UQÀM | Université du Québec à Montréal

CENTRE ESCER
POUR L'ÉTUDE ET LA SIMULATION DU CLIMAT À L'ÉCHELLE RÉGIONALE

ESCER Seminar

Date: Wednesday, October 23, from 12:00 to 1:00 PM

In-Person: PK-6610

On Teams: [Link here]

Title of the seminar: Remote Impacts of the Mid-Holocene Green Sahara

Presenter: Shivangi Tiwari graduated with a Bachelors and a Masters from the Department of Earth Sciences, Indian Institute of Technology Roorkee. She pursued another Masters at the Department of Earth Sciences, Indian Institute of Technology Kanpur. Her previous work focused on paleoclimatic reconstructions using proxies. She joined UQAM in 2019 to pursue a PhD focused on paleoclimate modelling and expects to defend her PhD in a few weeks (likely October 28).

Summary: Paleoclimatic reconstructions have shown that the present-day Saharan desert region was vegetated in the early and middle Holocene (~11,000 - 5,500 years Before Present or BP). This is referred to as the Green Sahara, with the corresponding time period referred to as the Green Sahara Period or the African Humid Period. The Green Sahara was accompanied by a reduction in terrigenous dust fluxes and an expansion of lakes, wetlands and rivers across northern Africa. While the changes due to the Green Sahara in regional climate over northern Africa have been extensively studied and are relatively well understood, the remote impacts on other regions of the world warrant further study.

In this seminar, the presenter will discuss the far-afield impacts of the northern African vegetation changes on three key regions of the world: South America, the equatorial Pacific and the Arctic. To this end, four fully coupled global climate models and one atmosphere-only global climate model have been used to simulate the mid-Holocene (6,000 years BP) with and without incorporating Green Saharan changes. The findings presented here are supported by proxy-model comparisons and highlight the importance of incorporating the Green Sahara in modelling studies of the early and middle Holocene.

Suggested Readings:

Pausata, F.S.R., Gaetani, M., Messori, G., Berg, A., Maia de Souza, D., Sage, R. and deMenocal, P.B.: The Greening of the Sahara: Past Changes and Future Implications, *One Earth*, 2(3), 235-250, 2020. [Link]

Tiwari, S., Ramos, R.D., Pausata, F.S.R., LeGrande, A.N., Griffiths, M.L., Beltrami, H., Wainer, I., de Vernal, A., Litchmore, D.T., Chandan, D., Peltier, W.R., and Tabor, C.R.: On the remote impacts of mid-Holocene Saharan vegetation on South American hydroclimate: a modelling intercomparison, *Geophy. Res. Lett.*, 50(12), 2023. [Link]