A START GUIDE TO USE JUPYTER NOTEBOOKS

OBJECTIVE : TO USE GEOSPATIAL DATA FROM TWO DIFFERENT SATELLITE INTRUMENTS AND ANALYZE NITROGEN DIOXIDE PROFILE GENERATED AROUND EACH LIGHTNING FLASH SOURCE

nb01_iss_lis_download-files_userinput_time_region_ncfile_filtered_v3.ipynb

DATA : **LIGHTNING STRIKES**
DATA COLLECTION INTRUMENT : **LIGHTNING IMAGING SENSOR** *(LIS)*
INSTRUMENT MOUNTED ON SATELLITE : **INTERNATIONAL SPACE STATION** *(ISS)*

1) FIRSTLY, CREATE A NASA EARTHDATA ACCOUNT TO ACCESS DATA.
2) USER I/P : ENTER START AND END DATE OF INTEREST.
3) ACCESS NASA COMMON METADATA REPOSITORY (CMR) USING 'EARTHDATA' A PYTHON API.
4) SORT SATELLITE ORBIT PASSING OVER CANADA REGION.
5) GET LINKS TO DOWNLOAD LIS DATA.
6) FINALLY, DOWNLOAD LIS DATA.

nb02_iss_lis_nctocsv_multifiles_16july2022_v3.ipynb

EXTRACT LIS DATA AND CONVERT TO CSV

1) READ ALL THE DOWNLOADED LIS FILES.
2) EXTRACT THE DATA FOR THE VARIABLES OF INTEREST.
3) CONVERT ARRAY DATA INTO PANDAS DATAFRAME.
4) FILTER THE DATA FOR FOR CANADA REGION
5) FINALLY, SAVE THE DATAFRAME AS CSV FILE.

nb03_TROPOMI_ip_time_location_OPeNDAP_tocsv_16july2022_v3.ipynb

DATA : **NITROGEN DIOXIDE**
DATA COLLECTION INTRUMENT : **TROPOMI** *(TROPOspheric Monitoring Instrument)*
INSTUMENT MOUNTED ON SATELLITE : **Copernicus Sentinel-5 Precursor satellite** *(S-5P)*

1) FIRSTLY, CREATE A NASA EARTHDATA ACCOUNT TO ACCESS DATA.
2) USER I/P : ENTER START AND END DATE OF INTEREST. *(IT SHOULD BE A SAME AS THAT MENTIONED FOR LIS)*
3) ACCESS NASA COMMON METADATA REPOSITORY (CMR) USING 'EARTHDATA' A PYTHON API.
4) GET LINKS TO DOWNLOAD TROPOMI DATA
5) CONNET TO OPENDAP SERVER USING THESE LINKS.
6) EXTRACT THE DATA FOR THE VARIABLES OF INTEREST.
7) CONVERT ARRAY DATA INTO PANDAS DATAFRAME.
8) FILTER THE DATA FOR FOR CANADA REGION.
9) FINALLY, SAVE THE DATAFRAME AS CSV FILE.

