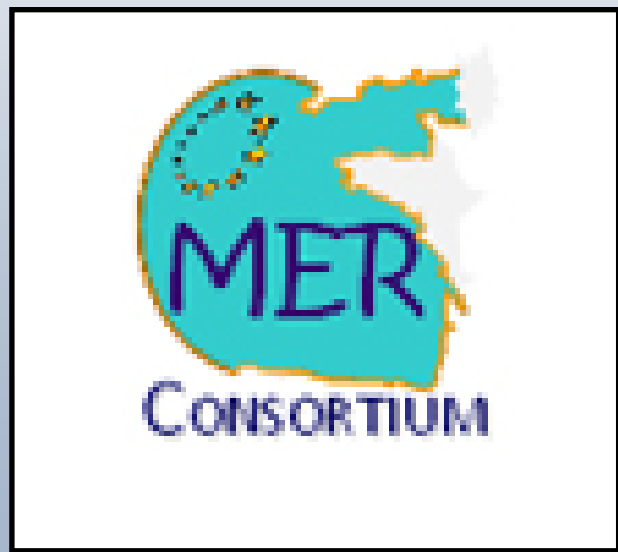
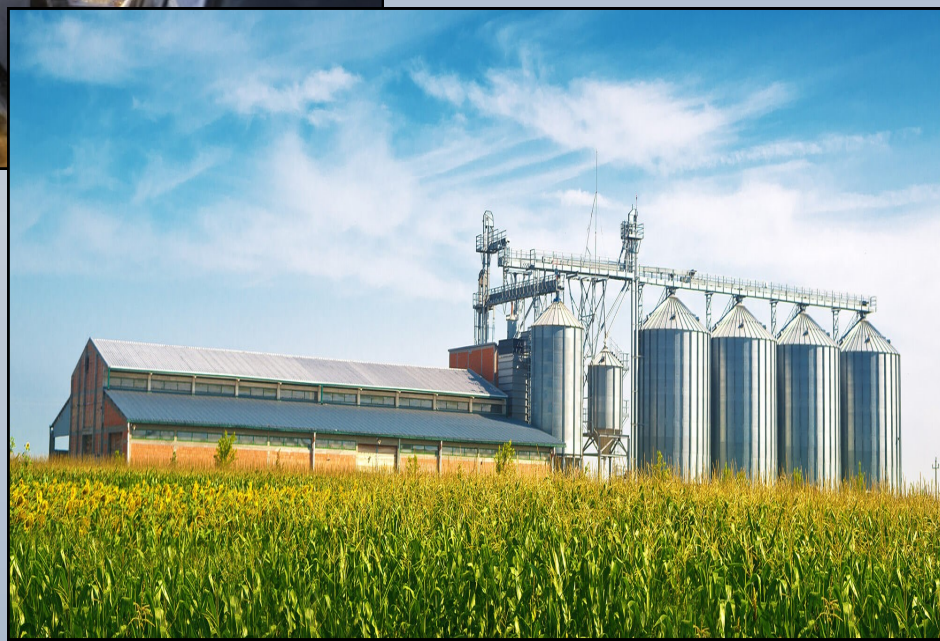


Quantifying nitrogen dynamics in Southampton Water Estuary using multi-isotopes in nitrate



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Introduction

- ⇒ Anthropogenic activities accelerate the increase of NO_x in the atmosphere, and the species can be further converted to atmospheric NO_3^- (N_{atm})
- ⇒ N_{atm} deposition on aquatic bodies leads to water quality degradation, algal blooms, eutrophication and subsequent regional climate change
- ⇒ Atmospheric N_{atm} possesses an oxygen isotopic anomaly expressed by $\Delta^{17}\text{O}$ with $\Delta^{17}\text{O} > 10$ per mil for N_{atm} and $\Delta^{17}\text{O} \approx 0$ for N_{re} (Remineralized NO_3^-)
- ⇒ In this study, $\Delta^{17}\text{O}$ along with other isotopes, is used as a proxy to understand the N dynamics of the RAMSAR Wetland, 'Southampton Water' Estuary

