



ALMA

TAC and the Proposal Process



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ALMA Review Panel

March 20, 2012

In search of our Cosmic Origins



ALMA Documents which describe the TAC process

- **NOT FOR DISTRIBUTION**

- Principles of ALMA Proposal Review Process
 - *K.Y. Lo, T. de Graauw, S. Miyama, M. Rubio, T. de Zeeuw (2011)*
- Proposal Review Process – Cycle 0
 - *L. Nyman (2011)*
- Guideline for Science Assessors
 - *Gautier Mathys (2011)*



The Atacama Large Millimeter/submillimeter Array (ALMA), an international astronomy facility, is a partnership among Europe, North America and East Asia in cooperation with the Republic of Chile (20 flags)



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ALMA shares

- Europe: 33.75%
- North America: 33.75%
- East Asia: 22.50%
- Chile: 10.00%

TOTAL: 100.0%

} 'Rest of the world'
shared between
these regions



Open Skies principles

- Open Skies proposals: PI or co-PI not from the four regions.
- Treated in identical manner to other proposals until rankings reach JAO Director, when they will be 'adjusted'.
- 'Up' to 5% of total ALMA time available (charged to four regions in ratio 33.75%:33.75%:22.5%:10%).
- Time in excess of 5% 'charged' to North America (following US government policy).
- PI chooses most convenient *ALMA Regional Centre (ARC)* for support.



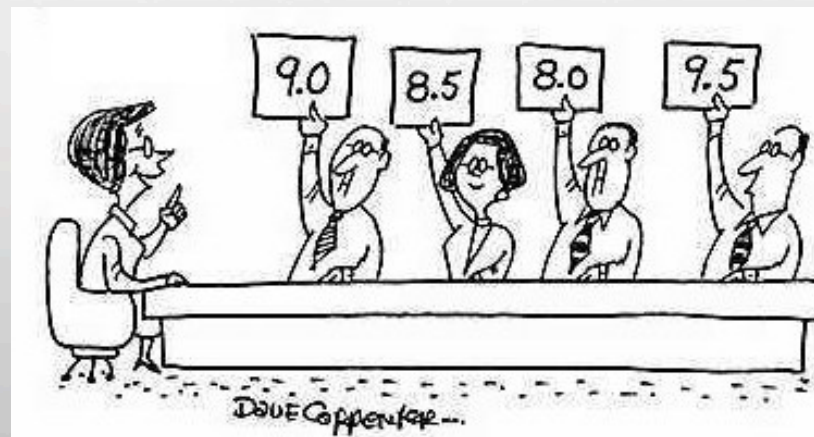
Principles of assigning ALMA observing time

- Scientific merit
- Technical feasibility
 - *Extremely few cycle 0 proposals rejected for technical reasons*
- Regional balance
 - *Differences in oversubscription*
- Proprietary time 12 months
- Single ALMA TAC (inc. Chile)



