



Deep 20 GHz Observations of X-ray selected QSOs

Elizabeth Mahony, Elaine Sadler, Scott Croom, Ron
Ekers, Ilana Feain and Tara Murphy

University of Sydney, ATNF

What we're trying to do...

- Investigate the radio luminosity distribution of a well defined sample of QSOs/Type 1 AGN
- Is there a distinct radio-loud/radio-quiet population?
- Or is it a more continuous distribution including a intermediate class of objects?
- What makes some QSOs very strong radio sources while others are not?

The RASS-6dFGS catalogue

- 3406 X-ray selected AGN
- Selected from ROSAT Bright Source Catalogue
- 2224 (65%) observed as part of 6dFGS
- 1715 have reliable redshifts
- median redshift $z=0.156$
- Only $\sim 5\%$ were detected as radio sources at 20 GHz down to the AT20G limit of 40 mJy

Deeper ATCA observations

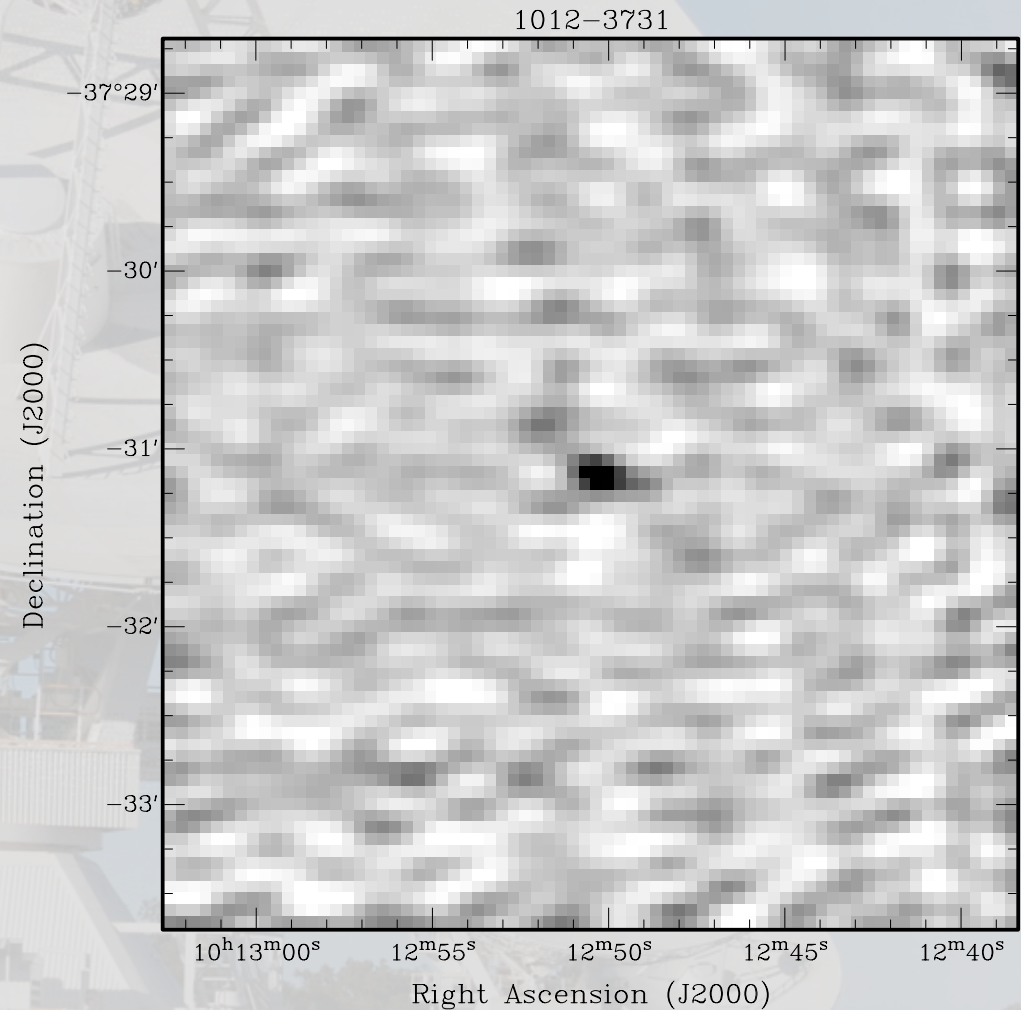
- Selected from the RASS-6dFGS catalogue
- $z < 1$
- Optical spectrum has broad emission lines
- No AT20G detection
- Also included possible BL-Lac objects (43 sources)
- Final sample: ~ 1138 sources
- All RAs, Dec < 0 , $|b| > 10$

