How to Use the McIntosh Synoptic Map Data Set

The complete digitized McIntosh Archive of solar synoptic maps of solar cycles 19 – 23 is publicly available through the National Centers for Environmental Information (NCEI), NESDIS, NOAA, U.S. Department of Commerce. In addition, we have included all completed maps for solar cycle 24 to date (CRs 2078 – 2197), coronal hole only maps for parts of solar cycle 24 and 25 and special maps from SC25 for PSP perihelion and the April 2024 solar eclipse. If you use this data in published work, please use the following **citation text**: *Patrick S. McIntosh, NOAA Space Environment Laboratory (1964). Synoptic Maps Composites Observed from McIntosh. NOAA National Centers for Environmental Information. doi:10.7289/V5765CCQ [access date]*

The parent directory is "mc-intosh" at: http://www.ngdc.noaa.gov/stp/space-weather/solar-data/solar-imagery/composites/synoptic-maps/mc-intosh/ This directory links to 5 subdirectories; how to use this dataset, documentation, ARCHIVE_CLASSIC, ARCHIVE_CHONLY, and data_tars/. Under the directories for McIntosh classic maps, McIntosh coronal hole maps are subdirectories for LEVEL0GIF, LEVEL1GIF, LEVEL3GIF, LEVEL3FITS.

The "documentation" directory has a file called mca_background_2020.pdf that describes the history of the maps and our implementation of the digital processing and archiving. The "plotfinal.pro" program and the color table program that it calls, "patmapcolortable.pro", are in the subdirectory documentation/software/. Further information about using these programs can be found in mca_background_2020.pdf.

The fields in the file names are broken down as follows
ptmc_compo_sm_20210410_024837_cr2243wa_l3.gif
ptmc – Patrick McIntosh
compo – composite
sm – synoptic map
20210410 is year/month/day of Carrington Rotation start
024837 is the hour/minute/seconds of Carrington Rotation start time
Cr2243 is the Carrington Rotation
The suffixes to the CR number are as follows
K – Kodaikanal SC19 map
wa – map made for the Whole Heliosphere Planetary Interaction (WHPI) group with Stereo_A data
we – map made for WHPI with Earth perspective using Solar Dynamics Observatory (SDO) data.
DO – Refers to digital ontology, meaning the maps were made using the paperless mapping techniques described for SC24.
Maps with no letters behind their CR numbers were made by the original paper and pencil techniques.

Note: For the purposes of the documentation for the McIntosh Archive and this document, "we" refers to the cartographers, Hewins and McFadden, along with the primary advisor for this ongoing project, Sarah Gibson at HAO/NCAR.

The data subdirectories contain the following:

- LEVEL0GIF contains level0 files that are Photoshop-processed gif images made from the .pdf

scans of each original hand-drawn CR map. For the SC24 paperless mapping technique and level0

- LEVEL1GIF contains level1 files that have been cropped, oriented and scaled for consistency.
- LEVEL3GIF contains a representative gif image of the final archive data for each Carrington Rotation (CR).
- LEVEL3FITS consists of a FITS file for each CR from which a set of color gif images can be produced through an IDL program called “plotfinal.pro”.