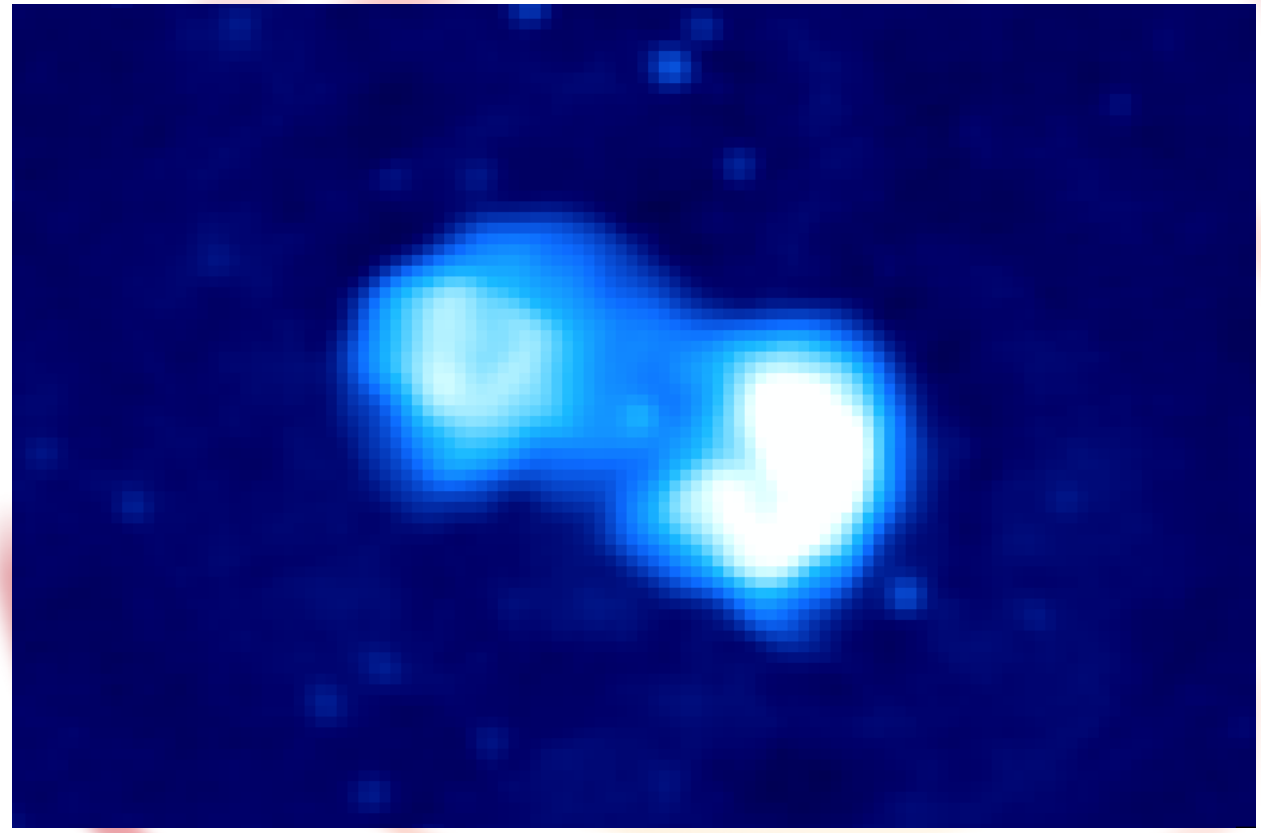
ICRAR

International Centre for Radio Astronomy Research



Science from Expanded MWA: why we want longer baselines and lower frequency coverage – Nick Seymour