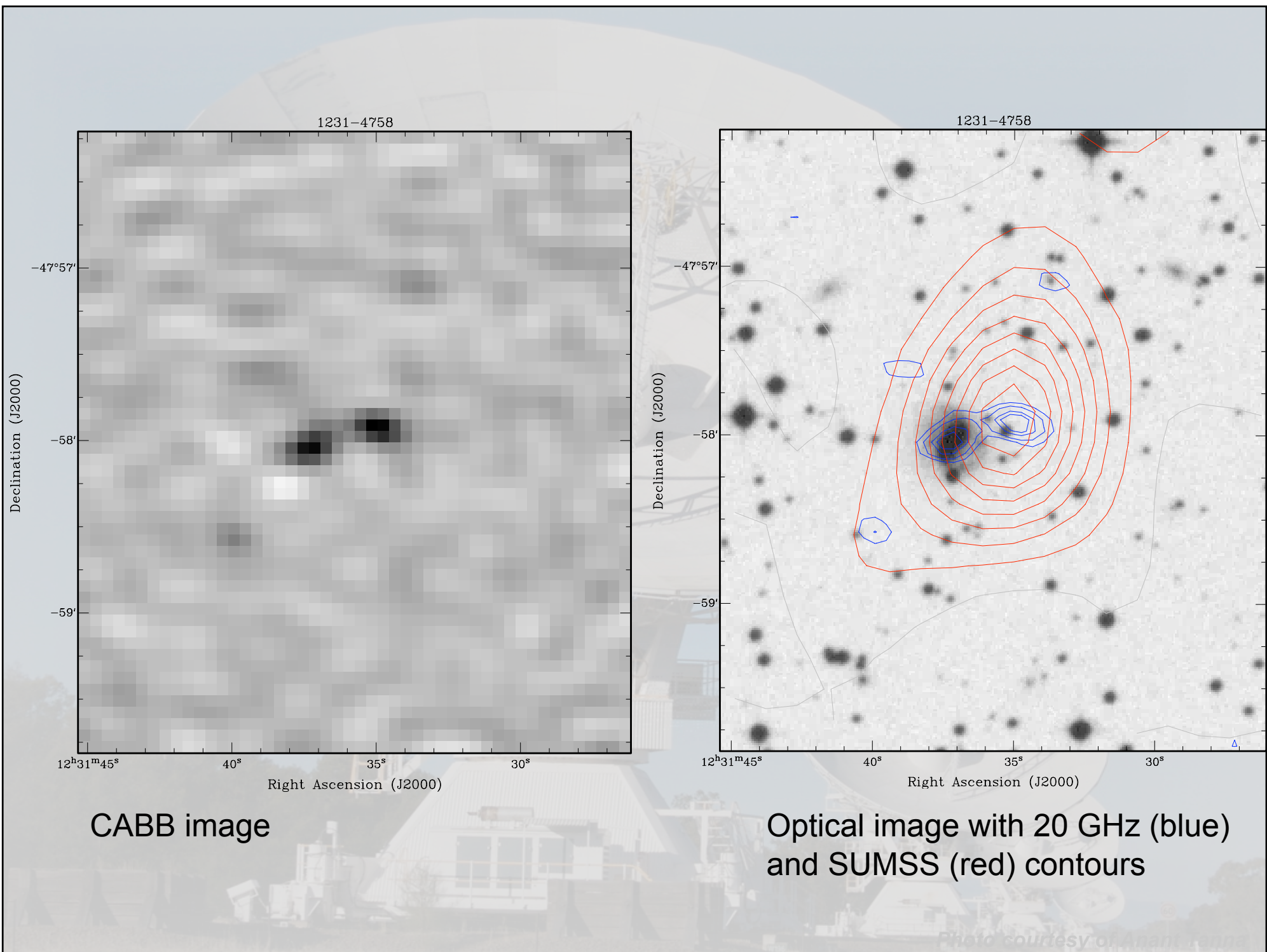
Observations

- October 08: 135 sources observed
- April 09 (with CABB): total of 435 sources observed
- RA range: 08-22hrs
- Hybrid array (H168)
- Frequencies: 19 and 21 GHz
- 2 x 40 second cuts

