

BDSM, Associations, GSM

- Source extraction (BDSM)
- Associating source lists (noise) &
- Optimised Radio Global Sky Model (or_gsm)
 - R. Niruj Mohan (Leiden)

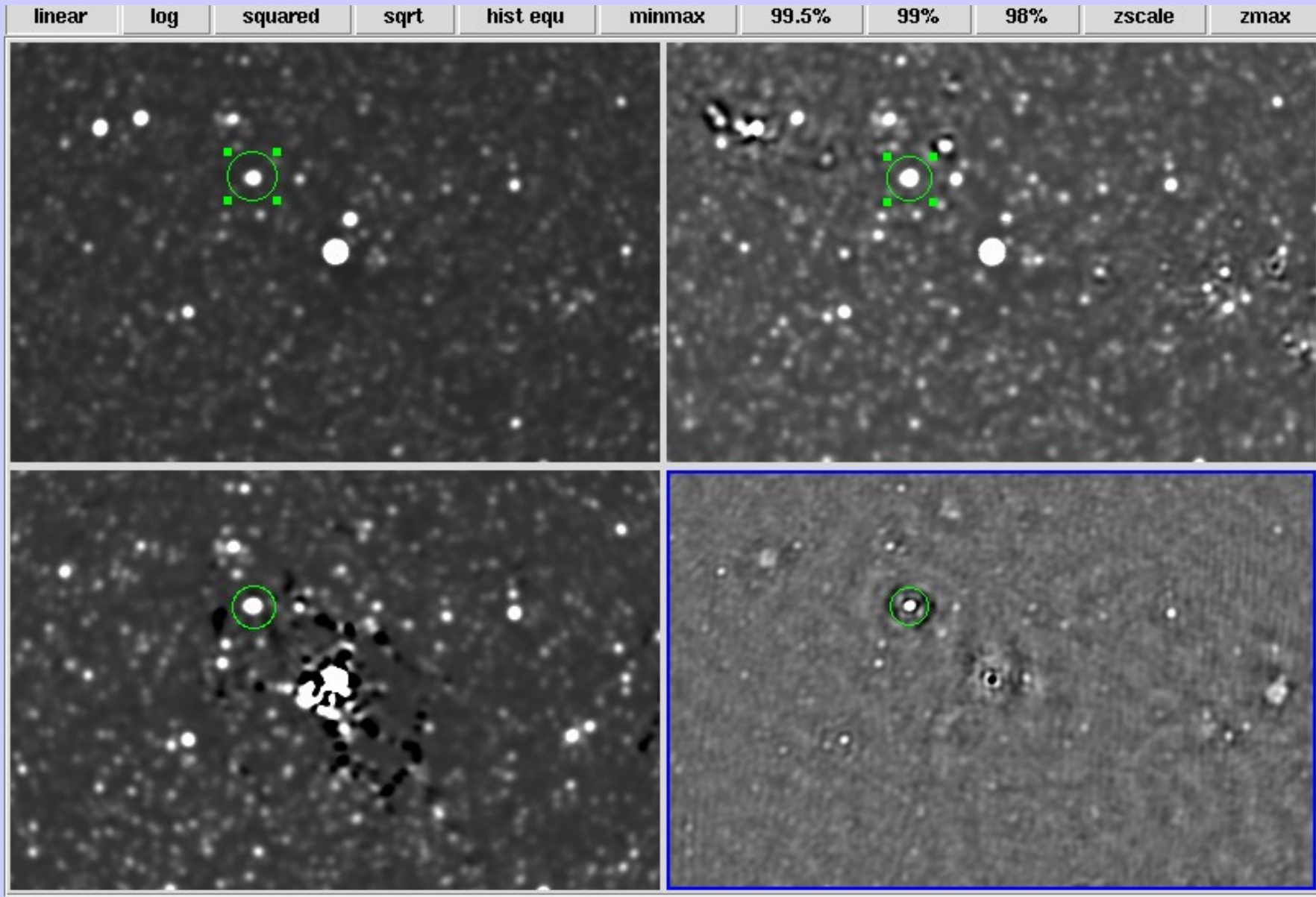
Associating source lists

- Create gaussian lists from a FITS image using BDSM.
- Can also read in external catalogues (in AIPS star format) like 4C, 8C and convert to 'noise' readable format.
- Can overplot various gaussian lists on an image.
- Associate any pair of list of gaussians in 'noise' (associate multiply as well).
- Plot parameters in one list against those in the other for all associated sources, do simple stats.
- Overplot associated sources on image, plot position offsets and flux ratios.

