Manuscript " Modelling the water isotopes distribution in the Mediterranean Sea using a high-resolution oceanic model (NEMO-MED12-watiso-v1.0): Evaluation of model results against in-situ observations"

Mohamed Ayache[1], Jean-Claude Dutay[1], Anne Mouchet[2], Kazuyo Tachikawa[3], Camille Risi[4], and Gilles Ramstein[1]

[1]Laboratoire des Sciences du Climat et de l'Environnement, CEA-CNRS-Université Paris Saclay, 91191, Gif-sur-Yvette, France
[2]Freshwater and OCeanic science Unit of reSearch (FOCUS), Université de Liège, B-4000 Liège
[3]Aix Marseille Univ, CNRS, IRD, INRAE, Coll France, CEREGE, 13545, Aix-en-Provence, France
[4]Laboratoire de Météorologie Dynamique, IPSL, CNRS, Sorbonne Université, Paris, France Correspondence: Mohamed Ayache (mohamed.ayache@lsce.ipsl.fr)

Dear Mr. Yool,

Thank you once again for your effort and advice on revising our paper. We apologize for the delay caused by the projection of Figure 1.

In the previous version, panels (a)–(f) were plotted directly from the output of the LMDZiso atmospheric model, whereas panels (j)–(l) were interpolated from the NEMO-MED12 grid (net surface flux calculated during simulation). In the new version, we have applied the same projection used in panels (j)–(l) to the entire Figure 1. We hope this has corrected the issues found in the previous version (see the new Fig.1 in the revised version, and track-changes file).

Regarding the color palette, we have found a new palette (batlow) recommended by Scientific Colour Maps (https://s-ink.org/scientific-colour-maps). Please see (below) a comparison between the mpl_Div_Spectral and batlow palette colors for Figure 1 and Figure 2.

We prefer using the mpl_Div_Spectral palette because the gradients are clearer compared to the batlow palette. However, if the production team prefers the batlow palette, we can easily change it for the published version.

We hope these changes resolve the problems that appeared in the previous version.

