Subject: Re: Full-Disk Orthographic to Cylindrical Projection
Posted by Craig Markwardt on Tue, 12 Mar 2013 00:34:49 GMT
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On Monday, March 11, 2013 5:20:13 PM UTC-4, Tyler Behm wrote:
>
> On Monday, March 11, 2013 1:14:16 PM UTC-6, Craig Markwardt wrote:
>
> Do you start with astronomical FITS images with world coordinates? The IDL Astronomy Library provides truly excellent routines for remapping images with FITS world coordinates.
>
> Craig, I am familiar with the Astronomical Library's good coordinate transform routines like wcssph2xy.pro. Unfortunately, these FITS do not have world coordinates.
>
> The solar images can be found at ftp://diglib.nso.edu/Evans_spectroheliograms/CaK/1988/

The files you posted are from 1988, which is before there was a standard for FITS world coordinates, so people just rolled their own. That's kind of unfortunate. In fact, the headers of those FITS files you linked are only barely FITS headers; there are many nonconformances which might trip up reader software.

On the other hand, it does look like there is a lot of useful information in the header, perhaps enough to construct appropriate world coordinates. It would take some reverse engineering. Unfortunately the README provides next to no information. Not even the plate scale!

I'm not a solar astronomer, so I'm out of my league here. The obvious choice is the AZP projection, which can handle planetary projections, assuming that's appropriate for your images (Calabretta & Greisen 2002 celestial WCS paper, section 7.4.4).

Wayne Thompson, who is an IDL person, has a paper about solar coordinates and FITS images (Thompson 2006 A&A 449 791). If that paper doesn't help then he might be a good point of information. Also the original provider of the data might need to be consulted.

Craig Markwardt