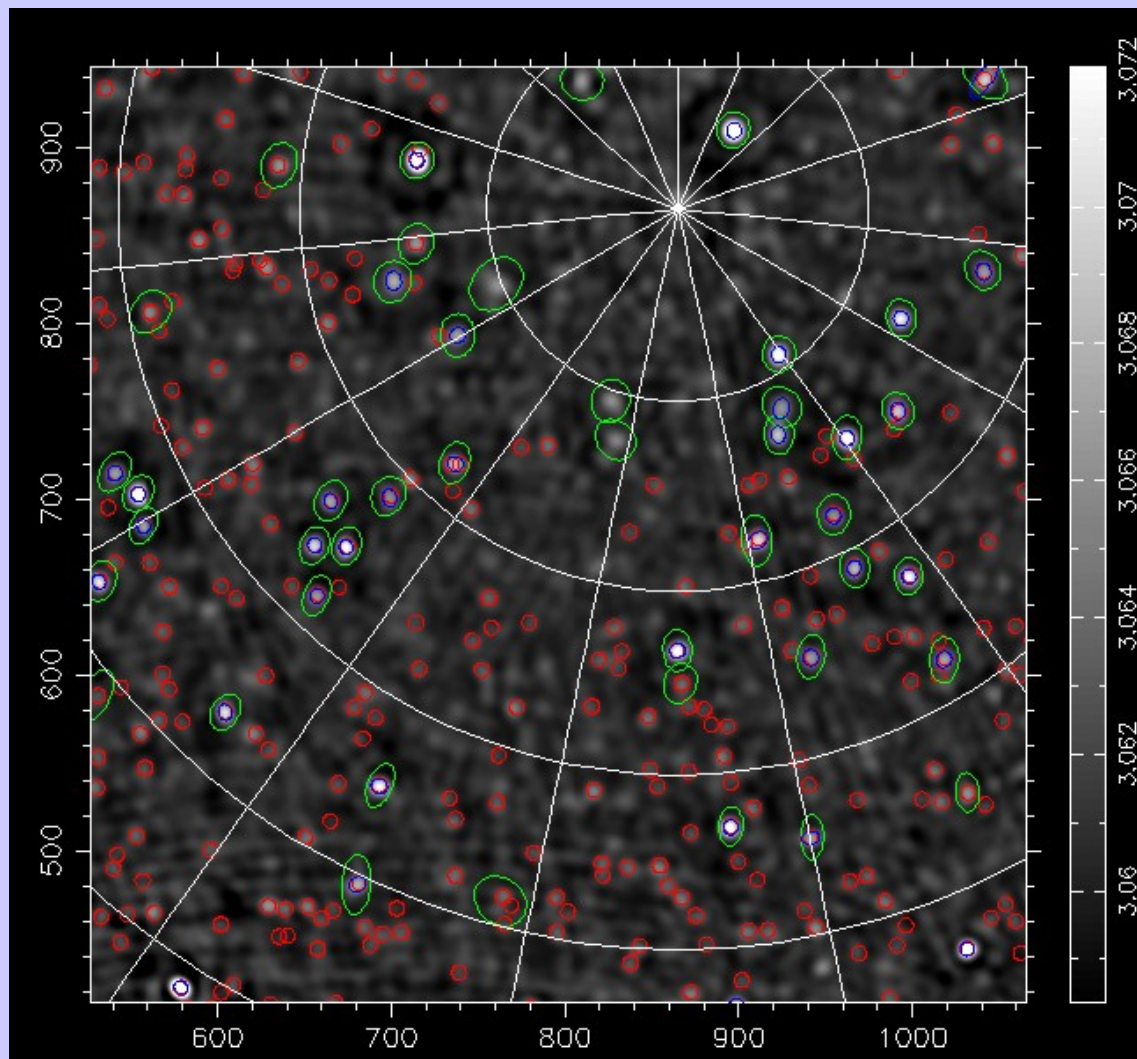
Astrometry and Photometry checks

- Run BDSM on 3463, 3464, 3565, & combined (MeqTree and BBS).
- Associate in 'noise' with 8C (38 MHz), 4C (178 MHz) catalogues.
- Also have NVSS (1.4 GHz), WENSS (327 MHz) and VLSS (75 MHz) images convolved to CS1 res. and geom. (by Reinout van Weeren).
- Associate with each other as well.
- Compare position offsets and fluxes.

NVSS – WENSS – VLSS - CS1 (the same universe)



Overplotting external catalogues on an image



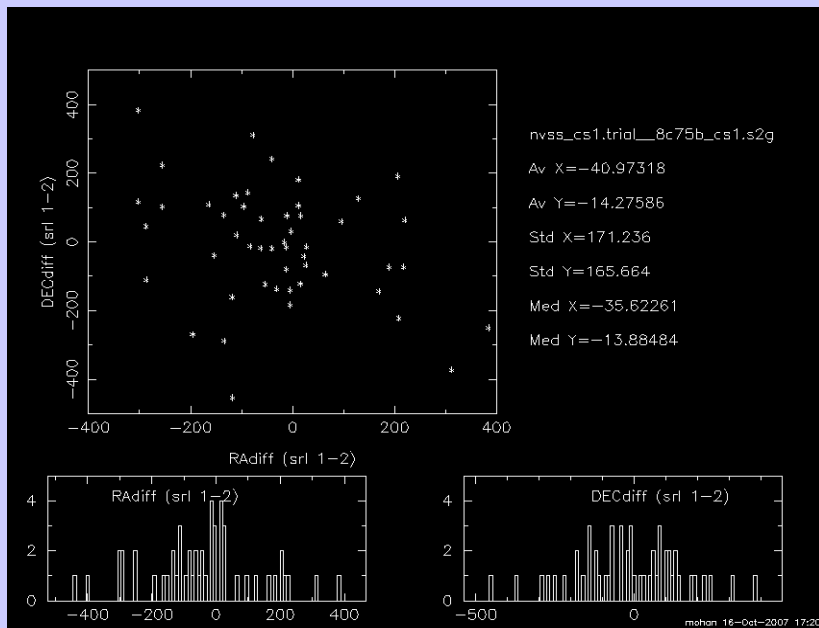
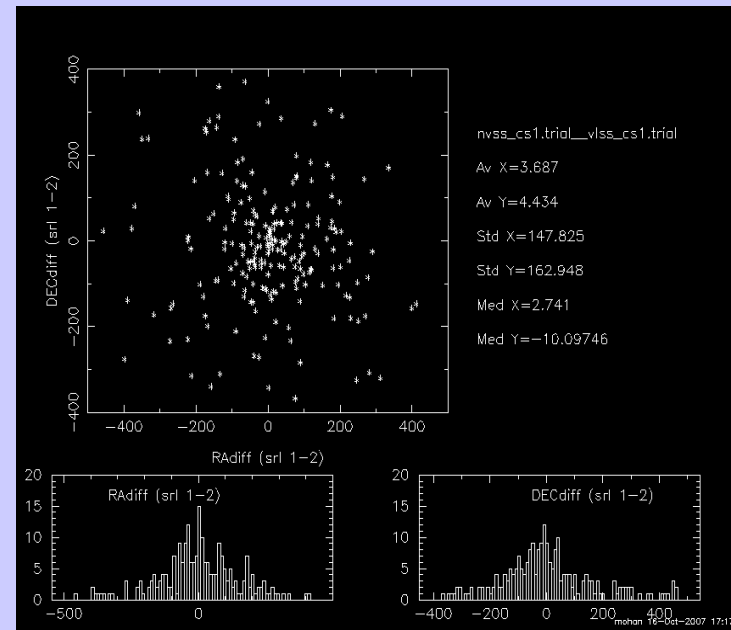
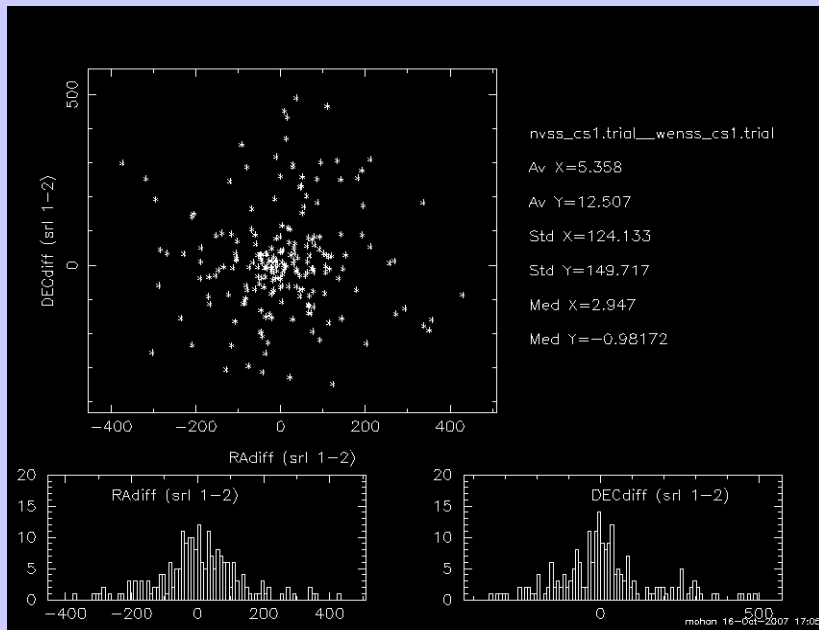
3463+3464+3565 image