Objectives

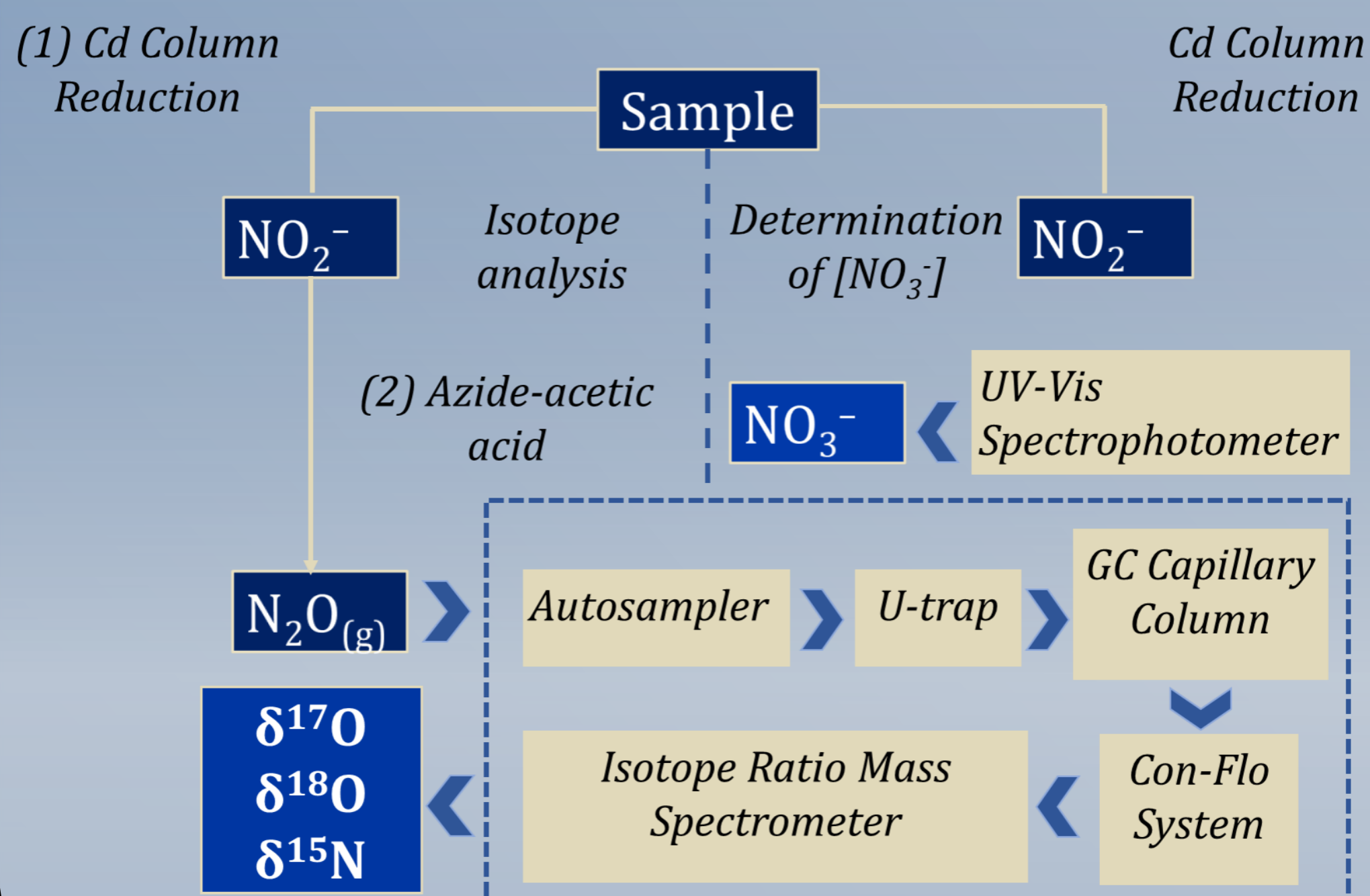
- ⇒ To quantify the N_{atm} fluxes in the water
- ⇒ To estimate the monthly N inventory of the water body
- ⇒ To develop models to assess spatial and temporal N_{atm} deposition trends
- ⇒ To assess the significance of N processes for the N cycle of the estuary

Study Area



Southampton Water Estuary and associated Rivers Test, Itchen and Hamble

Method



Benefits

- ⇒ The study provides a comprehensive understanding on the atmospheric based nitrogen pollution in the estuary
- ⇒ This study can be further used as a baseline investigation to implement atmospheric pollution regulation measures to protect the RAMSAR wetland