SMA Metrics: Proposals, publications, student training

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Outline

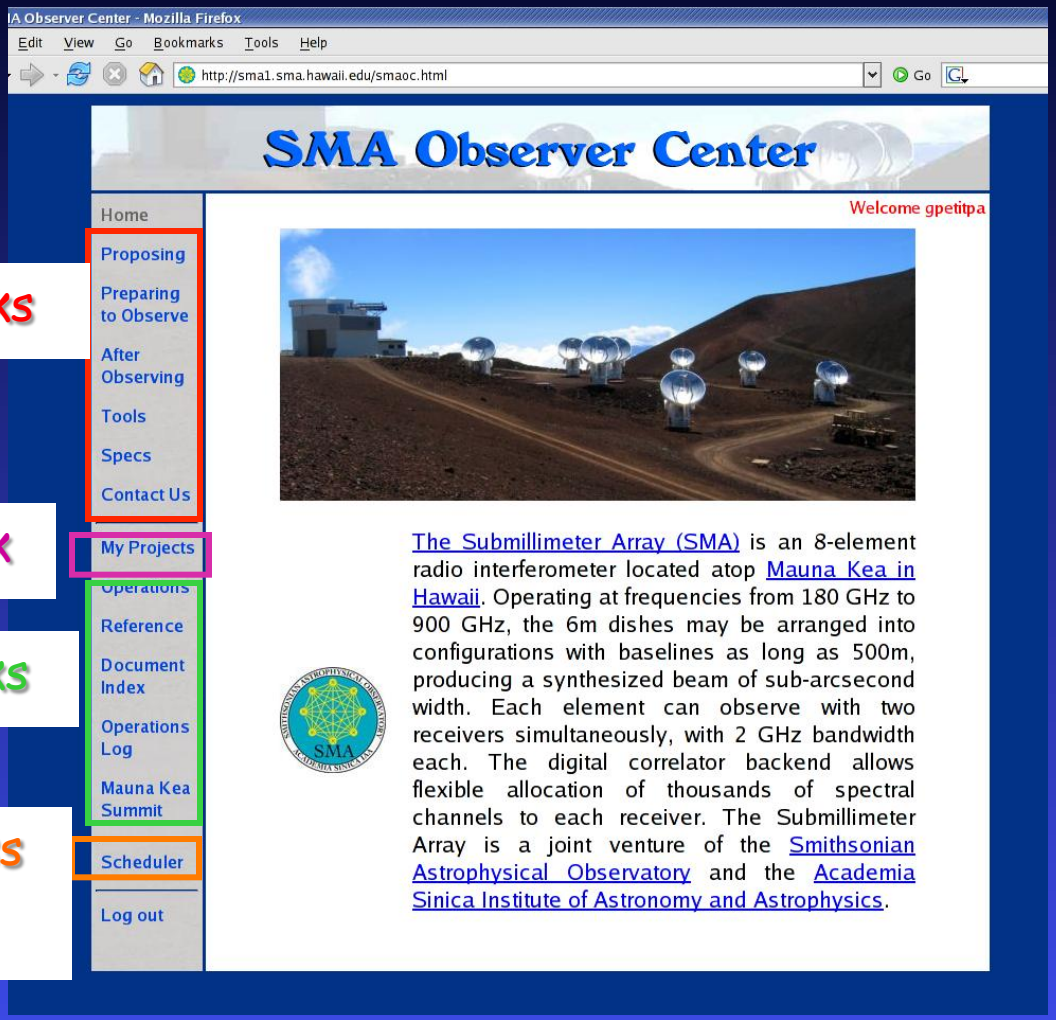
- Overview of proposal/TAC process
- Proposal statistics
- Publications
- Data Archive
- Student training/Outreach

Proposals*

- Two observing semesters per year (May 16 – Nov. 15, and Nov. 16- May 15).
- Proposal submission through SMA Observer Center (SMAOC).
- SMAOC provides up-to-date information on all projects and is the interface between users and the observatory.

*Large scale proposals (100-1000h) will be covered in Keto's talk

SMA Observer Center



Public Links

User Link

Staff Links

Special Access Link(s)