Red - 4C

Green - 8C

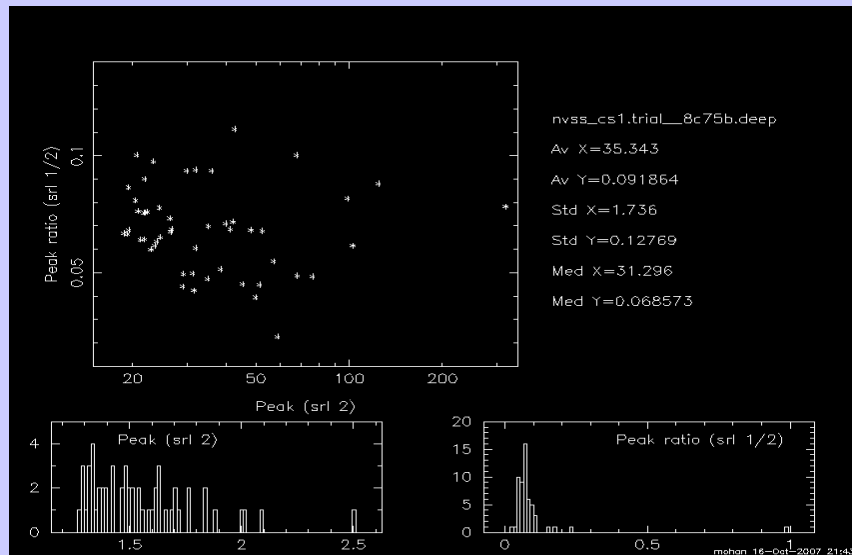
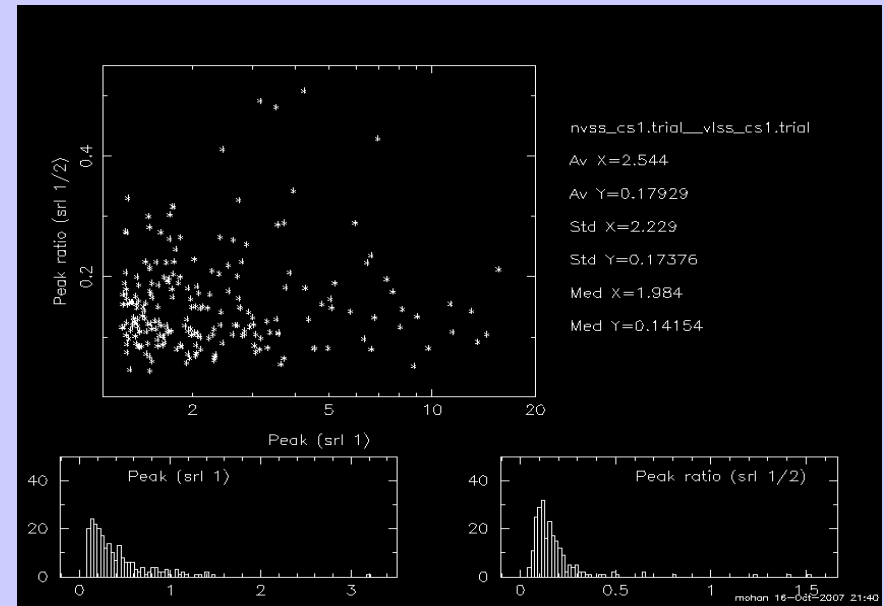
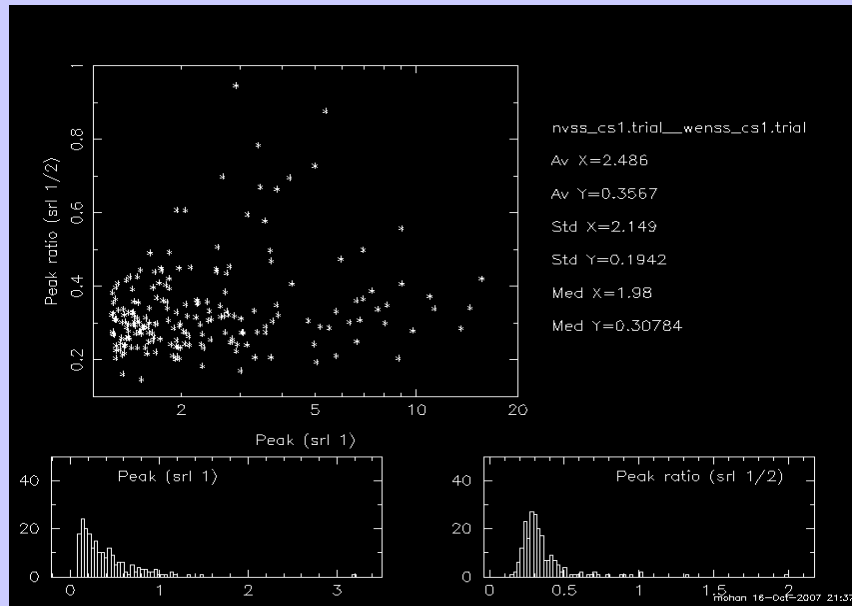
Blue - BDSM on image

