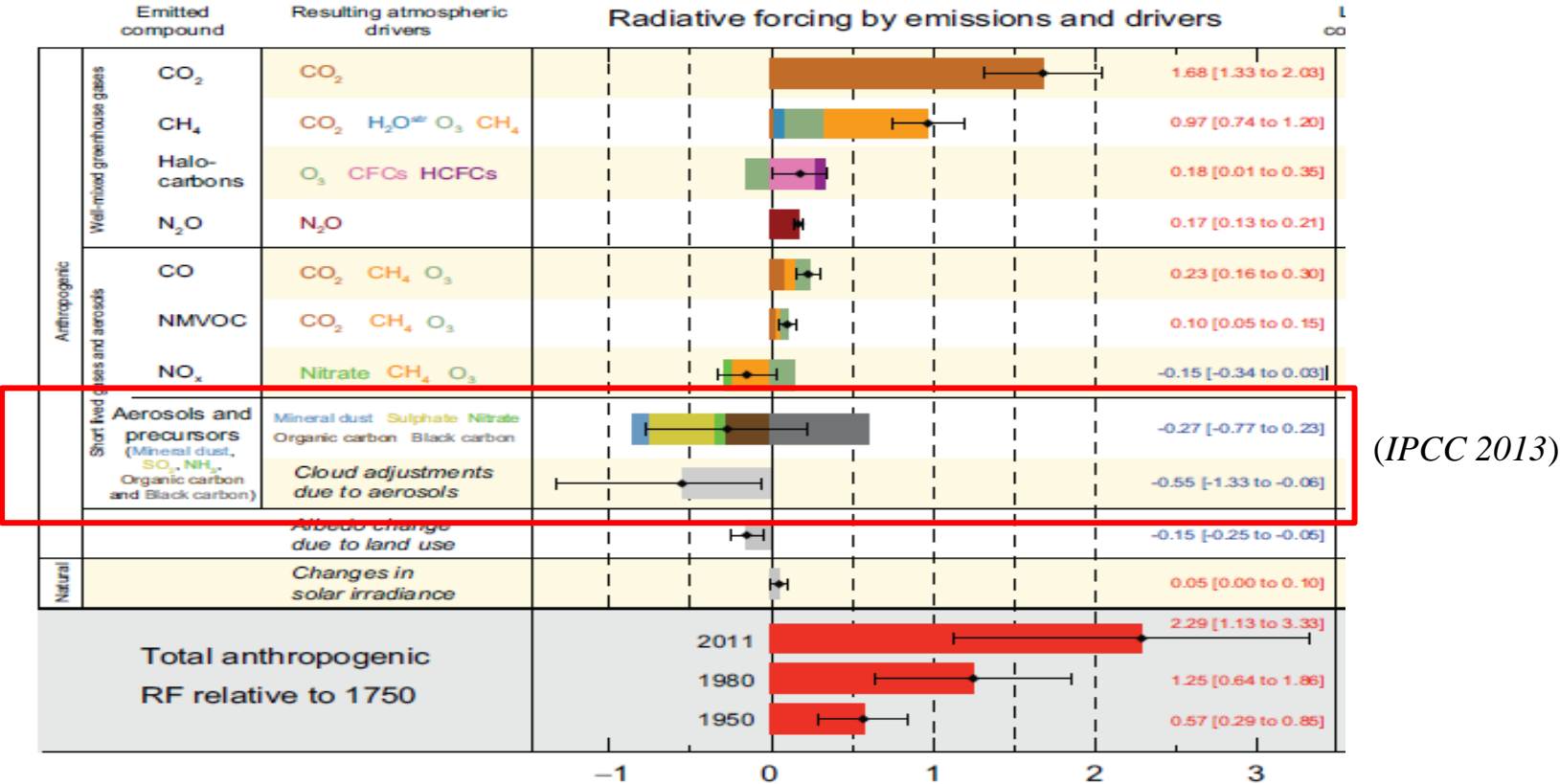


# Light absorption and fluorescence characteristics of water-soluble organic compounds in carbonaceous particles at a typical remote site in the southeastern Himalayas and Tibetan Plateau



