Fish Forecast Training Course

Welcome to the training programme on “Fish-catch Time-Series Forecasting with R” organized by International Training Centre for Operational Oceanography (ITCOocean) ESSO-Indian National Centre for Ocean Information Services(INCOIS), Hyderabad, India.

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This short course will be divided into a morning session on creating forecasting models for catch data and an afternoon session on report-writing, websites and code documentation with R. The course will consist of short lectures and many practical labs where you will work with R to model data and prepare forecasts (morning) and write reports and websites with R and R Markdown (afternoon)

Course Website and Files

Overview: <https://rverse-tutorials.github.io/Fish-Forecast-Training-Course>

Catch Forecasting: <https://fish-forecast.github.io/Catch-Forecasting-INCOIS/>

Workflow: <https://rverse-tutorials.github.io/RWorkflow-Workshop/>

# Forecasting fisheries catch time series with R (Forenoon)

## Topics

* Time-varying regression
* Box-Jenkins (ARMA) Models
* Exponential smoothing
* Modelling time series with seasonality
* Forecast diagnostics and accuracy metrics

# Report-writing and code documentation with R (Afternoon)

## Topics

* Basic workflow using RStudio, Git and GitHub
* Intro to R Markdown
* Creating simple websites from RStudio
* Build an R package with RStudio
* Creating a book with R Markdown: Intro to Bookdown.
* Creating and publishing RShiny applications

## Catch Forecasting Lectures and Labs

**Introduction**

**Time-Varying Regression**

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| Lectures | Labs |
| 1 Introduction to time-varying regression | 1 Fit TV regression models to catch data |
| 2 Forecasts with a time-varying regression model | 2 Create time-varying regression forecasts |

**ARMA Models**

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| Lectures | | Labs | |
| 1 Introduction to ARMA Models | | 1 Intro to ARMA models and diagnostics | |
| 2 Stationarity | | 2 Test the Greek catch data for stationarity | |
| 3 Selecting model structure | | 3 Fit ARMA models to the Greek catch data | |
| 4 Fitting ARMA Models | | 4 Create and test forecasts | |
| 5 Create and test forecasts |  | |

**Exponential Smoothing Models**

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| Lectures | Labs |
| 1 Intro to exponential smoothing models | 1 Fit exponential smoothing models to data |
| 2 Selecting model structure | 2 Create forecasts |
| 3 Forecasting with exp. smoothing models | 3 Testing models and diagnostics |

**Seasonality**

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| Lectures | Labs |
| 1 Intro to seasonality and approaches | 1 Create seasonal time-series objects in R |
| 2 Seasonal time-vaying regression models | 2 Seasonal exponential smoothing models |
| 3 Seasonal exponential smoothing models |  |