Dealing with NetCDF files

Training module 1. . .

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Supported languages

The NetCDF file format is highly supported. Among the many languages implementing NetCDF, we mention:

- **Fortran**
- **Python**
- C/C++
- Java
- Ruby
- R
- Matlab
- IDL
- Perl
- Tcl/Tk
- Ada

Python

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```
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The netcdf library that we will use in Python is called `netCDF4`

```
$ conda install netcdf4
```

Python (1)

First of all import the library:

```
from netCDF4 import Dataset
```

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Then, we can open NetCDF files with:

```
ds = Dataset(filename, "r", "NETCDF4")
```

Python (2)

- `ds` – shows several information
- `ds.dimensions` – returns a dictionary of all the dimensions
- `ds.variables` – shows a dictionary of all the variables
- `ds["varname"]` – shows info about the variable *varname*
- `ds["varname"][:]` – access data according to numpy rules (see *slicing*)

Python (3)

- `dim1 = Dataset.createDimension(...)` – to create a dimension
- `var1 = Dataset.createVariable(...)` – to create a variable
- `var1[:]  = data` – to assign data to the variable

Python (4)

The library NetCDF4 is quite useful in many cases, but you will soon feel limited using it. . . Then, the natural evolution will be to use `xarray`.