



# 11<sup>th</sup> SSAGI



# South American Symposium on Isotope Geology

Cochabamba-Bolivia  
July 22-25, 2018



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# Program and Abstracts



## Only getting younger: New geochronological constraints on the Bambuí Group, Brazil

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The age of the Bambuí Group has been disputed and the new findings of *Cloudina* and other dubious fossils on this area have boosted this debate. Here we report new U-Pb SHRIMP analyses on detrital zircons from pelitic layers and C, O and Sr on carbonate from the Bambuí Group sampled on the northern portion of the São Francisco Basin. Samples were collected on the basal Sete Lagoas Formation (SLF) and the overlying Lagoa do Jacaré Formation (LJF). Dark dolomitic limestone from SLF were collected from the same stratigraphic level where index fossil *Cloudina* was reported further south, but the sampled section is barren of fossils. It yielded  $\delta^{13}\text{C}$  values around +1.1‰ and Sr isotopic ratios of 0.7082, corresponding to the intermittent connecting stage of the basin to the open sea, as defined in the southern sector of the basin. Detrital zircons yielded ages ranging from 2950 to 515 Ma. Most grains are younger than 1 Ga; the 3 youngest grains providing a mean  $^{238}\text{U}/^{206}\text{Pb}$  age of  $523 \pm 14$  Ma. This is the same stratigraphic level where the index fossil *Cloudina* was found further south, however no fossils were found in this section. Carbonate from LJF were sampled in two sections. The first comprised dark gray calcarenite interbedded with siltstone. Carbonate present  $\delta^{13}\text{C}$  values around +12.0‰. Just a few detrital zircons grains were recovered from siltstone layers and display two age intervals: 1950-2185 Ma and 551-695 Ma. The second section comprises dark calcarenite and no siliciclastics. It presents  $\delta^{13}\text{C}$  values around +12.0‰ and Sr isotopic ratios are 0.7077. Discoidal structures found in this section were previously interpreted as Ediacaran-type fossils, microbial-originated gas domes, discoidal microbial colonies or abiotic in origin. After detailed inspection we reinterpret them as sedimentary structures generated by wave, such as hummocky or megaripple cross-stratifications, whose eroded surface expression in the form of rounded crests gives rise to the misleading features described as discoidal fossil. Our U-Pb SHRIMP ages reveal the Bambuí Group rocks are younger than previously thought and the deposition may have occurred during Cambrian times for most of its stratigraphy including part of the basal SLF. In addition, the occurrence of detrital zircons as young as 525 Ma at the same stratigraphic levels where *Cloudina* was reported, does not fit the classical age interval attributed to this index-fossil (542 to 550 Ma) asking either for a review of its time of extinction or a reevaluation of the Bambuí fossil occurrence.