

NRAO an NSF Facility



National Radio Astronomy Observatory



Atacama Large Millimeter/submillimeter Array
Expanded Very Large Array
Robert C. Byrd Green Bank Telescope
Very Long Baseline Array



NRAO: Enabling Forefront Research



Fred K.Y. Lo

Director

Atacama Large Millimeter/submillimeter Array

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NRAO in 2013

4 Forefront Facilities, under **Open Skies** policy

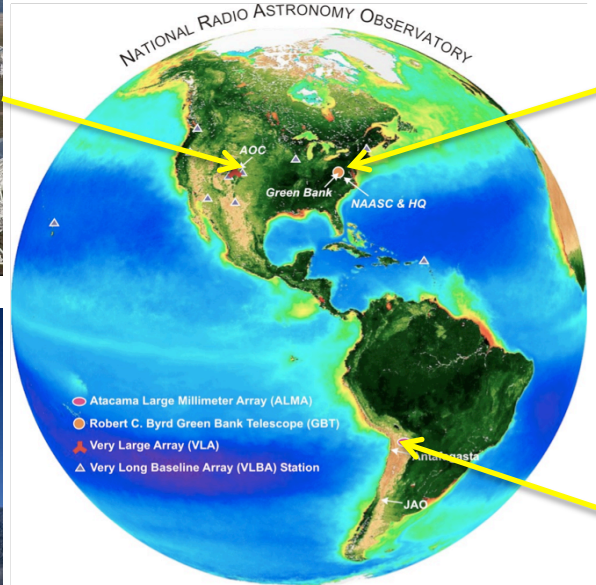
Complement HST, Chandra, Herschel, SOFIA, Gaia, LSST, JWST, GSMT, LIGO,...



EVLA



GBT



VLBA

ALMA



Implementing NWNH goals

- Indispensable for addressing many key science questions
 - Enhanced user support for ALMA, EVLA, VLBA and GBT
 - NA ALMA Science Center in CV
 - Array Science Center in SO
 - GB Science Ops in GB
- Towards the future
 - Help realize NWNH highly ranked mid-scale projects
 - NANOGrav, PAPER/HERA, FASR
 - Develop current facilities to maintain best performance
 - CDL: long term R+D for next generation facilities
 - e.g. Digital backend; Signal Processing; design towards manufacturing...



Highlights

- EVLA Early Science started 30 September 2010
 - ApJL Special Issue published September 2011
- ALMA Early Science started 30 September 2011
 - First datasets just delivered
- GBT: 2nd generation instrumentation
 - λ 3.5mm receiver, λ 1cm FPA, λ 3mm MUSTANG
 - GUPPI and VEGAS
- VLBA:
 - Software correlator
 - Increased BW to 2 Gbps: higher sensitivity
 - New 4-8 GHz receivers



Science with NRAO Telescopes

1 Star Formation

Crystal Brogan

2 Galaxy Evolution

Adam Leroy

3 Observing with NRAO Telescopes

Dale Frail



New name to recognize the dramatic new capabilities of the transformed VLA

- Public call for nominations for new name
 - mid-October to 1 December 2011
- Extensive world wide news coverage
- 23,331 suggestions submitted by 17,023 people from more than 65 countries;
 - The number of unique names submitted was 16,223
- Personal favorite is the suggestion by Roger Blandford:
Fabulous Radio Extragalactic Device (FRED)
- New name that becomes official at dedication ceremony on 31 March 2012

Karl G. Jansky Very Large Array (Jansky VLA)



1932: Beginning of Radio Astronomy

Karl Jansky, studying static from thunderstorms at Bell Labs, discovered radio waves from the center of Milky Way