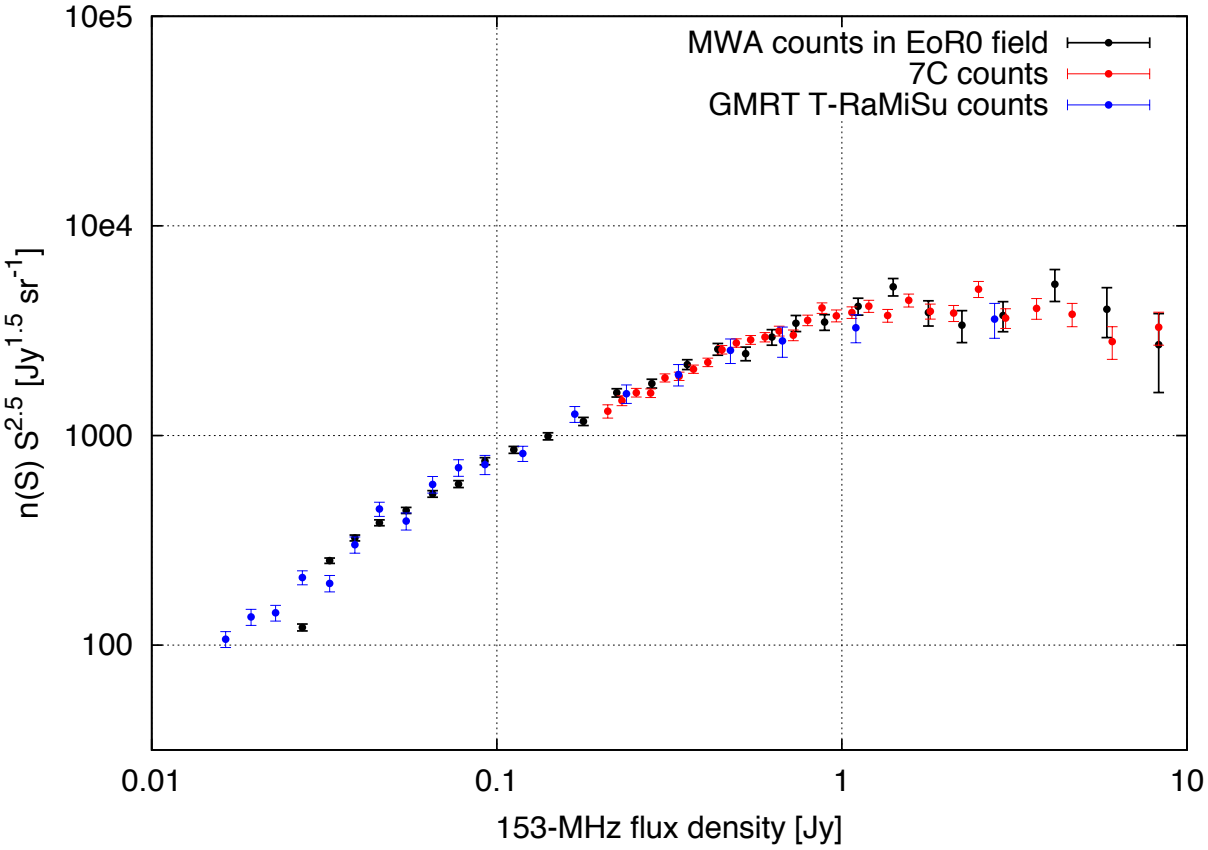
GLEAM

Curtin University

The University of Western Australia

Science with all-sky radio surveys

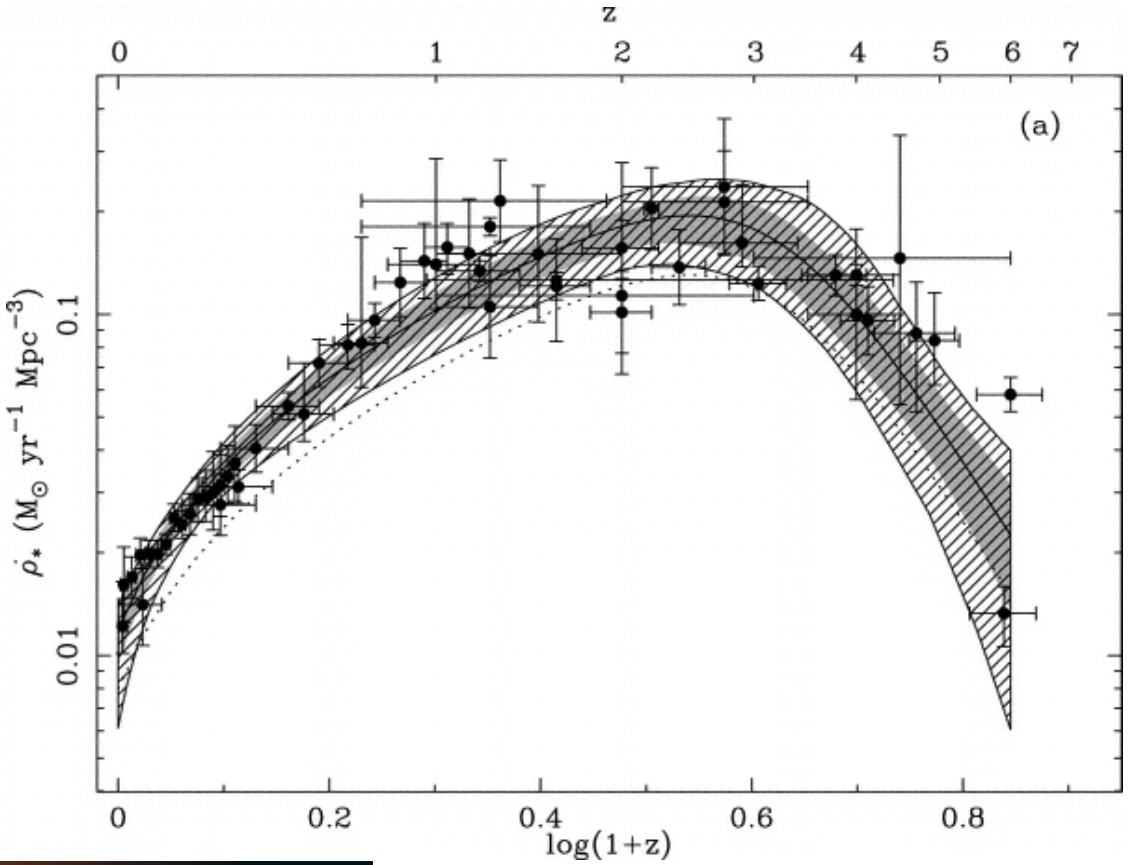
Population Studies



Franzen et al. in prep

Science with all-sky radio surveys

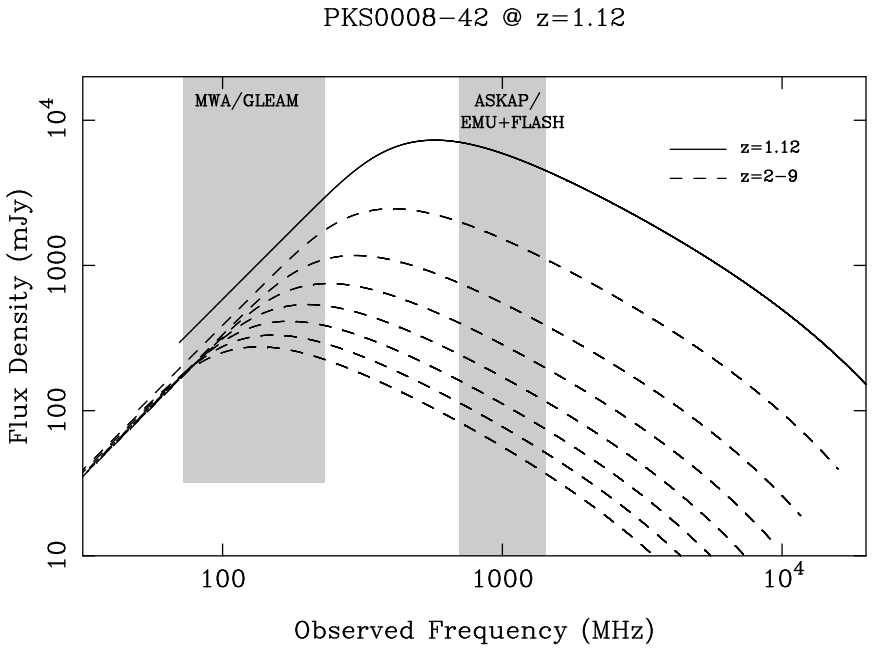
Population Studies

