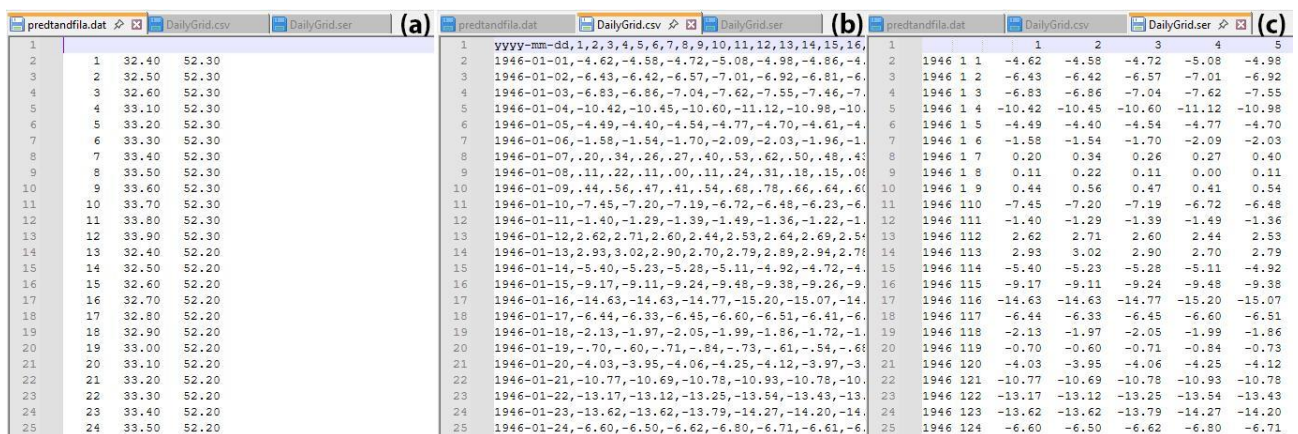# ClimUAd manual

ClimUAd dataset is structured by four climate parameters: **TN** (daily minimum 2 m air temperature), **TX** (daily maximum 2 m air temperature), **TG** (daily mean 2 m air temperature), **RR** (daily sum of atmospheric precipitation). Notations of these parameters are used as directory names containing three files each: predtandfila.dat, DailyGrid.csv, DailyGrid.ser.

1. predtandfila.dat: a metadata file, containing grid point IDs and coordinates (longitudes, latitudes). Fig. 1 (a)
2. DailyGrid.csv: a data file, containing gridded time series in the CSV format (easy to read with R/Python). Fig 1 (b)
3. DailyGrid.ser: a data file, containing gridded time series in for the SER format (the MISH software output format, easy to read with FORTRAN). Fig 1 (c).

All three files are plain ASCII files, readable in text editors like Notepad++

As can be seen from Fig. 1, the formats of the records in both data files, DailyGrid.csv and DailyGrid.ser, are quite similar. The first record/line is a header, which is followed by data lines for each year-month-day of the period. The header contains IDs of grid points. The data lines contain one or three values (depending on the data file) of year, month, day and then values of a climate parameter are listed for each grid point. Overall, there are 7385 grid points covering the territory of Ukraine

Fig 1. Examples of fragments of data and metadata files from the dataset: (a) predtandfila.dat, a list of grid point IDs and geographical coordinates; (b) DailyGrid.csv, daily gridded time series in the csv-format; (c) DailyGrid.ser, daily gridded time series in the ser-format (MISH output),

Below, we provide fragments of a code to read ClimUAd data using R and Python. Download the dataset and extract files to the desired directory before running the following commands.

R
```
# Reading the CSV file containing gridded time series
grid_data<-read.csv("path/to/your/directory/DailyGrid.csv", header=TRUE, colClasses=c("Date", rep("numeric", 7385), "NULL"))

# Reading the DAT file containing geographical coordinates
coords<-read.table("path/to/your/directory/predtandfila.dat", col.names = c("id", "lon", "lat"))
```

Python
```
import pandas
#Reading the CSV file containing gridded time series
```

```
grid_data=pandas.read_csv("path/to/your/directory/DailyGrid.csv",      sep=",",      skiprows=1,
names=["Date"]+[str(i) for i in range(1,7386)])
```

```
#Reading the DAT file containing geographical coordinates
coords=pandas.read_table("path/to/your/directory/predtandfila.dat",      sep="                    ",
names=["id","lon","lat"], engine="python")
```

FORTRAN
In Fortran90, the data from DailyGrid.ser can be read using the following format statement: format
(i4, i2, i2, 7385f8.2).