

C_{org}, N and Hg-isotopes and Hg chemostratigraphy in the Late Ordovician–early Silurian Transition, Argentine Precordillera

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C_{org}, N and Hg-isotope chemostratigraphy from three sections that straddle the Ordovician–Silurian transition (OST) in Argentina was examined: Cerro La Chilca and Baños de Talacasto (Central Precordillera) and Villicum (Eastern Precordillera). At the Baños de Talacasto section, Darriwilian limestones of the San Juan Formation are unconformably overlain by the Hirnantian basal chert pebbly conglomerates of the La Chilca Formation, and the Sandbian, Katian and early Hirnantian (*M. extraordinarius* Zone) are missing. At the Cerro La Chilca section, the Hirnantian Don Braulio Formation is covered by Hirnantian–Rhuddanian siliciclastics of the La Chilca Formation, and the Katian to early Hirnantian is missing. At Villicum, Hirnantian siltstones/shales with calcareous lenses bearing *M. persculptus* are overlain by Hirnantian–Rhuddanian mudstones and Rhuddanian ironstone/shales of the Don Braulio Formation.

At the Cerro La Chilca section, positive $\delta^{13}\text{C}_{\text{org}}$ shift and Hg spike were recorded in black shales of the Sandbian Los Azules Formation, coeval with $\Delta^{199}\text{Hg} \sim 0\%$ which suggests that Hg was perhaps loaded by Sandbian volcanism. Coeval Hg/TOC spikes ($>130 \text{ ng.g}^{-1}$) at the Baños de Talacasto and Villicum sections and $\Delta^{199}\text{Hg} \sim 0\%$ in the Late Hirnantian (*M. persculptus* Zone) seem to record the LOME 2 event when volcanism possibly caused warming and anoxia. A second Hg/TOC spike ($>130 \text{ ng.g}^{-1}$) in the early Rhuddanian at the Baños de Talacasto and Villicum sections is coeval with slightly positive $\Delta^{199}\text{Hg}$ values. This Hg enrichment is perhaps related to the runoff that followed the LOCG-3. At the Cerro La Chilca section, positive $\delta^{15}\text{N}$ values during the Sandbian (Los Azules Formation) suggest less intense water-column denitrification while negative ones in

the LOME 2 interval denounce denitrifying conditions. At the Baños de Talacasto and Villicum, strong sea-level fluctuations and N upwelling helped shaping up the $\delta^{15}\text{N}$ stratigraphic curve within the LOME 2 and early Rhuddanian. Negative $\delta^{15}\text{N}$ values attest that more reducing conditions change to less reducing ones next to the OST. The pattern of odd-MIF Hg isotopes within the LOME 2 was probably influenced by coeval volcanism, glaciation and sea-level fall while in the early Rhuddanian it was influenced by deglaciation and sea-level rise.