Best regards,

Mohamed Ayache

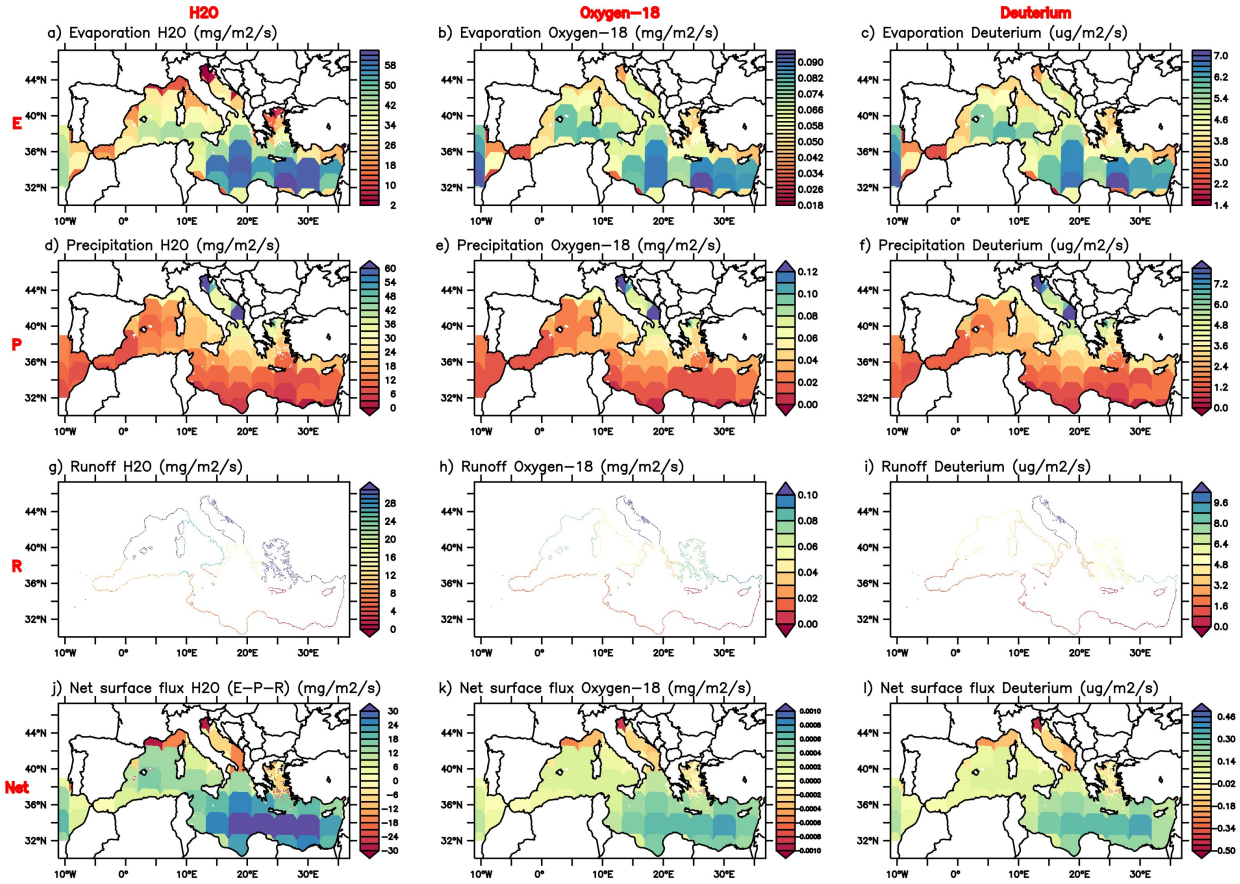

Figure 1 (used color palette 'mpl_Div_Spectral') Boundary conditions and input (evaporation and precipitation) maps applied to NEMO that originate from the LMDZ-iso atmo spheric model (Risi et al., 2010b).a) Evaporation, b) Precipitation, c) River runoff, J) Net surface flux (E- P- R) for H2O, (b, e, h, k) the same but for $\delta^{18}O_w$, (c, f, i, l) for δD_w. The isotopic composition of river runoff is not available from the LMDZ-iso model: this flux is computed as $^{18}RP \times R$ where R is prepared from the data ofLudwig et al. (2009) and Vörösmarty et al. (1996) and 18RP is the isotopic ratio in precipitations at the same time and location