ALMA Review Panels: cycle 0 science areas

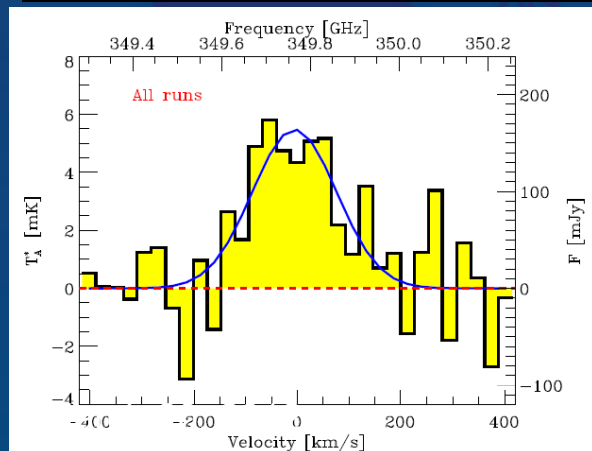
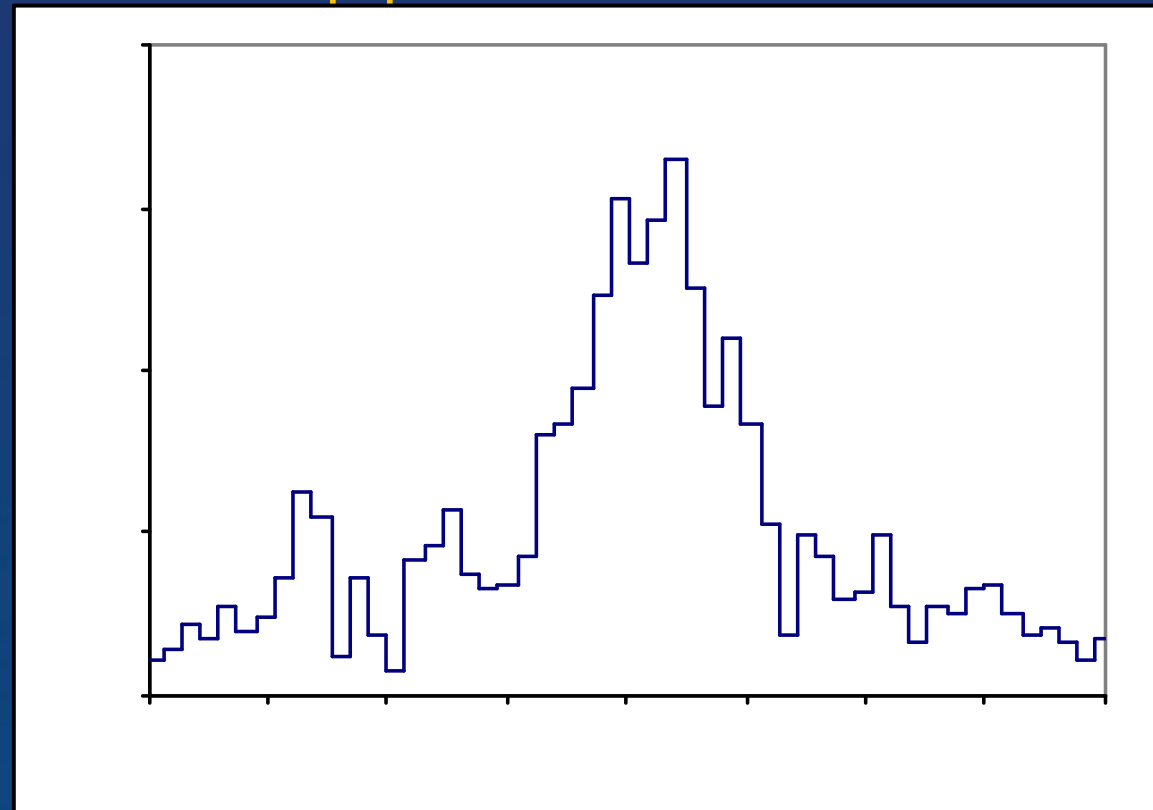
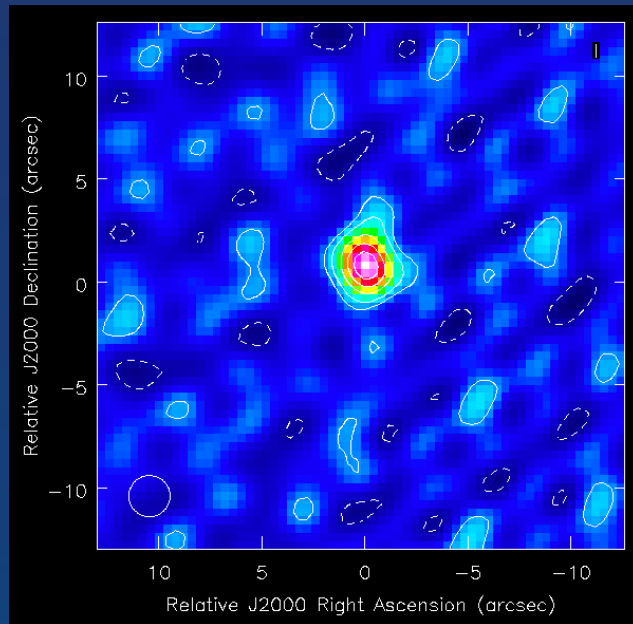
1. Cosmology and the high redshift Universe
2. Galaxies and galactic nuclei
3. ISM, star formation/protoplanetary disks and their astrochemistry, exoplanets
4. Stellar evolution, the Sun and Solar System





