

Dry deposition of reactive Nitrogen over the São Paulo state, Brazil

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Problem Definition

Human activities have been changing deposition rate of the atmospheric reactive N over the last decades. However, the understanding of the process that rules the accumulation and deposition of reactive nitrogen in the environment still faces major gaps mainly in regions with lack of data as South America.

Objective

Evaluate the atmospheric dry deposition of reactive nitrogen (Nr)

Using concentration of:

- Gaseous: NH_3 and HNO_3
- Aerosol: NH_4^+ and NO_3^-

Deposition velocity (Flechard et al. 2011)

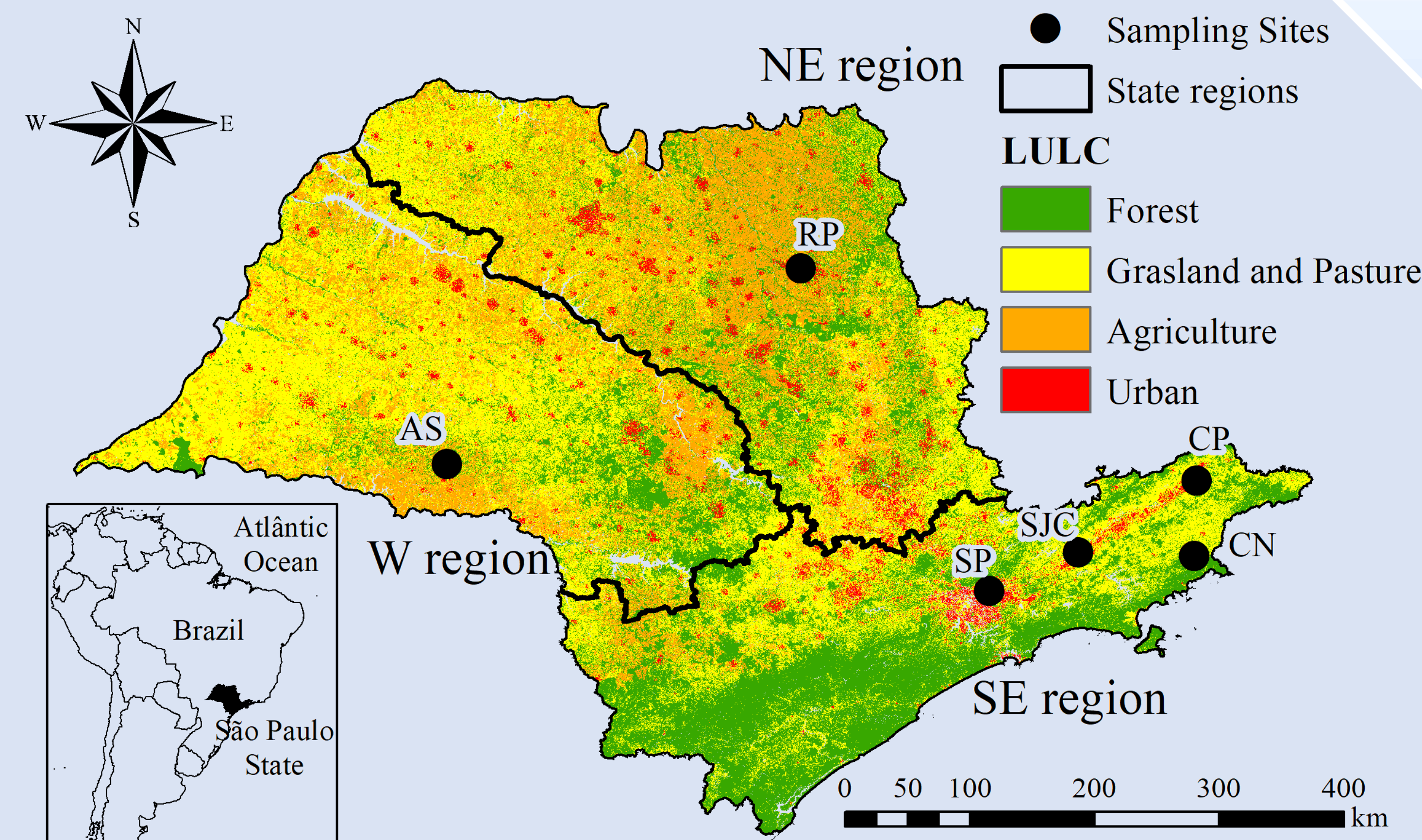
Methods

6 sampling sites, with different environmental characteristics;