NVSS vs WENSS, VLSS, 8C



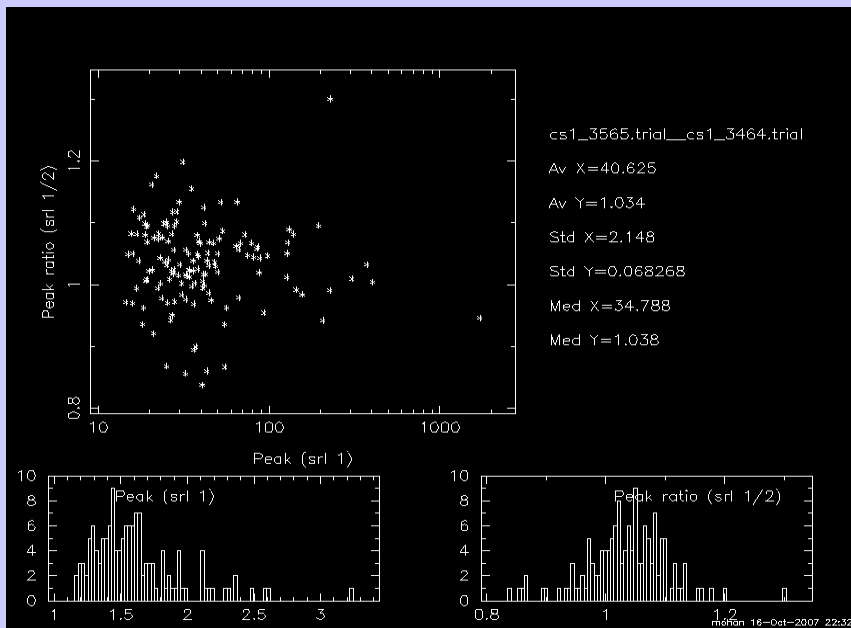
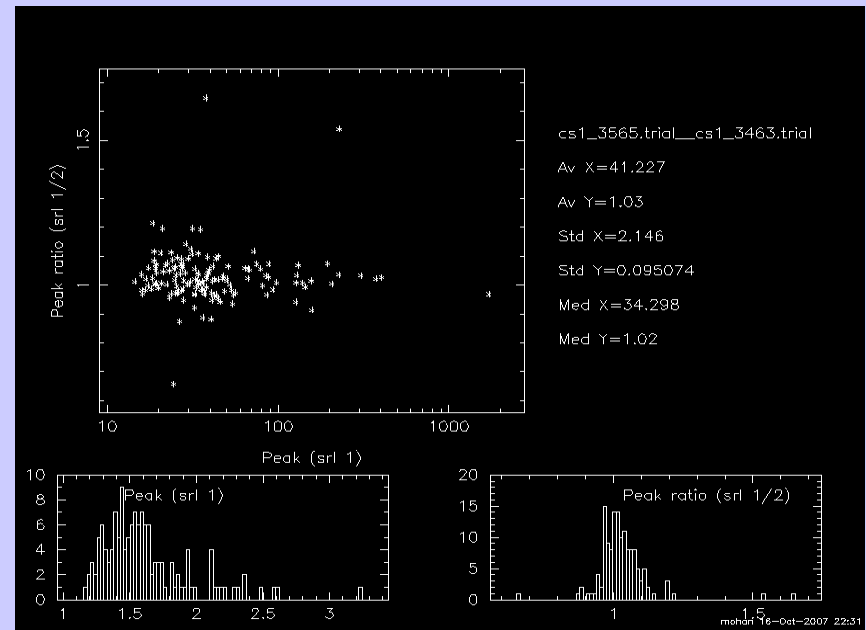
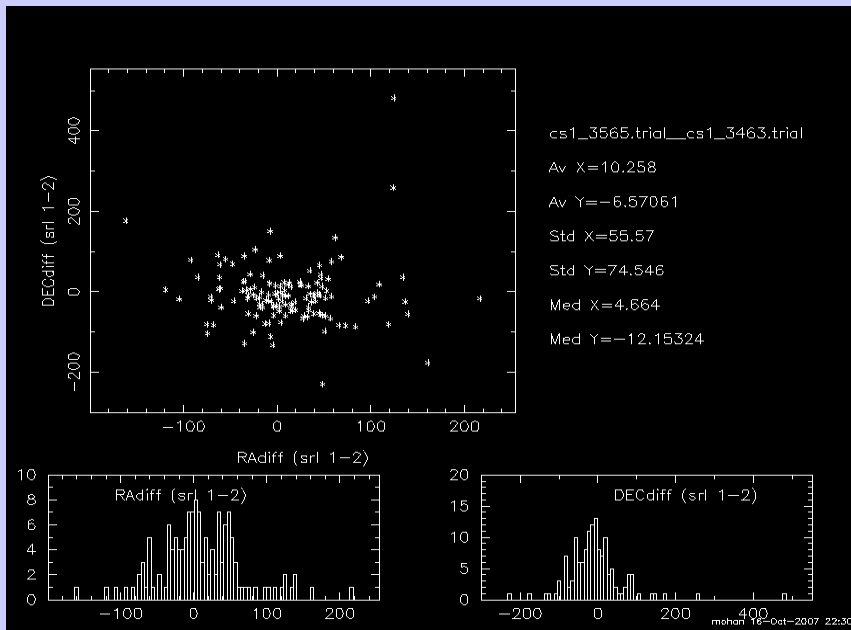
RA diff versus Dec diff for NVSS associated with WENSS, VLSS, 8C, all convolved to 2600" resolution and resampled.

