Manual how to create text files with positions of satellites for each second in a specified interval and images and movie made out of it
(2023-04-15)

- **Required Two Line Element file** satelitesdb.tle
  which can be downloaded from Dropbox link in :
  https://github.com/marcinsokolowski/Two_Line_Elements

- **Build program sattest**
  - Clone project transientlib. I will assumed it is cloned in directory ~/github/ :
  - cd ~/github/
  - git clone https://github.com/marcinsokolowski/transientlib.git
  - Build the library and sattest program as described in README file or https://github.com/marcinsokolowski/transientlib
  - After "make install" sattest should be installed on path

- **Create files named by UNIXTIME.txt** with positions of every satellite above horizon at the Murchison Radio-astronomy Observatory (MRO) at a given UNIXTIME second :
  - I will assume it is done in directory /tmp/20230415_030000/
    Let's also assume we will run a prediction of satellite positions for time starting from 20230415_030000 UTC (unixtime = <mark>1681527600</mark>) for 600 seconds (10min):
    - mkdir -p /tmp/20230415_030000/
    - cd /tmp/20230415_030000/
    - cp TLEs/20230415/satelitesdb.tle .

    - Copy observatory location configuration file mro.qth (for the MRO)
    - cp ~/github/transientlib/config/mro.qth .
    - In order to generate predictions for another location provide a different configuration file or create one based on mro.qth (geographical longitude, latitude and height of the observatory are required).
      Longitude is positive West and negative East from Greenwich

    - ~/github/transientlib/scripts/print_satellites_ux.sh <mark>1681527600</mark> 600
      - The first parameter is start time in UNIXTIME
      - The second is duration (600 seconds).
    - It will take a while to generate, but once it's done the files named UNIXTIME.txt for the specified range of time will be created in subdirectory satellites/
    - Once finished images with all the satellites can be created by executing script plot_satellites.sh
      - cd /tmp/20230415_030000/satellites/
      - ~/github/transientlib/scripts/plot_satellites.sh
      - The images and the movie will be created in :
        - cd /tmp/20230415_030000/satellites/images/
        - ls -al *jpg
        - cd /tmp/20230415_030000/satellites/images/movie/
        - ls -al *mp4
        -
      -
    -