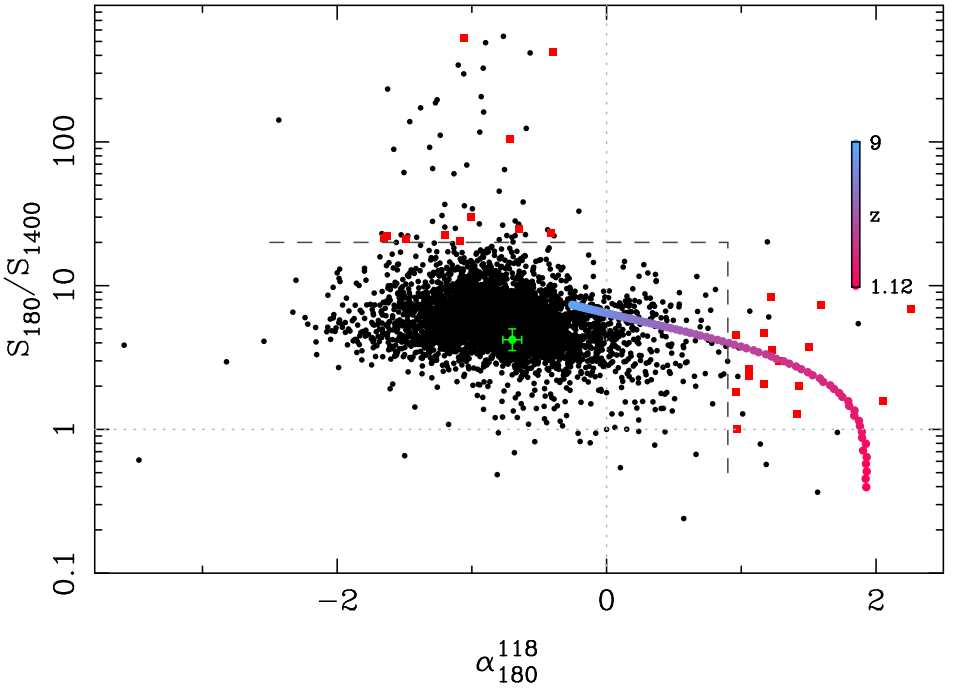


Hopkins & Beacom 2004

Science with all-sky radio surveys

Detailed astrophysics from extreme objects

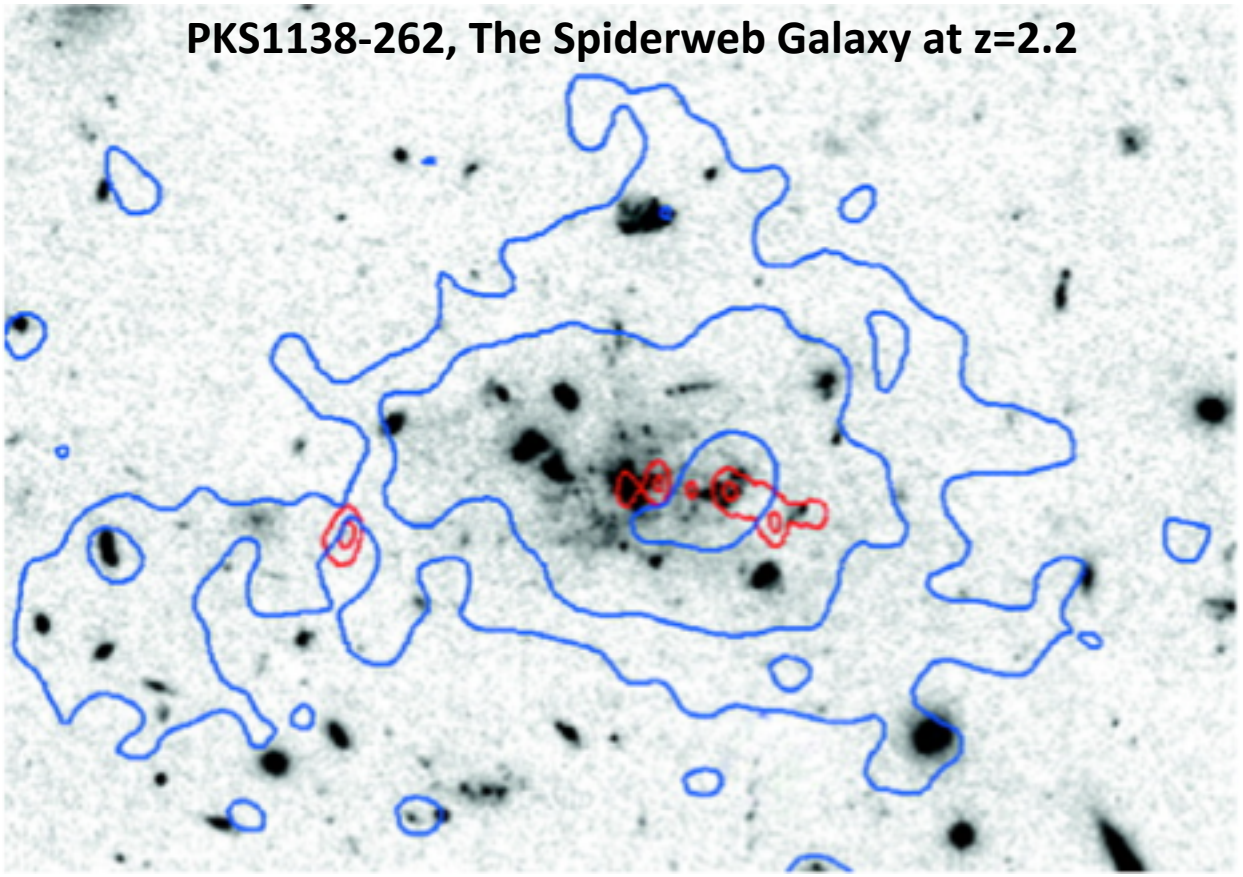




The First Black Holes

Science with all-sky radio surveys

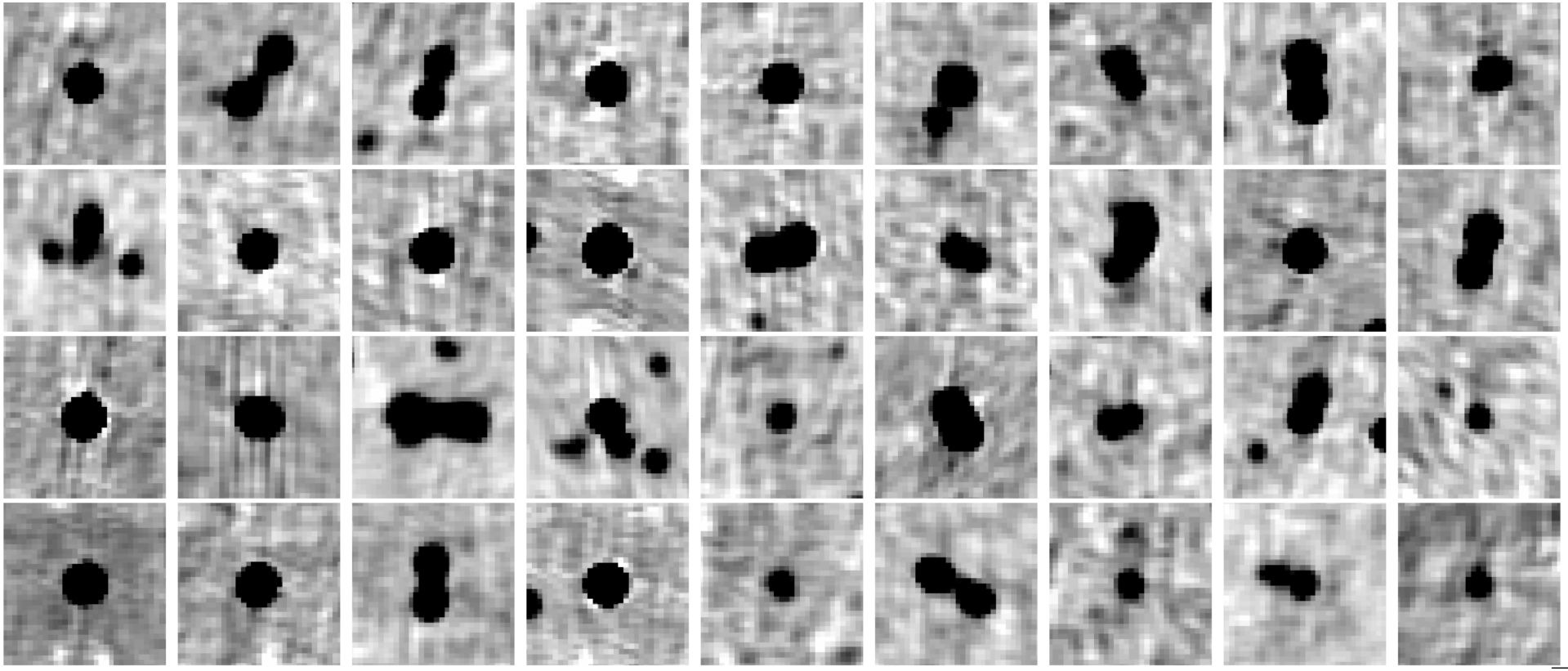
Detailed astrophysics from extreme objects



