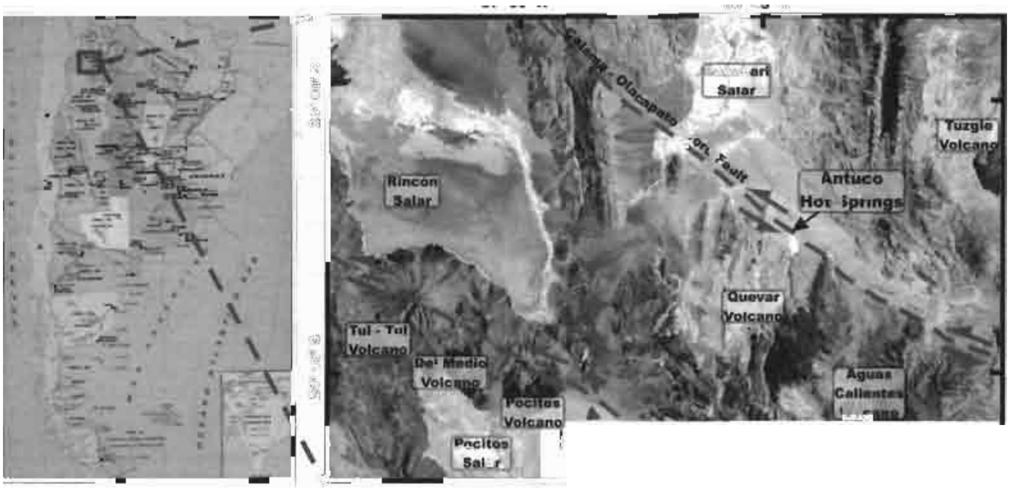
Salar
Tuzgle Volcano
Antuco Hot Springs
Rincon Salar
Quevar Volcano
Tul - Tul Volcano
Del Medio Volcano
Pocitos Volcano
Aguas Calientes
Pocitos Salar

The $\delta^{13}C$ and $\delta^{18}O$ of the upper micritic travertine are significantly different to the mean values for Antuco lower travertine body: $\delta^{13}C$ is ~5‰ higher and $\delta^{18}O$ is ~10‰ higher (Fig.2) and may suggest an increase of the water-rock interaction and a change of the main carbon source.

Recent hot spring precipitates

Present day thermal waters flowing from Antuco hot springs precipitate a thin calcite iron-rich crust along thermal streams. $\delta^{18}O$ values of recent calcite crusts are lower (about 7‰) than the upper travertine but they record similar carbon isotopic composition (Fig. 2).

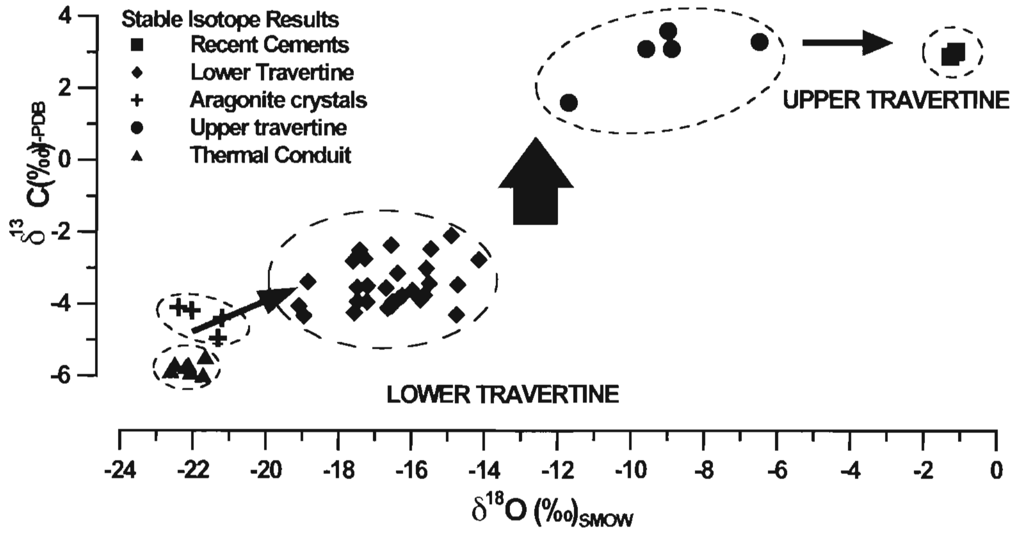

Figure 2. Carbonate $\delta^{13}C$ vs $\delta^{18}O$ values in the whole thermal system showing their evolution through Holocene.

DISCUSSION AND CONCLUSIONS

Antuco travertines were formed by precipitation from waters of meteoric origin. The trend to higher $\delta^{13}C$ and $\delta^{18}O$ values of the carbonates (calcite and aragonite) through time suggests a change of the thermal waters and their water/rock ratio from Late Pleistocene to Holocene.

Homogenization temperatures of carbonate precipitates from the lower travertine enable the calculation of the $\delta^{18}O$ of parental waters. These are similar to the $\delta^{18}O$ values of present-day meteoric water in the region indicating high water/rock ratio. Calcite rimming the thermal conduits crossing the lower travertine body record precipitation from evolved thermal waters with higher water-rock interaction than aragonite and calcite previously precipitated.

The higher $\delta^{18}O$ of Upper travertine carbonates and present day thermal waters can be explained by an increase of the water-rock interaction and a progressive decrease of the water/rock ratio.

Antuco hot spring travertine system was thus controlled by the water availability in the thermal system. Significant travertine deposits formed at stages of increased thermal water flow related to significant meteoric water supplies during moist periods. During drier periods, the water availability in the system decreased, and