Science Verification Observing Modes: Extragalactic: High Redshift Line Sources

C[III] line in BRI 0952 at $z=4.4$



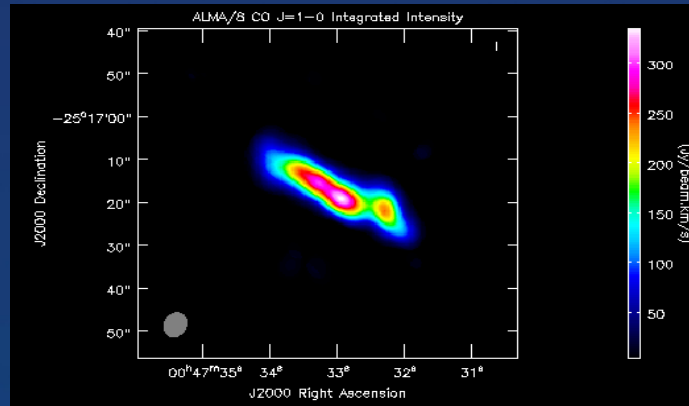
← APEX

ALMA Band 7 ↑

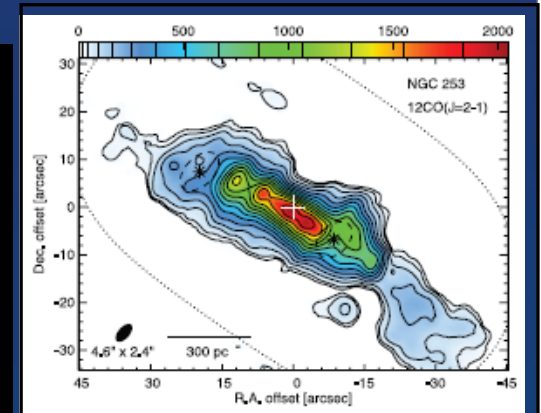
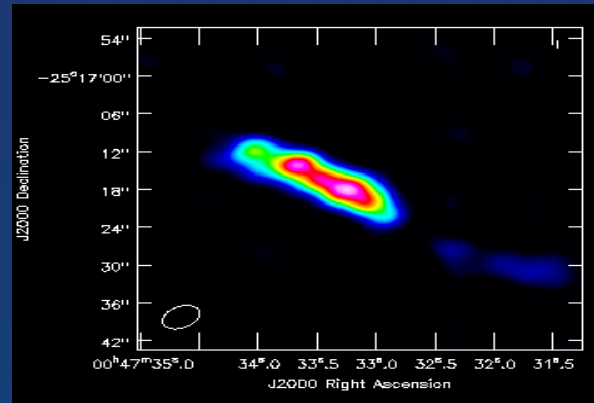