Courtesy: Glen Petitpas

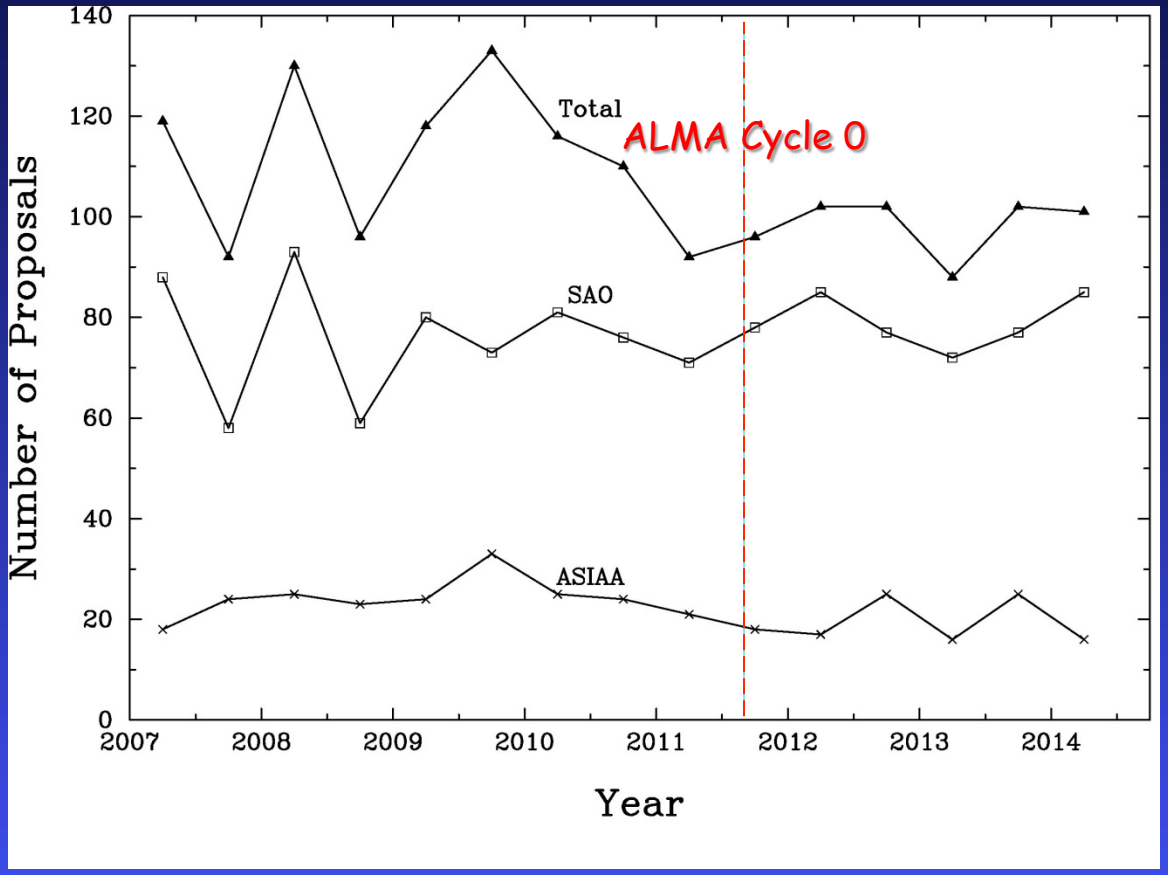
Time Allocation I

- Observing time share among three institutions: SAO 72.5%, IAA 12.5%, UH 15%
- Since September 2008, IAA and SAO proposals are reviewed and ranked by a single TAC, but time allocation is separate. Since 2011B, time allocation is based on a single ranking.
- Proposals reviewed by members of TAC (9-13 members) consisting of scientists from SMA, IAA, CfA, and outside community.
- UH runs a separate TAC on UH time share

Time Allocation II

- Each proposal reviewed by 4-6 TAC members;
- Proposals ranked, discussed and reevaluated at face-to-face meeting at CfA (next one in September).
- TAC Chair uses rankings to determine rough configuration schedule to best accommodate highest ranked proposals (including partners) . Final allocation with Director's approval.
- Proposals are rated by the TAC as
  - A: highest rating, executed on a best effort basis
  - B: middle rating, to be executed as time permits
  - C: lowest rating, will not be executed

