SMA Science Impact

2004 - 2014

- 620 refereed publications
- 19 in Nature/Science
- 55 publications per year, 75 in the last 5 years
- Citation rates similar to other facilities
- Broad range of science areas
- Proposal over-subscription rate of ~ 3-4 indicates current relevance
6 Year Mean Citations

SMA Science Impact 2004-2014

- SMA 6-yr mean
- PdBI 6-yr mean
- HST 6-yr mean
- CFHT 6-yr mean
- Chandra 6-yr mean

Number of Citations

Year

Number of Publications

SMA Science Impact 2004-2014

Chandra : x 6; HST : x 10

T.K. Sridharan Dec 15
Understanding the Differences

- SMA is a sparse array, relies on Earth rotation needing ~ 1 night for an observation.
- Needs good weather and night time
- Chandra/HST observe round the clock
- Chandra/HST provide funds to produce results
- SMA publication rate is remarkable in this context
- Favourable comparison to PdBI with smaller collecting area
High Impact Fields

- High-z sub-mm galaxies
  Reichers et al 2013, Nature, Maximum starburst galaxy at z=6.3 (c450)
- Protoplanetary disks
  Andrews et al 2009, 2011, 2013 (c260, c370, c350), large cavities, mass dependence
- Gravitational lensing
  Swinbank et al 2010, Nature, Intense star-formation in compact region at z=2.3 (c220)
- High-energy transients
  Abdo et al 2010, Blazar SEDs (c380), Zauderer et al 2011, Nature, birth of a relativistic outflow (c240)
- Galactic Centre, M87 BH
- Star-formation studies, nearby galaxies
  large collective impact hard to quantify, smaller community, local leadership
- Late type stars, solar system studies
  small community, local interest

- High impact areas unanticipated – riskiest projects delivered the most impact
- Should hold for future - keeping a broad range and open eyes may be the best approach
CFHT replaced their entire suite of instruments in 2003-2005 (to start “Golden Age”)

SMA publications gradually improved to a plateau

The proposed SMA upgrades should provide a similar boost - indicated by high proposal pressure (3-4) and publication impact