Astronomical Data Analysis Software and Systems IX
ASP Conference Series, Vol. 216, 2000
N. Manset, C. Veillet, and D. Crabtree, eds.

CIA V4.0 — News about Data Analysis with the ISOCAM Interactive Analysis System

S. Ott

ISO Data Centre, Astrophysics Division, Space Science Dept. of ESA, Villafranca, P.O. Box 50727, 28080 Madrid, Spain

R. Gastaud

DAPNIA/SEI-SAP, CEA/Saclay, F-91291 Gif sur Yvette Cedex, France

B. Ali[3], M. Delaney[1,4], S. Guest[1,5], A. Abergel[6], B. Altieri[1], J.-L. Auguéres[2], H. Aussel[2], J-P. Bernard[6], A. Biviano[1,7], J. Blommaert[1], O. Boulade[2], F. Boulanger[6], C. Cesarsky[2,8], D. Cesarsky[6,9], P. Chanial[6], V. Charmandaris[6], R-R. Chary[10], A. Claret[2], A. Coulais[6], C. Delattre[2], F-X. Désert[6], T. Deschamps[2], P. Didelon[2], D. Elbaz[2], Y. Fuchs[2], P. Gallais[2], K. Ganga[3], G. Helou[3], M. Kong[3], F. Lacombe[11], D. Landriu[2], O. Laurent[2], P. Le Coupanec[11], J. Li[3], L. Metcalfe[1], M-A. Miville-Deschenes[6], K. Okumura[1,6], M. Perault[6], S. Peschke[1], A. Pollock[1], P. Roman[1], D. Rouan[11], M. Rupen[12], J. Sam Lone[2], M. Sauvage[2], R. Siebenmorgen[1], J-L. Starck[2], D. Tran[2,9], R. Tuffs[13], D. Van Buren[3], L. Vigroux[2], F. Vivares[6], H. Wozniak[14]

---

[1]ISO Data Centre, Astrophysics Division of ESA, Villafranca del Castillo, Spain

[2]CEA, Saclay, Gif-sur-Yvette, France

[3]Infrared Processing and Analysis Center, JPL and Caltech, Pasadena, USA

[4]Stockholm Observatory, Salsjöbaden, Sweden

[5]Rutherford Appleton Laboratory, Chilton, Didcot, Oxon, England

[6]Institut d'Astrophysique Spatiale, Orsay, France

[7]Osservatorio Astonomico di Trieste, Trieste, Italy

[8]European Southern Observatory, Garching, Germany

[9]Max-Planck-Institut für extraterrestische Physik, Garching, Germany

[10]University of California, Los Angeles, USA

[11]DESPA, Observatoire de Paris, Meudon, France

[12]National Radio Astronomy Observatory, Socorro, USA

[13]Max-Planck-Institut für Kernphysik, Heidelberg, Germany

[14]Observatoire de Marseille, Marseille, France

Abstract. The ISOCAM Interactive Analysis System (CIA) (Ott et al. 1997; Delany et al. 1998) is used to calibrate and to perform the astronomical data processing of data from ISOCAM, (Cesarsky et al. 1996) the infrared camera of the Infrared Space Observatory (ISO) (Kessler et al. 1996).

CIA is generally available to the astronomical community and runs, using IDL 5, under DEC VMS Alpha, Solaris, DEC Unix, Debian (PC) Linux and HP/UX. More details, including how to obtain CIA, can be found at `http://www.iso.vilspa.esa.es/archive/software`.

We present the latest algorithmic and system improvements for the upcoming version of CIA, version 4.0, which will be released at the beginning of 2000.

1. Introduction

Starting mid 1994, the ISOCAM Interactive Analysis System (CIA)[14] was developed to support the calibration and operation of ISOCAM, the infrared camera on board of ESA's Infrared Space Observatory (ISO)[15].

The system is mainly IDL based. CPU intensive tasks are coded in C++ and FORTRAN.

As planned, the main effort is now spent to improve its functionalities to process astronomical data from ISOCAM without compromising its ability to continue dedicated calibration analysis. CIA is used within the ESA ISO Data Centre, by the ISOCAM consortium and currently by 60 external institutes.

