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Geochemical data recorded in stalagmites from West and East Java, Indonesia

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It is important to decipher tropical climate history over the last millennium bercause the tropics is a critical region to drive the global climate system. Although geochemical records in stalagmites have been widely recognized as a powerful tool for the elucidation of paleoclimate/environment of the terrestrial areas, the previous data are mainly reported from areas that are located in middle latitude. Accordingly, this study aims at reconstructing past climate variations in the Asian equatorial regions by using oxygen and carbon isotope ratios recorded in Indonesian stalagmites.
In this study, we performed a systematic comparison between temporal variation in precipitation and those in δ18O and δ13C of two stalagmites from western and eastern Java, Indonesia in order to assess the reliability of stable isotopic ratios of stalagmites as climate proxies. We measured annual variations of stable isotpic data and compared with that of rainfall amounts, showing significant, negative correlations. These correlations suggest that stable isoptopic ratios of stalagmites are a useful proxy for reconstructing anient precipitaions in this study areas. Furthermore, we reconstructed rainfall variation over the 500 years (1440-2006 AD), based on stable isotopic data recorded in the stalagmite of western Java. δ18O and δ13C vary from -7.7 permil to -5.4 permil and from -14.1 permil to -11 permil, respectively. The δ18O and δ13C variations show synchronous changes thorought the duration with enriched isotopic signatures around 1600, 1800 and 1990 AD, suggesting drier conditios. These three episodes coincidence with evidences of drought documented in lake sediment of eastern Java (Rodysill et al., 2011).
Now, further δ18O and δ13C measurments are in progress in order to reconstruct rainfall history over the last millennium, especiailly from Medieval Warm Period to Little Ice Age. In this presentation, we will present the isocopic time series data and the comparison between various climatic proxy data.