

Proposal ID: 75_0015
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Dear Dr. Young,

The attached file Cycle3_GR_DTT_75_0015_EYoung.class contains the processing steps to create the level 3b data products (.great, .lmv files). The large number of spectra created during these fast on-the-fly observations made a pipelined semi-automated data processing mandatory:

- The sub-array (LFA-V) committed for operation during Cycle 3 was operating in the V-polarization with all 7 pixels. The commissioning of the LFA-H (recording the H-polarization) was in progress during the observations of your project, and 5 (out of 7) pixels are included in this release.
- Removal of baselines. We characterized the baseline quality by comparison of the actual noise (rms) of a given spectrum with the calculated radiometric noise: a 1st order spectral baseline is removed if the rms of a spectrum is lower than 1.5x the radiometer noise, a 3rd order otherwise. If the rms of the individual spectrum was higher than 3x the radiometer noise, the data was ignored.
- Calibration to T_{mb} scale was established by observations of Jupiter (details will be published), main beam coupling efficiencies for the individual pixels are:
LFA-V: η_{mb} (pixel V0)=0.7; η_{mb} (V1)=0.73, η_{mb} (V2)=0.71; η_{mb} (V3)=0.69;
 η_{mb} (V4)=0.63; η_{mb} (V5)=0.65; η_{mb} (V6)=0.7;
LFA-H: η_{mb} (H0)=0.67; η_{mb} (H2)=0.61, η_{mb} (H4)=0.66; η_{mb} (H5)=0.67; η_{mb} (H6)=0.68.
pixel H1 and H3 are flagged and are not included.
- Interference spikes (mostly EMC pick-up, radar etc) are flagged.
- The spectral resolution was re-binned to 0.193 km/s.
- The final [CII] data cube has been created by weighted gridding ($1/\sigma_{rms}^2$ weighting of individual spectra, where σ_{rms} is the baseline noise). The nominal half-power beam width of 15.1" is used.
- Finally from the "lmv" data cube we create a "fits" file, using the resp. command line of the CLASS package (see the script). Finally an outer rim of 45" has been removed, that - covered by a subset of pixels only - reveals higher noise.

We recommend the use of a recent version of the CLASS software which is part of the GILDAS software package (see <http://www.iram.fr/IRAMFR/GILDAS/>).

If you have any questions please do not hesitate to contact me.

Best regards,

Denise Riquelme

GREAT liaison