Formation of the most massive clusters

Cross-identification

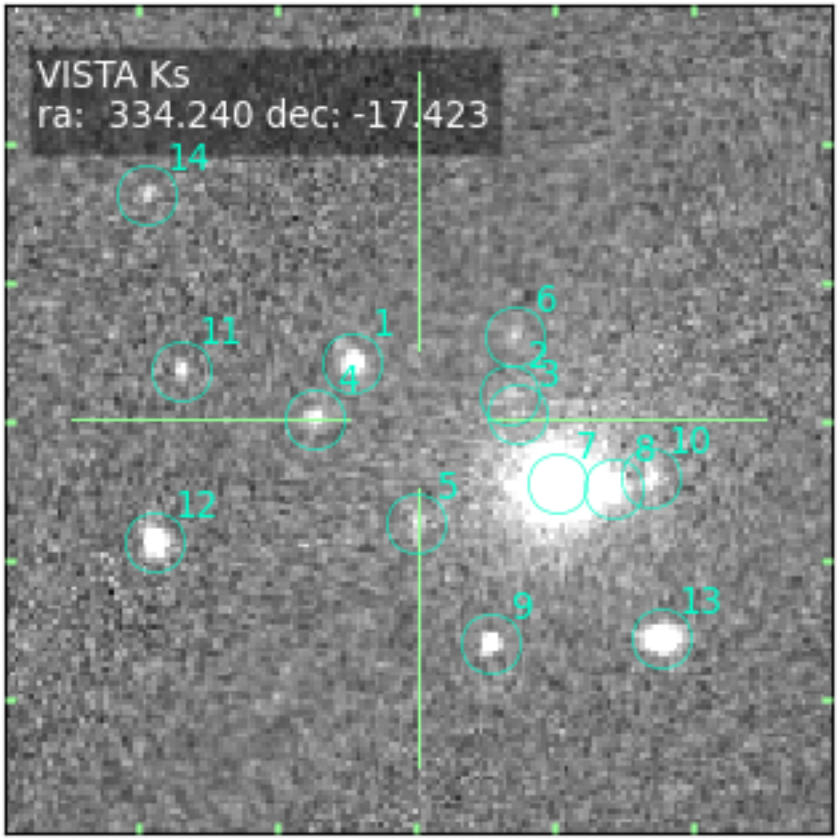
Step 1: High resolution radio imaging



NVSS Images

Science with all-sky radio surveys

Step 2: optical/near-IR XID



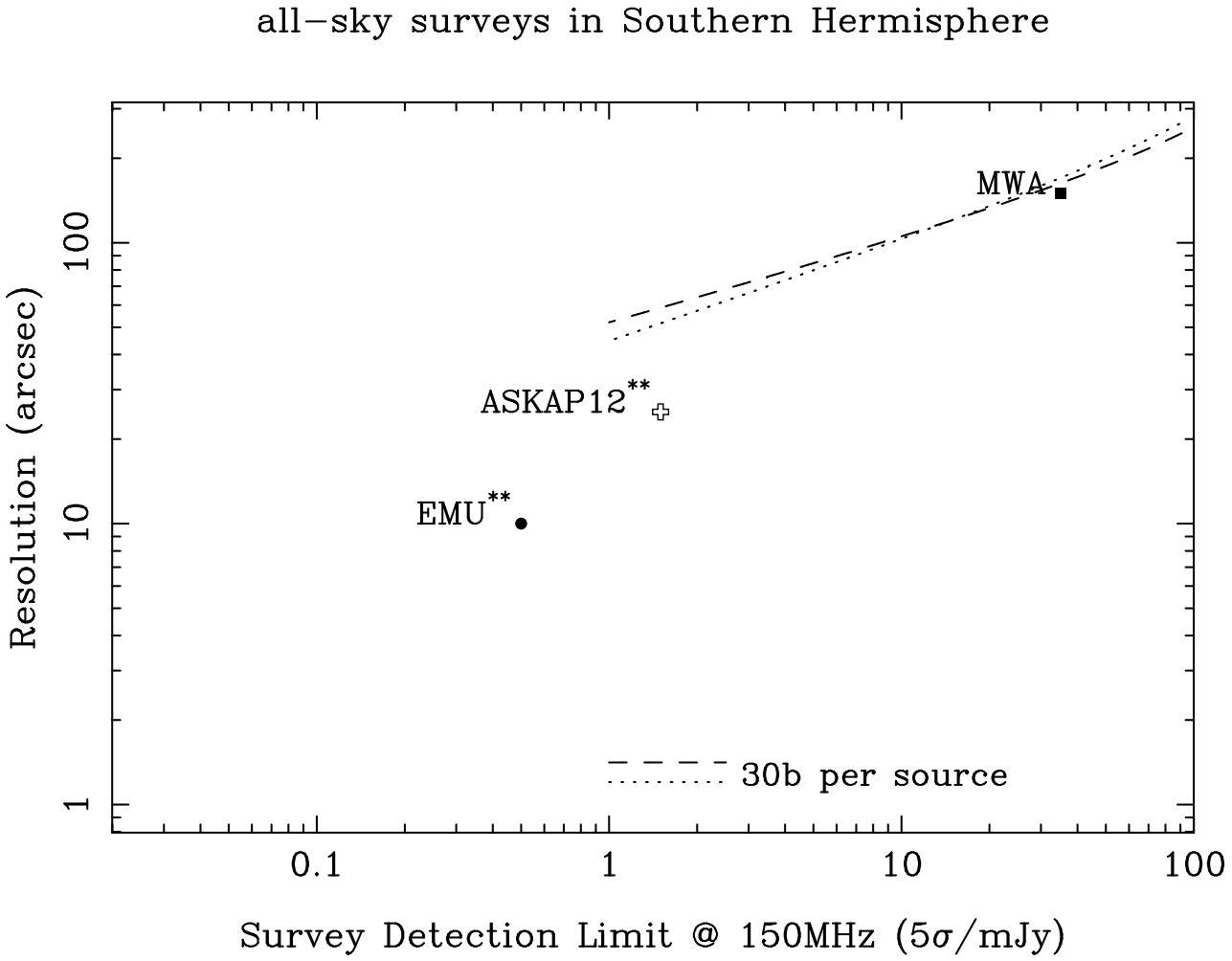
Cross-identification

Start with well studied fields:

