

# Read Me

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December, 2022

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## General Information

This repository contains the primary data for the paper “Incorporating protected areas into global fish biomass projections under climate change” published in 2022 in *FACETS*

- Data created in 2018 by the mentioned authors
- Geographic location: Global (marine realm)
- Keywords, marine conservation, climate change, marine protected area, MPA, computer modelling, earth system model, species distribution model

## License

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## Data Context

Data produced over computer modelling exercises to understand the impacts of climate change on marine reserves

## Data methods

Please see <https://github.com/jepa/climatechangempa> for complete protocol of data creation and Palacios-Abrantes et al, 2022 for methods.

## Structure of files

All four datasets produced in the research available here are `.csv` files with only one sheet:

- `Fish_RCP26_All_GCMs_20.csv` (5545231 observations x 11 variables), dataset representing the no-conservation scenario for RCP 2.6 (low emission scenario)
- `Fish_RCP85_All_GCMs_20.csv` (5545231 observations x 11 variables), dataset representing the no-conservation scenario for RCP 8.5 (high emission scenario)
- `MPA_RCP26_All_GCMs_20.csv` (5545231 observations x 11 variables), dataset representing the conservation scenario for RCP 2.6 (low emission scenario)
- `MPA_RCP85_All_GCMs_20.csv` (5545231 observations x 11 variables), dataset representing the no-conservation scenario for RCP 8.5 (high emission scenario)

*In all cases, results are presented as 20 years mean of three time periods and averaged of three Earth System Models used in the research (GFDL, IPSL, MPIS).*

## Naming conventions

- RCP names according to the Representative Concentration Pathway (RCP) adopted by the Intergovernmental Panel on Climate Change ([https://en.wikipedia.org/wiki/Representative\\_Concentration\\_Pathway](https://en.wikipedia.org/wiki/Representative_Concentration_Pathway))
- habitat, habitat type according to fishbase ([www.fishbase.org](http://www.fishbase.org))

## Sources used

Please see <https://github.com/jepa/climatechangempa> for a complete list of external data-sources

## Data confidentiality and permissions

These data sets are published under the Apache License 2.0. All other data sources are publicly available under their specific licenses available on their web pages (see section “Source used” above).

## Variable naming

- index, an unique identifier number for each 0.5 x 0.5 grid cell
- longitude, the angular distance of a grid east or west of the meridian at Greenwich in degrees and minutes.
- latitude, the angular distance of a grid north or south of the earth’s equator expressed in degrees and minutes
- time\_period, averaged of time periods representing the present day (1995-2014), the mid-21st century (2041-2060) and the end of the 21st century (2081-2100)
- data\_type, abundance (Abd) or maximum catch potential (Catch) derived from the DBEM
- measure, mean and standard deviation of the result (total) by data type (abundance or maximum catch potential) for all three Earth System Models and the standard deviation
- total, numeric value related to data\_type (unit-less)
- n, number of unique species in the grid cell
- rcp, Representative Concentration Pathways - RCP (26 for low emission and 85 for high emission)
- model, conservation scenario (MPA for conservation and Fish for no-conservation)

- habitat, type of habitat accordign to fish base

Table 1: Screenshot of dataset containing first 5 rows for reference

index	longitude	latitude	time_period	data_type	measure	total	n	rcp	model	habitat
1	-179.75	89.75	End of Century	Abd	Mean	0	24	26	Fish	NA
1	-179.75	89.75	End of Century	Abd	SD	0	24	26	Fish	NA
1	-179.75	89.75	End of Century	Catch	Mean	0	24	26	Fish	NA
1	-179.75	89.75	End of Century	Catch	SD	0	24	26	Fish	NA
1	-179.75	89.75	Mid Century	Abd	Mean	0	24	26	Fish	NA
1	-179.75	89.75	Mid Century	Abd	SD	0	24	26	Fish	NA