High-resolution $^{87/86}$Sr analyses in freshwater mussels: time-series and cartography using femto-laser MC-ICP-MS

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In the Amazon basin water $^{87/86}$Sr ratio varies depending on the surrounding geology, with major contrasts among 4 main sub-basins, but displays also spatial and temporal heterogeneities. However, water $^{87/86}$Sr data are still limited due to the very large size of the basin and the limited access to remote areas. However, such data are very important for many geological and ecological studies. Consequently, we investigated the potential of using freshwater mussel shells $^{87/86}$Sr ratio as a recorder of water $^{87/86}$Sr and of its seasonal variations. Shell grown in cages *in situ* during one year were analysed at high-spatial resolution using a femto-second laser ablation coupled to a multi-collector ICP-MS (LA-MC-ICP-MS) both in their hinge and in ventral margin. The shell $^{87/86}$Sr variations are clearly seasonal with enriched values during the high-water level and conversely. In most cases, $^{87/86}$Sr values are in accordance with those measured in the water during shell growth. Even if growth rates, in particular in the ventral margin, must be better known, analysing $^{87/86}$Sr of those shells by LA-MC-ICP-MS will provide invaluable water $^{87/86}$Sr data in the Amazon basin and surely in other large continental hydrosystems.

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