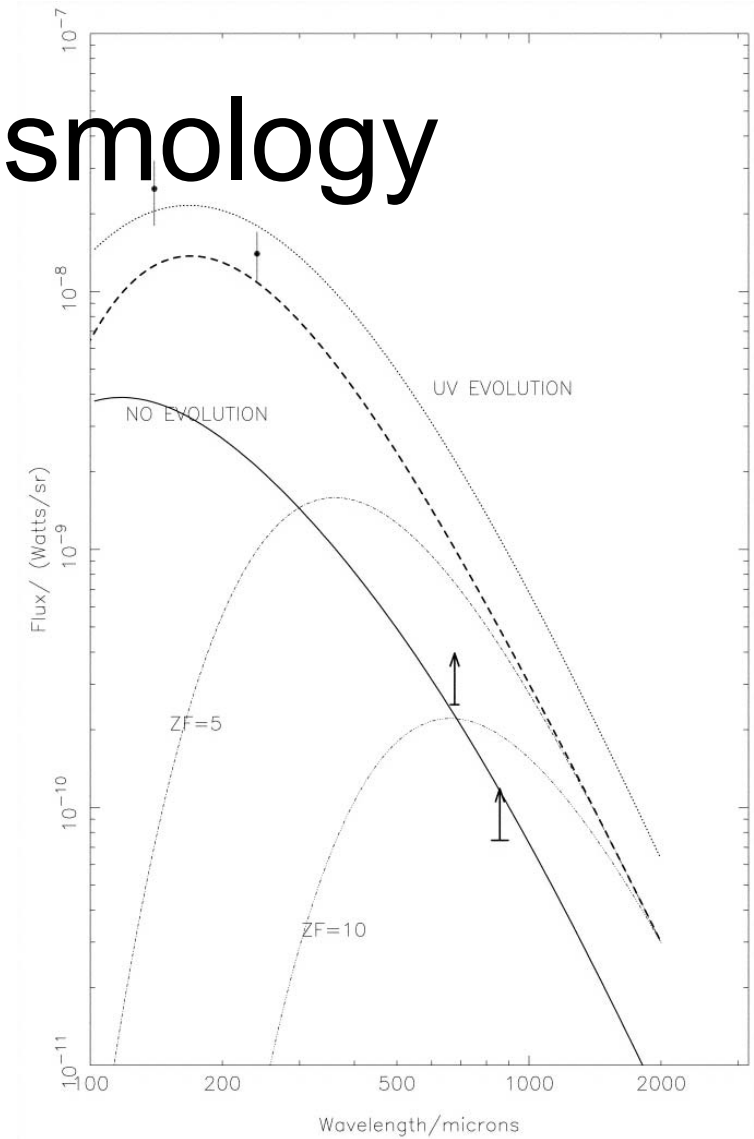
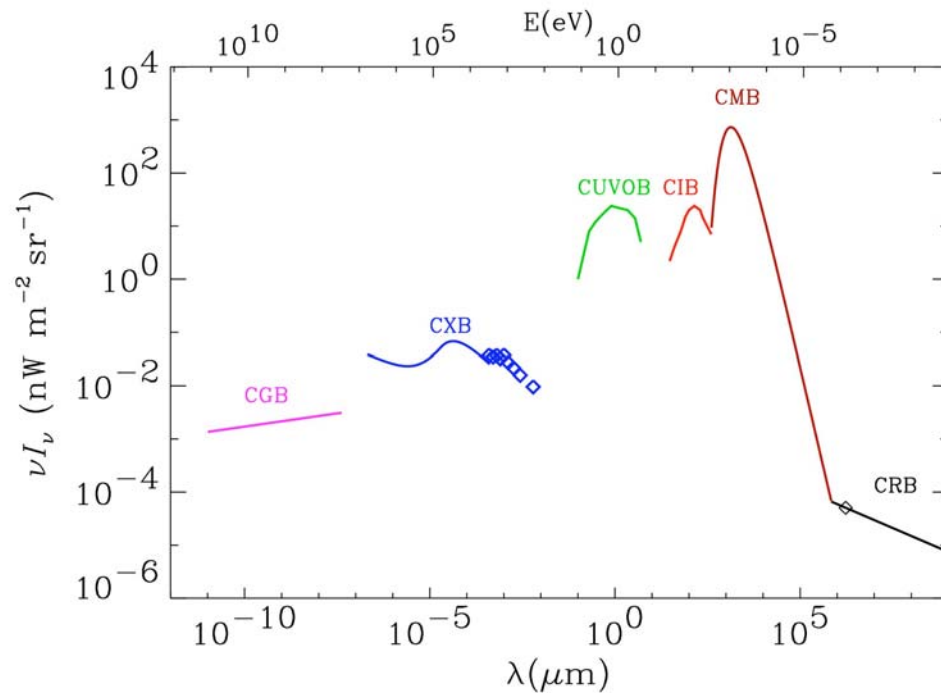