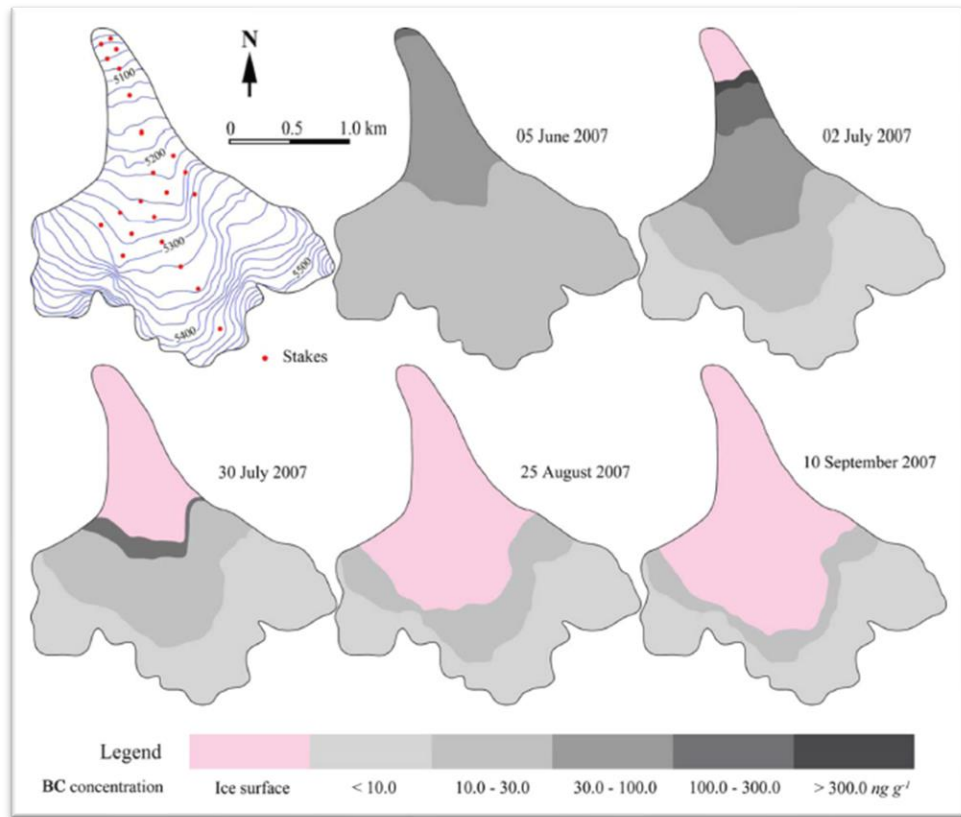
**Chao Zhang**, Meilian Chen, Shichang Kang, Fangping Yan, Chaoliu Li\*