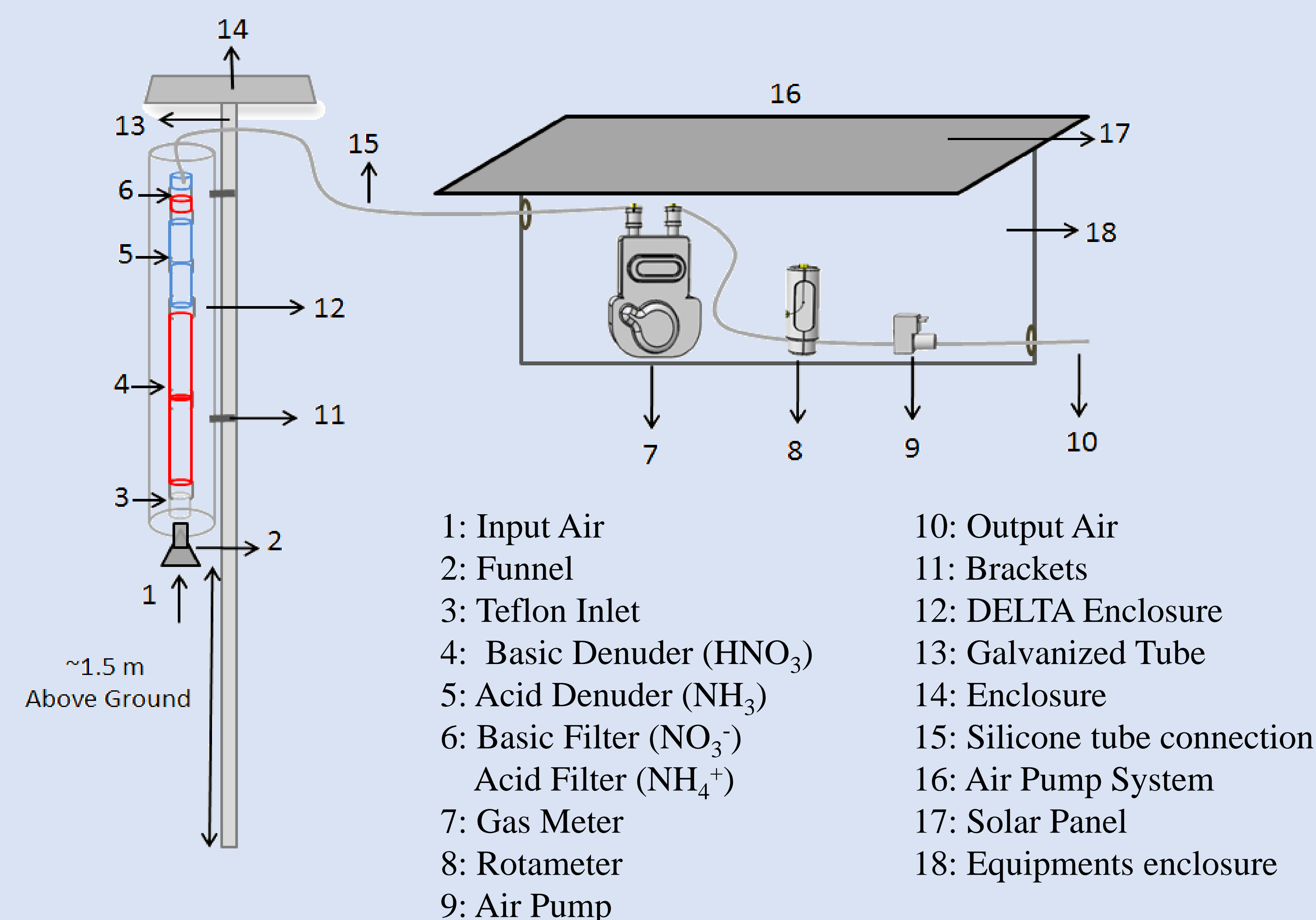
State of São Paulo, Brazil;

Sampling system DELTA;

Determine the concentration: Ion chromatography method.



