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New insights on the geological setting of the Northern Adriatic sea

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Whereas the onshore geological setting of the Northern Adriatic sea region is well known by now, less information are available on the structural setting of the offshore area. This region has been deeply investigated in the framework of the hydrocarbon exploration and by several research Institutions, the latter studies being mainly addressed to the reconstruction of the Quaternary stratigraphic evolution of this area. In 2009, OGS has performed a geophysical survey in the northern sector of the Northern Adriatic sea with R/V OGS Explora. About 800 km of 2D multichannel seismic and Chirp profiles have been acquired, together with Multibeam data in selected areas. The seismostratigraphic and structural analysis performed on the multichannel lines, together with the correlation of the available boreholes drilled in the area, led to the recognition of the major tectonic lineaments affecting the Northern Adriatic sea, approximately from the Tagliamento to the Po River deltas.
In the northernmost sector of the study area, our data highlight the occurrence of tectonic features that may represent the offshore continuation of NW-SE Dinaric and NE-SW anti-Dinaric lineaments, previously inferred in the Gulf of Trieste structural model on the basis of onshore geology, and led to define their extension further to the South. Although most of the tectonic deformation appears to be sealed by the Plio-Quaternary succession, there are evidences that, in places, the deformation affects also these stratigraphic levels. This hypothesis is supported by the widespread occurrence of CH4-rich fluid seepages, which appear strongly related to features interpreted as migration paths propagating throughout the Plio-Pleistocene sequence.
Offshore the Venice lagoon, the occurrence of sub-vertical lineaments are interpreted as possibly related to the continuation in the Adriatic sea of a fault system parallel to the NW-trending Schio-Vicenza feature.