# light absorption of organic carbon

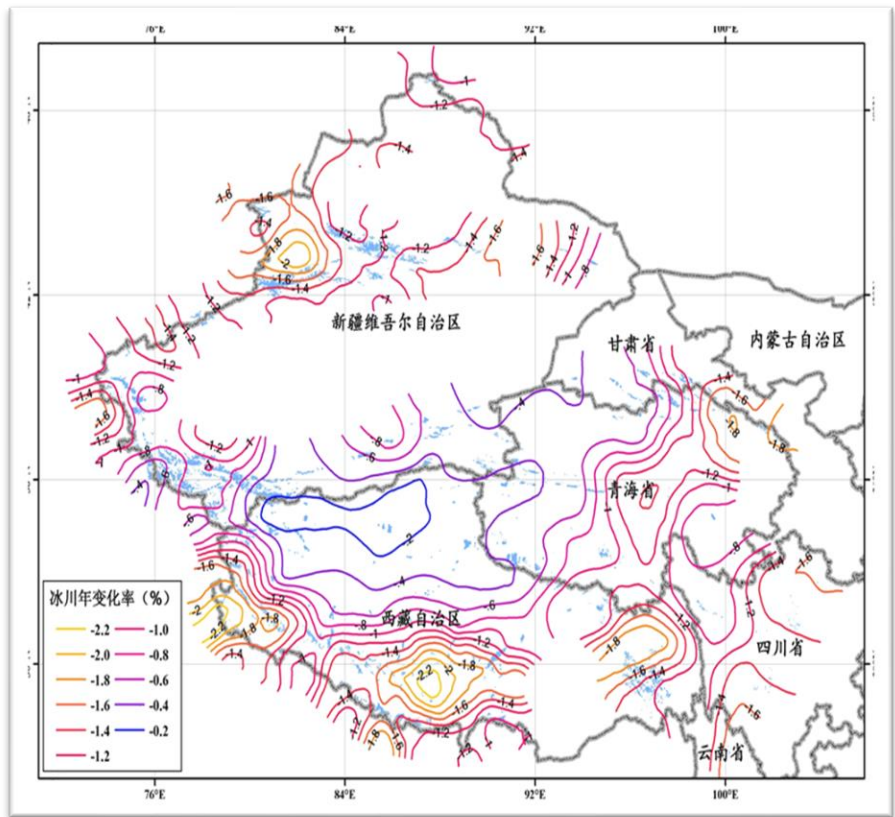


Some components of OC can absorb solar radiation in the visible to ultraviolet light bands;  
WSOC has become one of the factors that can affect radiative forcing.

# light absorption of organic carbon



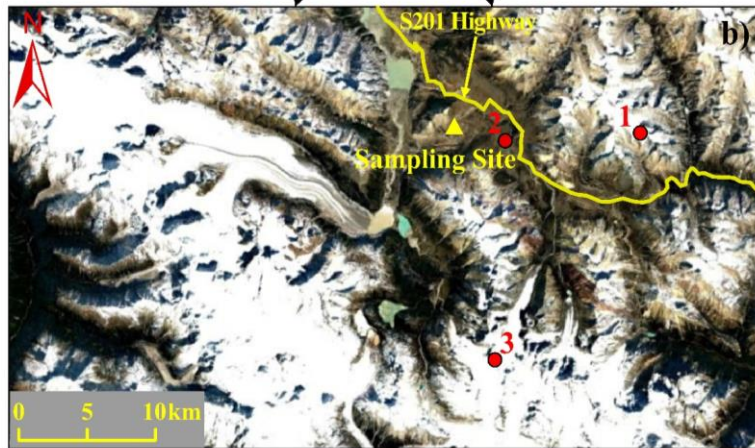
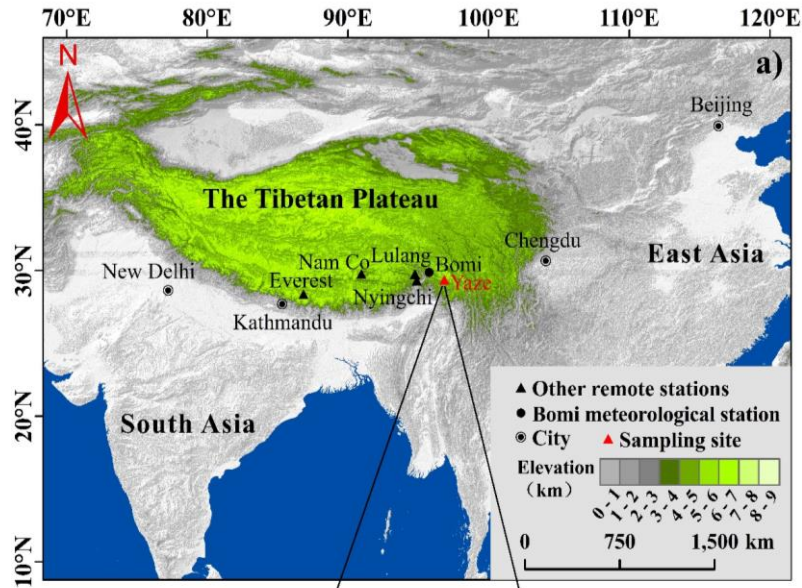
(Xu et al., 2009)



