Response to reviewer #1 Justino Martinez

Responses are marked with "**R:**".

1.- A brief explanation about how the trend has been computed

R: The following paragraph will be added to section 4.2:

"In this study, trends are calculated using the Theil-Sen estimation method (Mondal et al., 2012), which is robust to outliers and often more accurate than simple linear regression when applied to skewed or heteroskedastic data. This method also performs competitively with non-robust least squares regression in terms of statistical power, even for normally distributed datasets. Additionally, the non-parametric Mann-Kendall test (originally proposed by Mann, 1945; further developed by Kendall, 1975; and Gilbert, 1987) is employed to detect the presence of monotonic (linear or non-linear) trends by evaluating whether a time series shows a consistent increase, decrease, or no change. In the case of sea-surface temperatures in the Adriatic Sea, all trends are found to be statistically significant under both historical and RCP 8.5 conditions (Tojčić et al., 2023, 2024)."

2.- Figures 2, 3, and 4 should be modified because a detrended is now performed. Please let me know if this is not true.

R: Based on the reviewer's previous suggestion — *"Then, keeping the current baseline to perform the intercomparison between historical and RCP8.5 periods, and including the detrended baseline to study possible influence of Po outflow or EMT is, in my opinion, the correct approach to the study"* — my interpretation was that Figures 2 to 8 could remain unchanged, as they specifically aim to compare MHWs between the historical and RCP 8.5 scenarios using a consistent baseline. Consequently, I have only updated the figures in Section 4.2, which focus on the influence of ocean dynamics and required the use of the detrended SST signal.

However, please do not hesitate to let me know if I have misunderstood your intent, and I will be happy to revise the figures accordingly.

3.- The figure R1 (trend) should be incorporated to the paper. Additionally, the trend could be shown only with the positive values of the bar (range 0:0.5) to show clearly the zones more affected by warming

R: The following paragraph and figure will be added to section 4.2.1:

"In particular, the trends and variance of sea surface temperatures calculated over the Adriatic Sea for the 31-year historical and RCP 8.5 periods (Fig. 10) reveal the influence of the Po River. Specifically, under both historical and RCP 8.5 conditions, a distinct pattern emerges along the path of the Po River plume in the northern Adriatic. Compared to other shallow areas of the basin, this region exhibits a slower rate of warming (0.45 °C/decade vs. 0.7 °C/decade under historical

conditions, and 0.2 °C/decade vs. 0.35 °C/decade under RCP 8.5), coupled with markedly higher variance in sea-surface temperature (up to 40 °C² vs. 20 °C²). These results highlight the significant role of riverine influence in modulating local climate signals."

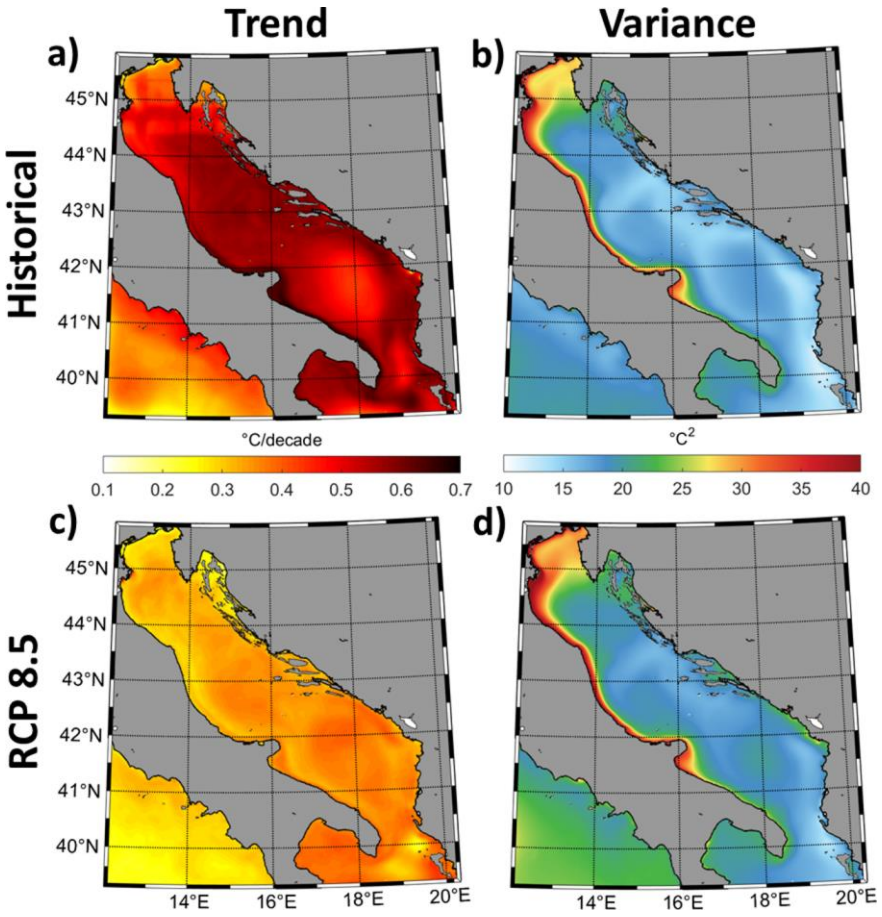

Figure 10. Trend (a, c) and variance (b, d) for the sea surface temperature over the Adriatic basin derived for the historical (a, b) and RCP 8.5 (c, d) 31-year long periods.

References:

Gilbert, R.O.: Statistical methods for environmental pollution monitoring, Wiley, New York, 1987.

Kendall, M.G.: Rank correlation methods, 4th edn. Charles Griffin, London, 1975.

Mann, H.B.: Non-parametric tests against trend, Econometrica1, 3, 163–171, 1945.