Download and prepare data from the Copernicus Marine Environment Monitoring Service (CMEMS)

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Contents

About

This is a short tutorial explaining how to download and prepare data from the Copernicus Marine Environment Monitoring Service (CMEMS).

The code is available in AZTI's github repository and the book is readily available here.

To cite this book, please use:

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Chapter 1

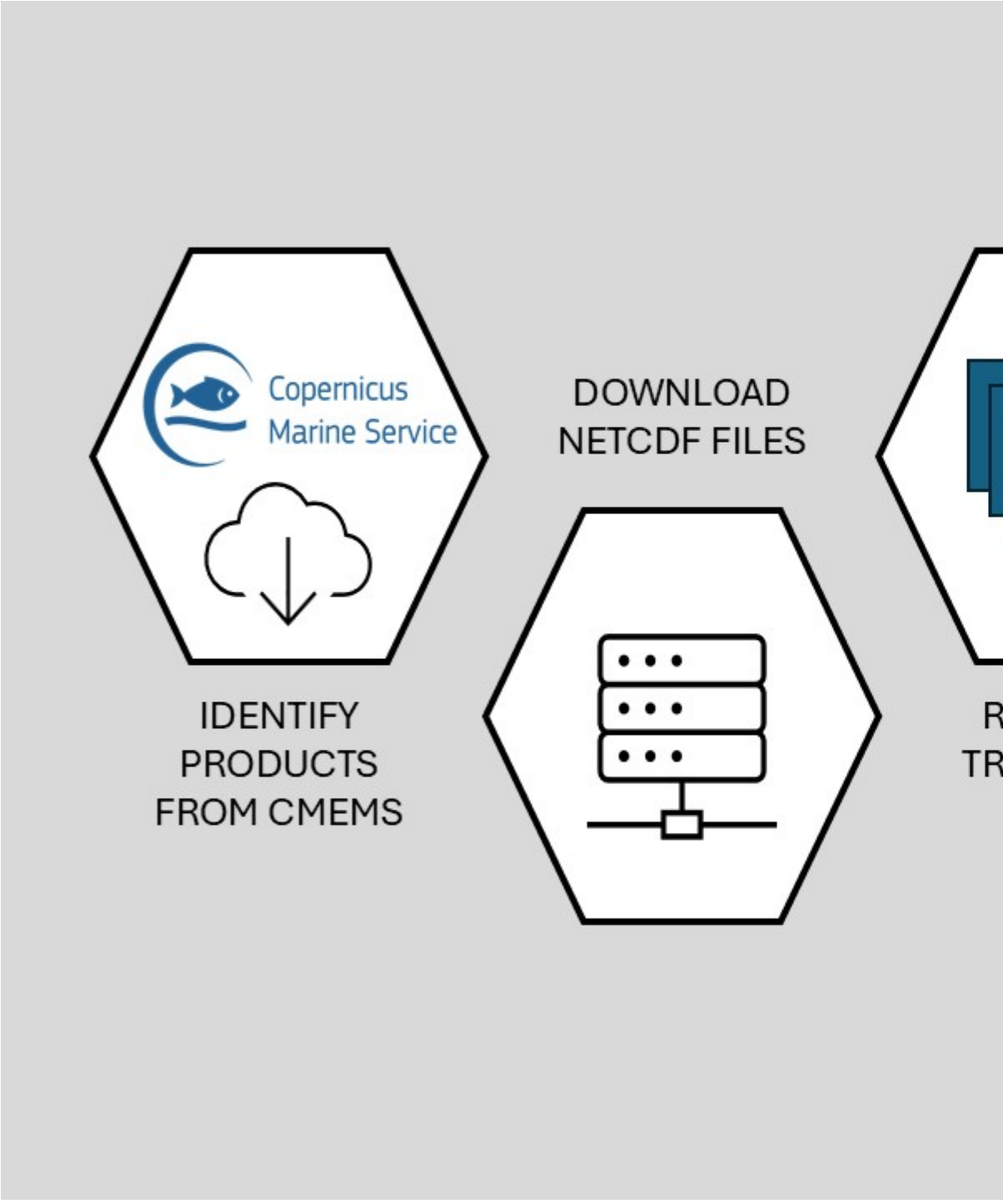
Introduction

The Copernicus Marine Environment Monitoring Service (CMEMS) provides a wide range of data products for the global ocean. The data is available through the CMEMS website, but can also be accessed programmatically using the CMEMS API.

The Copernicus Marine Toolbox is a free and easy-to-use tool that interoperates with the Copernicus Marine Data Store intending to cover any use case, from retrieval of metadata to a complete dataset, or just a subset, for any type of product: numerical models, satellite and/or in situ observations. It is written in Python, but

All the data available are in NetCDF format. We provide examples of how to read and work with these files and merge them with other data sources.

```
library(ggplot2)
```


Copernicus
Marine Service
DOWNLOAD
NETCDF FILES
IDENTIFY
PRODUCTS
FROM CMEMS

Chapter 2

Download

The Copernicus Marine Toolbox is written in Python, but it can be used in R through the `reticulate` package. For more information on how to use the Copernicus Marine Toolbox in R, see the official documentation.

2.1 Installation

First, we need to install the `reticulate` package:

```
install.packages("reticulate")
```

Then, the package can be loaded:

```
library("reticulate")
```

Now we create a dedicated Python virtual environment for the Copernicus Marine Toolbox. Using a separate environment ensures a clean, isolated space where the package and its dependencies won't interfere with other projects. The virtual environment has been created in

```
virtualenv_create(envname = "CopernicusMarine")

virtualenv_install("CopernicusMarine", packages = c("copernicusmarine"))

use_virtualenv("CopernicusMarine", required = TRUE)
```

Chapter 3

See structure of NetCDF files

Write here a brief intro

Chapter 4

Read and work with NetCDF files

Write here a brief intro

Chapter 5

Extract the information from the NetCDF files

Write here a brief intro