- ATLAS: ECDFS & ELAIS
- GAMA fields
- ATCA/SPT field
- COSMOS
- Stripe 82

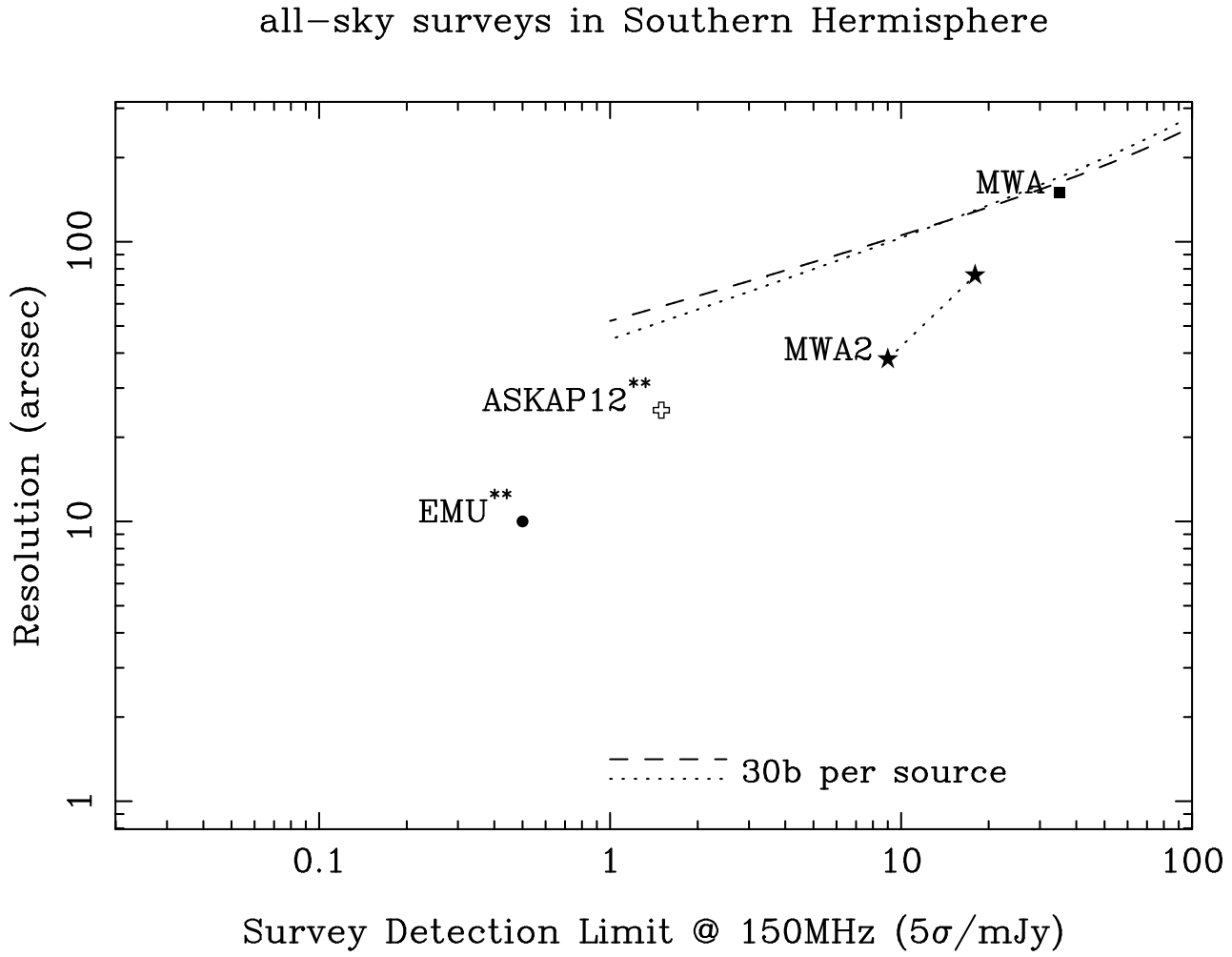
Going deeper

Complementary Radio Surveys



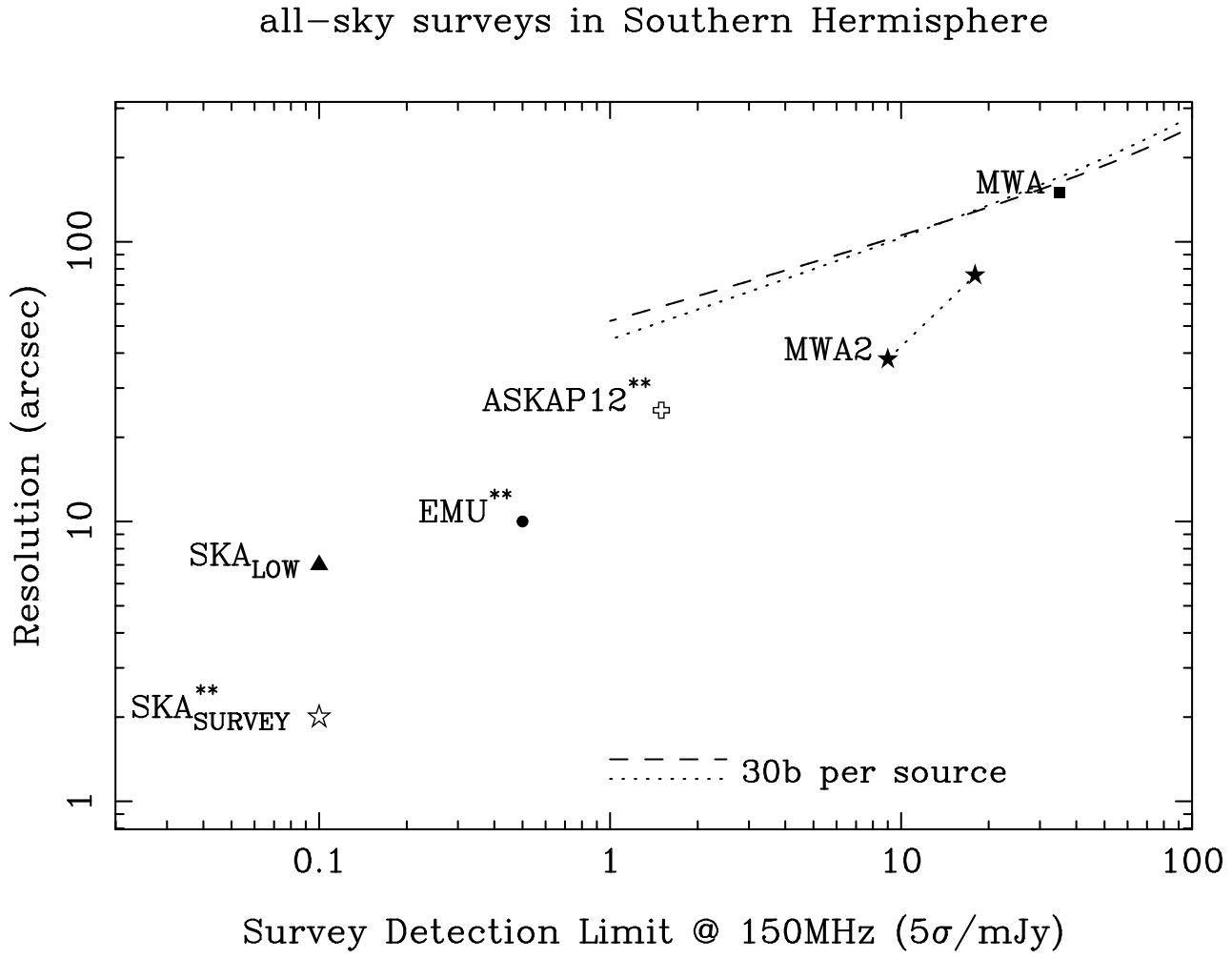
Going deeper