NVSS vs WENSS, VLSS, 8C



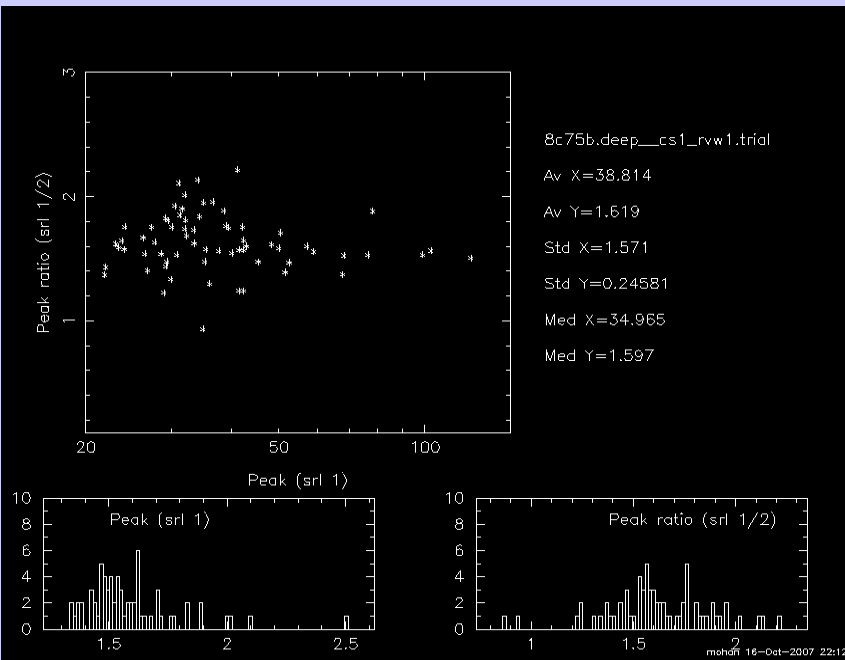
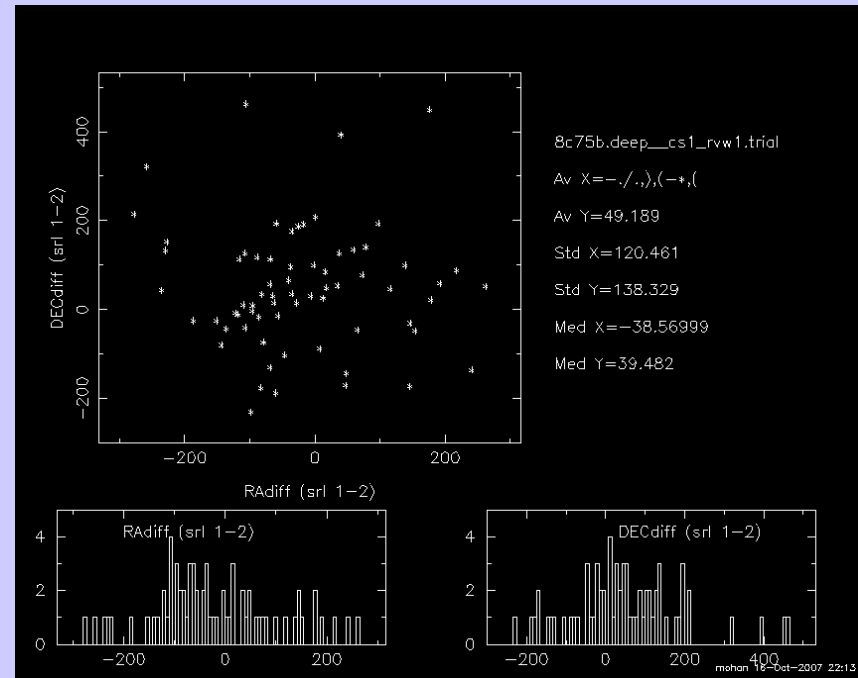
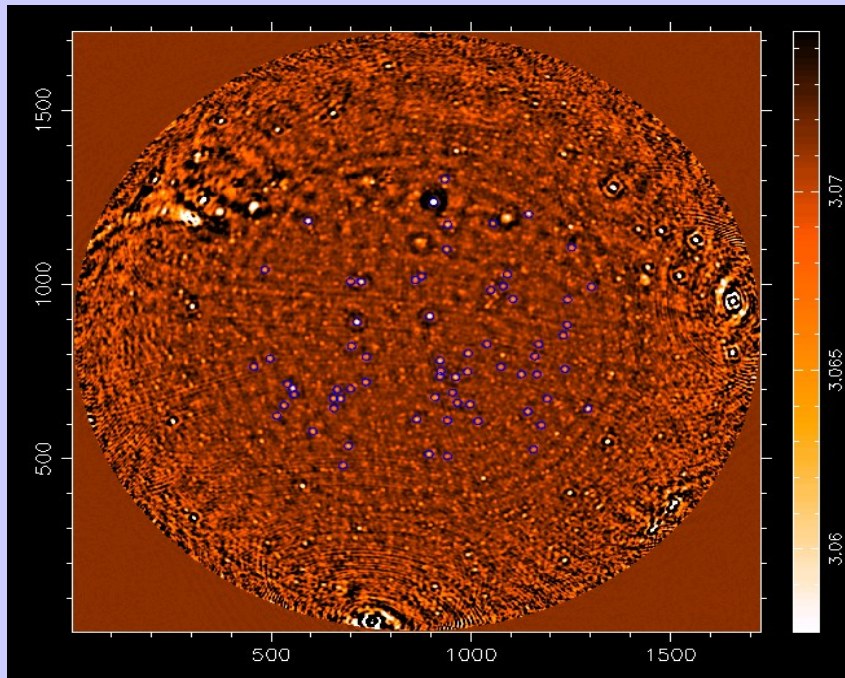
NVSS flux versus (WENSS, VLSS and 8C) flux/NVSSflux for NVSS associated with WENSS, VLSS, 8C. Median ratio implies sp.index of -0.81, -0.67, -0.75 resp.

3565 vs 3463 vs 3464



Profound statistical estimates should go in this space ...

3463+3464+3565 vs 8C



Expected flux ratio ~ 1.23 (50 MHz, -0.75)

