

EGU24-16848, updated on 23 Jan 2025
<https://doi.org/10.5194/egusphere-egu24-16848>
EGU General Assembly 2024
© Author(s) 2025. This work is distributed under
the Creative Commons Attribution 4.0 License.



Summer Deep Depressions Increase Over the North Atlantic

Fabio D'Andrea

Laboratoire de Meteorologie Dynamique, Ecole Normale Superieure, Paris, France (dandrea@lmd.ens.fr)

Mid-tropospheric deep depressions in summer over the North Atlantic are shown to have strongly increased in the eastern and strongly decreased in the western North Atlantic region. This evolution is linked to a change in baroclinicity in the west of the North Atlantic ocean and over the North American coast, likely due to the increased surface temperature there. Deep depressions in the Eastern North Atlantic are linked to a temperature pattern typical of extreme heat events in the region. The same analysis is applied to a sample of CMIP6 model outputs, and no such trends are found. This study suggests a link between the observed increase of summer extreme heat events in the region and the increase of the number of Atlantic depressions. The failure of CMIP6 models to reproduce these events can consequently also reside in an incorrect reproduction of this specific feature of midlatitude atmospheric dynamics.