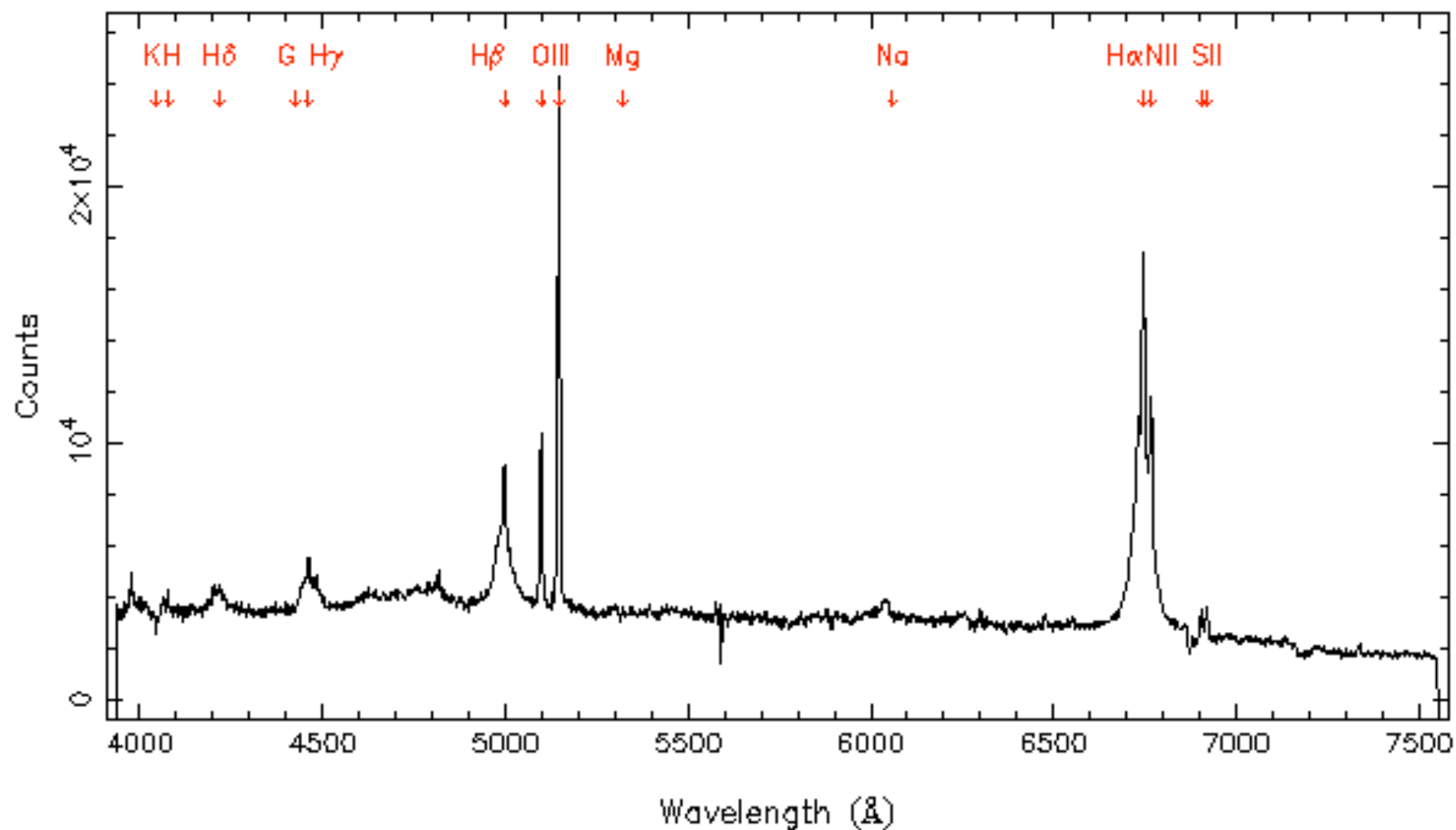
CABB works!