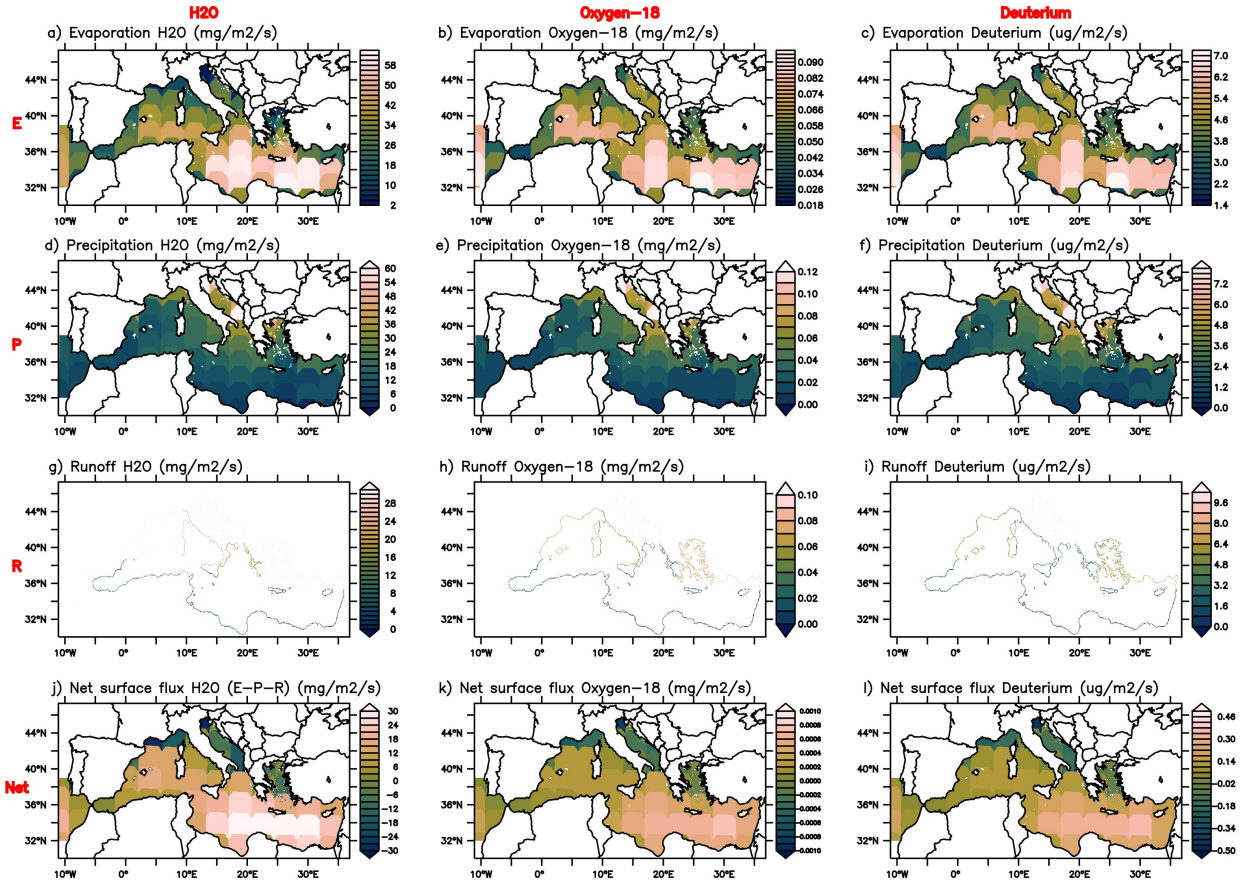

Figure 1 (color palette 'batlow') Boundary conditions and input (evaporation and precipitation) maps applied to NEMO that originate from the LMDZ-iso atmo spheric model (Risi et al., 2010b).a) Evaporation, b) Precipitation, c) River runoff, J) Net surface flux (E- P- R) for H2O, (b, e, h, k) the same but for δ18Ow, (c, f, i, l) for δDw. The isotopic composition of river runoff is not available from the LMDZ-iso model: this flux is computed as 18RP × R where R is prepared from the data ofLudwig et al. (2009) and Vörösmarty et al. (1996) and 18RP is the isotopic ratio in precipitations at the same time and location

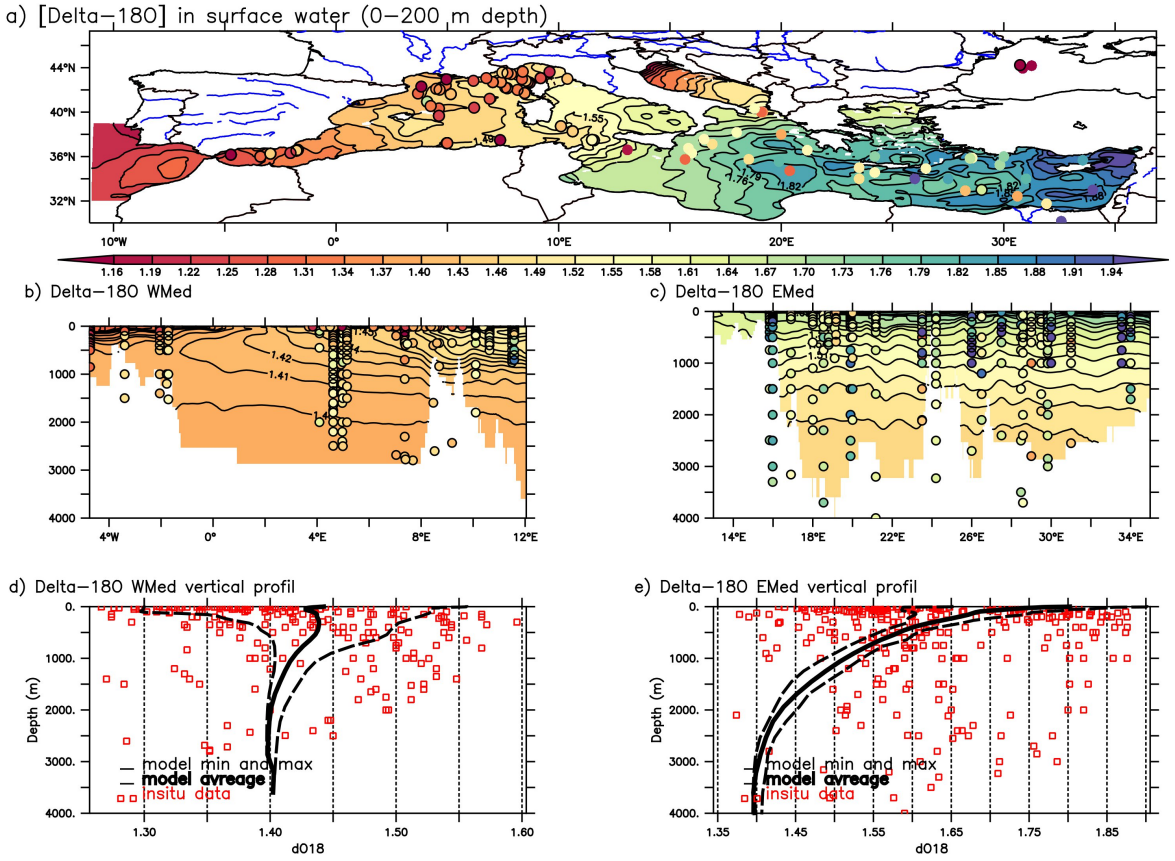

Figure 2. (used color palette 'mpl_Div_Spectral') The model outputs against in-situ data for the present-day situation. a) δ18Ow (in ‰) distribution in the surface water (50 m depth). b) E-W vertical section of δ18Ow (in ‰) in the western Mediterranean basin d) Zonal mean comparison of δ18Ow (in ‰) average vertical profiles in the western basin presenting model results against in-situ data. c) and e) the same as b) and d) but for the eastern basin. Colour-filled dots represent in-situ observations from (Epstein and Mayeda, 1953; Stahl and Rinow, 1973; Pierre et al., 1986; Gat et al., 1996; Pierre, 1999; Voelker, 2017; Reverdin et al., 2022). Both model and in-situ data use the same color scale.

