

Cheatsheet for R package StrathE2E2 version 4.0.0 (<https://www.marineresourcmodelling.maths.strath.ac.uk/strathe2e/>)

Model house-keeping

e2e_info_pk()	List version and details of the currently installed package
e2e_ls()	List the available models in a designated workspace
e2e_copy()	Make a copy of a named model/variant
e2e_info_md()	List details of a selected model and its variants
e2e_get_parmdoc()	Download parameter documentation as a dataframe

Basic model operations

e2e_read()	Read a model setup from a given workspace
e2e_run()	Run StrathE2E for a prescribed number of years with a given setup
e2e_extract_start()	Create a new initial values file from the end of a model run
e2e_extract_hr()	Extract the values of harvest ratios generated by the fleet model
e2e_plot_ts()	Time-series plots of model outputs for the full duration of a run

Visualize model inputs

e2e_plot_edrivers()	Plot a climatological year of environmental driving data
e2e_plot_fdrivers()	Plot distributions of fishery-related driving data

Visualize model outputs from the final year of a run

e2e_plot_eco()	Plot annual cycles of ecology model variables
e2e_plot_migration()	Plot annual cycles of active migration fluxes
e2e_plot_catch()	Plot distributions of annual landings and discards
e2e_plot_trophic()	Plot mean trophic level and omnivory indices
e2e_plot_biomass()	Plot zonal distributions of annual average biomass densities

Quick start

```
library(StrathE2E2) # Load the package
model <- e2e_read("North_Sea", "1970-1999") # Read an internal model setup
e2e_plot_edrivers(model) # Plots of the driving data
results <- e2e_run(model, nyears=5) # Run the model for 5 years
e2e_plot_ts(model, results, selection="ECO") # Plot time series of results
```

Parameter estimation

e2e_optimize_eco()	Optimize ecology model parameters
e2e_optimize_hr()	Optimize fleet model harvest ratio scaling parameters
e2e_optimize_act()	Optimize fleet model fishing activity parameters
e2e_plot_opt_diagnostics()	Plot diagnostic data from optimisation runs
e2e_calculate_hrscale()	Calculate initial values of harvest ratio scaling parameters

Sensitivity and Monte Carlo analyses

e2e_run_sens()	Run a global parameter sensitivity analysis for a given model setup
e2e_run_mc()	Run a Monte Carlo analysis with given model setup
e2e_merge_sens_mc()	Merge parallel processing files from sensitivity or Monte Carlo runs
e2e_process_sens_mc()	Post-process raw output data from sensitivity or Monte Carlo runs
e2e_plot_sen_mcs()	Plot diagnostic results from sensitivity or Monte Carlo runs
e2e_get_senscrit()	List the model outputs available as the basis for sensitivity analysis

Compare model runs and observations

e2e_compare_obs()	Box-plot comparisons between observations and model outputs
e2e_compare_runs_box()	Box-plot comparisons between two different model runs
e2e_compare_runs_bar()	Tornado bar-plot comparisons between two different model runs

Fishery yield analyses

e2e_run_ycurve()	Perform a set of model runs to generate fishery yield curve data
e2e_plot_ycurve()	Plot fishery yield curve data

Getting help

```
help(StrathE2E2) # Load package help page
vignette("StrathE2E2_CheatSheet") # Load this CheatSheet
help(function_name) # Load function help page
www.marineresourcmodelling.maths.strath.ac.uk/strathe2e/
Package website: User Manual, Technical Manual, and more
```