Hydrochemistry of the hot spring fluids of Villarrica geothermal system in the andes of southern Chile

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The Villarrica-Quetrupillán-Lanín volcanic chain is surrounded by > 20 hot springs, located on the flanks and in the valleys around the volcanos. The hot springs that are extensively used for spa purpose discharge thermal water of intermediate temperatures (27° - 81°C), mostly alkaline pH and low mineralization. To investigate fluid origin and genesis of Villarrica geothermal system the thermal waters are analyzed for hydrochemical composition, ?18 O/?D isotopes and Sr/Sr isotope ratios. They are Na dominated indicating strong water-rock interaction. Anion composition varies significantly, without any clear spatial relationship. The majority of springs have similar concentrations of major anions spreading between the SO4-, bicarbonate- and Clendmembers. Magmatic degassing can be traced solely by slightly elevated B concentrations in springs around the volcanic chain. Conformity with other species that might originate from magmatic degassing (e.g. Cl, SO4, bicarbonate, F) is not observe