

The McIntosh Archive

Patrick McIntosh, retired solar astronomer, began working at Sacramento Peak Solar Observatory and was in charge of the white light patrol. Later, he worked at the Space Environment Center in Boulder. During his career, he made synoptic maps of solar activity that include solar cycles 20 through 23. Several of the maps in cycle 23 have been digitized.

At the recent Space Weather Workshop, Pat McIntosh's Cartographers, Robert McFadden and Ian Hewins presented a poster of some of the digitized maps in cycle 23. Several solar physicists indicated a need for the digitization of all of the maps that Pat McIntosh has produced which go back to October of 1964. None of the older maps in the archive have been scanned, reformatted, or saved electronically. In their final format, these synoptic maps will be done in five recommended colors, which will distinguish the polarity of large-scale regions, coronal holes, and the filaments.

These synoptic maps also reveal much more about the sun. The filaments also reveal complex motions and changes in the filaments and coronal holes. This is especially true with respect to The polar crown filaments, polar crown gaps, polar coronal holes. These motions also give clues about the fluid dynamics of the sun and the dynamo process. The maps also show polar crown drift toward the equator or to higher latitudes. Observations and mapping of the reappearance of polar coronal holes and the reversal of the polar magnetic field. (1) During the Whole Heliospheric Interval, maps were used to study filament cavities and helmet streamers over the polar crown filaments.

The synoptic maps are also useful for comparing solar cycles, especially at solar minimum. For example, the extended minimum between cycles 23 and 24 offers clues about the entire Sun-to-earth system. This long solar minimum, as mapped, could offer clues about the large scale magnetic field of the sun. (2)

It is our intent to complete the digitization of the entire McIntosh Archive. Numerous members of the scientific community have expressed an interest in having the synoptic maps of all four solar cycles available for research and prediction.

1. (D.F. Webb, J. M. Davis, and P. S. McIntosh, Solar Physics 92, (1984).
2. (G. de Toma, S.E. Gibson, et al; Astronomical Society of the Pacific, vol 428.)