NGC253: a “starburst” galaxy in 4 transitions

NGC 253 – B3 – CO J=1-0

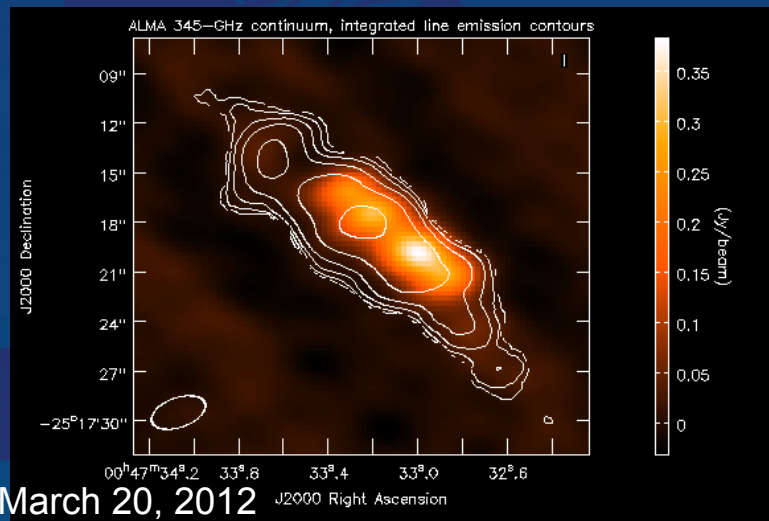


NGC 253 – B6 – CO J=2-1



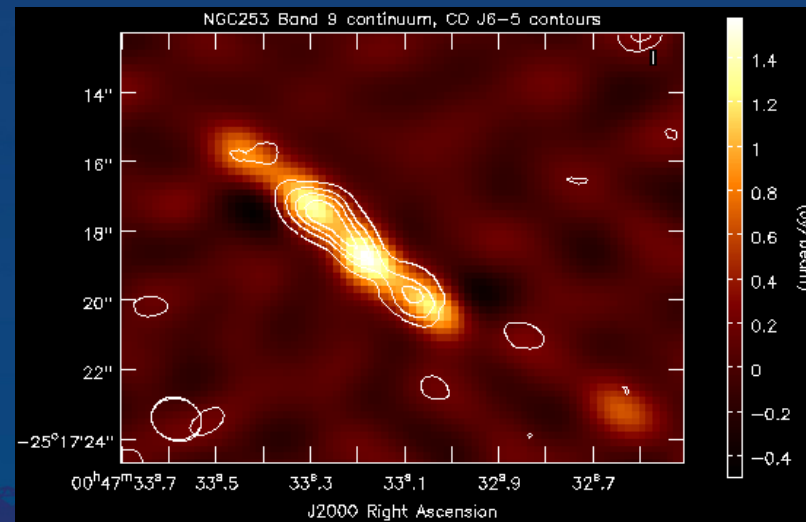
(Sakamoto et al, 2006)

NGC 253 – B7 – CO=3-2



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NGC 253 – B9 – CO=6-5

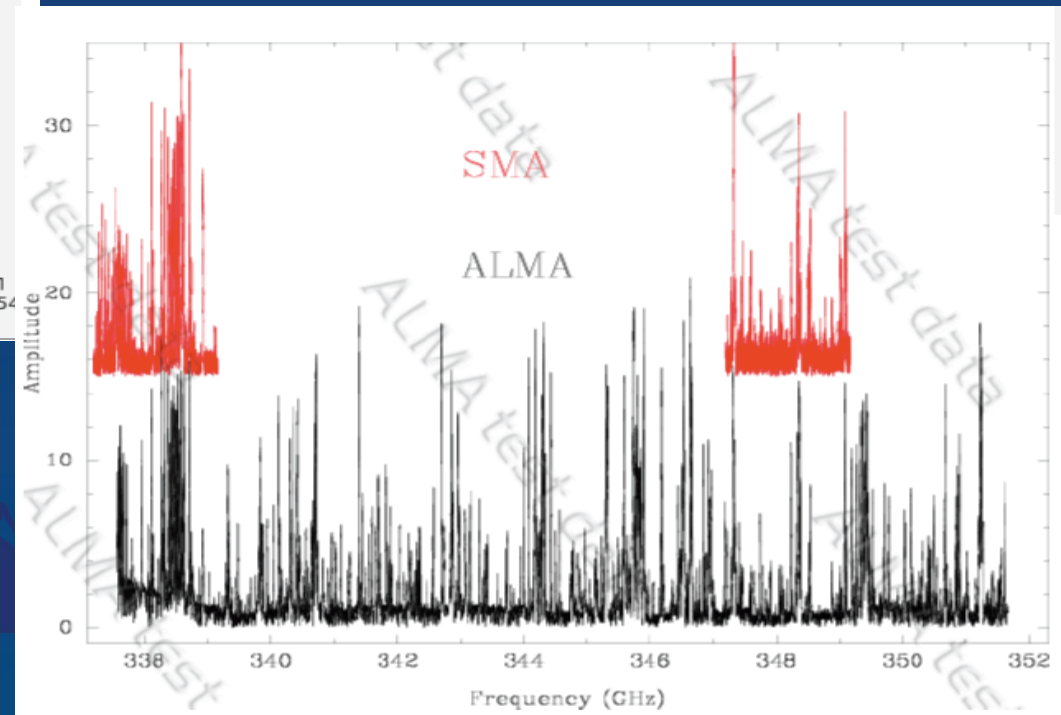
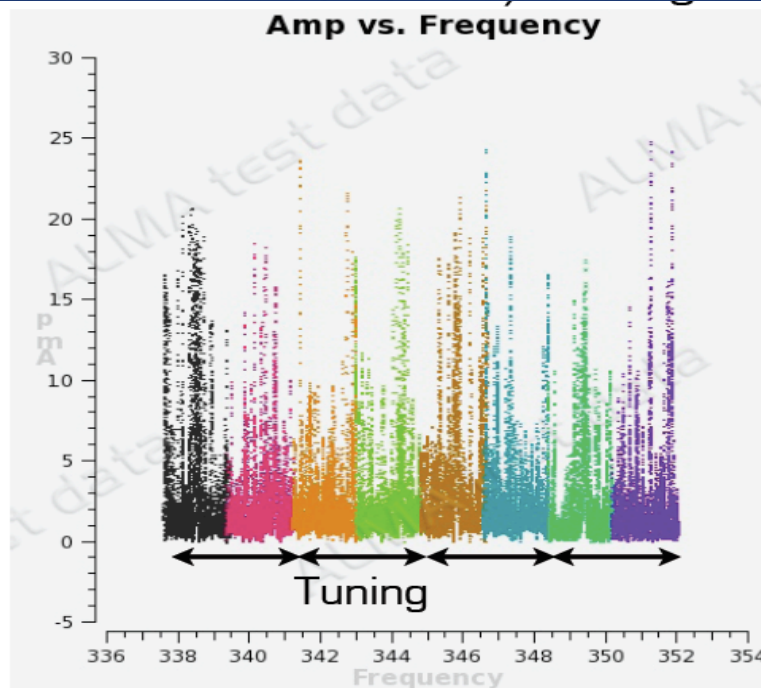