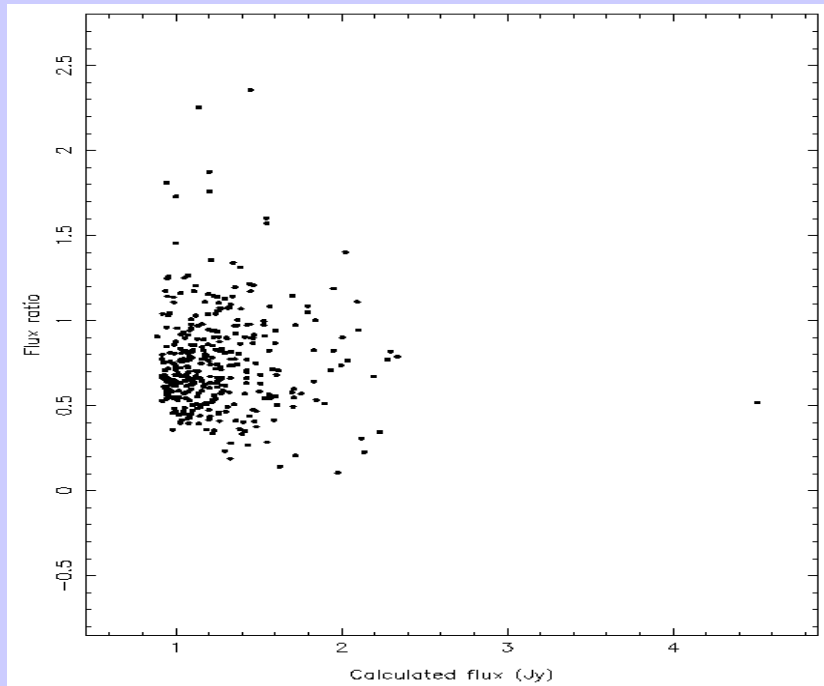
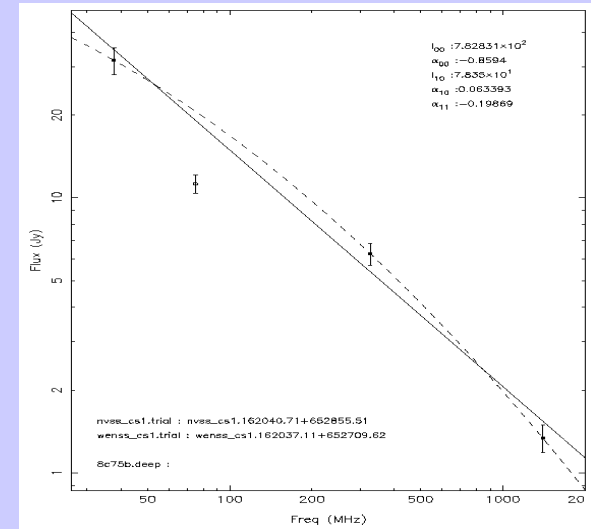
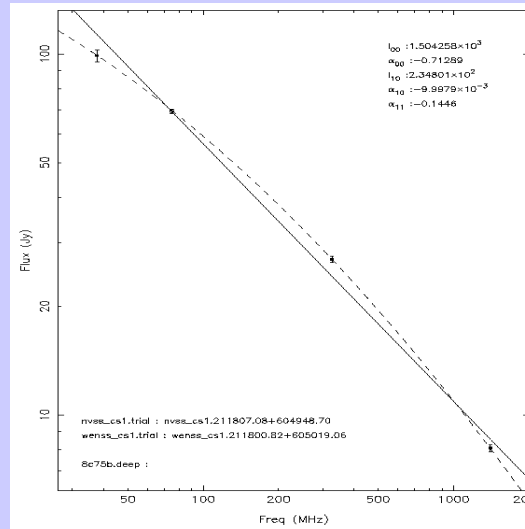
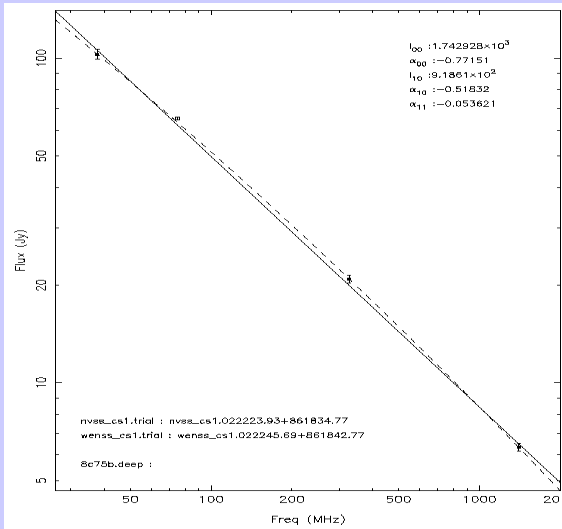
Constructing a GSM

- Select a number of gaussian lists (made by BDSM or imported from external catalogues)
- Select which ones to fit and which to predict for.
- Associates every pair of catalogues (to id bad ones).
- Associates all the catalogues together. Fits linear and curvature parts of spectrum of each association.
- Plots spectra of each association.
- Writes out the GSM table and also predicted flux for each.
- Plots observed/predicted flux for each catalogue vs RA, Dec, flux, distance from Cas A etc.
- Coming soon – image of observed/calculated flux !

