The Radio View of the COSMOS Field

M.Bondi (INAF-IRABo), P. Ciliegi (INAF-OABo)
E. Schinnerer (MPIA, Heidelberg), V. Smolcic (MPIA, Heidelberg)
C. Carilli (NRAO, Socorro)
& the VLA-COSMOS team
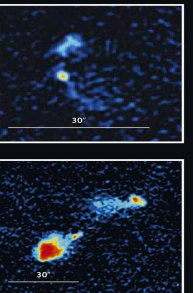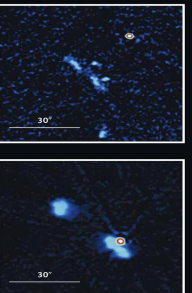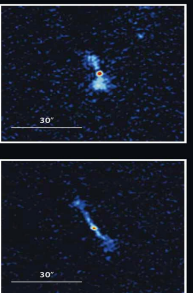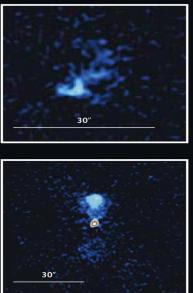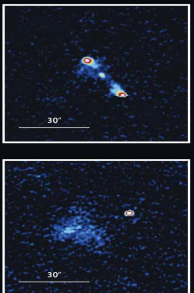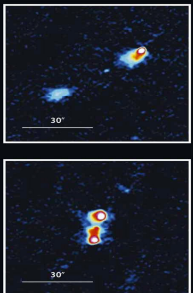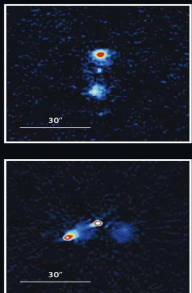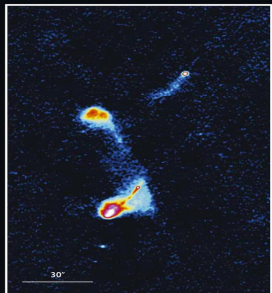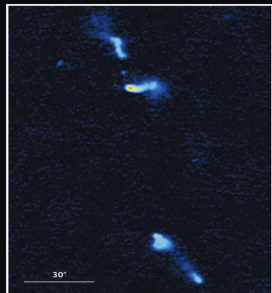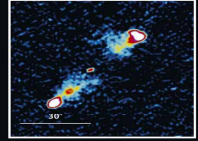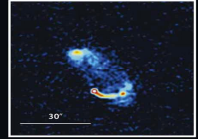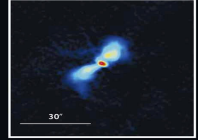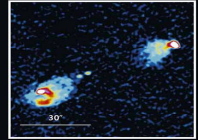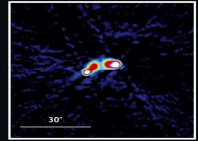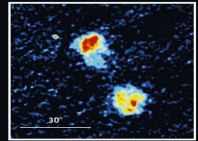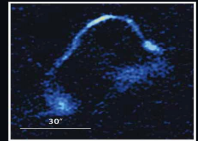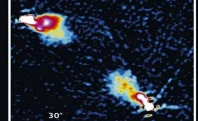
Just to remind what COSMOS is...

- 2 sq.deg equatorial field

- HST treasury project: 640 orbits with ACS

- Worldwide collaboration providing ancillary data: radio (VLA), infrared (Spitzer), optical-nir (VLT, Subaru, NICMOS, CFHT, ...), ultraviolet (Galex), X-ray (XMM) + spectroscopy (Magellan, zCosmos)

Are radio observations important ? - I

- **Star Forming Galaxies**

  - Radio emission unaffected by oscuration and well correlated with star-formation rate (Condon 1982)