Complementary Radio Surveys



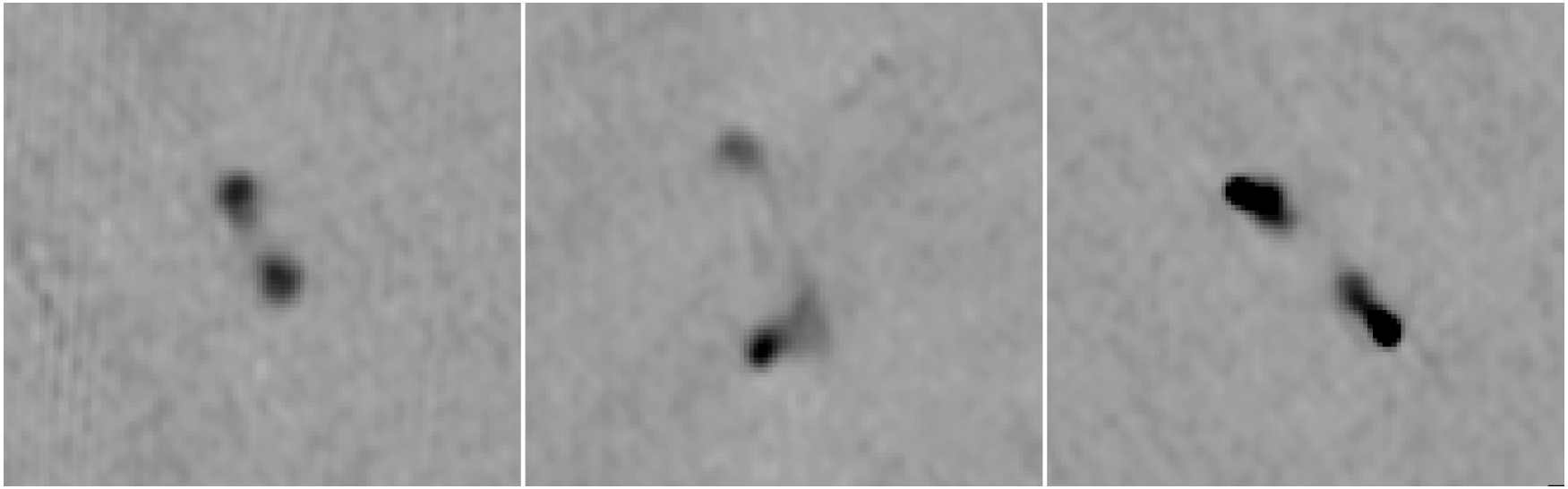
Going deeper

Complementary Radio Surveys



New Science – Longer Baselines

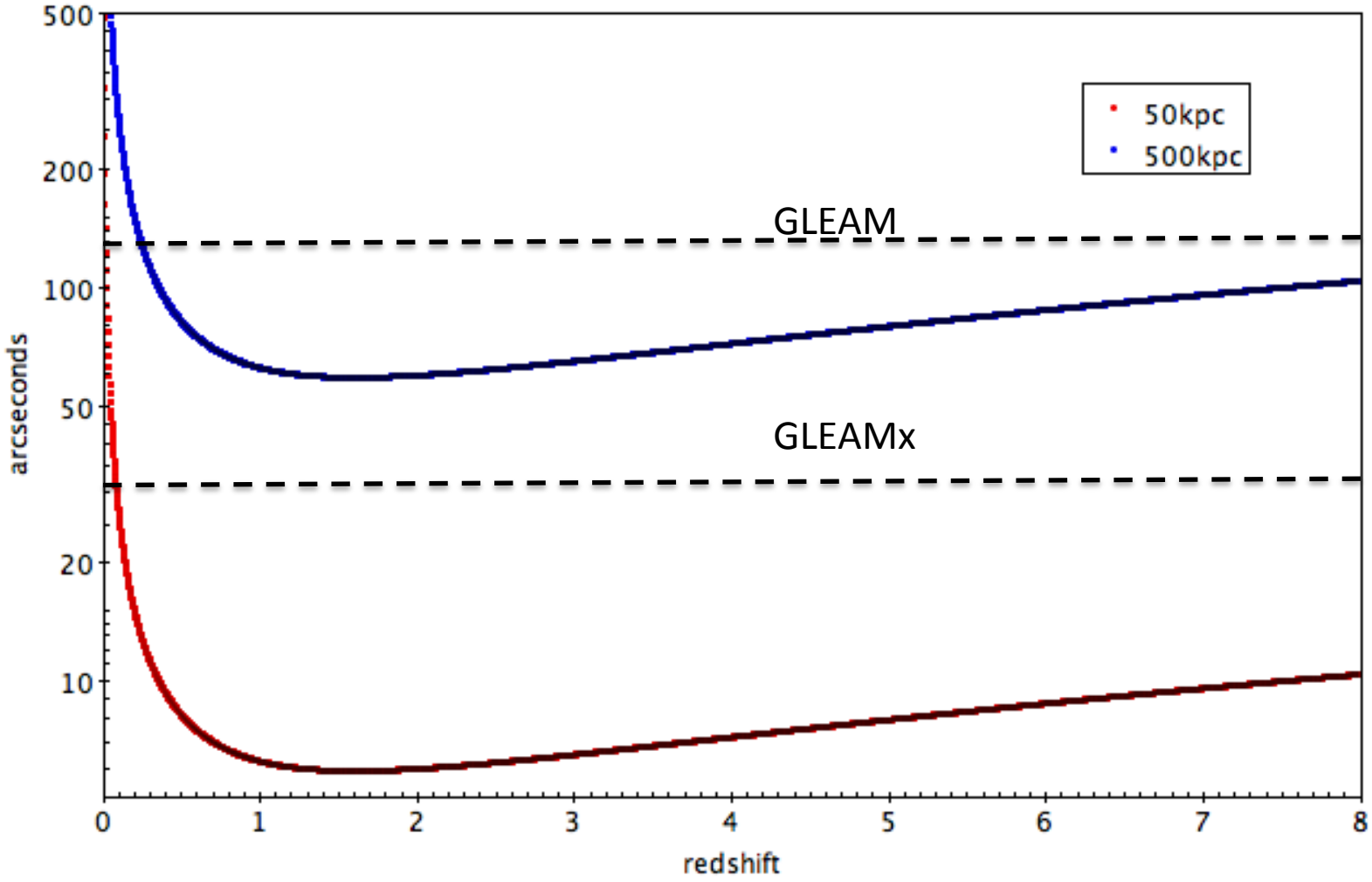
Better Cross-ID to high-nu radio data – COSMOS



