

## SOHO/MDI solar oscillations

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### ABSTRACT

The dataset consists of a cube of raw velocity data from the Michelson Doppler Imager (MDI) instrument aboard the SOHO satellite. The data have been transformed to Cartesian coordinates by projecting high-resolution data from an area approximately  $18^\circ$  square onto a tangent plane. The object in the center of the time-slice (top of cube) is a sun-spot. The sampling spacing is 1 minute on the time-axis and approximately 825 km on the two spatial axes.

### SOHO/MDI SOLAR OSCILLATIONS

**Raw Data** /net/kana/data/fun/solar/solar.HH

**Velocity Model** /net/kana/data/fun/solar/solarvel.HH

**Usage** Passive seismology (Rickett and Claerbout, 1999); Unsolved challenge: can you image the sides/bottom of the sunspot?? Try cross-correlation plus turning ray-migration.

**Geometry**

```
114 skye% In solar.HH
solar.HH:
in="stdin"
expands to in="stdin"
esize=4
n1=256 n2=256 n3=512 n4=1      33554432 elem   134217728 bytes
d1=0.8248 d2=0.8248 d3=0.06 d4=1
o1=0 o2=0 o3=0 o4=0
label1=distance (Mm)
label2=distance (Mm)
label3=time (ks)
```

**Problem**

**History of Data** Given to us by Tom Duvall and Sasha Kosovichev in the solar physics department at Stanford.

**Preprocessing** Projection to tangent plane

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**Proprietary Considerations** None, but for courtesy acknowledge the Solar Oscillations Investigation team (<http://soi.stanford.edu>) and/or reference Scherrer et al. (1995).

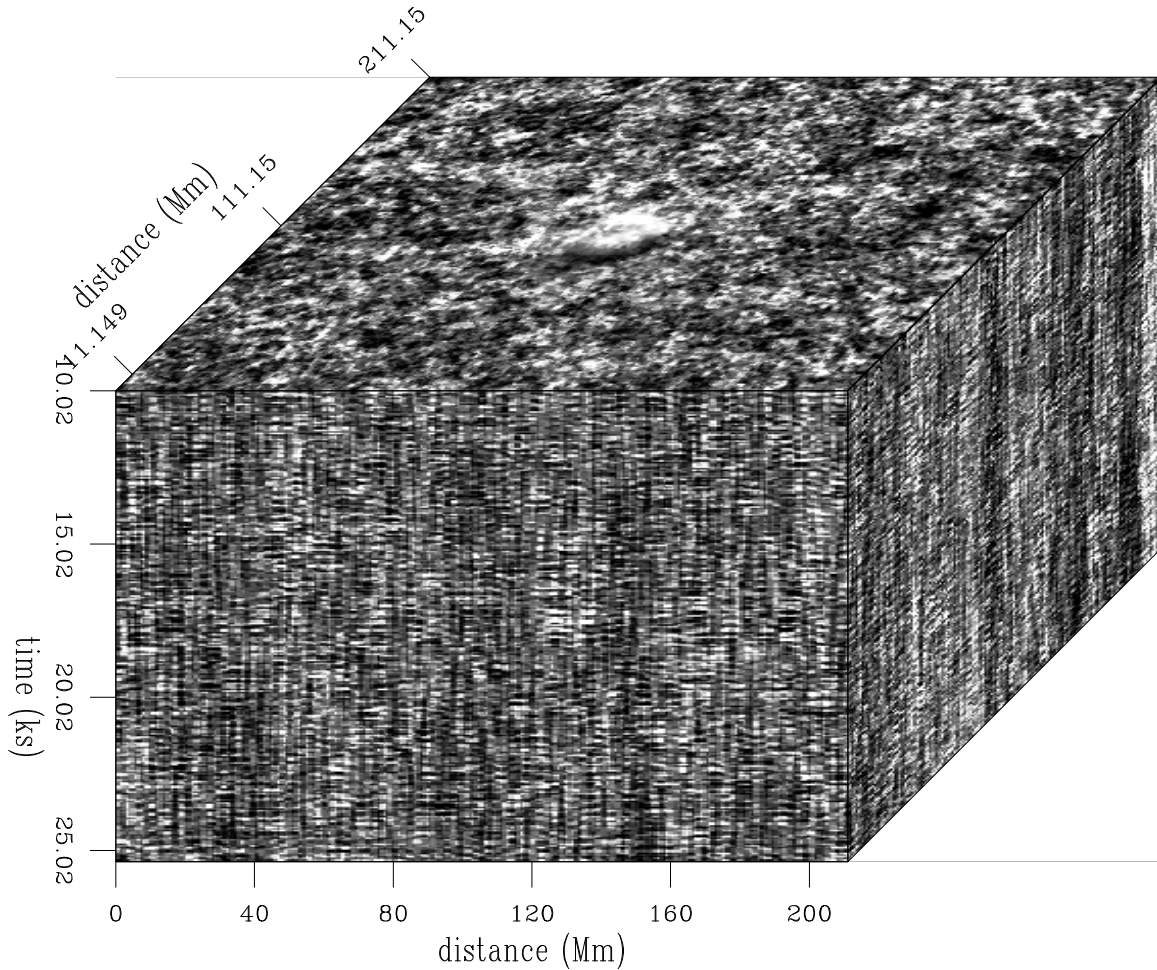


Figure 1: Oscillation data `solar-shortcube` [ER]

## REFERENCES

- Rickett, J., and Claerbout, J., 1999, Acoustic daylight imaging via spectral factorization: Helioseismology and reservoir monitoring: *SEP-100*, 171–180.
- Scherrer, P. H., Bogart, R. S., Bush, R. I., Hoeksema, J. T., Kosovichev, A. G., Schou, J., Rosenberg, W., Springer, L., Tarbell, T. D., Title, A., Wolfson, C. J., Zayer, I., and the MDI Engineering Team, 1995, The Solar Oscillations Investigation - Michelson Doppler Imager: *Solar Physics*, **162**, no. 1/2, 129–188.

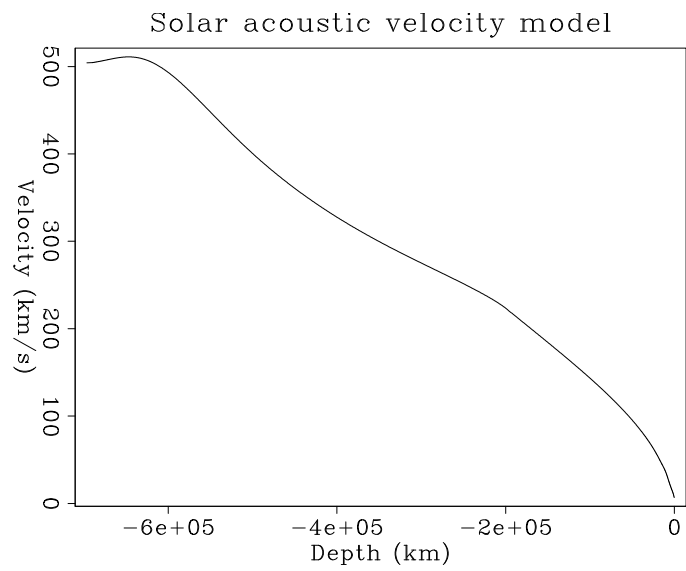


Figure 2: Velocity model (note: better check units). `solar-solarvel` [ER]