Optimised Radio Global Sky Model

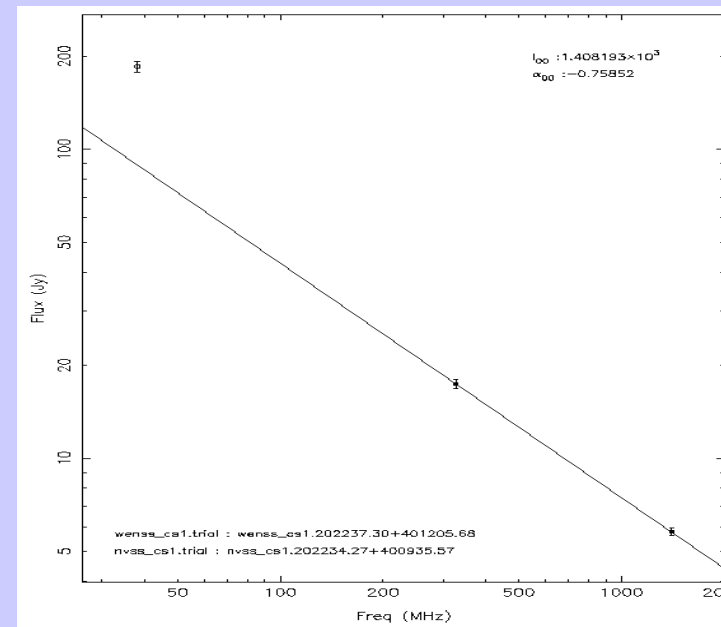
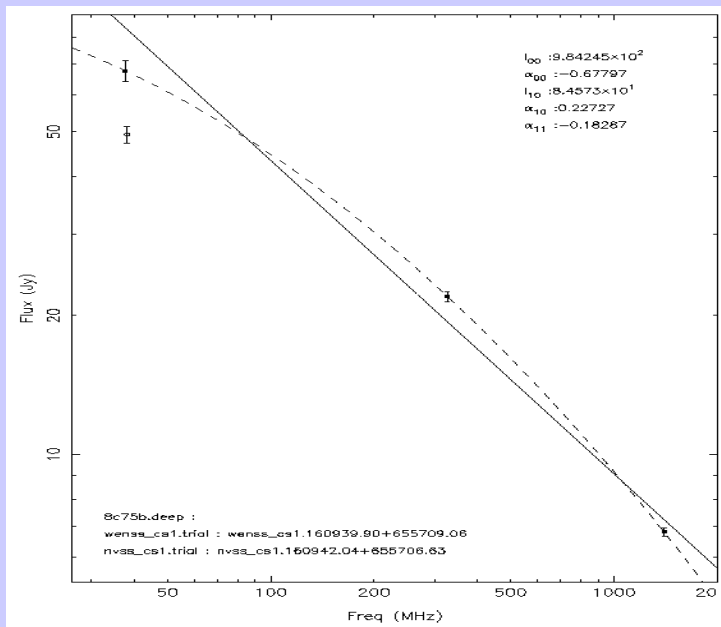
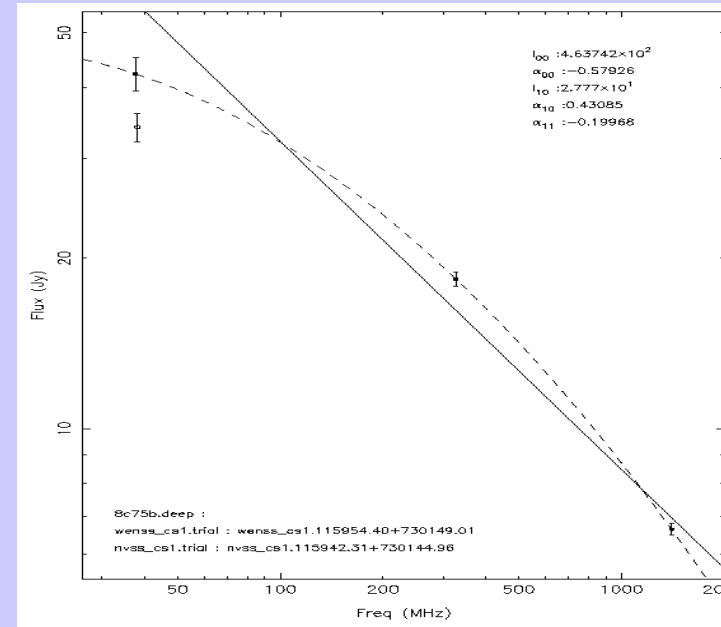
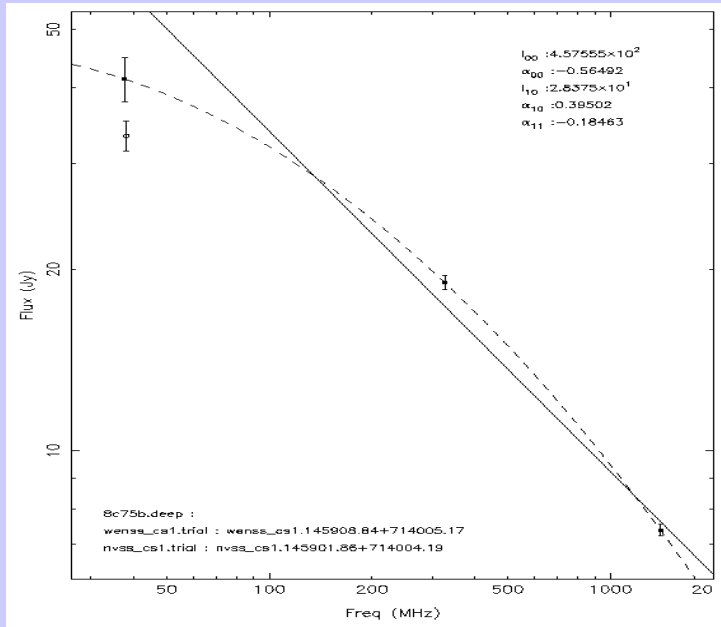
- Use 8C, VLSS, WENSS, NVSS to make initial model.
- Add 3463+3464+3565 MeqTree catalogue to this.
- Look at 36 sub-bands of 3565 data alone.

GSM : NVSS, WENSS, VLSS, 8C

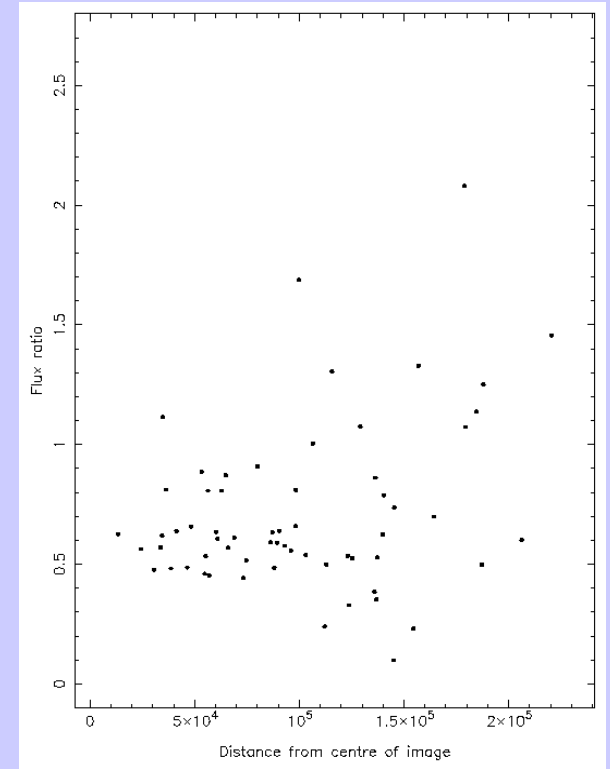
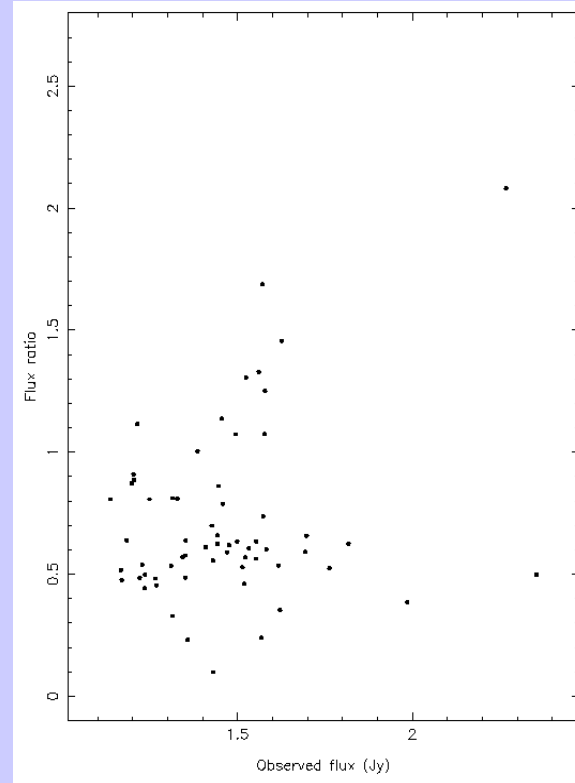
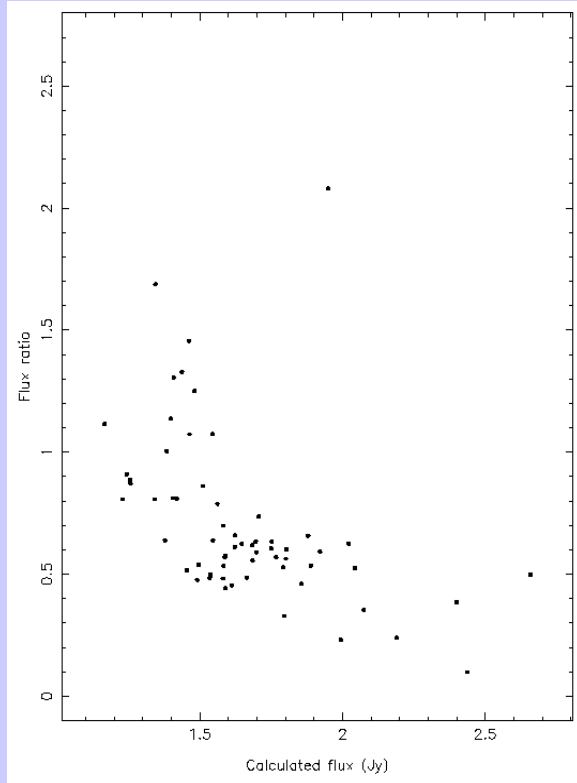