No. of Proposals from SAO+IAA 2007-2014

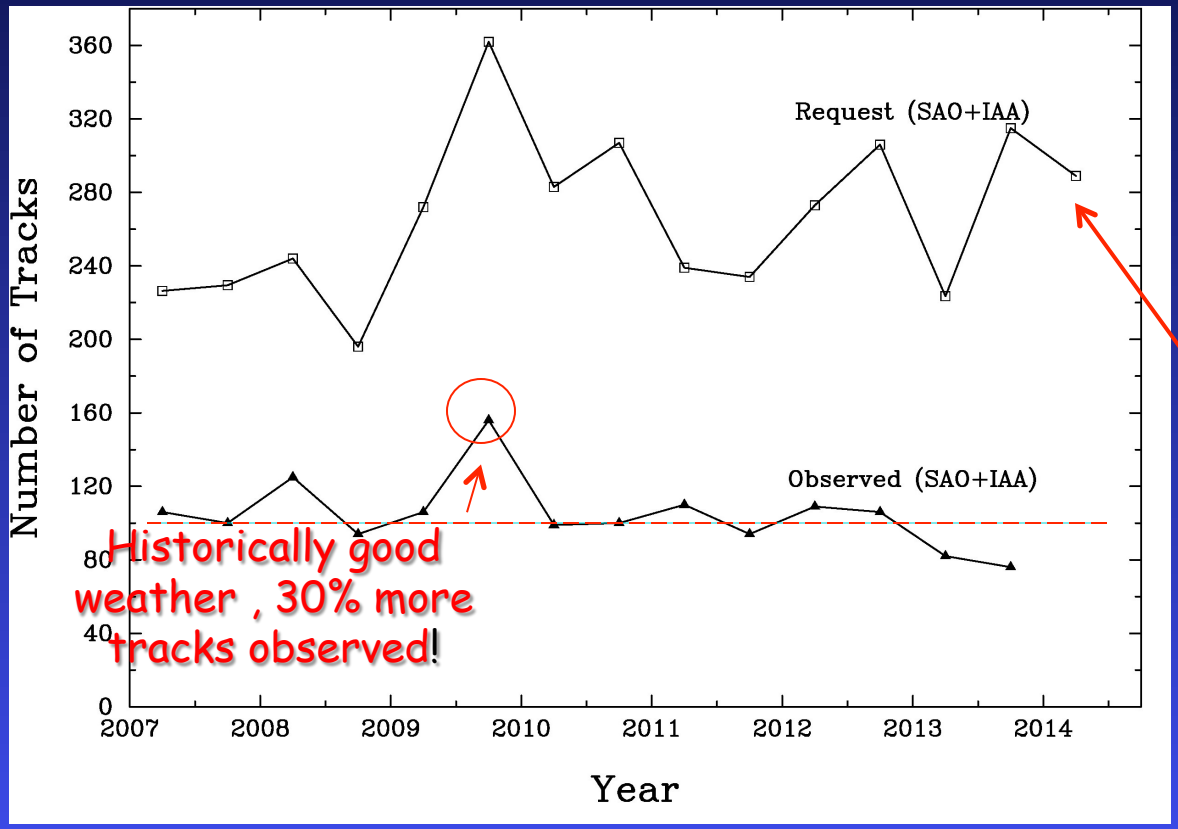


# of proposals: 1597 (106 per semester)
No. of unique PIs: 315

SAO per semester: 58 - 93
IAA per semester: 18 - 33

UH: Only approved projects (10 per semester) enter in the system

No. of tracks requested/observed from 2007-2014 (SAO+IAA only)