(Liu et al., 2015)

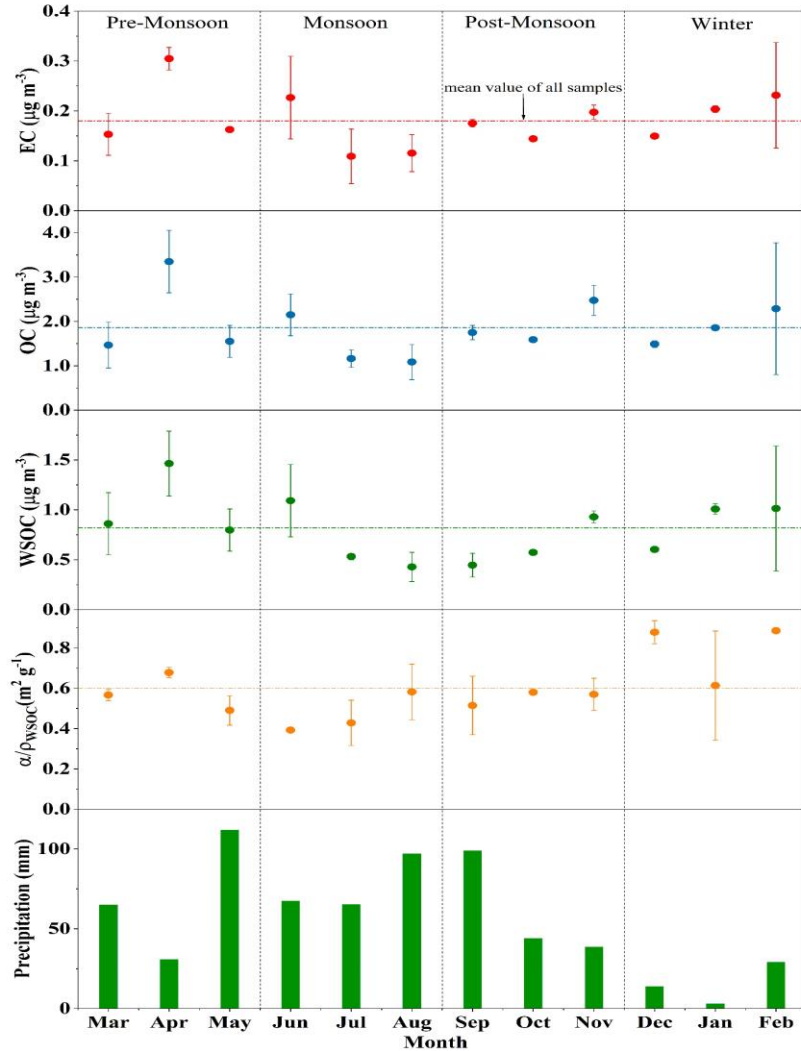


# Sampling site--A typical remote site



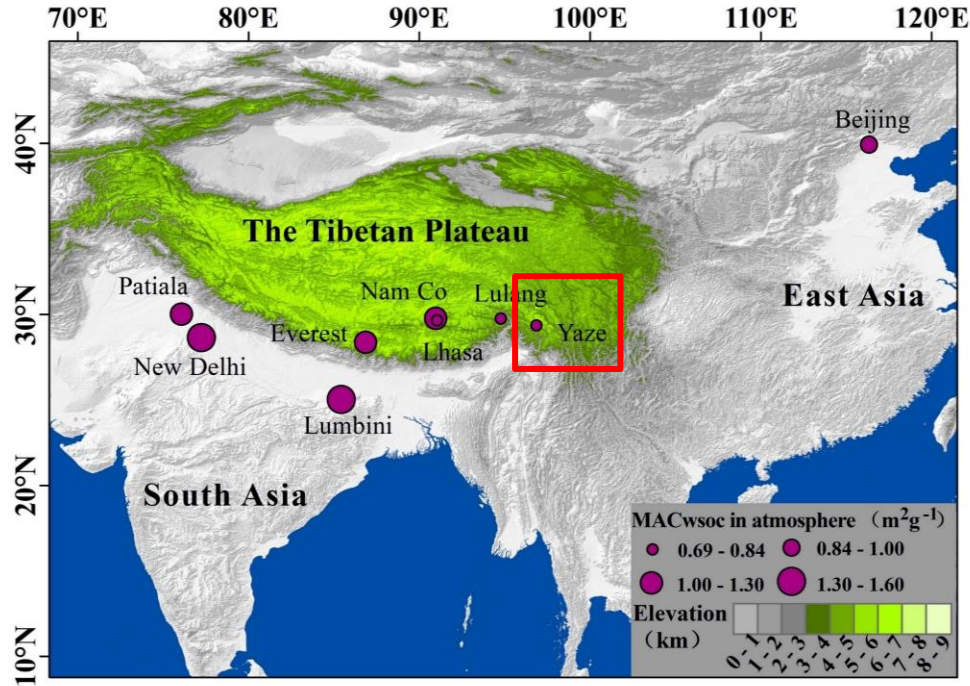
- Weak local emissions during the summer season
- The atmospheric particles collected during this period reflected the background characteristics of the southeastern HTP

# Characteristics of OC, EC, and WSOC



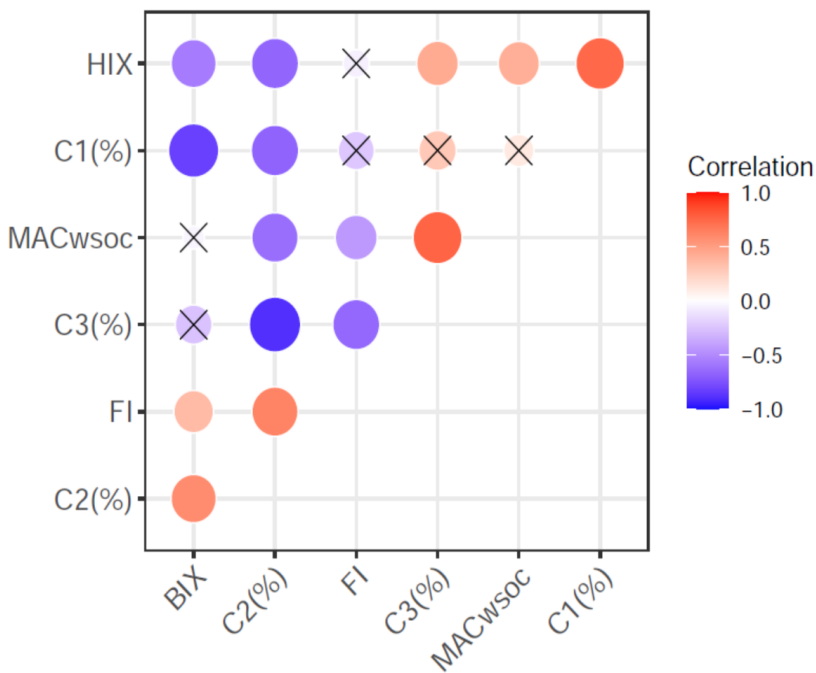
- OC ,EC and WSOC showed significantly lower concentrations during the monsoon period than that during the winter period.

# Light absorption properties of WSOC



- In Yaze village, the MAC value at 365 nm was  $0.60 \pm 0.19 \text{ m}^2 \text{ g}^{-1}$ , which is much lower than that of the Everest and Nam Co Stations.