  - Evolution of star formation rate with z

  - *Redshift indicator for sub-mm galaxies without optical id*
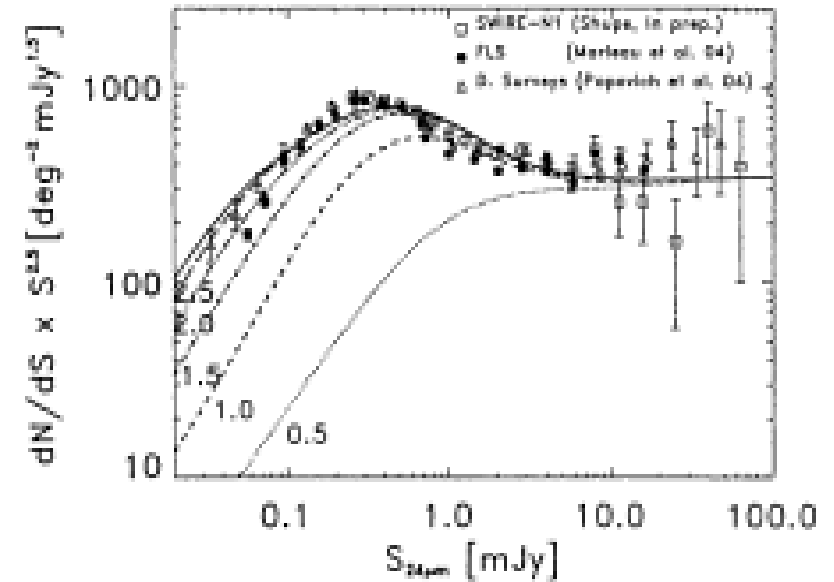
Pozzi et al. 2005

Are radio observations important ? -II

- **AGN**

  - Evolution of the faint end of the AGN radio LF

  - Large number of radio quiet AGN

  - *Deep radio observations (10.000 s) can easily detect Compton thick radio quiet AGNs*
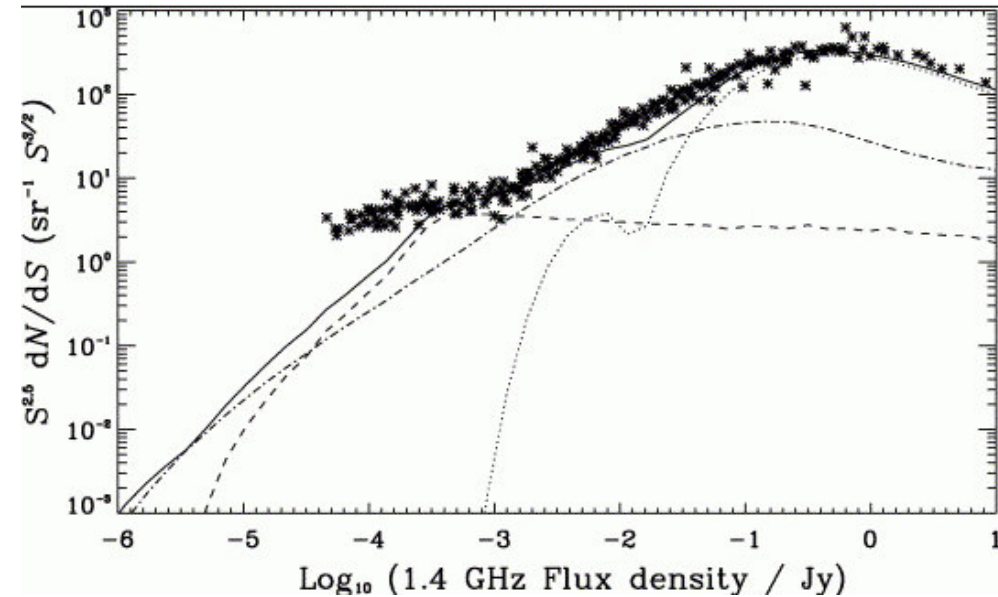
Jarvis & Rawlings 2004

$$S_{2-10\mathrm{keV}}(\mathrm{Wm^{-2}}) \simeq 5 \times 10^{-16} S_{1.4}(\mathrm{mJy})$$