Requested (not including large-scale projects): 4000

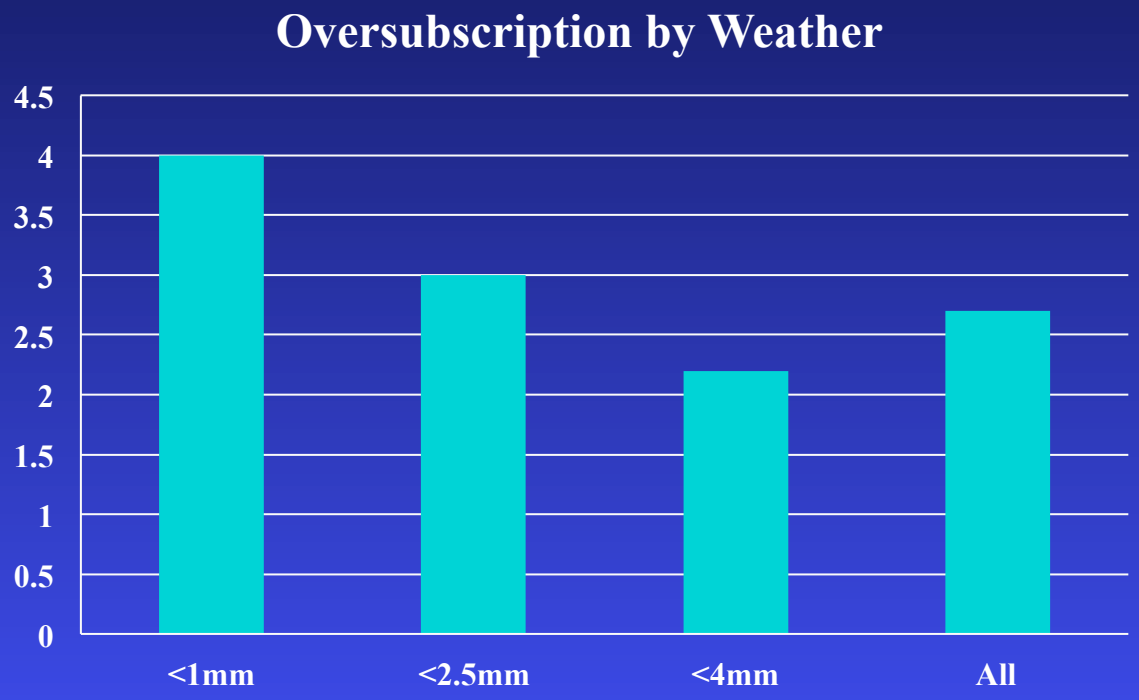
Observed: 1463*
*through May 15, 2014

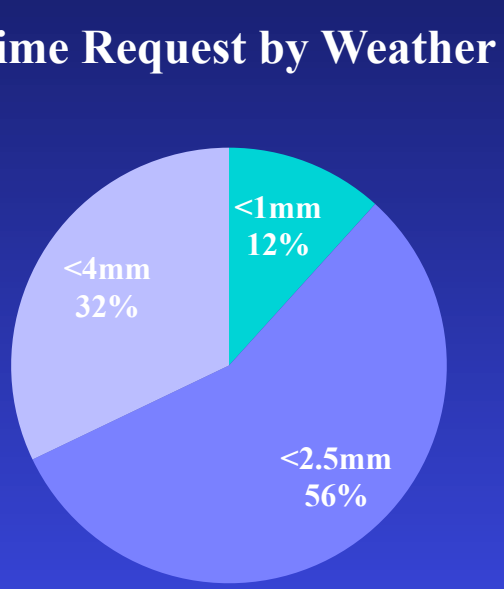
Oversubscription: 1:2.7

Current observing semester

Time Oversubscription

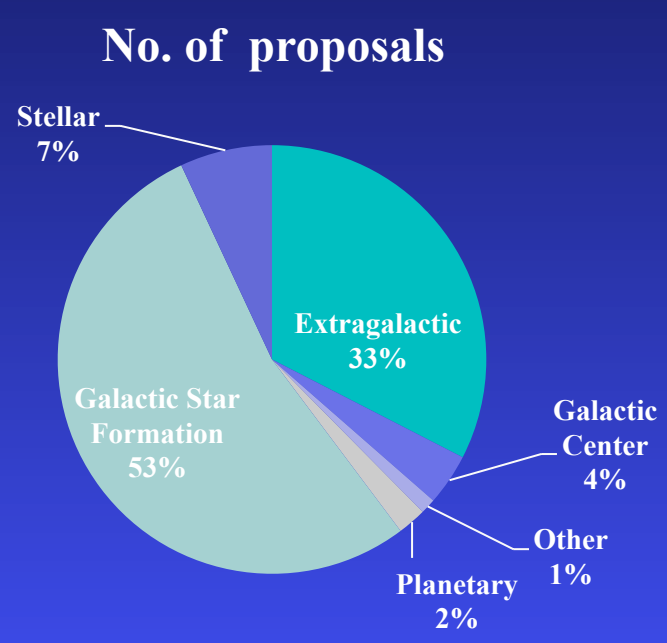
- Majority of time requests come at PWV < 2.5mm, normally reserved for 345 GHz

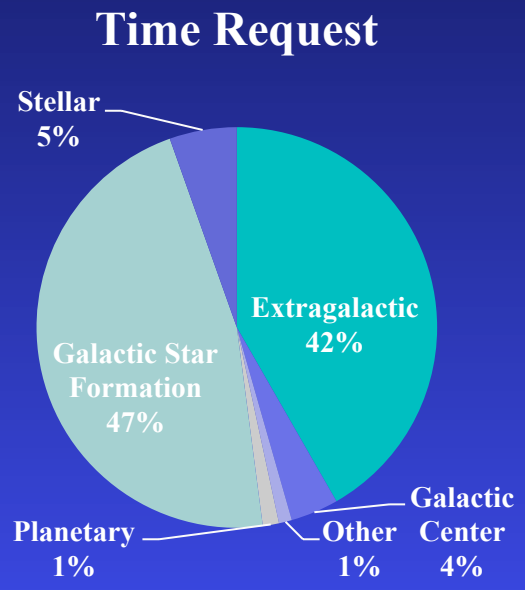




Proposals in science categories

- Galactic star formation and extragalactic science make up 86% of proposals, and are the main science drivers
- Extragalactic proposals (majority on submm galaxies) request more tracks per proposal





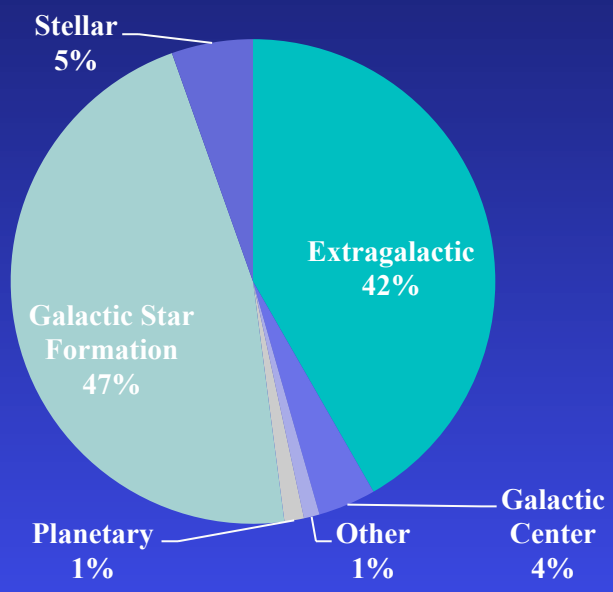
Refereed publications

- Total of 516 refereed publications 2007- 2014
- 80 papers/year from 2010-2014, 1.5paper/week
- SMA observes ~ 100 proposals per year
- ➔ 50% to as high as 80% projects result in publications

