EGU26-5401, updated on 10 Nov 2026
https://doi.org/10.5194/egusphere-egu26-5401
EGU General Assembly 2026
© Author(s) 2026. This work is distributed under
the Creative Commons Attribution 4.0 License.

Small tropical islands also exposed to extreme humid heat by the end of the century

Lilian Bald[1], Ali Belmadani[1,2], Marie-Dominique Leroux[3], Olivier Pannekoucke[1], Agathe Gentric[1], and Saïd Qasmi[1]

[1]CNRM, Université de Toulouse, Météo-France, CNRS, Toulouse, France, (lilian.bald@meteo.fr)
[2]Météo-France, École Nationale de la Météorologie, Toulouse, France
[3]Météo-France, Direction Interrégionale pour l'Océan Indien, Saint-Denis, La Réunion, France

Heat, combined with high levels of humidity, can lead to hyperthermia, i.e. an increase in human body temperature beyond dangerous thresholds. In the most severe cases, it can be deadly, even for young and healthy adults. According to the literature, extreme humid heat over continents is projected to increase markedly at the global scale by the end of the century, particularly over the tropical belt. Yet, the case of small tropical islands is ambiguous because the available studies are based on coarse gridded datasets such as those from global climate models that ignore or distort these islands, calling for dedicated downscaling efforts.
Here, statistically downscaled and bias-corrected model output from CMIP6 using weather station observations from islands across the tropics are used to assess present and future conditions of extreme humid heat. The latter are estimated with the Heat Index (HI) that combines surface temperature and relative humidity.
Similarly to what has been previously shown for continents, the intensity of extreme humid heat events is projected to reach particularly dangerous levels by the end of the century, with higher HI values for islands located closer to the equator. Longer, more common humid heatwaves are also notably projected to increase in frequency, with more pronounced increases equatorward, because of the lower seasonal variability of HI.
Such severe humid heat conditions threaten the lives of millions of small island inhabitants across the tropics, calling for dedicated local adaptation strategies.