# Fluorescence properties of WSOC



- Three fluorescence components (one protein-like component (C2) and two humic-like components (C1 and C3)) were identified in the extracted WSOC using the PARAFAC method.

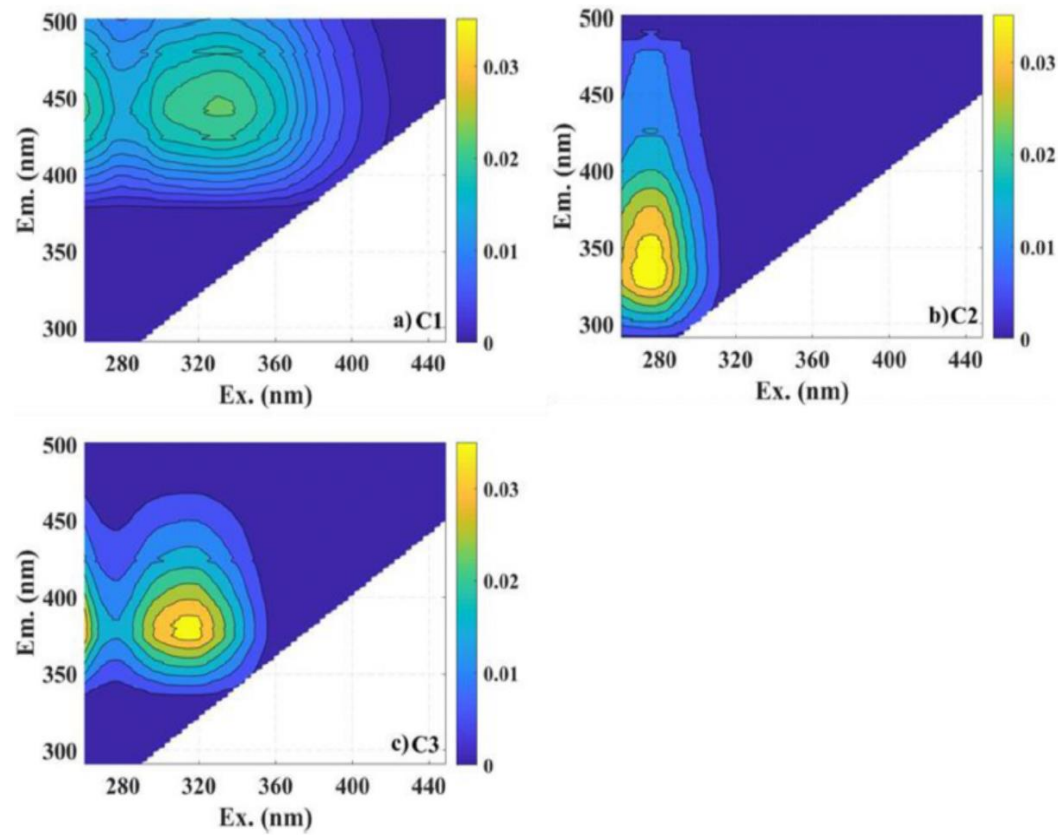
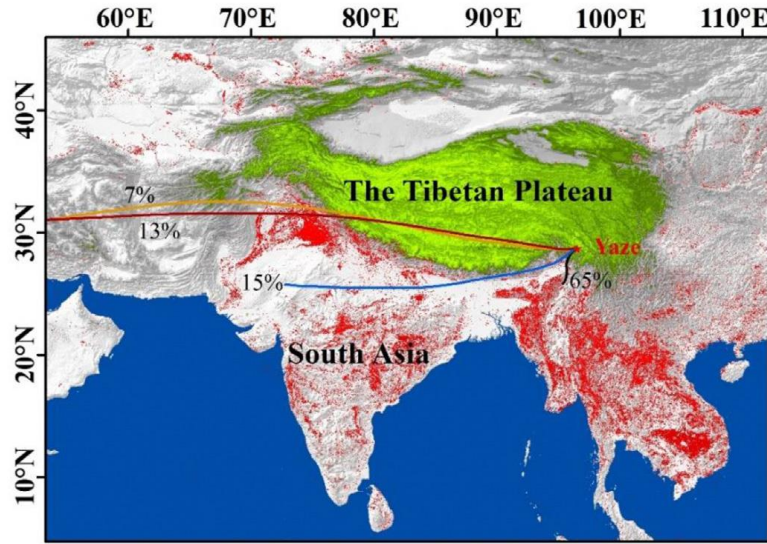