2. Algorithmic Improvements for CIA V4.0

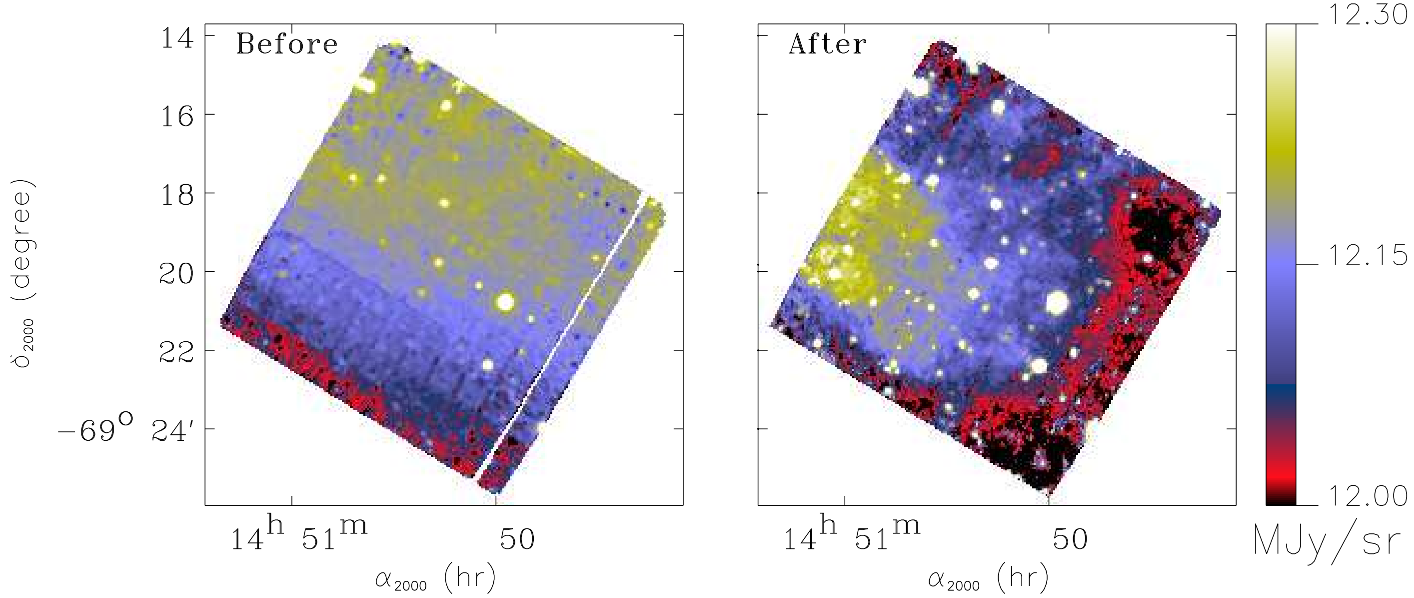
The latest algorithmic improvements for ISOCAM were added, namely:

- New Fouks-Schubert responsive transient correction (leading to better results, and to a reduction in processing time up to a factor of 20),
- Improved dark current correction (dark uncertainty reduced by 30%),
- Access to long-term transient and variable flat-field algorithms (Miville-Deschenes et al. 1999),
- Handling of polarisation observations,
- Inclusion of algorithms to perform color correction,
- Improved mosaic generation,
- Inclusion of algorithms to treat faint sources for circular variable filter (CVF) observations,
- Inclusion of algorithms to project the flux of sky-pixels back into the detector pixels.

[14] CIA is a joint development by the ESA Astrophysics Division and the ISOCAM Consortium. The ISOCAM Consortium is led by the ISOCAM PI, C. Cesarsky, Direction des Sciences de la Matiere, C.E.A., France.

[15] ISO is an ESA project with instruments funded by ESA member states (especially the PI countries: France, Germany, the Netherlands and the United Kingdom) and with the participation of ISAS and NASA.

Correction of the long-term transient and variable flat-field with the SLICE package

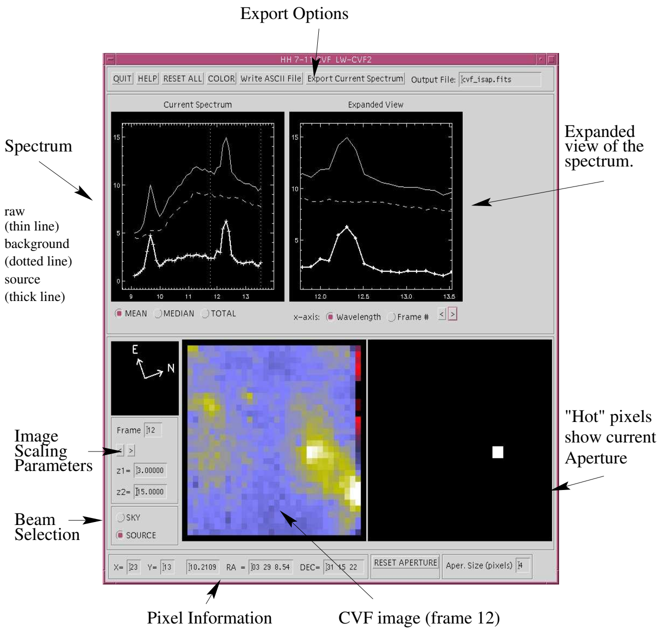


Credits: "Achieving the nominal ISOCAM sensitivity for imaging of extended emission"
Miville-Deschenes, M.-A., Boulanger, F,. Abergel, A. and Bernard, J.P., to be published in A& A supp.

3. System Improvements for CIA V4.0

Major system improvements (apart from bug-fixes) are:

- CIA V4.0 is Y2K compliant,
- An interface to the spectral analysis package ISAP was added,
- The functionality to display all ISOCAM pixels observing the same sky-position in a raster was improved,
- The user is now warned of saturation events,
- No-blocking widgets were introduced.



The XCVF graphical interface for exporting CVF Spectrum to ISAP (spectral analysis package for ISO).
The GUI allows users to define separate apertures for the sky and source beam.

References

Cesarsky, C., et al. 1996, A&A, Vol. 315, L32

Delaney, M. ed., ISOCAM Interactive Analysis User's Manual, Version 3.0, ESA Document, Reference Number SAI/96-5226/Dc

Kessler, M., Steinz, J. A. et al. 1996, A&A, Vol. 315, L27

Miville-Deschenes, M.-A., et al. 1999, Achieving the nominal ISOCAM sensitivity for imaging of extended emission, A&AS, in press

Ott, S., et al. 1997, Design and Implementation of CIA, the ISOCAM Interactive Analysis System, in ASP Conf. Ser., Vol. 125, Astronomical Data Analysis Software and Systems VI, ed. G. Hunt & H. E. Payne (San Francisco: ASP)