

## P2.07

### Trend dynamics in physical and chemical water parameters in the Venice Lagoon (Italy)

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#### Abstract

The Venice Lagoon is the largest wetland in the Mediterranean.

Since 2011, ISPRA and ARPAV have assessed the ecological status of Water Bodies (WBs) of the Venice Lagoon, within the Water Framework Directive (WFD), which includes monitoring of physical and chemical parameters in water. Veneto Region has funded monitoring activities. The present work aimed at describing the trend dynamics of these parameters.

Water parameters were seasonally collected in thirteen WBs (30 stations in total) of the Venice Lagoon from 2011 to 2019.

Seasonal Kendall test was applied to data of temperature, pH, dissolved oxygen, total suspended solid (TSS), carbon, nitrogen and phosphorous compounds, silicates, chlorophyll-*a*. Fluctuations in pH were observed, whilst temperature displayed positive trends, although not significant, as reported for longer-term dynamics in the central part of the lagoon. Reductions in oxygen conditions were observed in the central WBs of the lagoon, often affected by hypoxia and/or anoxia phenomena in the last years, and where, on the contrary, chlorophyll-*a* significantly increased. TSS reduced only in a WB in the northern lagoon. A general reduction in nutrient concentrations was observed, mostly due to orthophosphates rather than nitrogen compounds (total dissolved nitrogen, dissolved inorganic nitrogen, nitrates), being the first significantly decreasing in six WBs and the latter only in one or two WBs, depending on parameter. Total and dissolved organic carbons significantly decreased only in one WB, placed in the inner part of the lagoon, whilst particulate organic carbon significantly decreased in two WBs more influenced by the sea.

The present study is a baseline for future investigations, as describing trend analysis of data from the whole Venice Lagoon. For some parameters, results could be also useful to support Water Managers in the assessment of the ecological status (WFD *sensu*) and adoption and/or review of the effectiveness of measures.

#### Keywords

Seasonal Kendall Test, Transitional waters, Water Framework Directive, Nutrients