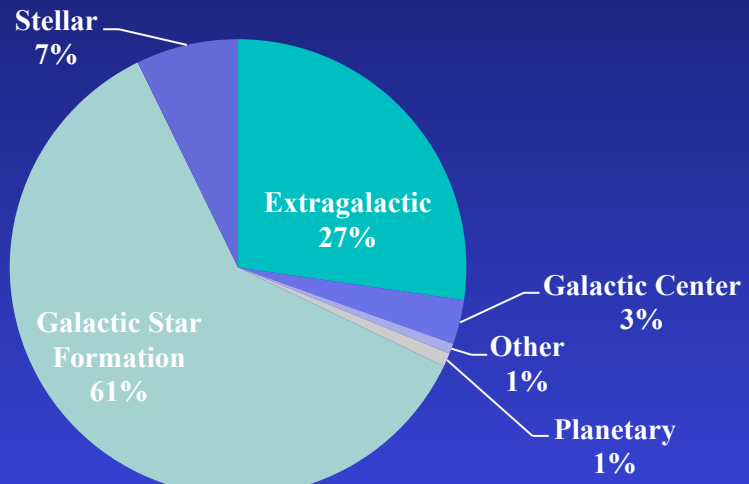
Observing time and publications

- Extragalactic projects tend to require more observing time as compared to star formation projects