In search of our Cosmic Origins



Orion Spectral Sweep

- 4 Tunings
- Total Bandwidth 14.7 GHz
- 14 min. on source per tuning



Red=SMA (Beuther et al.)

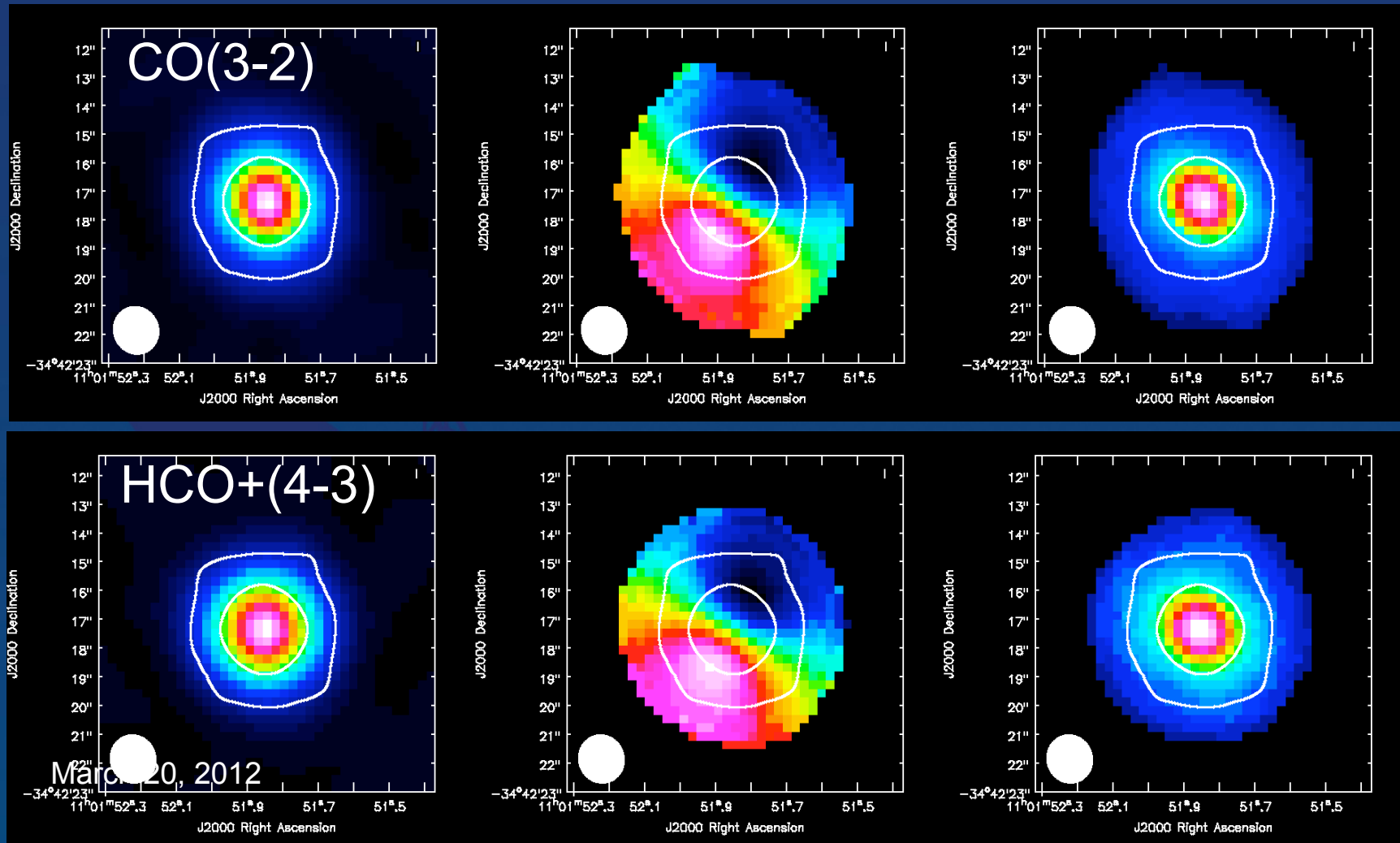
Black=ALMA



TW Hydra: a proto-planetary Disk

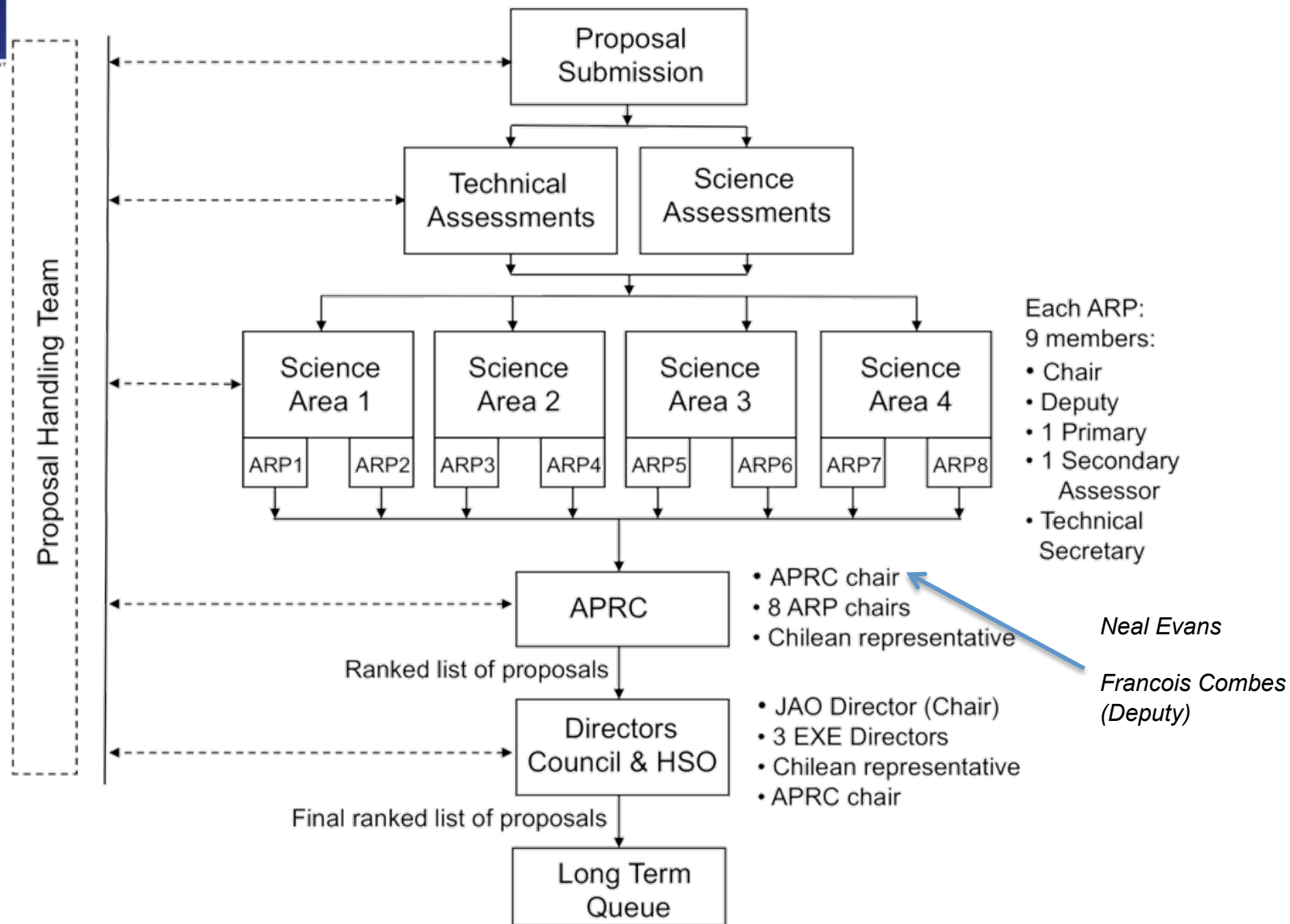
Moment Maps of CO(3-2) and HCO+(4-3)

