NUTRIENT CONCENTRATIONS ALONG THE COAST OF SOUTHERN BRAZIL

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Introduction

The supply of nutrients to coastal areas may indicate the contribution of continental, superficial and groundwater that favor primary productivity. The southern coast of Brazil at Rio Grande do Sul state is influenced by these processes. Sandy coastal barriers extend the entire length of the shoreline of this region favoring the submarine groundwater discharges to the ocean (Niencheski et al., 2006, 2007,2014).

Material and Methods

Water samples were collected at the surface and bottom of the water column for the determination of physicochemical parameters and nutrients (nitrate, nitrite, ammonia, phosphate and silicate) in: 1) a transect on the northeastern coast at Torres; 2) a transect along the coastal area in the palaeochannels; and 3) a transect on the southeastern coast at Mostardas near of the Patos Lagoon. (Figure 1)

Objective

The aim of the present study was to identify the distribution of nutrients on the southern coast of Brazil.

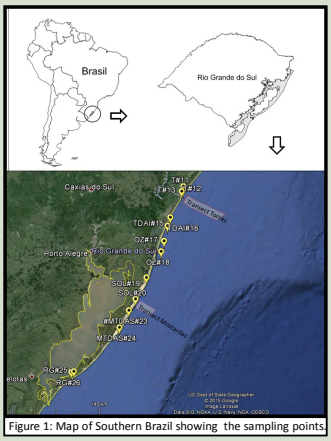

Figure 1: Map of Southern Brazil showing the sampling points.

Results and Conclusion

A salinity gradient was observed with an increase in south-north direction of the coast (Figure 2A). However there was no vertical stratification of salinity (Figure 2B).

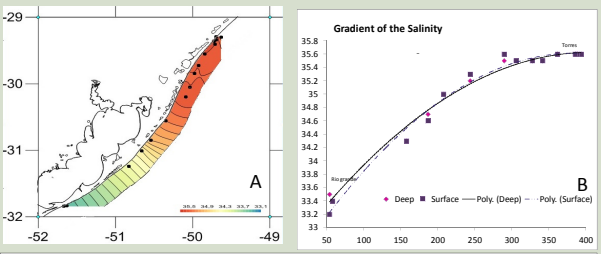

Figure 2: Gradient of the salinity along the coast. A) Surface water. B) Surface and deep waters.

DIN, $P\text{-}PO_4^{-3}$ e SiO_4^{-4} exhibed an inverse behavior to salinity suggesting the influence of continental surface water contribution (Figure 3).

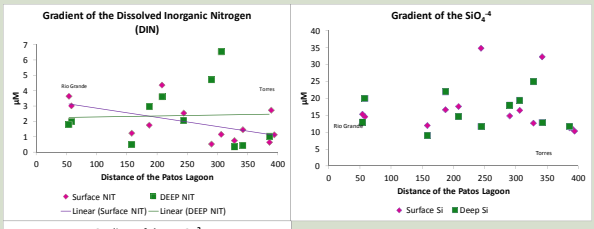

Figure 3: Nutrient Distribution

The results indicated that the coastal area is influenced by the intensity of continental inputs. Waters near the Lagoa dos Patos are more nutrient-rich, when compared to other locations.

Torres transect:

•A) A horizontal decreasing gradient on the surface water along the transect was observed (Figure 4), but an anomaly on the deep water was detected at 35-55 km of distance of the coast.

•B) The Botton water was more nutrient enriched then the surface water.

- Influence of coastal input; (A)
- Sediment ressuspension; (B)
- Submarine groundwater discharges; (B)
- Biological interactions. (A,B)

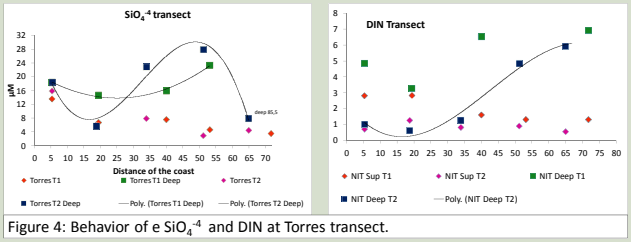

Figure 4: Behavior of e SiO_4^{-4} and DIN at Torres transect.

Coastal waters showed spatial differences (Figure 5):

- Northern coastal waters were directly correlated with DO, salinity, nitrate and nitrate;
- Southern coastal waters were directly correlated with suspended material, ammonium, phosphate and silicate.

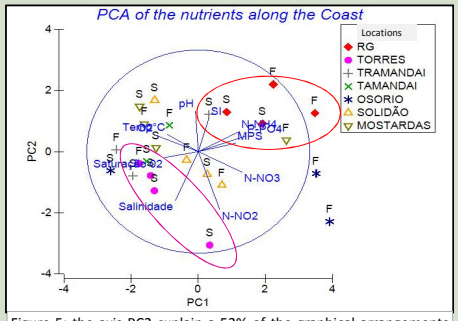

Figure 5: the axis PC2 explain a 52% of the graphical arrangements and the axis PC1 explain only 37 %.

Acknowledgement:

Reference:

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