Development of software for presentation of the multiwave RATAN-600 data in unified formats

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The regular multi-wavelength solar observations at RATAN-600 (about 300-320 days per year) are doing usually in meridian time (near 09:00 UT) with one-dimensional diagram and covered now the range from 1.67 cm to 32 cm at about 40 frequency channels. The problem existed was the difficulty of data treatment using widespread software like IDL and other programm with FITs format working. Now we present the new version of data presentation which is free from this defect. We expected also that the multiwave RATAN-600 data may get more popular for solar community if new additional observational possibility will take into account, like the frequent azimuthal observations during four hours interval (from 07:00 UT to 11:00 UT, each 3 minutes) for special program. The new version of the data is presented on the Internet site: http://www.sao.ru/~sun/SUN_DATA/pic3dm.htm

In the Fig.1 an example of daily simulations of magnetic field based on spectral-polarization observations is presented. The magnetic field in each active region is determined on the base of cyclotron emission of third harmonic of gyrofrequency in the transition region between chromoshere and corona (see Akhmedov et al., 1980). The scan at wavelength 7.03 cm was made with the vertical size of the diagram about 0.9 of solar disk size. The horisontal diagramm pattern one can estimate using simple relation $\theta_H = 225$ arcsec/GHz. In the Fig.1 the solar scheme and radio scan in I and V are combined.

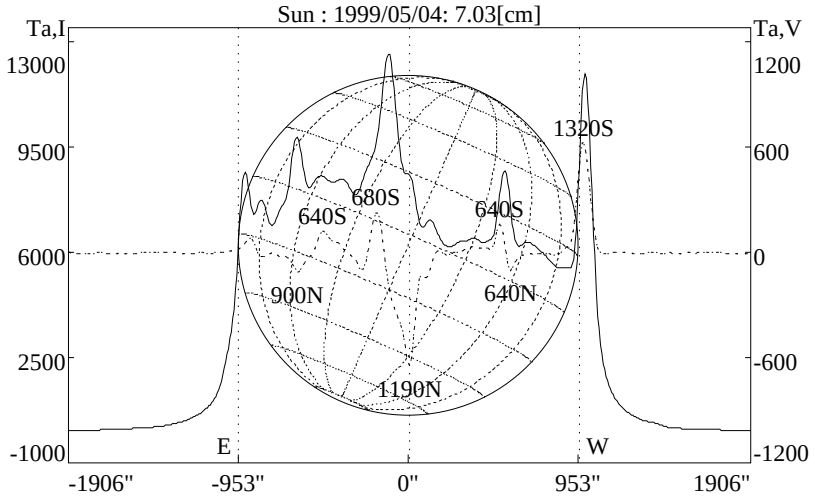

Figure 1: The example of magnetic field calculations for May 4, 1999 along the solar disk on the level of transition region chromosphere-corona using spectral-polarization data at RATAN-600. The wavelength is 7.03 cm. Solid line is intensity (R+L), dashed line is polarization (L−R)

In the Fig.2 an example of multi wavelength scan for circular polarization V in the range 1.7 cm to 32 cm is shown. Actually this figure presents the magnetic field distribution along the hight of the corona.

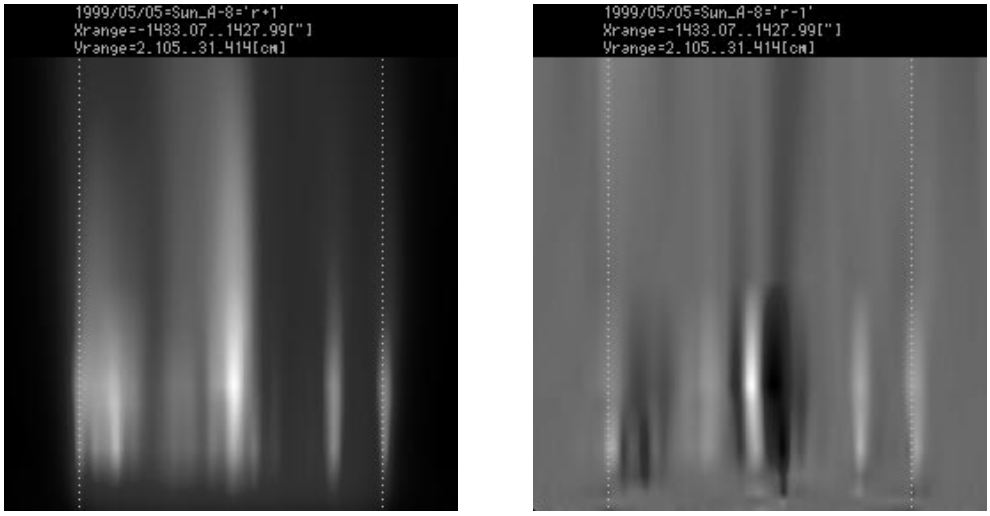

Figure 2: The example of new presentation of RATAN-600 data. On the right is the intensity in antenna temperatures, on the left is the same for circular polarization on May 5, 1999.

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References

Akhmedov Sh.B., Bogod V.M., Gelfreikh G.B., Korzhavin A.N. 1982, Solar Phys., 79, 41