No. of tracks observed



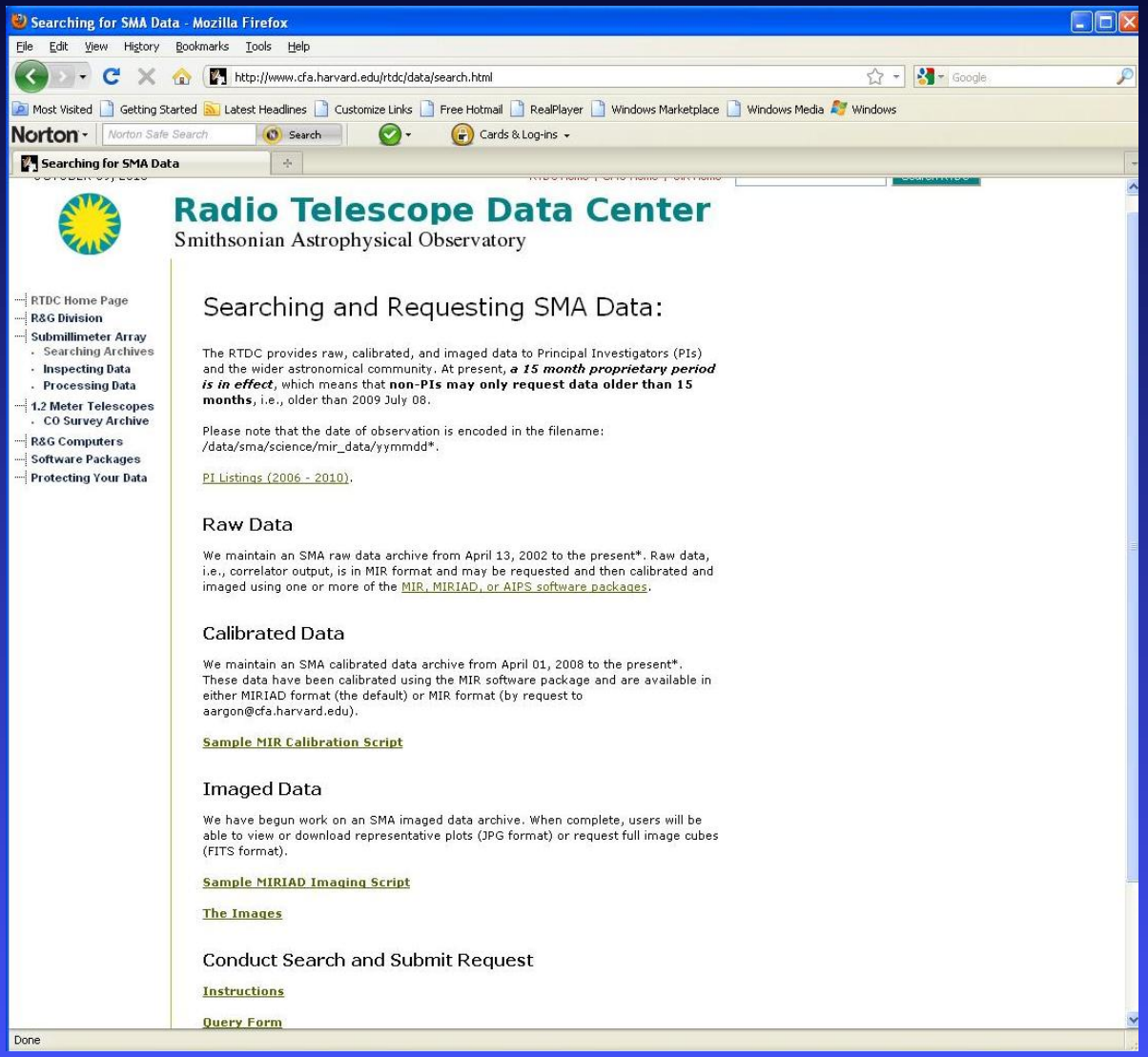
No. of Publications



Data Archive I

- Raw data archived in Hawaii and Cambridge
- Users obtain data through Radio Telescope Data Center (RTDC)
- SMA data have a proprietary period of 15 months
- Calibrated visibilities and images available to users from 2008

Data Archive II



PhD Theses with Significant Amount of SMA Data*

Harvard Students (12)

Peter Sollins (2005)
Dan Marrone (2006)
Joshua Younger (2009)
Meredith Hughes (2010)
Robert Harris (2013)
Meredith MacGregor (expected 2015)
Katherine Rosenfeld (expected 2016)
Ian Czekala (expected 2016)
Christopher Faesi (expected 2016)
How-Huan (Hope) Chen (expected 2016)
Dawn Graninger (expected 2017)
Ryan Loomis (expected 2018)

Other Universities (3)

Joanna Brown (Caltech, 2008)
Olja Panic (Leiden, 2009)
Simon Bruderer (EHT Zurich, 2010)

SAO Predocs and Visitors (23)*

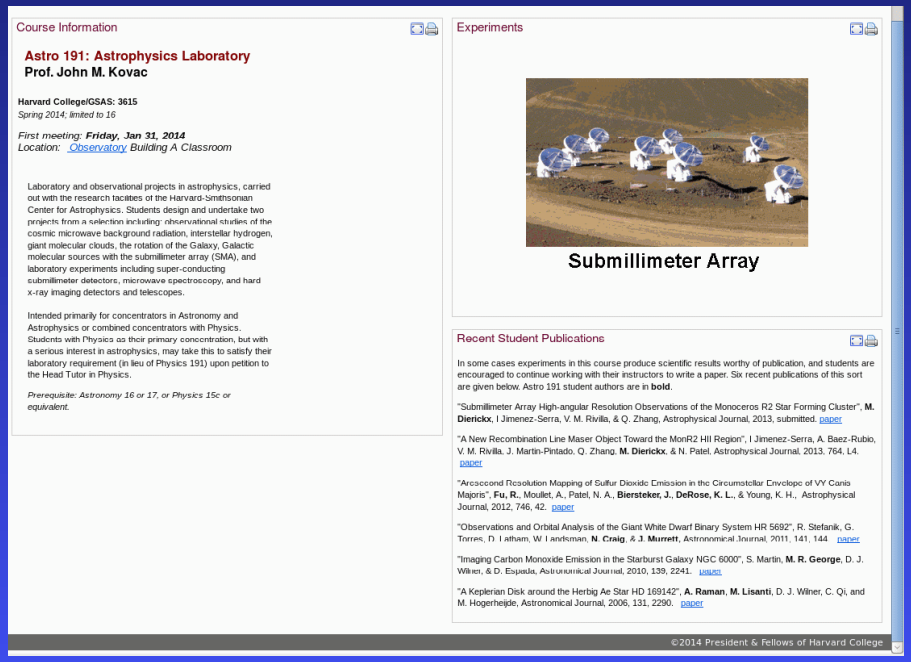
Junzhi Wang (Beijing, 2006)
Aina Palau (Barcelona, 2007)
Sheng-Li Qin (Beijing, 2008)
Ramiro Franco-Hernandez (UNAM, 2009)
Javier Rodon (MPIA, 2009)
Luis Zapata (UNAM, 2010)
Filipe Alves (Barcelona, 2010)
Gemma Busquet (Barcelona, 2010)
Cassendra Fallscheer (MPIA, 2010)
Keping Qiu (Nanjing, 2010)
Roberto Galvan-Madrid (UNAM, 2011)
Vivian U (Hawaii, 2011)
Lei Zhu (Beijing, 2011)
Ke Wang (Beijing, 2012)
Yuan Wang (MPIA, 2012)
Hao-Yu Liu (ASIAA, 2012)
Pau Frau (Barcelona, 2013)
Xuejian Jiang (Nanjing, 2014)
Katherina Immer (MPIfR, 2014)
Siyi Feng (MPIA, expected 2014)
Catherine McGuire (U Manchester, expected 2015)
Xing (Walker) Lu (Nanjing, expected 2015)
Tao-Chung Ching (Taiwan, expected 2015)

Of 14 PhDs (Harvard/SAO predocs), 7 are university faculty or obs. staff researcher.