327MHz image of COSMOS field (3'x3'), Smolcic et al. 2014

New Science – Longer Baselines

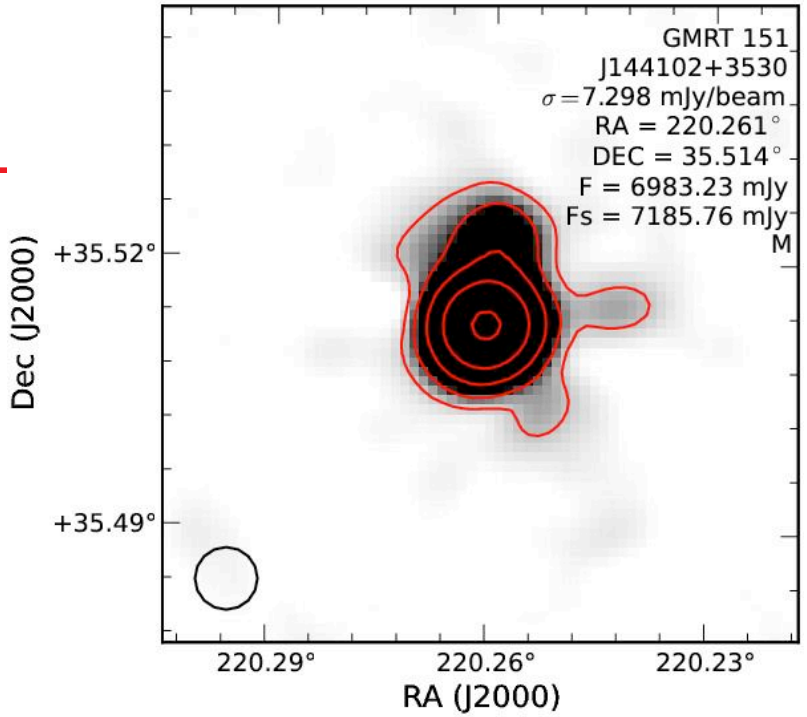
Extended Emission at High Redshift

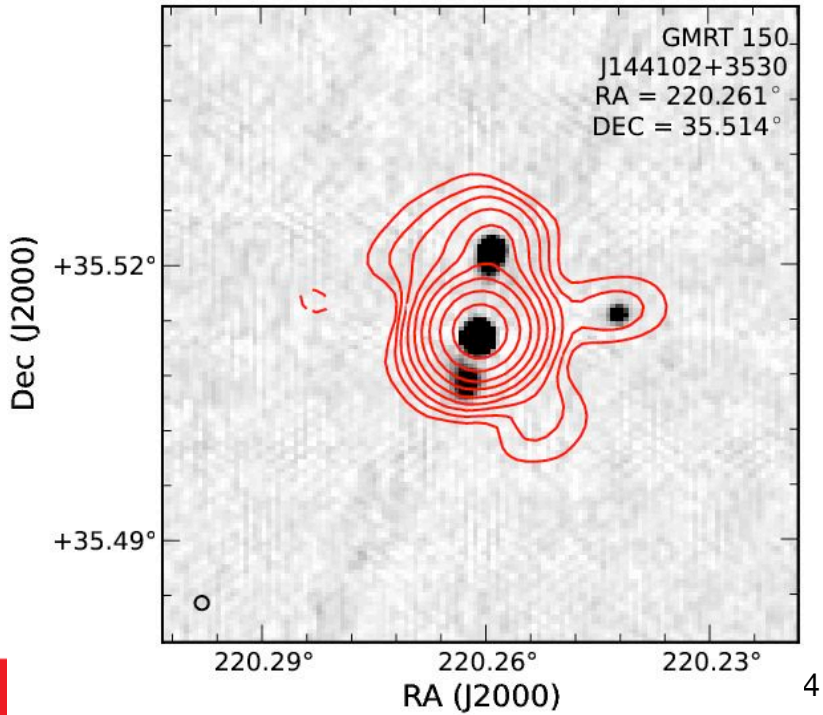


New Science

Fading and/or Rotating Radio Lobes

Williams et al. (2013) GMRT v FIRST





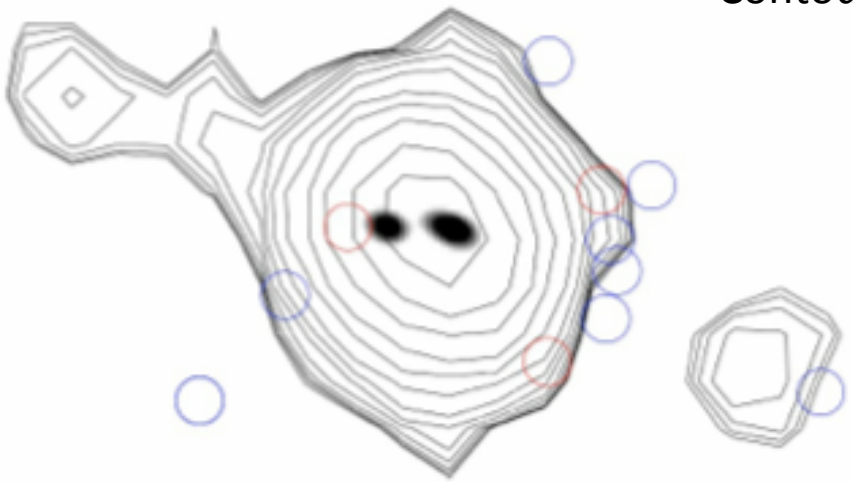
New Science

Fading Rotating Radio Lobes

Seymour et al. (in prep)

