Status of time distance and farside programs

The time-distance pipeline (C-code) computes the average travel time and travel-time differences for a given region of the disk using individual daily images. The solar disk is divided into sections and the average travel-time differences for these sections are determined. About 15 hours of CPU time is required to get travel-time differences for an area of lat [-48 to 48] and long [-60 to 60] for a single depth. Included below are examples of cross-correlation functions of MDI and GONG, and travel-time differences for 8 hours of GONG+ data. Without phase-speed filtering we can see correlations as low as 1.3 for GONG and 0.9 degree for MDI data.

T. Duvall's software (IRAF/ (dif_io, dif_sn, dif_ew) for obtaining travel-time differences runs under the new development version of IRAF, however, we have not successfully implemented the code. The program uses data-cubes in (x,y) coordinates, provides deep focusing as well, and produces average travel-time maps for small areas.

P. Rajaguru’s code (Fortran) computes travel times for a small areas (less than full disk data cubes). The code has been successfully implemented on the gongxx system.

D. Braun, C. Lindsey, and A. Malanushenko’s farside and front-side holography code (C-code) to construct daily far-side images of the sun. Uses rebinned, low-resolution 200x200 images.