The VLA-COSMOS Survey

- Resolution 1.5 arcsec

- Sensitivity: 9-15 microJy

- Catalogue of 3643 radio sources (4.5 sigma)

- Astrometric accuracy: 100 mas

Radio Source Counts
not yet corrected for incompleteness

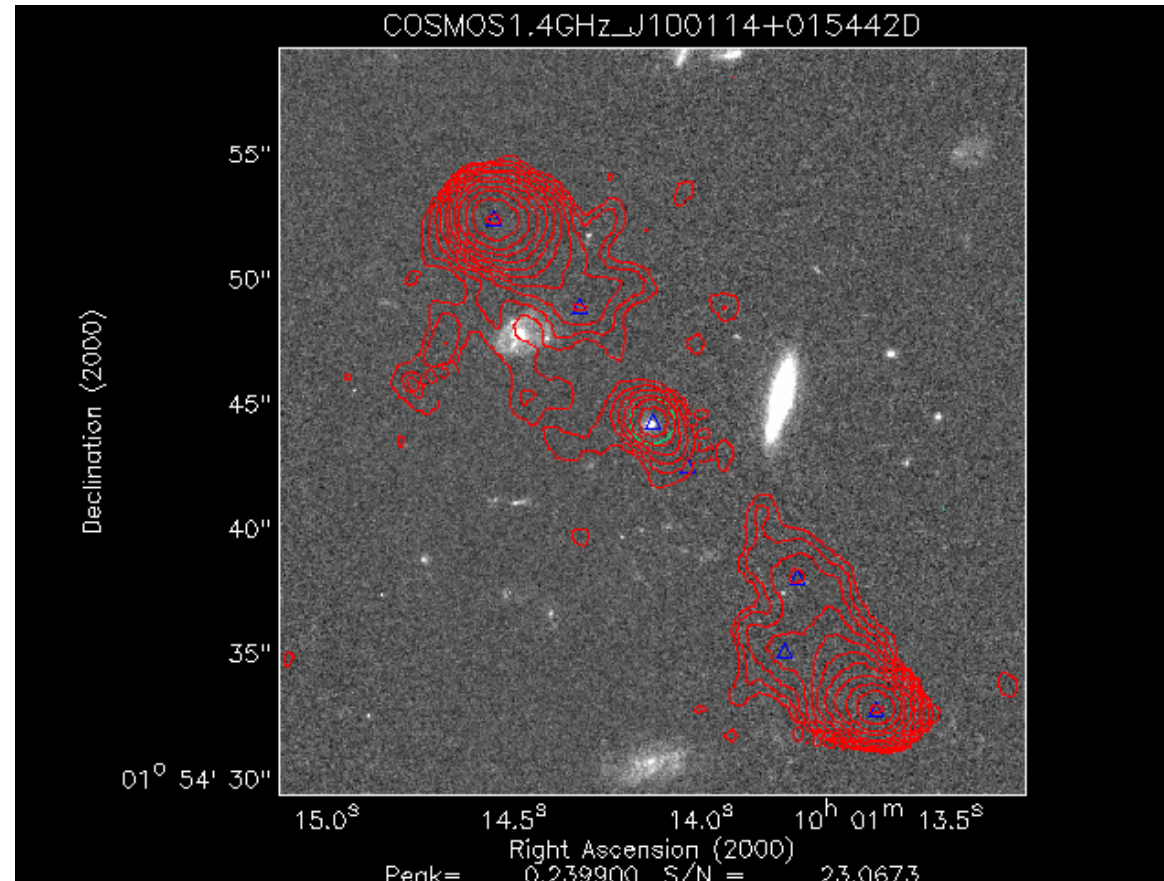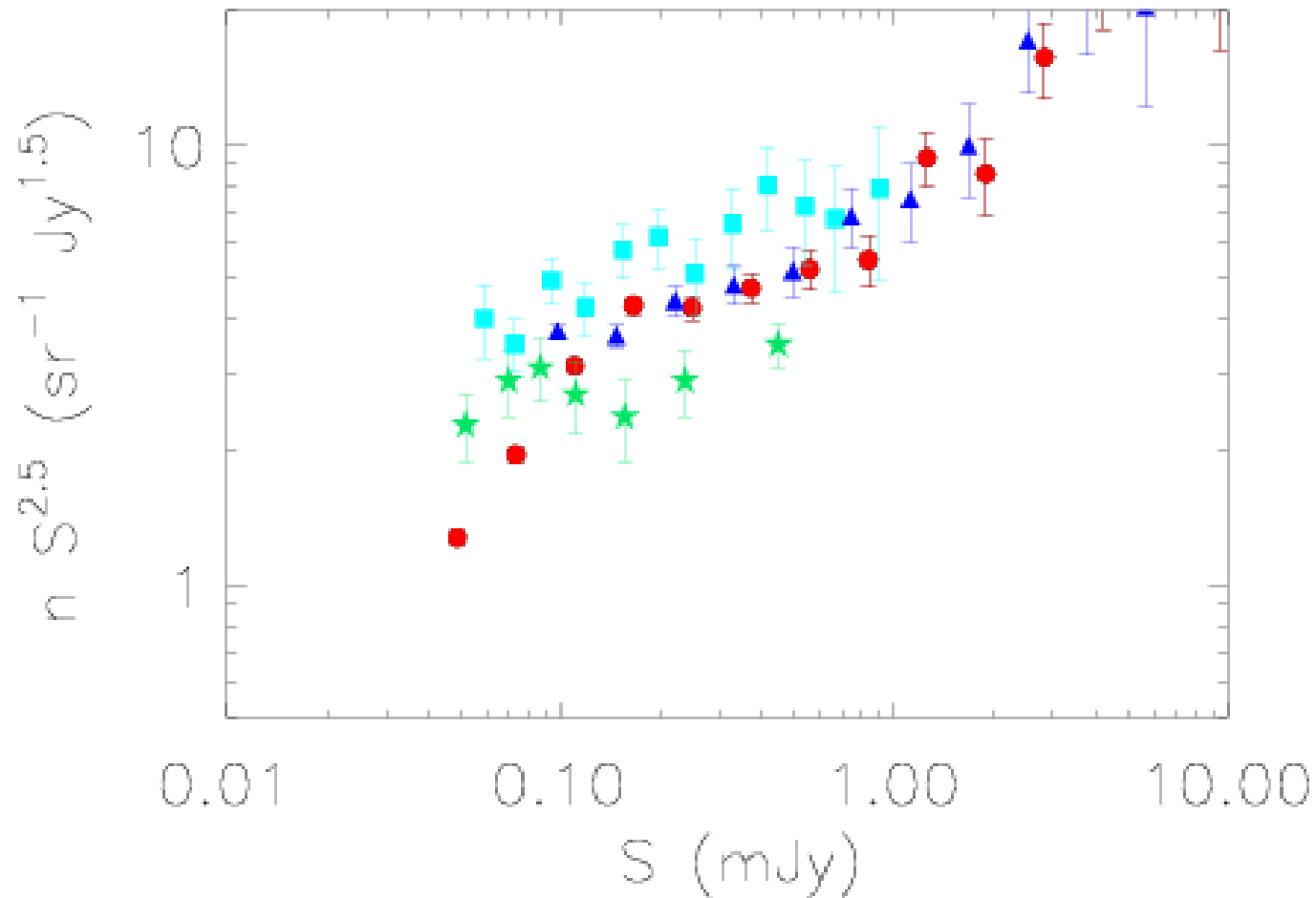