ages at 472 and 473 Ma of this study and the Chassenon suevite peak at 492 Ma, and the ages for Montoume and Babaudus IMR at 491 Ma and 487 ± 7 Ma (Guerrero et al., forthcoming; Rasmussen et al., 2020). The 236 Ma age peak of the Babaudus IMR of this study is also known from zircon of a Montoume IMR sample. The Chassenon suevite is the only sample with age peaks that can be partially correlated with the ages of the target rocks analyzed so far. The Cambrian ages and the 461 Ma age peak are similar to the ages recorded in a paragneiss from Moulin de Laurière and a monzodiorite from La Martinie (Guerrero et al., forthcoming). At this point, further basement lithologies need to be studied, before comparative provenance analysis for impactites and target rocks may allow to fingerprint the main protoliths for impact breccias from different locations in the Rochechouart impact structure.

REFERENCES

Guerrero, D., et al., forthcoming. U-Pb on zircon isotope analysis on target rocks and first provenance analysis on impact melt rock from the Rochechouart impact structure, France. Meteorit. Planet. Sci. (in revision).

Rasmussen, C., et al. 2020. Geochim. Cosmochim Acta 273: 313–330.

6. New Frontiers in Isotopic Studies: Medical Geology, Forensics, Environment and Climate Change

ACTUAL SCENARIO OF THE NATIONAL RAIN ISOTOPIC MONITORING NETWORK IN BRAZIL

stable isotopes, rain, Monitoring, Brazilian Network
https://proceedings.science/p/184071?lang=en

KIRCHHEIM, Roberto ; FRANZINI, Andrea [1]; IMBIRIBA, Manoel [1]; SANTOS, Guilherme [1]; MOURA, Idembergue [1]; GASTMANS, Didier ; ATHAYDE, Gustavo [2]; MANCUSO, Malva [3]; COTA, Stela [4]; EVANGELISTA, Balbino [5]; LAZAROTTO, Eduardo [1]; ISLER, Elias [6]

[1] Geological Survey of Brazil; [2] Universidade Federal do Paraná | (Federal University of Paraná); [3] Universidade Federal de Santa Maria | (Federal University of Santa Maria); [4] Centro de Desenvolvimento de Tecnologia Nuclear; [5] Embrapa; [6] Universidade Federal do Oeste da Bahia | (Federal University of Western Bahia)

The enormous challenges related to water resources in the country and the lack of continuity in the isotopic monitoring of precipitation in Brazil, led the International Agency for Atomic Energy (IAEA) to promote the Geological Survey of Brazil (GSB) becoming a Collaborative Center (CC) for the dissemination of isotopic techniques applied to hydrology. The suggestion led to the creation of a program that consists of a series of activities, from monitoring isotopes in precipitation (GNIP) to capacity building, training and setting up analytical laboratories. Another striking feature is that it interacts synergistically with national institutions and academic research groups as well. Since 2017, the GSB has been running the aforementioned program through exclusive financial allocation. In 2021, the GSB and the IAEA signed an international agreement adopting a common strategic action plan. This work provides the main results of this work regarding the GNIP network and indicates the future steps to be followed in the national and continental context. Currently, the isotope monitoring network in precipitation is one of the most important activities within the Isotope Program of the GSB in Brazil and is composed of 26 rain collection stations, with another 04 to be installed in the short term. t is planned for the year 2024 to publish and make available all the data generated to date. The formalization of a national scientific network capable of serving as a general repository of isotopic data in the country is on the agenda of the GSB in partnership with other institutions. It should be noted that 05 GNIP stations were strategically installed along borders with neighbor countries as a way of supporting and reinforcing the Latin American isotopic coverage. The existence of a monitoring network operating in

AIEA GNIP standards and being part of a national program brings important benefits and at the same time has sustainability. The main future action is to jointly give institutional scope to this network and make it a repository of isotopic information generated in the national territory and to be able to exchange information with neighboring countries.

ANTHROPOGENIC DROUGHT CAPTURED IN OXYGEN ISOTOPE FROM SOUTHERN AMERICAN SPELEOTHEM

Climate change, Speleothem, Stabel Isotope, Cave, Drought
https://proceedings.science/p/184034?lang=en

STRIKIS, Nicolás ; BUARQUE, Placido Fabrício [1]; CRUZ, Francisco [2]; VUILLE, Mathias [3]; CAMPOS, José Leandro [2]; TEJEDOR, Ernesto [4]; ASSUMPÇÃO, Evandro [1]; MONTEIRO, Eduardo [1]
[1] Departamento de Geoquímica - Universidade Federal Fluminense; [2] Instituto de Geociências - Universidade de São Paulo; [3] mvuille@albany.edu; [4] Department of Geology, National Museum of Natural Sciences-Spanish National Research Council

The increase in global temperature and evapotranspiration potential caused by climate change has a strong impact on the water balance of tropical regions. In this sense, reconstituting hydro-climatic parameters beyond the instrumental series is vital to the understanding the full amplitude of natural climate variability and to assess the contribution of anthropogenic forcing to regional climate. A pervasive drying trended recorded in the streamflow from São Francisco drainage basin points to an unprecedented long-term drought stating by the 1980s following the rising of surface temperatures. The warming plays an important role in this regard, exacerbating drought conditions by increasing water loss through higher evapotranspiration demands (Chagas et al., 2022).

In order to reconstruct the hydroclimate variability to beyond the instrumental period we produced an annual-resolved oxygen isotope record using stalagmites from a well-ventilated cave located in middle course of São Francisco Drainage basin, at Januária city Brazil northern of Minas Gerais State. The cave, locally known as Lapa da Onça, features a wide entrance with numerous actively dripping stalagmites in the entrance chamber. The atmosphere in the sampling sites is characterized by large seasonal amplitudes in relative humidity and temperature, reflecting the atmospheric and environmental conditions outside the cave (Strikis et al., 2024).

Cave monitoring results show a consistent coupling between seasonal variation in oxygen isotope composition from speleothem calcite and the cave atmosphere relative humidity and temperature. At intra-annual time-scale season variation in cave temperature rise as a major driver of oxygen isotope variability. Conversely, at interannual time scale, variation in evaporative demand emerges as a primary driver of the isotope variability.

Accordingly, isotope effects associated with periods of reduced rainfall (rainfall isotope enrichment through degree of rainout upstream) are magnified by the kinetic isotope effects associated to increasing in evaporation during water dripping. Such combined isotope effects results in a marked increase in $\delta^{18}O$ values of speleothem calcite.

To assess how the current warming period has effects the local hydrologic balance we performed an high resolution isotope sampling with 0.1 mm on two speleothems with high deposition rate, near 1 $mm.yr^{-1}$. Both speleothems exhibit annual-resolved chronologies, established through U-Th dating and layer counting.

Comparison between oxygen and carbon isotope profiles from Onça stalagmites with instrumental records from local meteorological station points to the evaporative demand which ultimately is temperature dependent as a major driver of oxygen and carbon isotope variability. By extending our record back to the year 1298, we observe that the increase in $\delta^{18}O$ and $\delta^{13}C$ has no parallel over the