README
for iwvcalc.py

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May 20, 2024

Contents

1. Description

The aim of this script is to export the data from the WRF model, that is stored in a netCDF format, and data from a troposinex file and compute IWV, ZTD, ZHD, ZWD, temperature and pressure.

2. Basic Information

To run the script:

```
python3 iwvcalc.py --snx-file snx_file --wrf-file wrf_file [--o output_file
--station station]
```

where the arguments **not** in brackets are mandatory.

```
--snx-file - path to: snx file
--wrf-file - path to: folder, wrf file or wrf files seperated with comma
--station  - station name or station names seperated with comma (optional)
--o        - name of output file (optional)
```

Default value for station argument is all stations.
If no output file name is set, then it prints to stdout a table.

The script consists of three helper classes **Station**, **Point** and **Result**.

Station - data from the snx file.

Point - data from one wrf (netCDF) file.

Result - the computed results.

There are four helper procedures:

read_met_from_wrf - Calculates indexes. Fetches altitude, temperature and pressure from wrf file.

read_station_latlon - Fetches station names, latitudes and longitudes from the snx file.

read_trop_solution - Reads time and ztd from the snx file.

read_gps_from_snx - Opens snx file and runs read_station_latlon and read_trop_solution.

And main, where a couple of things happen:

1. We have a list of stations and a list of points. Where the number of points = number of wrf_files * stations.
2. The points and stations are averaged in five minute intervals.
3. Combined into one array based on time.
4. Begin the calculations for pressure, temperature, zhd, zwd, iwv.
5. Then either printed to stdout or saved in troposinex (snx2) file format.

3. Manual

Open a terminal and type:

```
git clone https://github.com/lyubenkod/iwv_calc
```

This will create a folder iwv_calc. With a folder structure

```
iwv_calc/iwvcalc.py - main script.
iwv_calc/iwv_test.py - script using only calculations from wrf file.
iwv_calc/sample.snx2 - sample snx2 file created by iwvcalc.py.
```