Study site (State of São Paulo, Brazil).



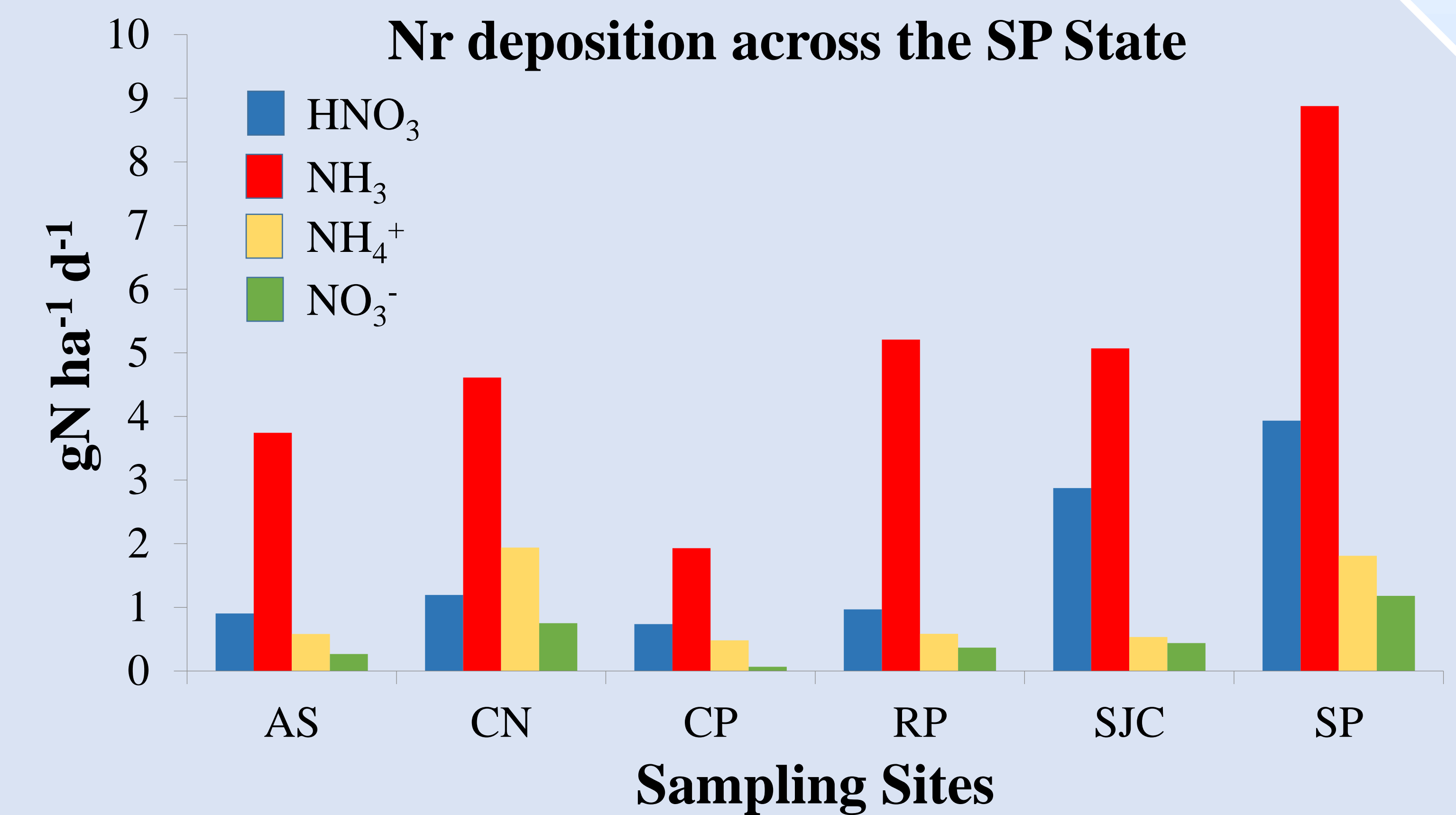
Schematic diagram of the DELTA system.

