README
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Format of files: .csv

Title: Cross-Track Infrared Sounder (CrIS) Peroxyacetyl Nitrate (PAN) and Carbon Monoxide (CO) retrievals for the 2018 wildfire season over the western U.S.

Description: This dataset includes processed data from Cross-Track Infrared Sounder (CrIS) Peroxyacetyl Nitrate (PAN) and Carbon Monoxide (CO) retrievals from 24 July 2018 – 13 September 2018 coinciding with the wildfire season of 2018 and the Western wildfire Experiment for Cloud chemistry, Aerosol absorption, and Nitrogen (WE-CAN) for the western U.S. (35º N - 50º N lat, 127º W – 101º W lon). There are 50 days of data represented in 50 different .csv files (there is not August 22 and September 3 in the files). Not a Number (Nan) values are left blank.

Data sources:

Payne, V. H., S. S. Kulaiwk, E. V. Fischer, J. Brewer, L. G. Huey, K. Miyazaki, J. R. Worden, K. W. Bowman, S. Wofsy, J. Elkins, E. Hintsa and F. Moore, Satellite measurements of peroxyacetyl nitrate from the Cross-track. Infrared Sounder: Comparisons with ATom aircraft measurements, in prep, to be submitted to Atmos. Meas. Tech.

Fu, D., Bowman, K. W., Worden, H. M., Natraj, V., Worden, J. R., Yu, S., Veefkind, P., Aben, I., Landgraf, J., Strow, L., & Han, Y. (2016). High-resolution tropospheric carbon monoxide profiles retrieved from CrIS and TROPOMI. *Atmospheric Measurement Techniques*, *9*(6), 2567–2579. https://doi.org/10.5194/amt-9-2567-2016

Location: Western U.S. (35º N - 50º N lat, 127º W – 101º W lon).

Time period: July 24, 2018 – September 13, 2018

Description of acronyms:
   PAN: Peroxyacetyl nitrate
   CO: Carbon Monoxide
   HMS: Hazard Mapping System

Variable Information:
   Longitude: longitude of retrieval
   Latitude: latitude of the retrieval
   X_CO: CO average between the surface and the tropopause (180 hPa).
   CO_680hPa: CO at the 680 hPa level
   CO_510hPa: CO at the 510 hPa level
   XPAN: PAN average between the surface and the tropopause (180 hPa).

HMS_flag: corresponding smoke designation for each CrIS retrieval based on the National Oceanic and Atmospheric Administration (NOAA) Hazard Mapping Systems (HMS).

      0: no smoke
      5: light smoke
      16: moderate smoke
      27: dense smoke

Desert_flag: Desert Flag for X_PAN.

      Desert_flag > 0.95 indicated data that has interferences due to bare soil.

Point: CrIS retrieval's latitude, longitude pair.

Closest: closest HMS smoke designation location.

Smoke_flag: same as HMS_flag (see above)

GEO_Flag: areas were removed due to their bare surface characteristic and its interference with PAN retrieval.

      1: retrieval inside areas removed (remove these retrievals!)
      0: retrieval outside areas removed (keep these retrievals!)

Methods: The CrIS PAN retrievals rely on the PAN absorption feature at 790 cm^{-1}; and the retrieval algorithm uses the Multi-Species, Multi-Spectral, Multi-Satellite (MUSES) retrieval software (Fu et al., 2016). CrIS PAN retrievals are performed from NASA v2 Level 1B radiances (Revercomb and Strow, 2018) on the 15 km individual fields of view (FOVs).

Limitations to reuse: There is interferences of bare surfaces (e.g., deserts, rocks, etc.) to the PAN signal that is currently under revision. The areas where this problem was identifies are tagged with the GEO_Flag

Date dataset was last modified
      March 16, 2021