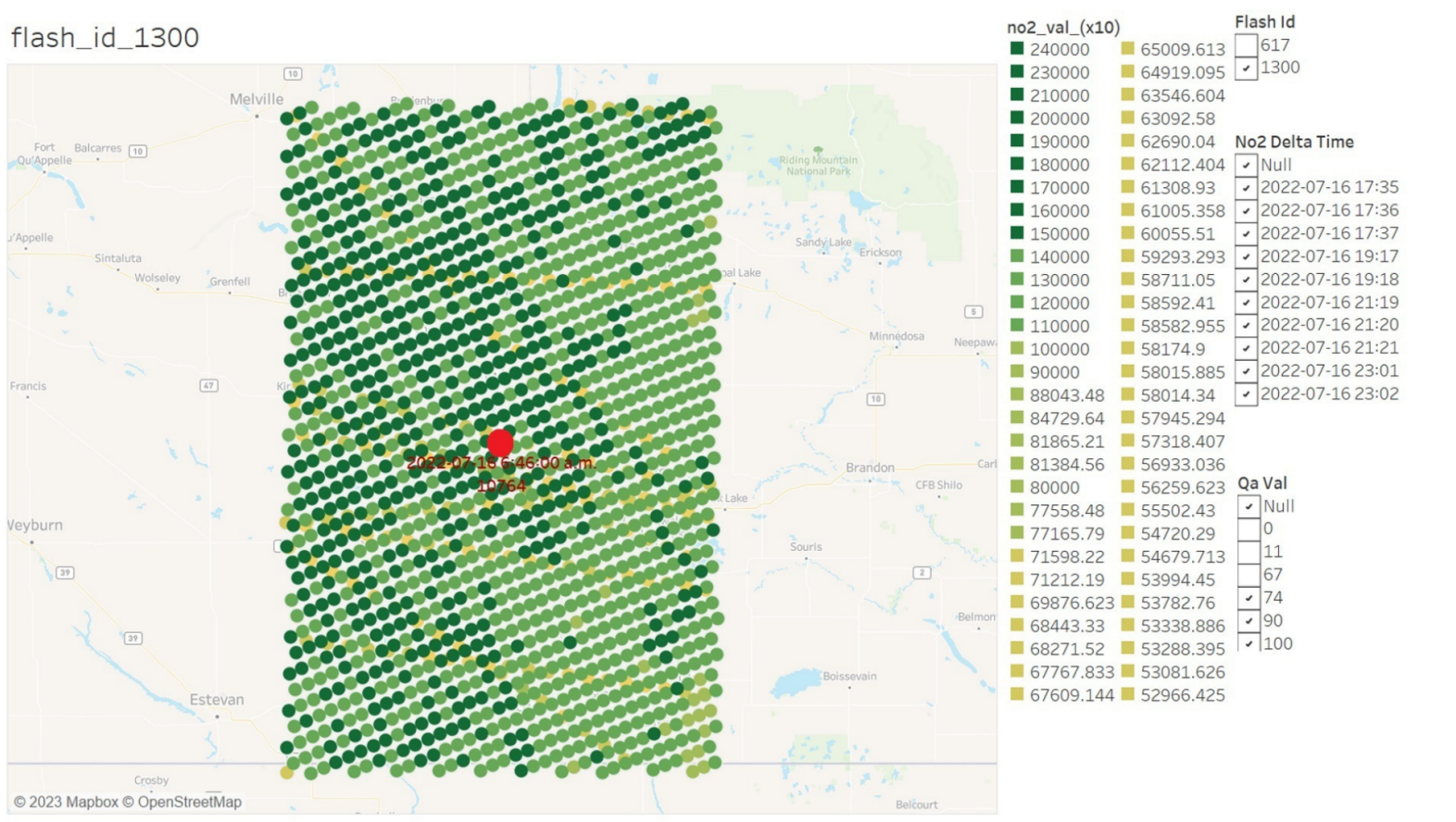
nb04_iss_tropomi_merged_datafarame_csv_box_filtering_looped_v4.ipynb

BOX ANALYSIS:
NO2 PROFILE AROUND FLASHES

1) READ THE LIS FILE SAVED AS CSV. *(FROM ABOVE STEPS)*
2) READ THE TROPOMI FILE SAVED AS CSV. *(FROM ABOVE STEPS)*
3) CREATE AN IMAGINARY BOUNDARY AROUND EACH FLASH. *(BY MIN & MAX LATITUDE, LONGITUDE LOGIC)*
4) CHECK CONDITON TO FIND IF TROPOMI DATA POINTS LYING AROUND *(SAY 1DEGREE~111KMS)* FROM EACH FLASH.
5) FINALLY SAVE THE DATAFRAME AS CSV.

FINAL REQUIRED OUTPUT: NO2 PROFILE AROUND A GIVEN FLASH POINT (*AS HIGHLIGHTED IN RED*)

.analysis is done inTableau



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