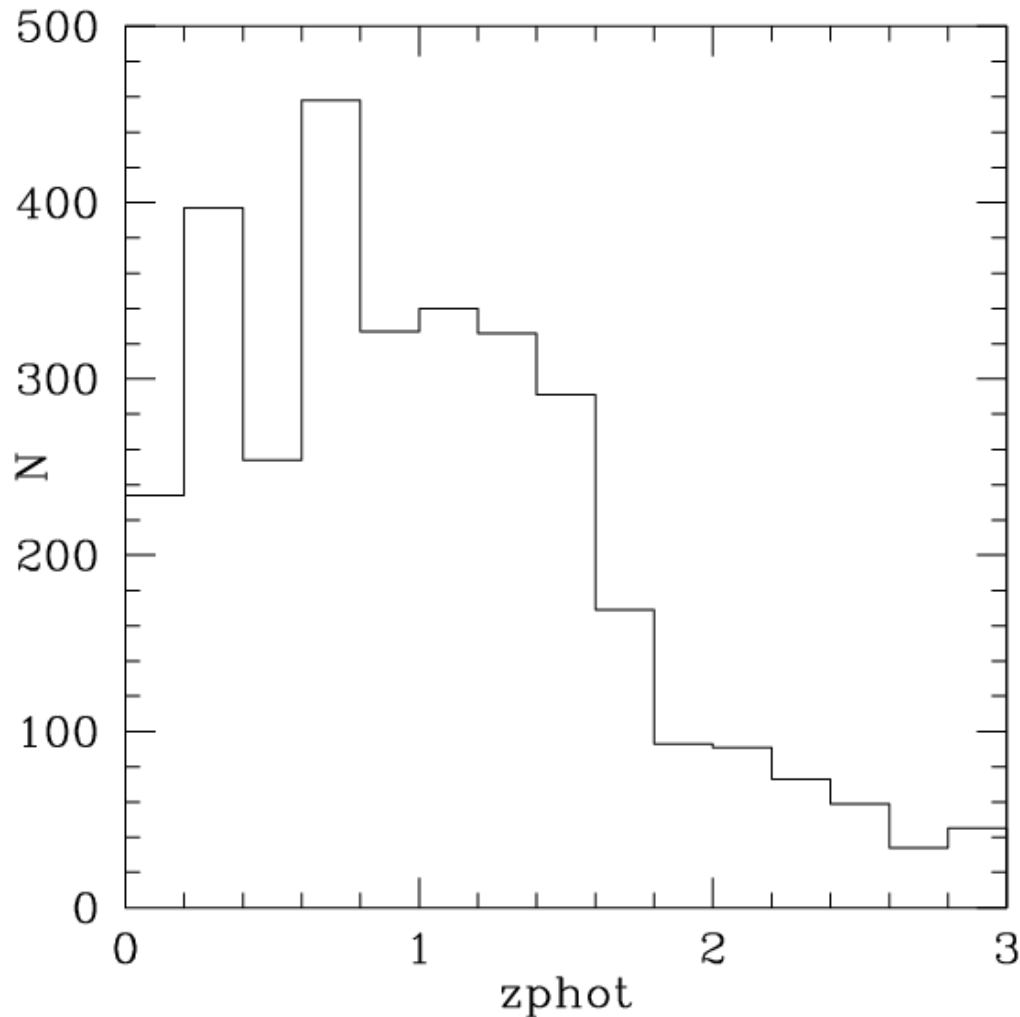# Optical Identification

- Cross-correlation R=1.5 arcsec with optical catalog (version Jan 2006)

- 90% of radio sources optically identified

Flux interval 1.4 GHz (μJy)	Early type	Late type	Starburst	Total
$S < 60$	29%	34%	37%	80%
$60 \leq S < 100$	34%	32%	34%	84%
$100 \leq S < 150$	42%	32%	26%	90%
$150 \leq S < 500$	48%	33%	19%	95%
$S \geq 500$	61%	20%	19%	95%

Photometric Redshift

- Spurious peaks ?

- Magellan-COSMOS i(AB)=23: 200/500 radio sources observed

- zCOSMOS B(AB)=25 compulsory targets

- Expected 1000 radio sources with zspec

EROs