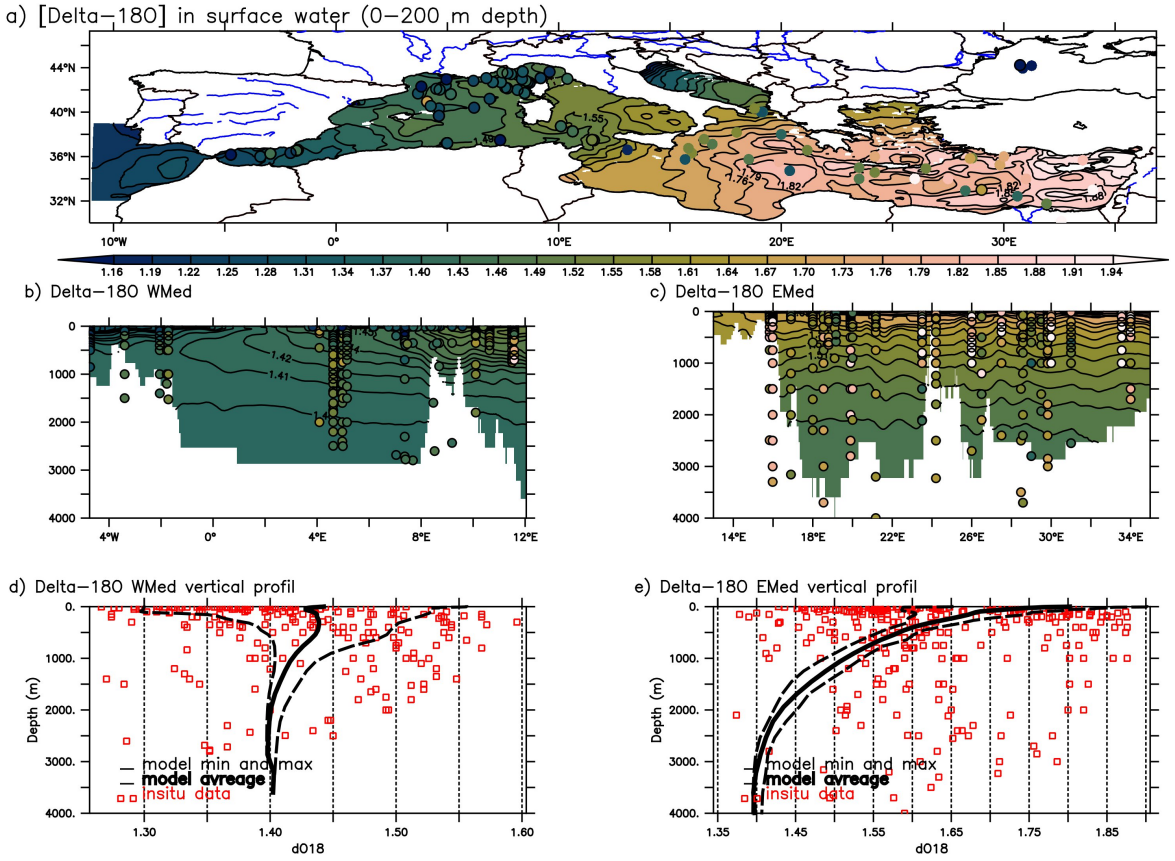

Figure 2. (color palette 'batlow') The model outputs against in-situ data for the present-day situation. a) δ18Ow (in ‰) distribution in the surface water (50 m depth). b) E-W vertical section of δ18Ow (in ‰) in the western Mediterranean basin d) Zonal mean comparison of δ18Ow (in ‰) average vertical profiles in the western basin presenting model results against in-situ data. c) and e) the same as b) and d) but for the eastern basin. Colour-filled dots represent in-situ observations from (Epstein and Mayeda, 1953; Stahl and Rinow, 1973; Pierre et al., 1986; Gat et al., 1996; Pierre, 1999; Voelker, 2017; Reverdin et al., 2022). Both model and in-situ data use the same color scale.