ISSA Processing Notes

Calibration

ISSA is calibrated on the so-called IRAS "DC" scale, as were most of the IRAS image products prior to March 31, 1993.

The IRAS detectors exhibited dwell-time dependent responsivity changes, especially at 12 μm. This means that calibration for point sources is different than the calibration for extended sources, which the detectors 'see' for a longer period of time as they pass over at the IRAS scan rate of 3.85 arcminutes per second. This calibration difference, known as the "AC/DC effect", is discussed online briefly along with other characteristics of the IRAS data. It is discussed more fully in the *IRAS Catalogs and Atlases: Explanatory Supplement* (1988, ed. C.A. Beichman, G. Neugebauer, H.J. Habing, P.E. Clegg and T.J. Chester, Washington, DC: GPO) at some length. The "DC" scale gives correct integrated fluxes for structure on scales larger than 30', while the "AC" scale gives flux densities consistent with the Point Source Catalog (PSC) for point sources.

Cautionary Notes

Absolute Radiometry

The ISSA images are designed to give **relative** photometry for extra-solar objects and **should not be used for determining the absolute surface brightness of the sky**. For one thing, an imperfect model of the zodiacal background has been subtracted from the images. Furthermore, there is an ongoing effort with Cosmic Background Explorer (COBE) scientists to understand calibration differences between IRAS and the Diffuse Infrared Background Experiment (DIRBE) instrument aboard COBE. IPAC newsletters and the final version of the *ISSA Explanatory Supplement* contain the results of this work. It should be noted that this large scale calibration discrepancy does **NOT** affect the IRAS point source calibration.

Source Confirmation

Non-confirming objects (objects which appear in only one IRAS Hours-Confirming Coverage [HCON]), as identified by visual inspection, were removed from the coadded images. Some non-confirming objects undoubtedly remain in the final product. The individual HCON images may be examined to verify reproducibility of features in the coadded fields.

Solar System Contamination

Although a zodiacal emission model has been subtracted from the ISSA images, emission from solar system material remains in the data and may be a source of confusion. The residual solar system contamination includes asteroids, the zodiacal dust bands, comet tails and comet trails. Known asteroids, as of the 1986 version of the IRAS Asteroid and Comet Survey, were removed prior to coaddition.

The zodiacal bands appear as non-confirming extended emission bands in fields at low (< 10 degrees) ecliptic latitudes. Comet *tails* are visible in some fields (notably comet IRAS-Araki-Alcock in fields 416 and 418). Comet *trails* (as opposed to comet tails) are spread out along the orbit of the comet and accumulate over time. In the ISSA images they appear as streaks crossing the image nearly perpendicular to the scan direction.

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