CCAT For Cosmology

- Go where the energy is



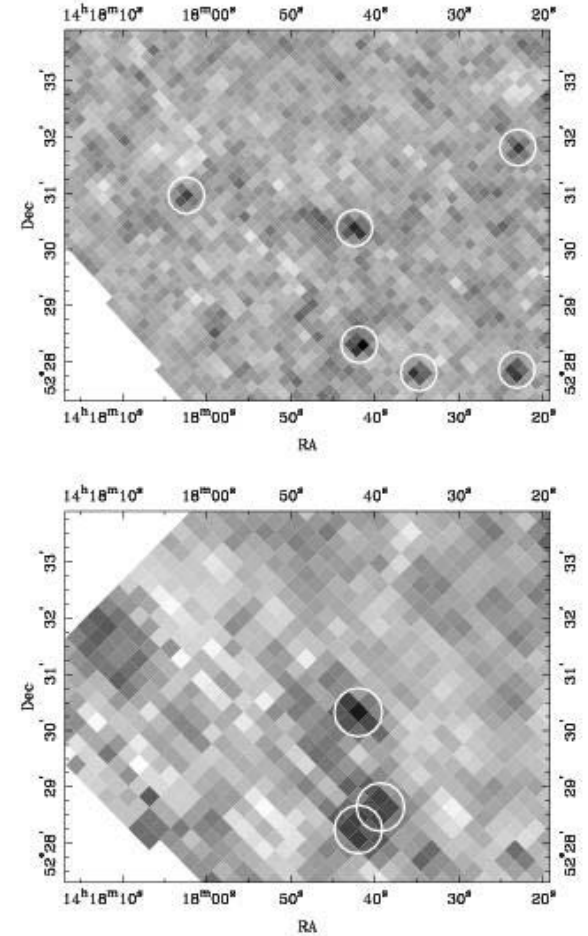
The background at 850 μm is 30 times lower than the background at 200 μm

