

Application of $\delta^{18}\text{O}$ water analysis in the study of hydrological renewal in some Alpine Lakes

M. Perini, F. Camin, G. Flaim, F. Corradini, A. Tonon, G. Versini

Centro Sperimentale, Istituto Agrario di San Michele all'Adige, via Mach 1, 38010 San Michele all'Adige (TN) - Italy

$\delta^{18}\text{O}$ water analysis of five lakes (Lavarone, Caldonazzo, Levico, Serraiia and Tovel) located in Trentino (N Italy) was performed to better understand the dynamics and the modalities of hydrological renewal of the lakes in connection to seasonal mixing and thermal stratification of the water masses. The lakes considered have different hydrological regimes and their theoretical water renewal time varied from $> 1\text{ yr} - \geq 3\text{ yr}$.

Water samples were taken over the deepest part of the lake at discrete depths at least every 2 months and sometime the main tributaries (surface and underground) were sampled. Each lake was followed up for at least two years. Considerations on lake water renewal and on the stability of the hypolimnion and epilimnion for the different lakes are presented. The $\delta^{18}\text{O}$ values are fairly stable along the depth profile over the year for Tovel lake, whereas for the other lakes seasonal differences in $\delta^{18}\text{O}$ particularly in the epilimnion resulted. Different ^{18}O enrichments of epilimnion are shown for 2003 and 2004, due to the different climatic conditions of the two years.