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# **Program and Abstracts**

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## CHALLENGES TO THE LUMINESCENCE DATING OF QUATERNARY TUFFA DEPOSITS

*Ligia Maria de Almeida Leite Ribeiro* – CPRM, *André Oliveira Sawakuchi* – Instituto de Geociências/USP, *Hong Wang* – Illinois State Geological Survey, *Luciana Nogueira* – Instituto de Geociências/USP, *William Sallun Filho* – Instituto Geológico - SMA-SP.

Quaternary continental carbonates, such as tufas are potential paleoenvironmental and paleoclimatic archives. However these deposits require a robust age control for such interpretations. Dating recent continental carbonate deposits has proved a challenge task for the most usual methodologies applied to quaternary deposits. The radiocarbon dating of tufas shows problems about the 'dead carbon' effect and the 42 ky age limit, and U-Th series dating of tufa deposits is limited by contamination due to terrigenous Th and the open system behavior. We propose in this work an alternative approach to date tufa deposits using the OSL (Optically Stimulated Luminescence) dating of their terrigenous content. The methodology was applied in two Brazilian tufa deposits: The Serra da Bodoquena Formation, in the Mato Grosso do Sul State, and the André Lopes deposit in the Ribeira Valley - São Paulo State. Both deposits have a poor age control, only with few uncertain radiocarbon ages. In this study, we compare OSL ages with new radiocarbon data. Despite the very good sensitivity of the OSL signals obtained for the quartz of the studied tufa samples, the OSL dating is also a challenge, mostly because the open system behavior affects the U and Th decay chains and consequently promotes variation of radiation dose rates through time. Thus, modeling the dose rate question may provide a promise method to get reliable deposition ages for tufa deposits.