Results and Conclusion

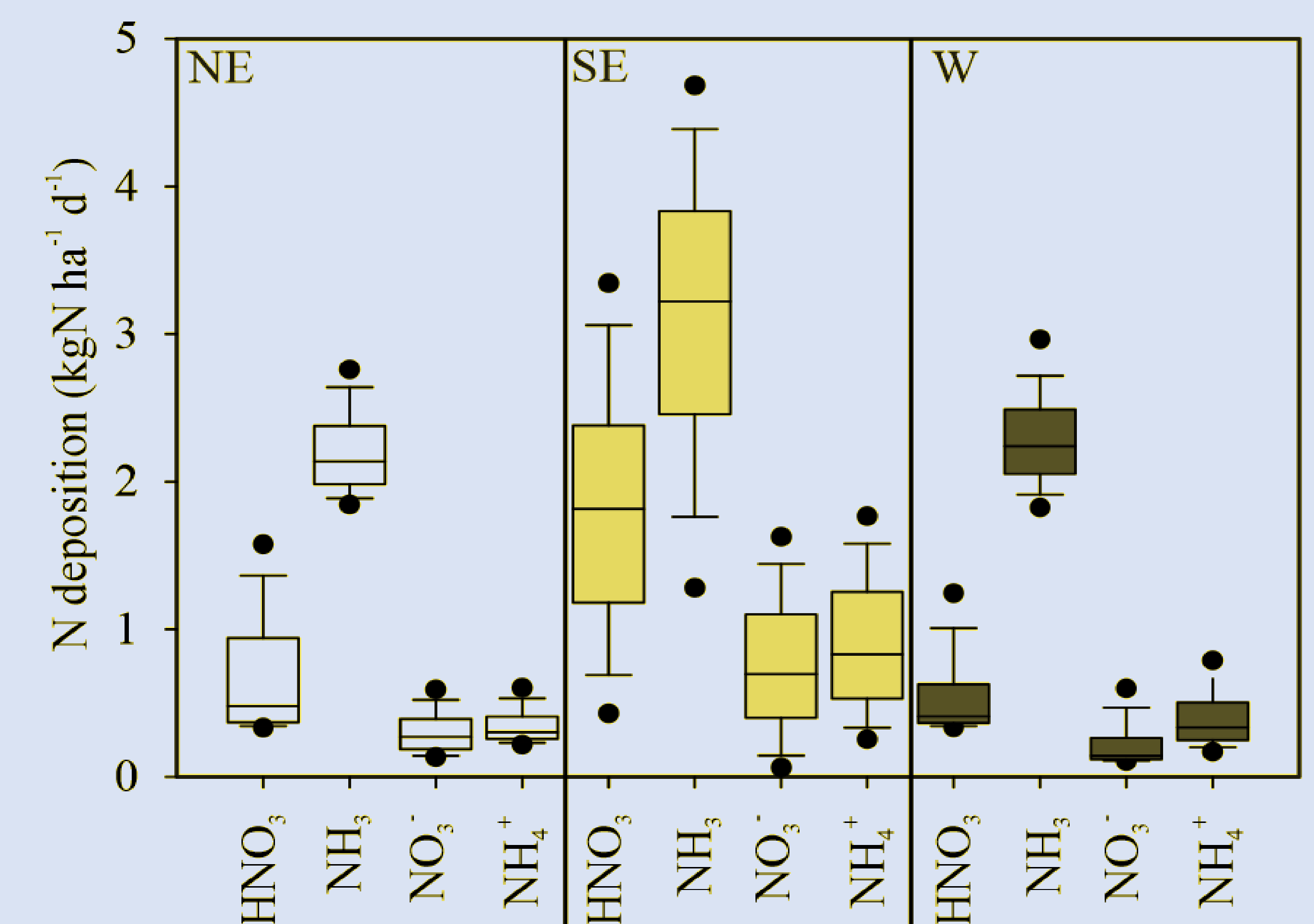
Atmospheric Nr concentration

- N-NH_3 : dominant form of Nr in the atmosphere at all sampling sites (57%)
- NH_4^+ : The second most common form of Nr
- HNO_3 and NO_3^- : represent 10% of the total Nr in the atmosphere each

Atmospheric Nr deposition



- Not observe a pattern of variation linked to meteorological of dry/wet season
- Found good correlation with:
 - Humidity
 - Wind speed higher than 3.5 m s^{-1}



- High deposition in fragments of Atlantic Forest: higher than the critical N and may represent a high risk for the local biodiversity.