

ISOTOPIC ANALYSIS (^2H E ^{18}O) OF SURFACE AND SUBSURFACE WATERS IN THE ISONZO PLAIN

In the WP6 framework the spatial and temporal variability of the surface and subsurface waters have been investigated by means of environmental tracers to determine flowing paths and origins of the water sources. 53 and 9 sites were monitored for the subsurface and surface waters, respectively.

Field surveys in different periods of the year were carried out (Fig. 1) to collect samples for isotopic analyses. Stable isotopes of water (^2H e ^{18}O) were measured by laser absorption spectroscopy (Baer et al., 2002; Penna et al., 2010, 2012) at the laboratory of experimental hydrology of the Department of Land, Environment, Agriculture and Forestry of the University of Padova (Fig. 2).

Figure 3 highlights the spatial variability of the isotopic composition of the phreatic aquifers in July 2013.

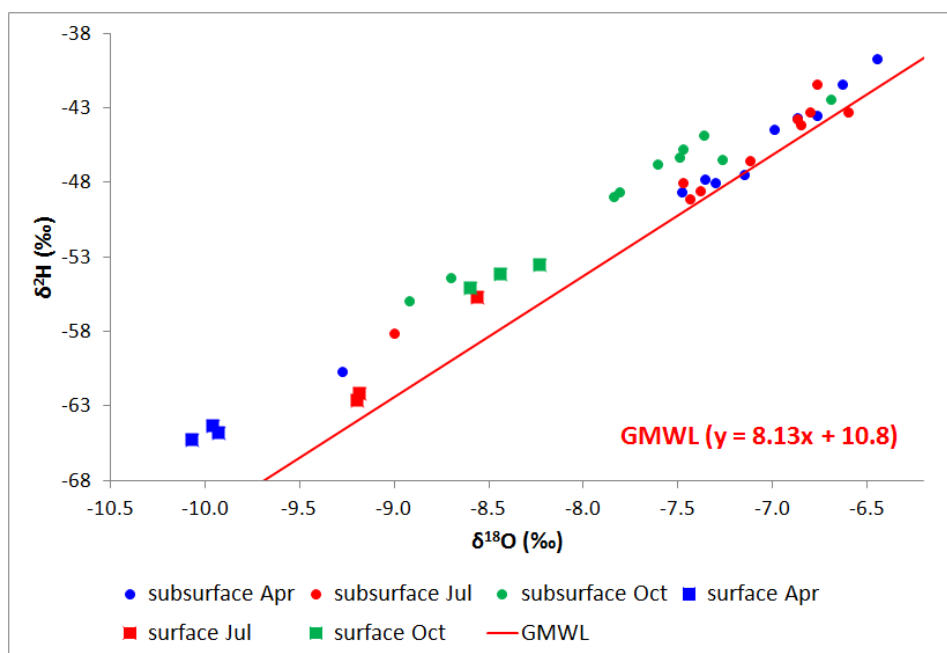


Fig. 1. Seasonal variability of isotopic composition of 3 surface and 10 subsurface monitoring sites. Apr=April, Jul=July, Oct=October.



2007-2013
cooperazione territoriale europea
programma per la cooperazione
transfrontaliera
Italia-Slovenia
evropsko teritorialno sodelovanje
program Čezmejnega sodelovanja
Slovenija-Italija



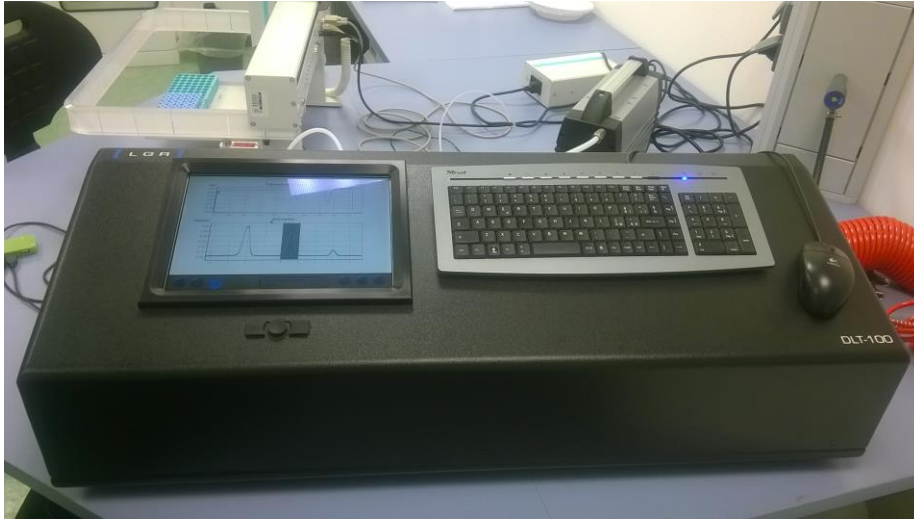


Fig. 2. Laser absorption spectrometer at the laboratory of experimental hydrology of the Department Land, Environment, Agriculture and Forestry of the University of Padova.

