

Hydrological changes during Meghalayan Stage from the Southern India

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The Indian Summer Monsoon (ISM) has been driven by the global atmospheric circulation and the climate. Southern India acts as a gateway for the ISM advancement over the Indian landmass and thus, the ISM variability is substantially recorded in the sedimentary archives of southern India. Here ISM variability during 3.5-5 ka is reported from a lake sediment core raised from Kerala region, southern India chronologically supported by radiocarbon AMS dates. This study demonstrates dry climate as a result of weak ISM during 3.5-3.7 ka and 4.7-4.9 ka interrupted by ISM strengthening period. Both the period of dry climates (3.5-3.7 ka and 4.7-4.9 ka) has been attributed to reduced Total Solar Irradiance (TSI). While the reduced TSI was accompanied by the increased El Nino events during 4.7-4.9 ka. These observations are in concurrence with declining temperature reported from SE Arabian Sea and Greenland Ice Core (GISP2) records. A vital role of TSI in controlling the ISM variability is envisaged with the possible occurrence of El Nino event restricting ISM during 4.7-4.9 ka, and thereby causing 4.2 ka dry climate over the Indian subcontinent and other global records. This study highlights the behaviour of ISM with the possible role of natural forcing factor during 4.7-4.9 ka.