Explanatory Supplement to the 9P/Tempel 1 IRAS Sky Survey Atlas (ISSA), Reject Images for Trail Analysis

Data Delivered to University of Maryland

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The Tempel 1 Debris Trail

The largest grains ejected from Tempel 1 may be expected to lie in the debris trail. R. Walker scanned the IRAS Sky Survey Atlas (ISSA) and identified 56 ISSA images that show a comet trail, several quite well. All of the images are from the ISSA Reject files because they were "messed-up" with comet trails. These images were made from survey scans binned into 4 x 4 arc minute pixels. The resolution is poor. It is not obvious how much structure information can be gotten from them. The ISSA plates are:

Plate Number	HCONS
147	1,2
148	1,2
149	1,2
182	1,2
183	1,2
216	1
217	1,2
218	2

The plates cover 12.5 degrees by 12.5 degrees with 1.5 arcminute pixels (500 by 500 pixels). The files reside in /data/trail/ and are named InnnBnHn.FIT where the I is for ISSA, nnn is the plate number, B1, B2, B3, and B4 are the four IRAS bands at 12, 25, 60, and 100um respectively, and H1 = HCON1, H2 = HCON2, and H3 =HCON3. The units of sky surface brightness are mega Janskys per steradian. No color corrections have been applied. The images were not processed by R. Walker's trail analysis program.

The trail is usually visible at 12 and 25um, usually at 60um and seldom at 100um. Included are all the ISSA images (bands) for a given field and HCON that the trail was visible in at least one band. The ISSA images are also available on CD ROM from IPAC. For the complete sky one needs both Volume 1 and Volume 2 and possibly the CD ROM mailer issued in 1991.

Another approach to examine the trail might be using the high-resolution Zodiacal History File. This file is binned into 30 arcminutes cross-scan by 1 arcminute in-scan pixels. Since the trails are almost parallel to the cross-scan direction one should be able to extract sub-arcminute data on the trail profiles.

References

Beichman, et al, 1988, 'IRAS Catalogs, Vol 1. Explanatory Supplement'