



## The climate in the Venetian and North Adriatic region: variability, trends and change

*workshop*

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### **TOPIC T2. Northern Adriatic sea level and circulation: variability and trends**

#### **Oceanographic Properties of the Northern Adriatic Sea: Variability and Trends**

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##### *Short abstract:*

The Northern Adriatic is characterized by a weak cyclonic circulation, mixed water column in winter and strong stratification in summer. Local water masses are affected by the plume of the Po river, whose path presents interseasonal variation depending on the intensity of the river flow, so that it descends along the western Adriatic coast or penetrates inside the central part of the basin in weak/strong conditions respectively. In addition, spreading of the freshwater of the Po River origin depends on local wind conditions and thus varies on a weekly synoptic time scale. Dense water formation takes place in winter and contributes to the deep circulation of the whole Adriatic and of the Ionian Sea. Interannual and decadal variability of the dense water formation is large and depends on air-sea heat fluxes and freshwater discharge. Some indications of the decadal variability or a trend in SST in the northernmost part of the Adriatic have been shown from the analysis of AVHRR data. More specifically, in the period 1984 – 1992 a trend of the SST decrease has evidenced. Comparison between the recent in situ SST and sea-surface salinity data (period 1988 – 99) and the same data from the previous period (1911 – 1987) has on the other hand, shown that there is a general increase in both salinity and temperature over the major portion of the Northern Adriatic. Northern Adriatic thermohaline properties are also a function of the Mediterranean and Southern Adriatic influence. Thus, a recent salinity increase could be associated to the dramatic change in the Eastern Mediterranean circulation (Eastern Mediterranean Transient). Also, the advective heat transport from the Southern Adriatic may generate the water temperature variations in the Northern Adriatic. This is especially evident when differences in winter climatic conditions occur between the two basins.