June 2023 marine heatwave over the NorthWest European Shelf - origins, weather feedback and future recurrence

RICHARD RENSHAW[1], SÉGOLÈNE BERTHOU[1]

[1] *Met Office, UK*

The Northwest European shelf (NWS) experienced its longest recorded category II marine heatwave (MHW) in June 2023 (17 days). Locally, it reached category IV north of Ireland (anomalies up to 5 °C). With state-of-the-art observation and modelling capabilities, we show the MHW developed quickly in the first half of June due to strong atmospheric forcing (high level of sunshine, weak winds and waves, tropical air). This shallow MHW then maintained itself by reducing cloud cover in persistent anticyclonic conditions, followed by a week of neap tides. The MHW impacted the weather of northern Europe with stronger, warmer and moister sea breezes generating more rainfall and significantly contributing to the breaking of June mean temperature records. This MHW was additional to climatological sea surface temperatures +0.9 °C warmer over the last 20 years. These MHW temperatures are projected to become commonplace by the middle of the century under a high CO2 emission scenario.