- Use maps convolved to CS1 resolution
- VLSS seems to have problems wrt the rest.
- sp.ind : mean=-0.75; std=0.2
- Can observe curvature in certain sources.
- Median flux ratio of VLSS (observed/calculated) = 0.7

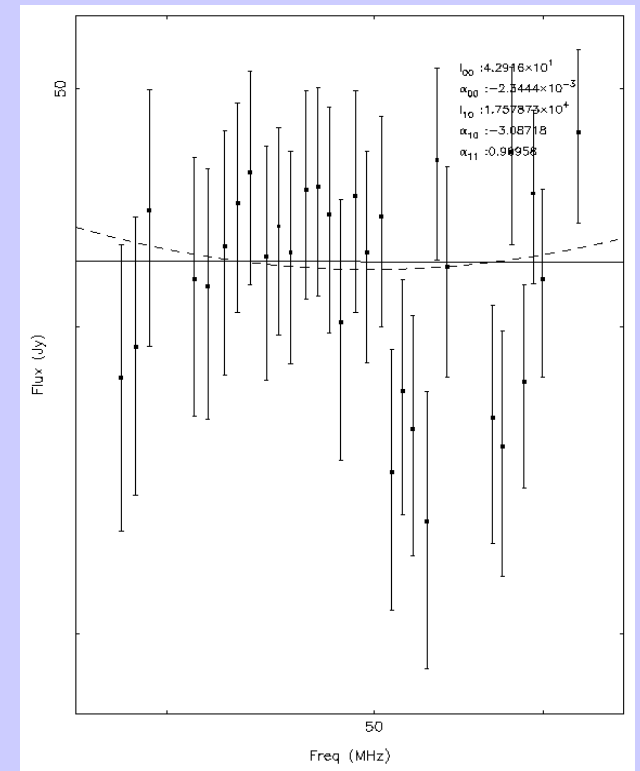
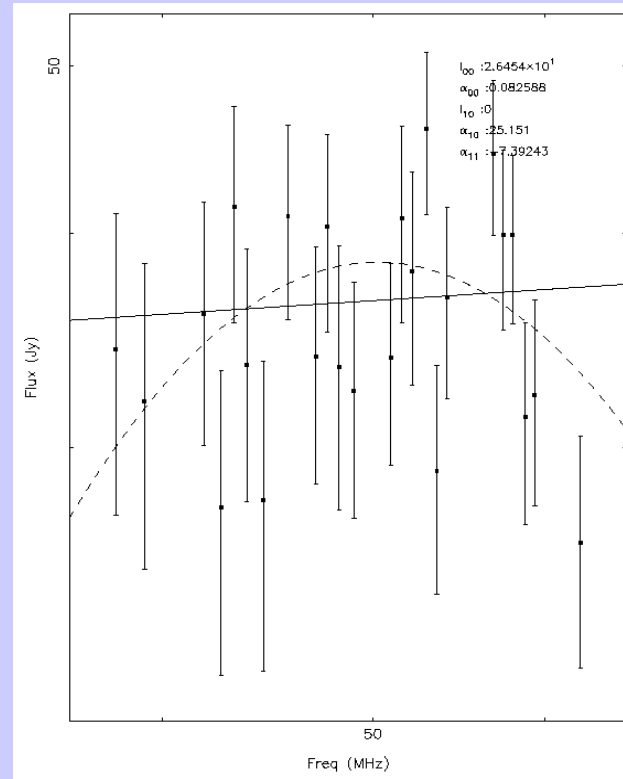
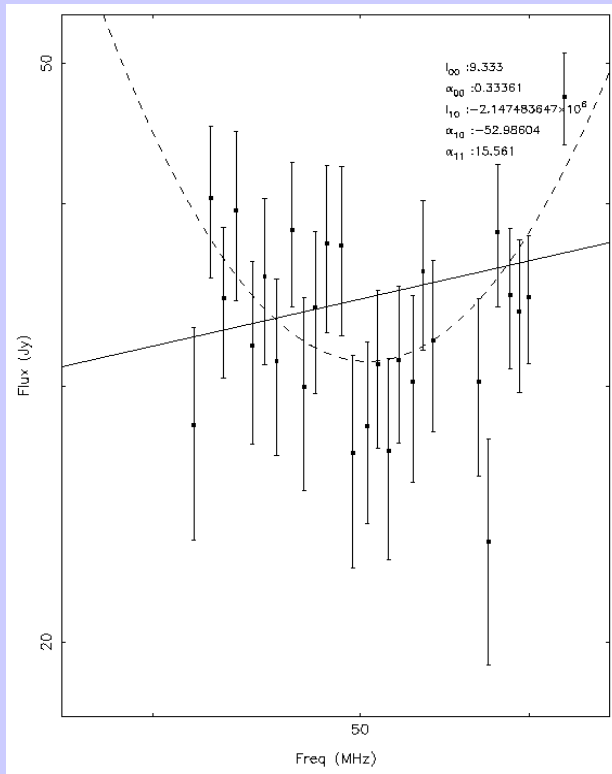
GSM : NVSS, WENSS, 8C vs CS1



GSM : NVSS, WENSS, 8C vs CS1



GSM : CS1 3565 multi-band



- Construct GSM with all 36 subbands of 3565 data.
- Spectra consistent with being flat.
- Due to assumed flat spectrum of Cas A and Cyg A.

GSM : all of them now ...