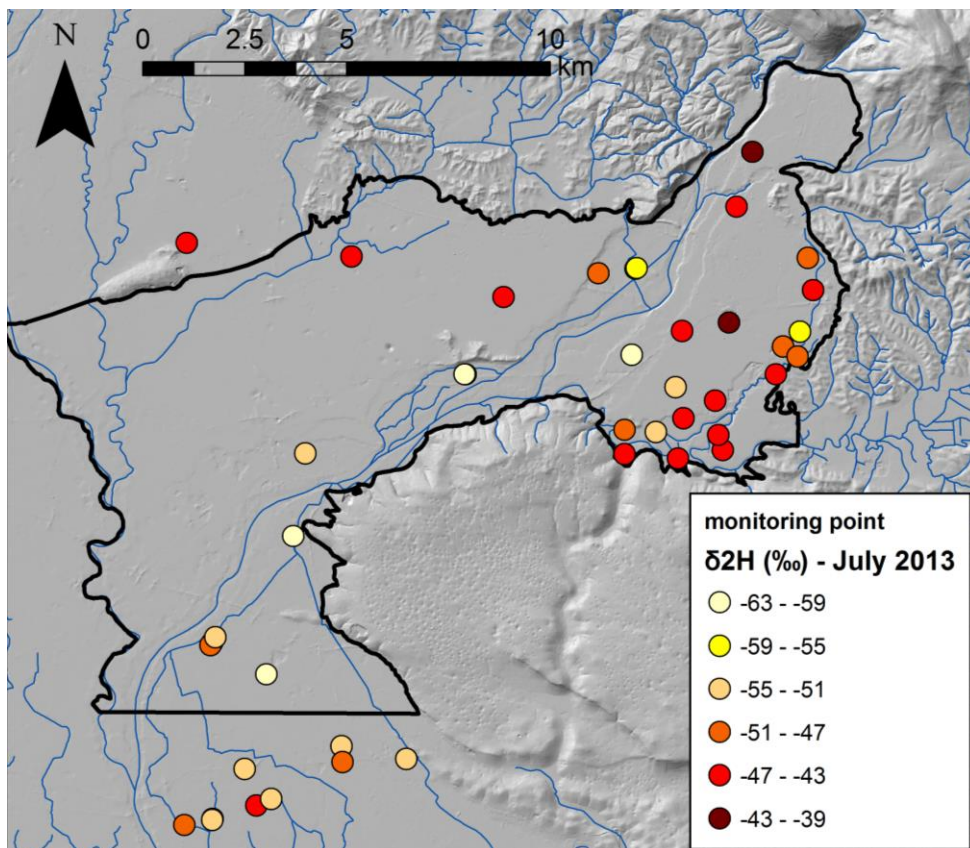


Fig. 3. Isotopic composition ($\delta^2\text{H}$) of the subsurface monitoring sites in July 2013.

REFERENCES

Baer D.S., Paul J.B., Gupta M., O'Keefe A., 2002. Sensitive absorption measurements in the near-infrared region using off-axis integrated cavity output spectroscopy. *Applied Physics B, Laser and Optics*, 75, 261-265.

Penna D., Stenni B., Šanda M., Wrede S., Bogaard T.A., Gobbi A., Borga M., Fisher B.M.C., Bonazza M., 2010. On the reproducibility and repeatability of laser absorption spectroscopy measurements for $\delta^2\text{H}$ and $\delta^{18}\text{O}$ isotopic analysis. *Hydrology and Earth System Sciences*, 14, 1551-1566.

Penna D., Stenni B., Šanda M., Wrede S., Bogaard T.A., Michelini M., Fisher B.M.C., Gobbi A., Mantese N., Zuecco G., Borga M., Bonazza M., Sobotková M., Čejková B., Wassenaar L.I., 2012. Technical Note: Evaluation of between-sample memory effects in the analysis of $\delta^2\text{H}$ and $\delta^{18}\text{O}$ water samples measured by laser spectroscopes. *Hydrology and Earth System Sciences*, 16, 3925-3933.