* Not including students at partner institutions (ASIAA and UH) unless they were SAO predocs

Undergraduate Student Research and Postdocs

- Undergrad: SMA offers one of the experiments in Harvard Astronomy 191, Modern Astrophysics Laboratory, and produced 6 of the 7 class publications with Harvard undergraduate students.
- Postdocs: In addition to offering its own postdoc fellowship, SMA is a draw to other prize fellows (Hubble, NSF, Segan, Jansky, Einstein fellows)



Course Information

Astro 191: Astrophysics Laboratory
Prof. John M. Kovac

Harvard College/GSAS: 3615
Spring 2014; limited to 16

First meeting: ***Friday, Jan 31, 2014***
Location: Observatory Building A Classroom

Laboratory and observational projects in astrophysics, carried out with the research facilities of the Harvard-Smithsonian Center for Astrophysics. Students design and undertake two projects from a selection including: observational studies of the cosmic microwave background radiation, interstellar hydrogen, giant molecular clouds, the rotation of the Galaxy, Galactic molecular sources with the submillimeter array (SMA), and laboratory experiments including super-conducting submillimeter detectors, microwave spectroscopy, and hard x-ray imaging detectors and telescopes.

Intended primarily for concentrators in Astronomy and Astrophysics or combined concentrators with Physics. Students with Physics as their primary concentration, but with a serious interest in astrophysics, may take this to satisfy their laboratory requirement (in lieu of Physics 191) upon petition to the Head Tutor in Physics.

Prerequisite: Astronomy 16 or 17, or Physics 15c or equivalent.

Experiments

Submillimeter Array

Recent Student Publications

In some cases experiments in this course produce scientific results worthy of publication, and students are encouraged to continue working with their instructors to write a paper. Six recent publications of this sort are given below. Astro 191 student authors are in **bold**.

"Submillimeter Array High-angular Resolution Observations of the Monoceros R2 Star Forming Cluster", **M. Dierickx**, I Jimenez-Serra, V. M. Rivilla, & Q. Zhang, Astrophysical Journal, 2013, submitted. paper

"A New Recombination Line Maser Object Toward the MonR2 HII Region", I Jimenez-Serra, A. Baez-Rubio, V. M. Rivilla, J. Martin-Pintado, Q. Zhang, **M. Dierickx**, & N. Patel, Astrophysical Journal, 2013, 764, L4. paper

"Arcsecond Resolution Mapping of Sulfur Dioxide Emission in the Circumstellar Envelope of VY Canis Majoris", **Fu, R.**, Moullet, A., Patel, N. A., **Biersteker, J.**, **DeRose, K. L.**, & Young, K. H., Astrophysical Journal, 2012, 746, 42. paper

"Observations and Orbital Analysis of the Giant White Dwarf Binary System HR 5692", R. Stefanik, G. Torres, D. Latham, W. Landsman, **N. Craig**, & **J. Murrett**, Astronomical Journal, 2011, 141, 144. paper

"Imaging Carbon Monoxide Emission in the Starburst Galaxy NGC 6000", S. Martin, **M. R. George**, D. J. Wilner, & D. Espada, Astronomical Journal, 2010, 139, 2241. paper

"A Keplerian Disk around the Herbig Ae Star HD 169142", **A. Raman**, **M. Lisanti**, D. J. Wilner, C. Qi, and M. Hogerheijde, Astronomical Journal, 2006, 131, 2290. paper

Outreach

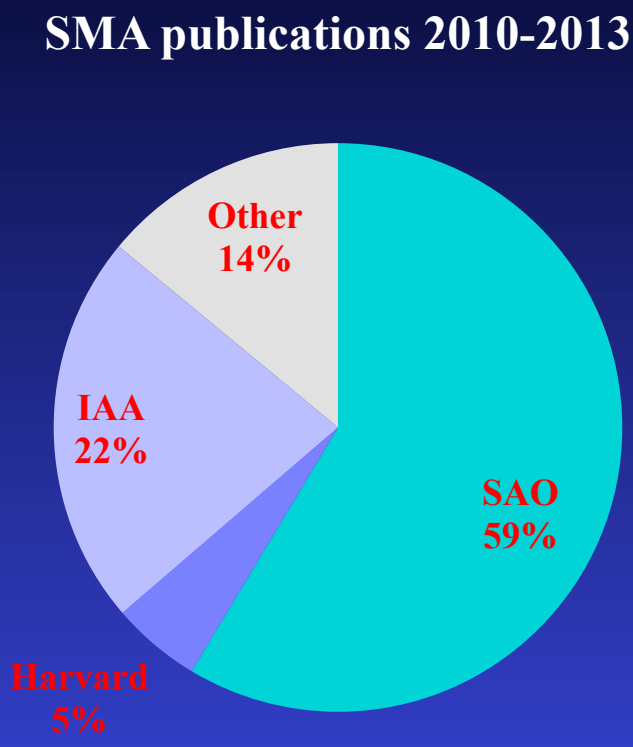
- 1597 proposals from 2007-2014 with 315 unique PIs (over 50% from outside community).
- 516 refereed publications in the same period with over 1000 unique authors (64% of papers have CfA participaton).
- Number of projects observed and number of publications suggest that on average 50% to as high as 80% of projects observed are published.

