

## **On the reliability of Sr isotope chemostratigraphy of late Ediacaran carbonates from the Bambuí Group**

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A marked co-variation of  $\delta^{13}\text{C}$  and  $^{87}\text{Sr}/^{86}\text{Sr}$  is observed in Ediacaran to early Cambrian Bambuí Group carbonates at the southern part of the São Francisco epicontinental basin (Brazil). Three chemostratigraphic intervals were defined related to different evolution stages of the basin: a restricted shallow basin influenced by freshwater ( $\delta^{13}\text{C} = -5$  to  $0\text{‰}$ ;  $^{87}\text{Sr}/^{86}\text{Sr} = 0.7074\text{--}0.7082$ ), then a basin connected to the Ediacaran seas ( $\delta^{13}\text{C} = \sim 0\text{‰}$ ;  $^{87}\text{Sr}/^{86}\text{Sr} = \sim 0.7082$ ), and finally a restricted basin ( $\delta^{13}\text{C}$  up to  $+16\text{‰}$ ;  $^{87}\text{Sr}/^{86}\text{Sr} = \sim 0.7075$ ). The transition from open marine to restricted marine environment exhibit regular changes in  $^{87}\text{Sr}/^{86}\text{Sr}$  ratios. However, when the Sr isotope data of the entire basin is considered, some inconsistencies are observed. While  $\delta^{13}\text{C}$  values follow the previously established chemostratigraphy, starting at  $-5\text{‰}$  at the base and increasing progressively to  $+16\text{‰}$  at the top,  $^{87}\text{Sr}/^{86}\text{Sr}$  ratios for equivalent strata at different sectors of the basin may vary significantly, between 0.7072 and 0.7144. A dominantly restricted environment could explain these large variations of  $^{87}\text{Sr}/^{86}\text{Sr}$  ratios due to the mixture of variably radiogenic continental and marine sources. In addition, restricted environments may also induce Sr enrichments and reduce strontium residence time in seawater. Our study implies that great caution must be used in applying Sr isotope chemostratigraphy in the São Francisco basin and by analogy in other epicontinental basins.