ReadMe

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2025-12-16

General Information

This repository contains the primary data for the paper "Projected impacts of climate change to key species in the Marine Corridor of the Eastern Tropical Pacific (CMAR)" submitted for peer review in December of 2025

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- Data created in 2025 by the mentioned authors
- Geographic location: Eastern Tropical Pacific (marine realm)
- Keywords, fisheries, climate change, time of emergence, stock share ratio, shared fisheries, computer modelling, earth system model, species distribution model

License

Data Context

Data produced over computer modelling exercises to understand the impacts of cliamte change to the abundance and distribution of key marine species in the Eastern Topical Pacific

Data methods

Please see https://github.com/jepa/etpmc_cc for complete protocol of data creation

Structure of files

Two datasets are .csv files with only one sheet while anotherone is a shapefile.

- *all_years_data_esm_gridded.csv* (7 variables x 67500 observations), this dataset relates to the absolute abundance projections from the DBEM
- *all_cmar_mpas.shp* (Simple feature collection with 10 features and 1 field), this dataset relates to the spatial polygons of the Marine Protected Areas (MPAs) in the Eastern Tropical Pacific. It pairs with the following:
- *all_cmar_mpas_sau.shx*
  - *all_cmar_mpas.prj*
  - *all_cmar_mpas.shx*
  - *all_cmar_mpas.dbf*
- *all_mpa_grid_fe.csv* (4 variables x 627 observations), CEMAR MPAs gridded to the DBEM format
- *fe_data_scen.csv* (5 variables x 259200 observations), fishing effort values used in each scenarios relative to MSY

Naming conventions

- Exclusive Economic Zones (EEZ) according to the Sea Around Us (http://www.seaaroundus.org)
- Marine Protected Areas (MPA) according to each region

Sources used

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

Quality assurance

Please see https://github.com/jepa/etpmc_cc

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

all_years_data_esm_gridded.csv

- `year`, year of projection from 1951 to 2100
- `region`, marine protected area or exclusive economic zone
- `value_region`, DBEM model output
- `esm`, Earth System Model coupled with the DBEM (gfdl,ipsl,mpis)
- `ssp`, Shared Socioeconomic Pathway (126 and 585)
- `scen`, management scenarios (nr - no regulations, ri - regulations implemented, rpc partial regulations for conservation, rpp - partial regulations for fishing, sq - status quo)
- `category`, related to DBEM output with fishing (Abc) or no-fishing (Abd) outputs

all_mpa_grid_fe.csv

- `index`, unique identity number for grid
- `status`, classification of grid cell, can be *protected* or *surrounding*
- `mpa`, marine protected area that the grid belongs to
- `fe_prop`, fishing proportion relative to maximum sustainable yield (*F/Fmsy*)

all_cmar_mpas.shp

- Simple feature collection with 10 features and 1 field
- `Geometry type`: MULTIPOLYGON
- `Dimension`: XY
- `Bounding box`: xmin: -93.00765 ymin: -2.081746 xmax: -78.09683 ymax: 7.88888
- `Geodetic CRS`: WGS 84
- `region`, marine protected area or exclusive economic zone
- `geometry`, coordinates