Summary:

- SMA is a highly sought instrument among the mm/ submm community.
- Science output from the SMA remains steady in the last 4 years, and compares favorably to other similar facilities.
- The main science output of the SMA is galactic star formation (61% publications) and extragalactic science (27% publications).

Backup slides

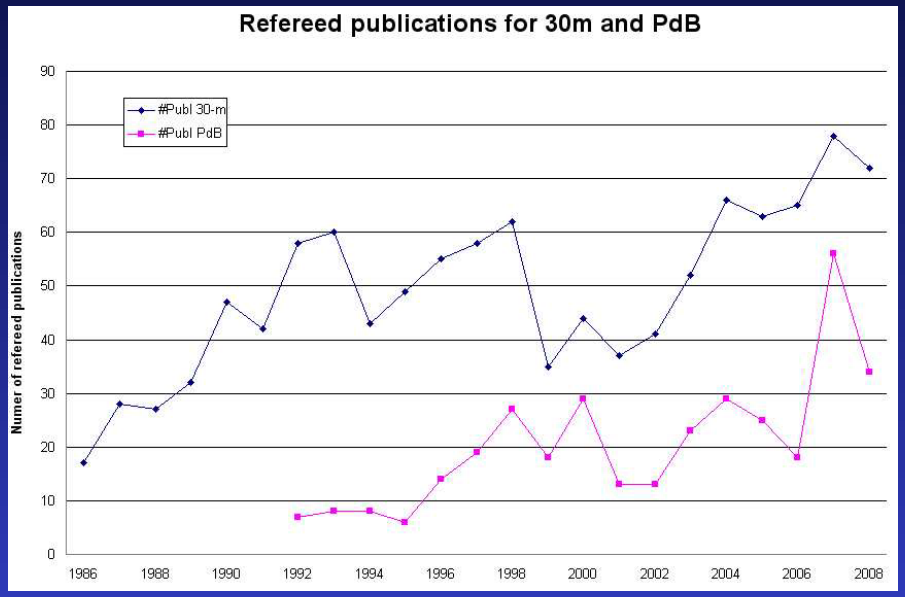
SMA publication by authors affiliation



20% 1st authors from CfA

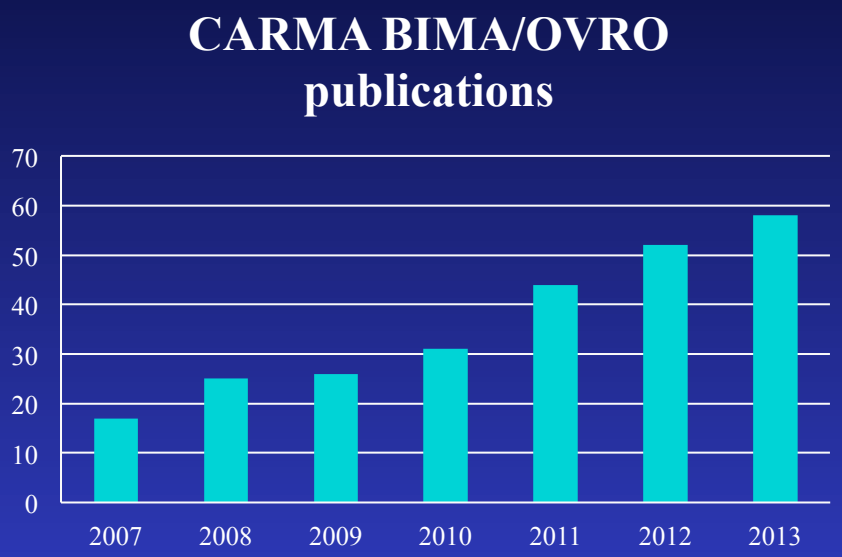
"Other": papers with no CfA nor ASIAA participation

Publications by other facilities



IRAM publications

Source: IRAM Newsletters 2009 Feb. issue



CARMA publications

Source: http://www.mmarray.org/