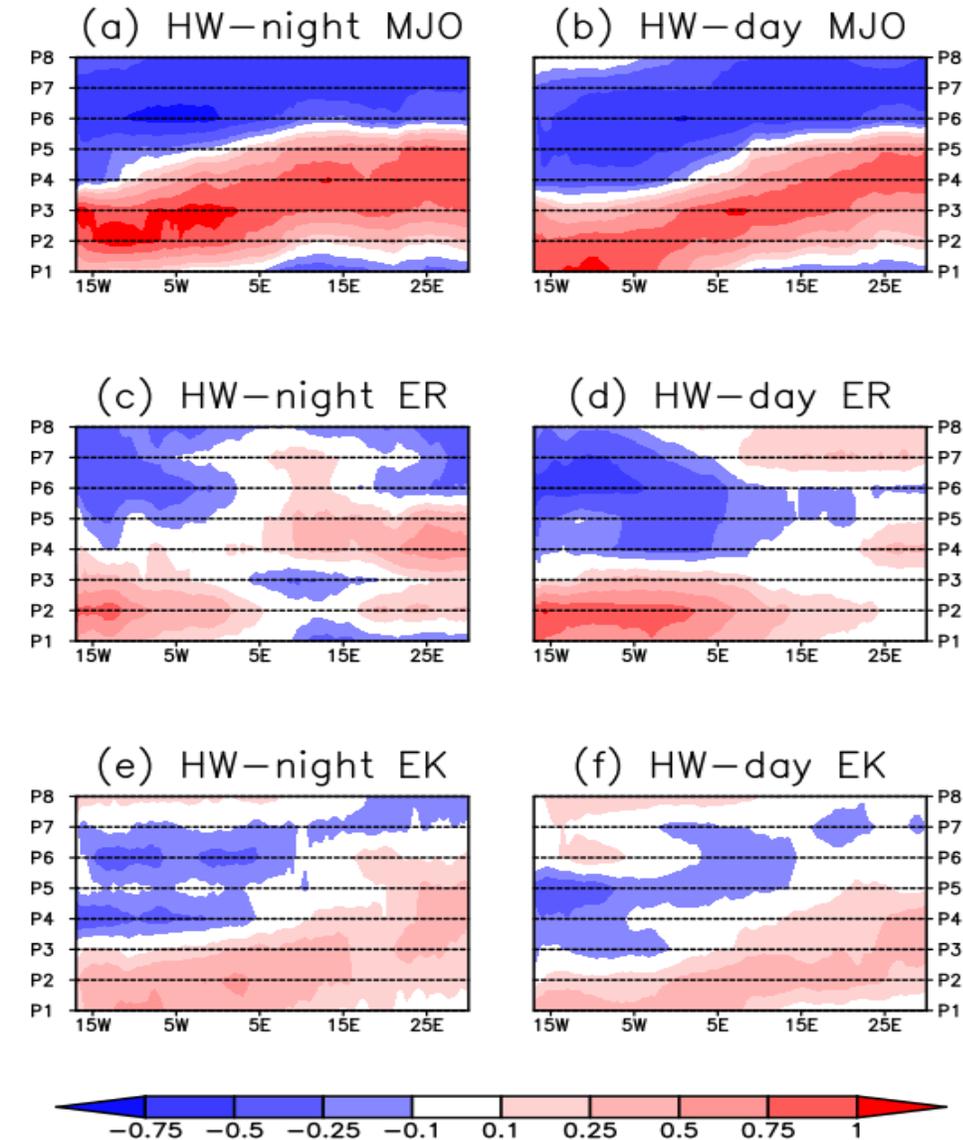


ATMOSPHERIC TROPICAL MODES ARE IMPORTANT DRIVERS OF SAHELIAN SPRINGTIME HEATWAVES



- ✓ The convective activity of the MJO, the ER and the EK waves in the Equatorial West Africa sector exerts an important control on Sahelian heatwaves in Spring.
- ✓ This modulation is more important for the frequency of occurrence of heatwaves than for their intensity.
- ✓ It varies with the convective phase of the modes, and the spatial location (western Sahel vs eastern Sahel), with a slight sensitivity to the diurnal period (day vs night).
- ✓ Constructively superposed modes amplify the singular modulation of each mode.
- ✓ The physical mechanisms at play include a perturbation of the regional circulation with anomalous heat and moisture transport leading to heating by hot air advection and greenhouse effect.

Guigma KH, Guichard F, Todd M, Peyrille P, Wang Y (2020) *Atmospheric tropical modes are important drivers of Sahelian springtime heatwaves*. ClimDyn. <https://doi.org/10.1007/s00382-020-05569-9>

Modulation of Sahelian (10-20°N) heatwave frequency of occurrence by the MJO and the equatorial Rossby (ER) and Kelvin waves (EK)