**Cold\_pool\_indices\_1959\_2023.csv**

Annual cold pool indices from 1959 to 2023

Data structure:

Source: ROMS (bias-corrected ROMS-NWA bottom temperature from du Pontavice et al, 2023), GLORYS (CMEM’s GLORYS12V1 global reanalysis bottom temperature), PSY (CMEM’s PSY global forecast bottom temperature)

The rest are the same as 2022

**bt\_temp\_time\_series\_anomaly\_epu.csv**

seasonal-annual bottom temperature and anomaly

Add to last year’s documentation

**Structure:**

Season: 1 = winter (January – March), 2 = spring (April – June), 3 = summer (July – September), 4 = fall (October – December)

Subarea: EPU name

Source: ROMS (bias-corrected ROMS-NWA bottom temperature from du Pontavice et al, 2023), GLORYS (CMEM’s GLORYS12V1 global reanalysis bottom temperature), PSY (CMEM’s PSY global forecast bottom temperature)

bt\_temp : mean bottom temperature for each year/season across entire EPU

ref\_bt: bottom temperature climatology for season/EPU based on 1990-2020

anomaly: bt\_temp – ref\_bt

**bt\_seasonal\_gridded**

seasonal mean bottom temperature on a 1/12 degree grid. Each file contains annual data for a different season.

**Structure:**

Time dimension in each file is annual with winter dates (XXXX-01-01), spring dates (XXXX-03-01), summer dates (XXXX-07-01), and fall dates (XXXX-10-01). Gridded values are mean bottom temperature in degrees C. Years 1959 – 1992 are derived from the bias-corrected ROMS-NWA bottom temperature (du Pontavice et al., 2023), years 1993 through summer 2023 are from CMEMS GLORYS12V1 global reanalysis bottom temperature, and fall 2023 is from CMEMS PSY forecasting product.

**thermal\_habitat\_area\_2023.csv**

Calculates the proportion of each EPU that exceeds temperature thresholds as a daily time series from 1993 – 2023. See thermal\_habitat\_frequency for cell-based calculations. Thermal habitat area is calculated by identifying 1/12 degree cells within a given EPU that are greater than or equal to the temperature threshold then taking the sum of all cell areas.

**Structure:**

Source: GLORYS (CMEM’s GLORYS12V1 global reanalysis bottom temperature) and PSY (CMEM’s PSY global forecast bottom temperature)

min.depth: minimum of depth band

max.depth: maximum of depth band

temp.threshold: cutoff temperature for thermal area calculations (all areas greater than or equal to this temperature)

area: area exceeding temperature threshold (m2)

area.prop: proportion of EPU area exceeding temperature threshold

**thermal\_habitat\_frequency\_2023.csv**

Calculates the number of days per year per 1/12 degree cell that exceeds a temperature threshold. Data originate from GLORYS12V1 global reanalysis for 1993-01-01 to 2023-08-29, and from PSY forecasts from 2021-01-01 to 2023-12-31. Cells are mapped to 3 depth bins: 0-25m, 25-100m, and >100m. Two temperature thresholds are used representing a temperature where moderate (15oC) and extreme (24oC) thermal stresses are likely to occur across several species. GLORYS and PSY 1/12 degree grid is mapped to EPU\_NOESTUARIES shape files by the center point of each grid cell.

**Structure:**

Source: GLORYS (CMEM’s GLORYS12V1 global reanalysis bottom temperature) and PSY (CMEM’s PSY global forecast bottom temperature)

min.depth: minimum of depth band

max.depth: maximum of depth band

temp.threshold: cutoff temperature for thermal area calculations (all areas greater than or equal to this temperature)

longitude: longitude of cell center point

latitude: latitude of cell center point

Ndays: number of days exceeding temp.threshold