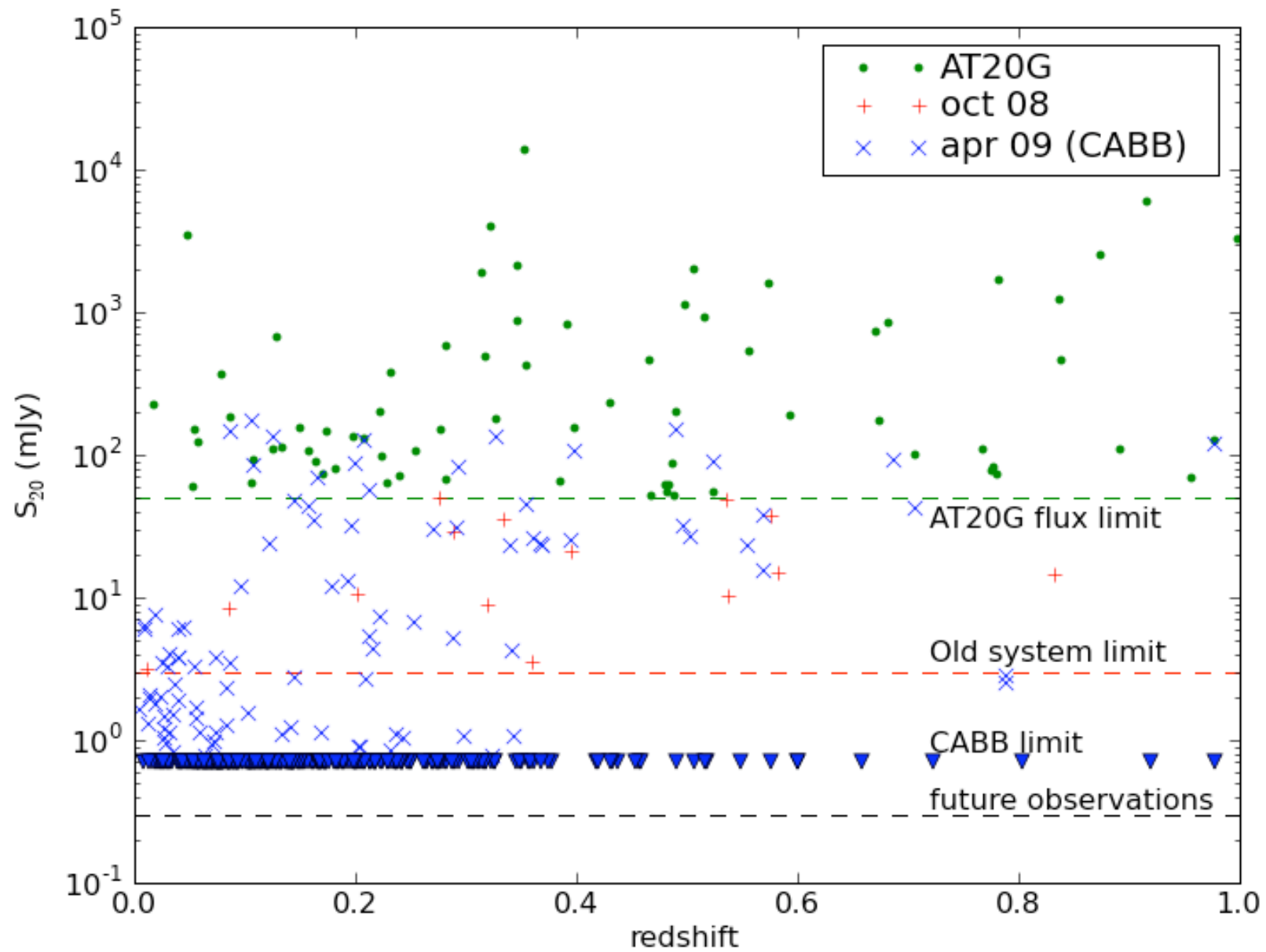
- Integration time: 80s
- Theoretical rms:
~150 μJy
- Measured rms:
~150 μJy
- 5σ detection limit of
750 μJy
- ~25% detection rate





g1231372-475802 2005/05/13 z_helio= 0.02790 z= 0.02793 qual= 4





Still to do...

- The divide and conquer method
- Follow-up marginal detections
- More observations:
 - complete sample down to same flux level ($22 < RA < 08$)
 - fainter flux limits ($200 \mu\text{Jy}$) for non-detections
- Follow up at other frequencies i.e. 5,8 GHz



Photo courtesy of Anant Tanna