PKS113-26
The Spiderweb
z=2.156

Greyscale= 1.4GHz
Contours = 150MHz

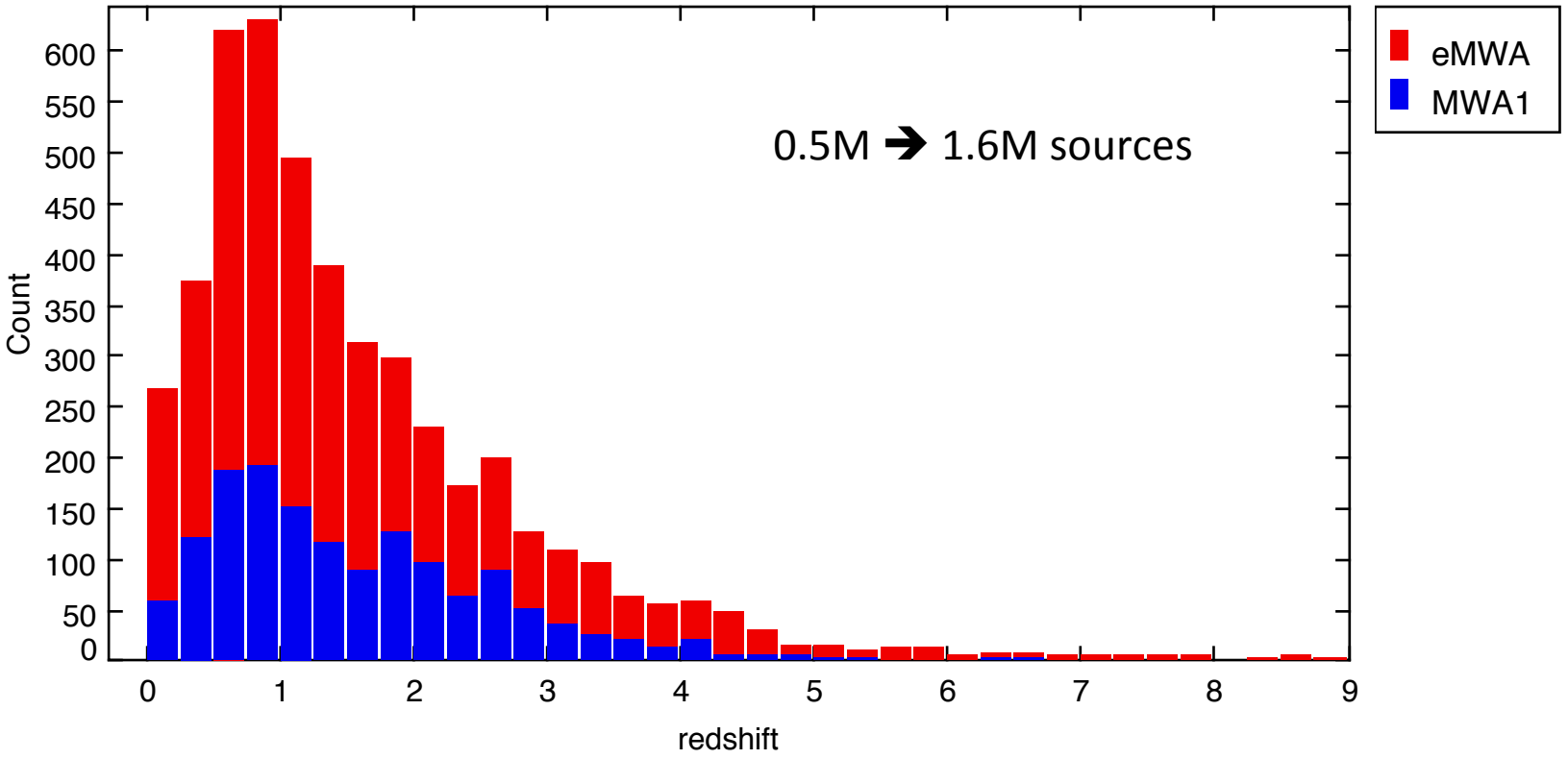


New Science – Longer Baselines

Better polarisation, resolved emission avoids depolarisation

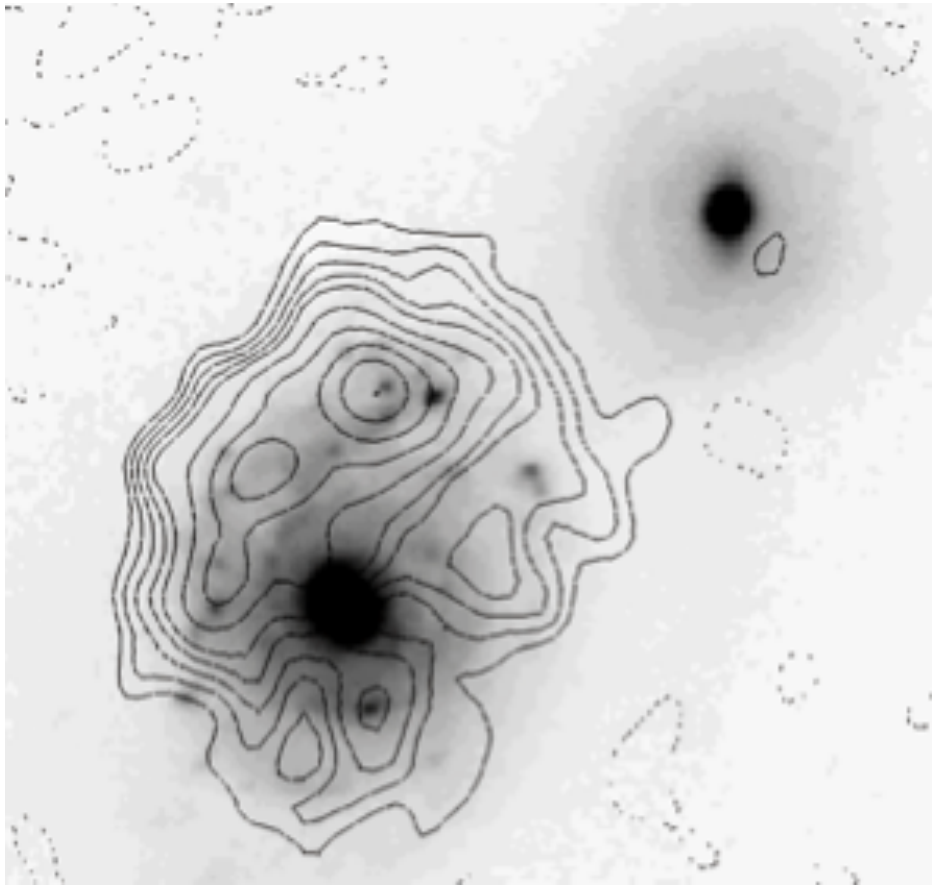
New Science - Deeper

More sources, better statistics



New Science - Deeper

More SFGs



1k ➔ 30k sources

Low frequency trace turnover

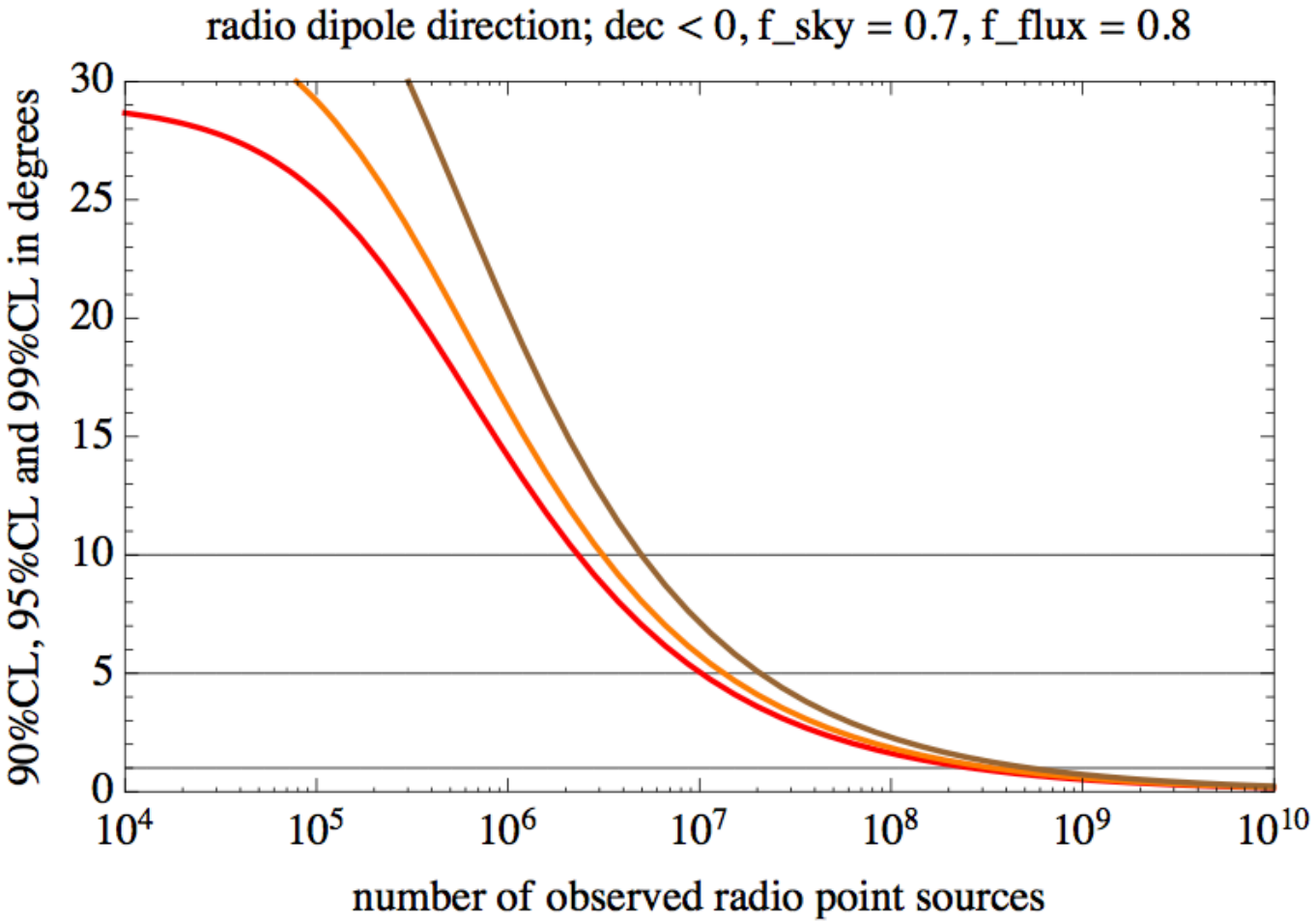
New Science - Deeper

Legacy/Etc

- Characterise Southern low-frequency sky for SKA_LOW
- Serendipity
- Cosmology
  - CMB Dipole
  - HI Absorption Line Forrest

New Science - Deeper

Legacy/Etc



D. Schwarz
(SKA Chapter)

Configuration

Long baselines + good uv coverage