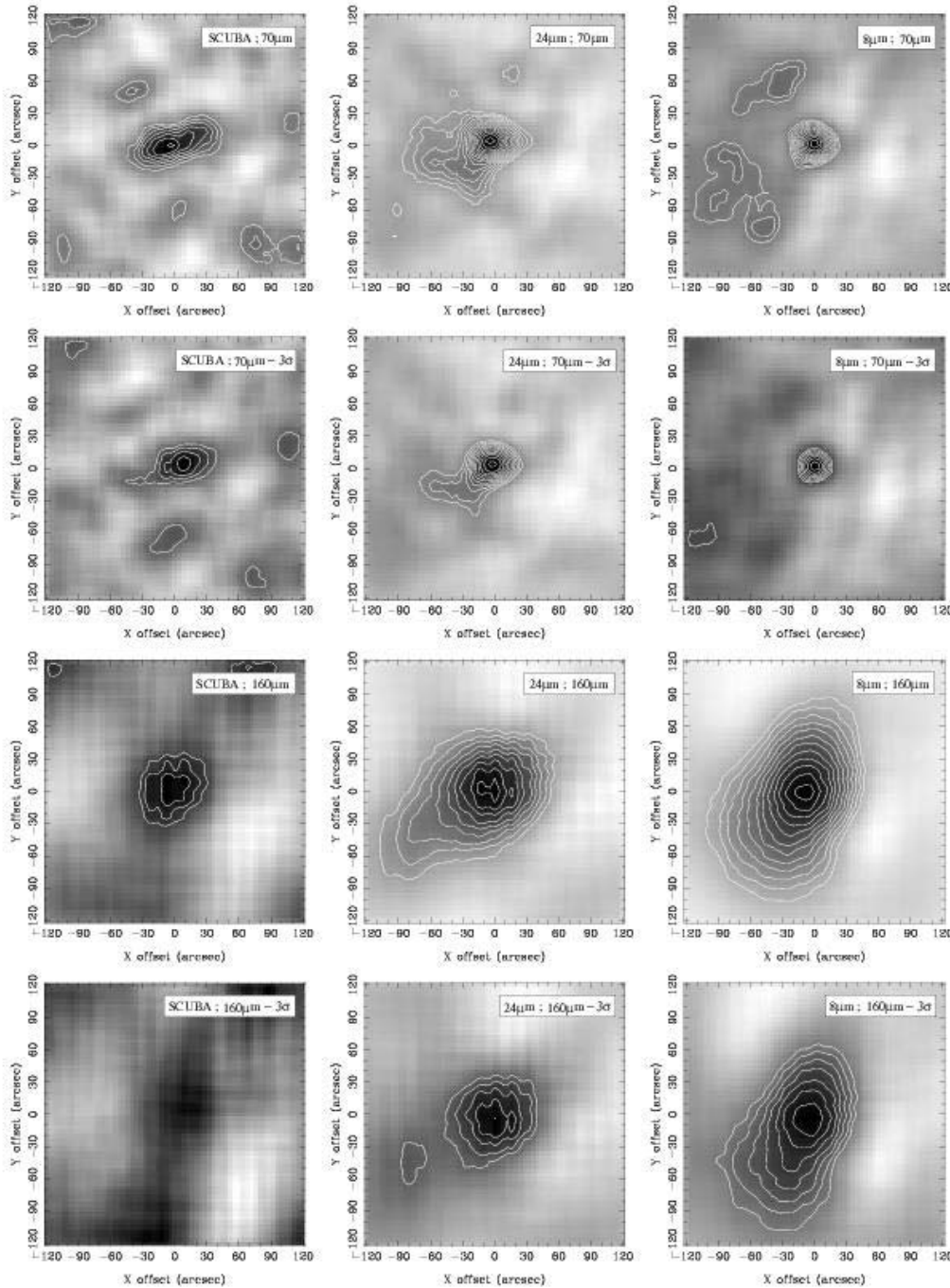
Does it Matter?

- The SCUBA sources have a median redshift of 2.2 and are generally more luminous than local ULIRGs (Chapman et al. 2005).
- Chapman et al. use their radio properties to estimate that they contribute $<6\%$ of the background at $200\ \mu\text{m}$.

Stacking Analysis – for want of anything better

- We have used the Spitzer MIPS images at 70 and 160 μm to examine the contribution of 8, 24 and 850 μm sources to the peak of the background (Dye et al., submitted to MN).





- 8 μm sources contribute 88% of the background at 160 μm
- 24 μm sources contribute 36% of the background at 160 μm
- 850 μm sources contribute 6% of the background at 160 μm
- The sources contributing most of the background are borderline ULIRGs in the redshift range $1 < z < 2$.

How to do this properly

I have modelled the confusion limit of various telescopes, using models which are a good fit to the SCUBA and Spitzer source counts and to the extragalactic background. The amount of the background resolved into individual sources is as follows:

- Herschel at 250 μm – confusion at about 20 mJy; 13% of the background resolved
- SCUBA-2 at 450 μm – confusion at about 4 mJy; 21% of the background resolved.
- CCAT at 350 μm – confusion at about 2 mJy; 49% of the background resolved
- CCAT at 250 μm – confusion at about 1.3 mJy; 72% of the background resolved.

Low-Z Universe

- SCUBA produced a quantum-leap in our knowledge of the low-z universe.
- SCUBA-2 will produce an incremental increase in our knowledge because 850-micron observations get hit by confusion.
- SPIRE at 250 microns will be effectively 30 times as sensitive to low-z dust, and will therefore be able, for the first time, to study dust in ellipticals and test whether there is dust around and outside galaxies.
- CCAT will be able to map this dust with six times the angular resolution.

A Cheap Telescope?

- FIRI will come along in 2030 (?) and be very expensive
- CCAT seems a cheapish alternative we might get soon.