Fig. 4. WSOC fluorescence components (C1, C2, and C3) in Yaze village, identified using EEM-PARAFAC analysis.



# Potential sources of WSOC



- The air masses are dominated by the Indian monsoon and westerly winds, of which 65% are derived directly from South Asia and 35% from the Middle East, passing through the southern part of the Himalayas.

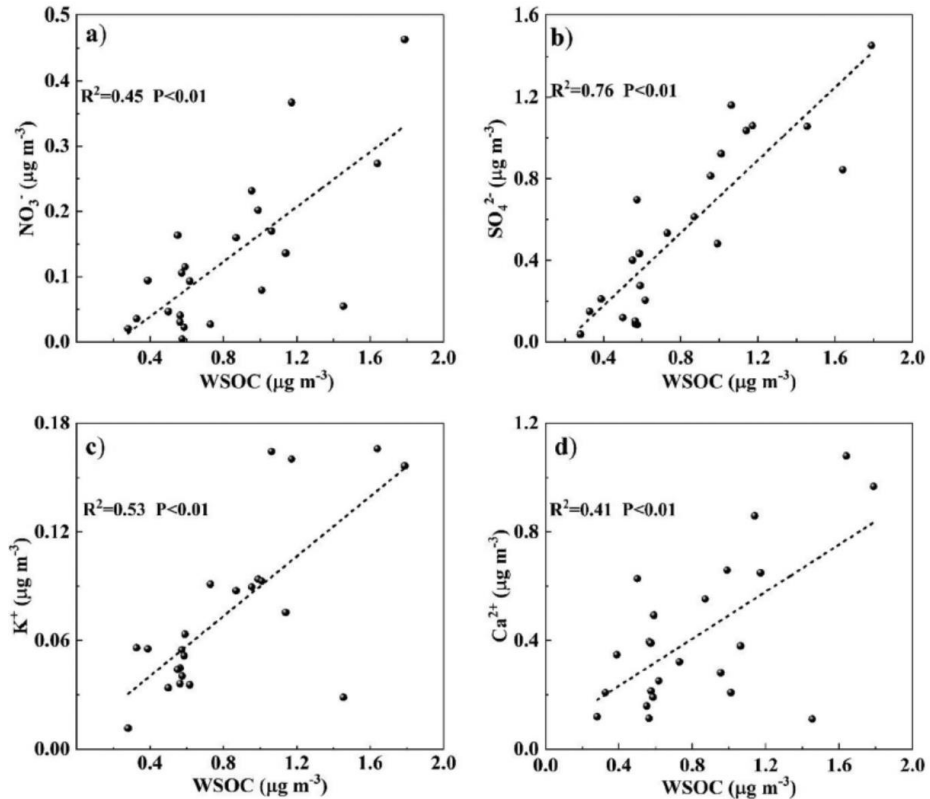


Fig. 5. Relationship between WSOC and various ions ( $\text{NO}_3^-$ ,  $\text{SO}_4^{2-}$ ,  $\text{K}^+$ , and  $\text{Ca}^{2+}$ ) in samples collected in Yaze village.

- WSOC showed strong positive correlations with  $\text{SO}_4^{2-}$ ,  $\text{NO}_3^-$ , and  $\text{K}^+$  during the sampling period.





**Thanks for your attention!**