

Supplementary Information (SI) for  
**Forecasting size-at-maturity shifts under global warming: A case study on European hake, a  
widely distributed species**

*Reviews in Fish Biology and Fisheries*

David José Nachón\*, E. Ramírez-Romero, A. Paz, M. Cousido-Rocha, F. Izquierdo, M<sup>a</sup>. G.  
Pennino, & S. Cerviño

**\*Corresponding author:** Instituto Español de Oceanografía (IEO-CSIC), Centro Oceanográfico  
de Vigo, Subida a Radio Faro, 50–52, 36390 Vigo, Pontevedra, Spain.

[davidjose.nachon@gmail.com](mailto:davidjose.nachon@gmail.com)

**This pdf file includes:**

- **Online Resource 3** Table containing details of projections ensemble used for the Mediterranean basin, including the different methods and models, with bibliographic references validating each approach. The table also includes data on Representative Concentration Pathways (RCP) greenhouse gas concentration scenarios, as adopted by the Intergovernmental Panel on Climate Change (IPCC). Each data entry is linked to a reference number, with the full list of bibliographic references provided after the table

**Online Resource 3** Details of projections ensemble used for the Mediterranean basin, with bibliographic references validating the different methods and models. RCP: Representative Concentration Pathway greenhouse gas concentration scenarios, adopted by the Intergovernmental Panel on Climate Change (IPCC)

| Physical model | RCP     | Resolution & Vertical levels | Period & Temporal resolution | Domain                                            | References                                            |
|----------------|---------|------------------------------|------------------------------|---------------------------------------------------|-------------------------------------------------------|
| POLCOMS        | 4.5/8.5 | 11 km, 43 levels             | 2006-2100, Monthly           | Northwest European Shelf /Mediterranean/NE Africa | Copernicus CDS, 1 & 2                                 |
| CNRM-RCSM4     | 4.5/8.5 | 9–12 km, 43 levels           | 2006-2100, Monthly           | Mediterranean                                     | MedCORDEX, 3                                          |
| NEMO-MFS16     | 4.5/8.5 | 6.5km, 72 levels             | 2006-2100, Daily             | Mediterranean                                     | Euro-Mediterranean Center on Climate Change (CMCC), 4 |

## References

1. Kay, S. & Butenschön, M. (2018). Projections of change in key ecosystem indicators for planning and management of marine protected areas: An example study for European seas. *Estuarine, Coastal and Shelf Science*, **201**: 172–184. <https://doi.org/10.1016/j.ecss.2016.03.003>
2. Kay, S., (2020). Marine biogeochemistry data for the Northwest European Shelf and Mediterranean Sea from 2006 up to 2100 derived from climate projections. Copernicus Climate Change Service (C3S) Climate Data Store (CDS). <https://doi.org/10.24381/cds.dcc9295c>
3. Darmaraki, S., Somot, S., Sevault, F., Nabat, P., Cabos Narvaez, W. D., Cavicchia, L., Djurdjevic, V., et al. (2019). Future evolution of marine heatwaves in the Mediterranean Sea. *Climate Dynamics*, **53**, 1371–1392. <https://doi.org/10.1007/s00382-019-04661-z>
4. Reale, M., Cossarini, G., Lazzari, P., Lovato, T., Bolzon, G., Masina, S., Solidoro, C., et al. (2022). Acidification, deoxygenation, and nutrient and biomass declines in a warming Mediterranean Sea. *Biogeosciences*, **19**, 4035–4065. <https://doi.org/10.5194/bg-19-4035-2022>