Molecular emission is quite extended, Keplerian motion obvious; HCO+(4-3) is more centrally concentrated than the CO(3-2)





Proposal Review Process





ALMA TAC members (public info)

- 50 MEMBERS; TWO FROM NON-MEMBER COUNTRIES
- PANEL ASSIGNMENTS CONFIDENTIAL

Neal Evans (chair)

Francois Combes (Deputy)

Yoshiaki Taniguchi

Neil Nagar

Jacqueline Bergeron

Andrew Blain

Rob Ivison

Alexandra Pope

Nick Scoville

Andrew Baker

Hiroshi Karoji

Dieter Lutz

Sadanori Okamura

Chirstine Wilson

Frank Israel

Jayenne English

Leslie Hunt

Pauline Lira

Masato Tsuboi

Ryohei Kawabe

Beatriz Barbuy

Tracy Clarke

Gaspar Galaz

Raffaella Morganti

Dave Sanders

John Bally

Cecilia Ceccarelli

Asuncion Fuente

Yasuo Fukui

Akiro Mizuno

Debra Shepherd

Guido Garay

Yuri Aikawa

Rachel Akeson

Jorma Harju

Ilaria Pascucci

Dave Wilner

Tom Millar

Luis Felipe Rodriguez

Maite Beltran

Leonardo Bronfman

John Carpenter

Naomi Hirano

Jose Cernicharo

Dariusz Lis

Dominique Bockelee-Morvan

Leen Decin

Hans Olofsson

Takashi Onaka

Lister Staveley-Smith



Cycle 0 outcomes

Cycle 0 Proposal submission deadline: **June 30**
919 proposals received

112 proposals awarded 'high-priority' status

Early Science started ~30 September

FIRST PRIORITY IS COMPLETION OF THE ARRAY

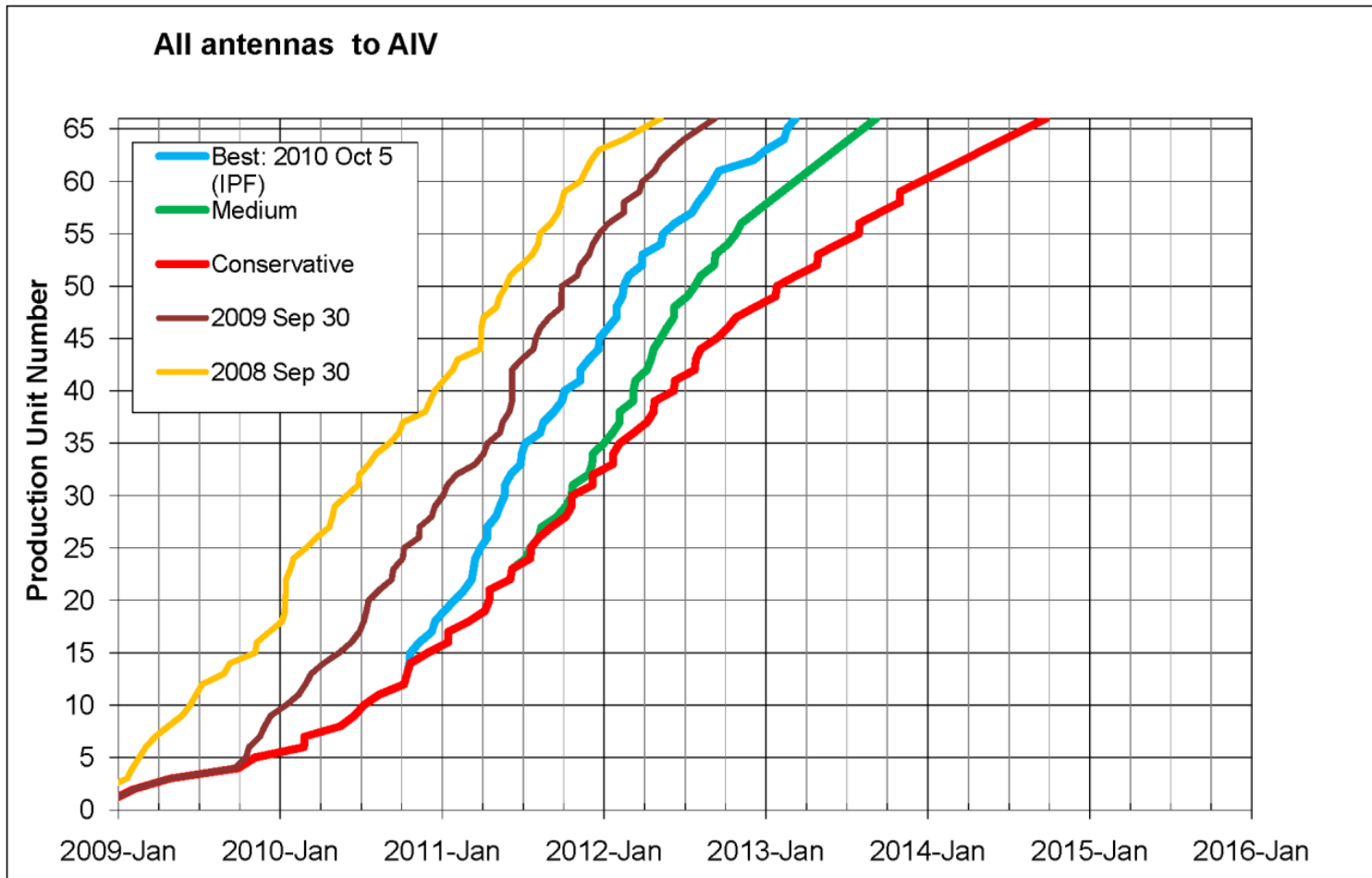


ALMA Proposal Timeline

- 1 June 2011: Open for proposal submission
- 30 June 2011: Proposal Deadline
- 15 August 2011: Cycle 0 TAC meeting
- 30 September 2011: Start of ALMA Cycle 0 observing
- February 2012: Engineering shutdown
- June-July 2012: Open for proposal submission?
- July-August 2012: Deadline for Cycle 1 proposal submission?
- 1 October 2012: Cycle 1 TAC meeting
- 1 January 2013: Cycle 1 observing begins?



Construction schedule



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Expected ALMA Cycle 1 capabilities

CYCLE 0

- Sixteen 12-m antennas
- 10% science availability
- Receiver bands 3, 6, 7 & 9
(wavelengths of 3, 1.3, 0.8 and 0.45 mm)
- Two array configurations
 - Compact: 18-25m
 - Extended: 36-400m
- Mosaics of up to 50 pointings
- Correlator modes: both continuum and spectral line
- Manual data reduction

CYCLE 1

- Thirty-two 12-m antennas
- Six 7-m antennas; two 12-m total power antennas
- 60% science availability
- Receiver bands 3, 6, 7 & 9
(*maybe bands 4 & 8 for ACA**)
- Expanding/contracting configuration
 - Maximum baseline 150-1000m
- Mosaics of up to 150 pointings
- Zero spacing (spectral-line only)
- Correlator: separate bandwidths for each baseband
- *Polarization (continuum only)**
- *Solar observing**
- Pipeline data reduction

**special observing modes*



Proposal advice

- Science justification is limited to TWO pages!
- Suggested format:
 - *Big picture intro, including what the main questions that the field is attempting to answer*
 - *Briefly describe proposed observations*
 - *Describe expected outcome AND how this helps answer some of the big questions above.*
- Another THREE pages for figures, table, technical justification, references and outreach.



Other Advice for Australian proposers

- Choose most convenient *ALMA Regional Centre (ARC)* for support
 - Japan for time zone
 - Otherwise based on research field (I use ESO)
- No disadvantage to Australians being PIs (I think non-member time is well beneath 5%)
- If collaborating with member-country PIs, those from Chile and East Asia appear to have lowest over-subscriptions



www.almaobservatory.org

The Atacama Large Millimeter/submillimeter Array (ALMA), an international astronomy facility, is a partnership of Europe, North America and East Asia in cooperation with the Republic of Chile. ALMA is funded in Europe by the European Organization for Astronomical Research in the Southern Hemisphere (ESO), in North America by the U.S. National Science Foundation (NSF) in cooperation with the National Research Council of Canada (NRC) and the National Science Council of Taiwan (NSC) and in East Asia by the National Institutes of Natural Sciences (NINS) of Japan in cooperation with the Academia Sinica (AS) in Taiwan. ALMA construction and operations are led on behalf of Europe by ESO, on behalf of North America by the National Radio Astronomy Observatory (NRAO), which is managed by Associated Universities, Inc. (AUI) and on behalf of East Asia by the National Astronomical Observatory of Japan (NAOJ). The Joint ALMA Observatory (JAO) provides the unified leadership and management of the construction, commissioning and operation of ALMA.

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