ALMA Cycle 9 Proposal Statistics

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Based on slides prepared by

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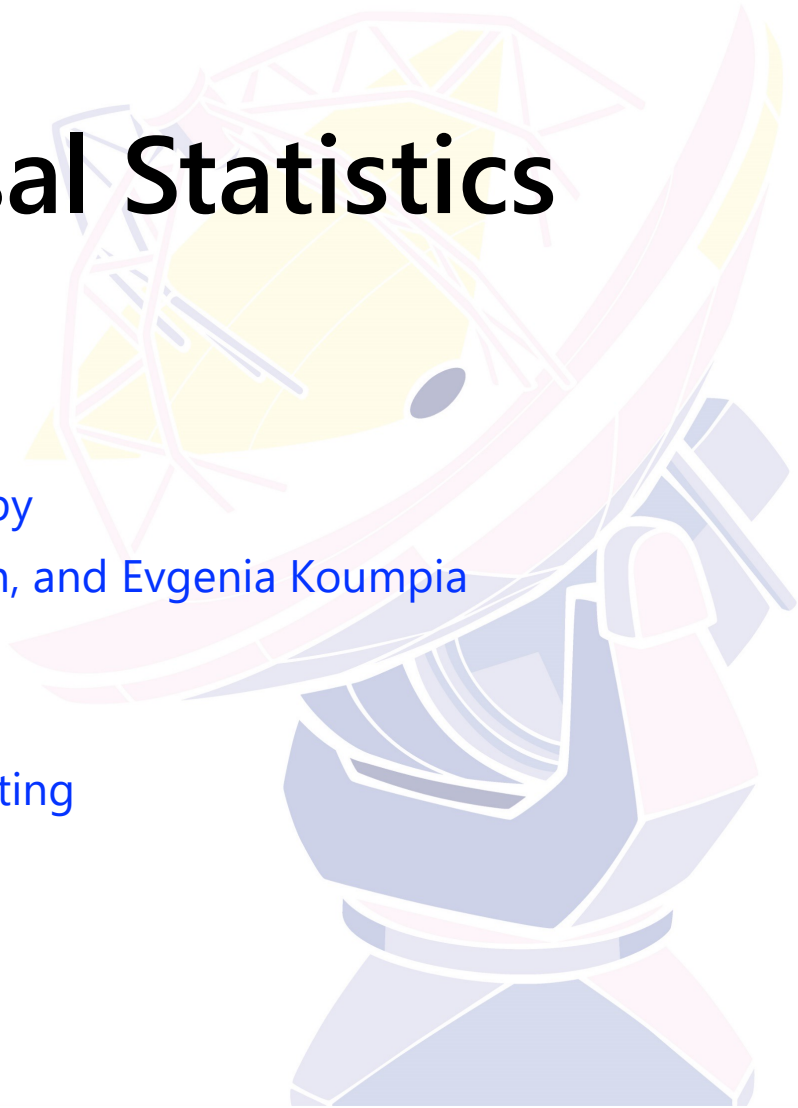
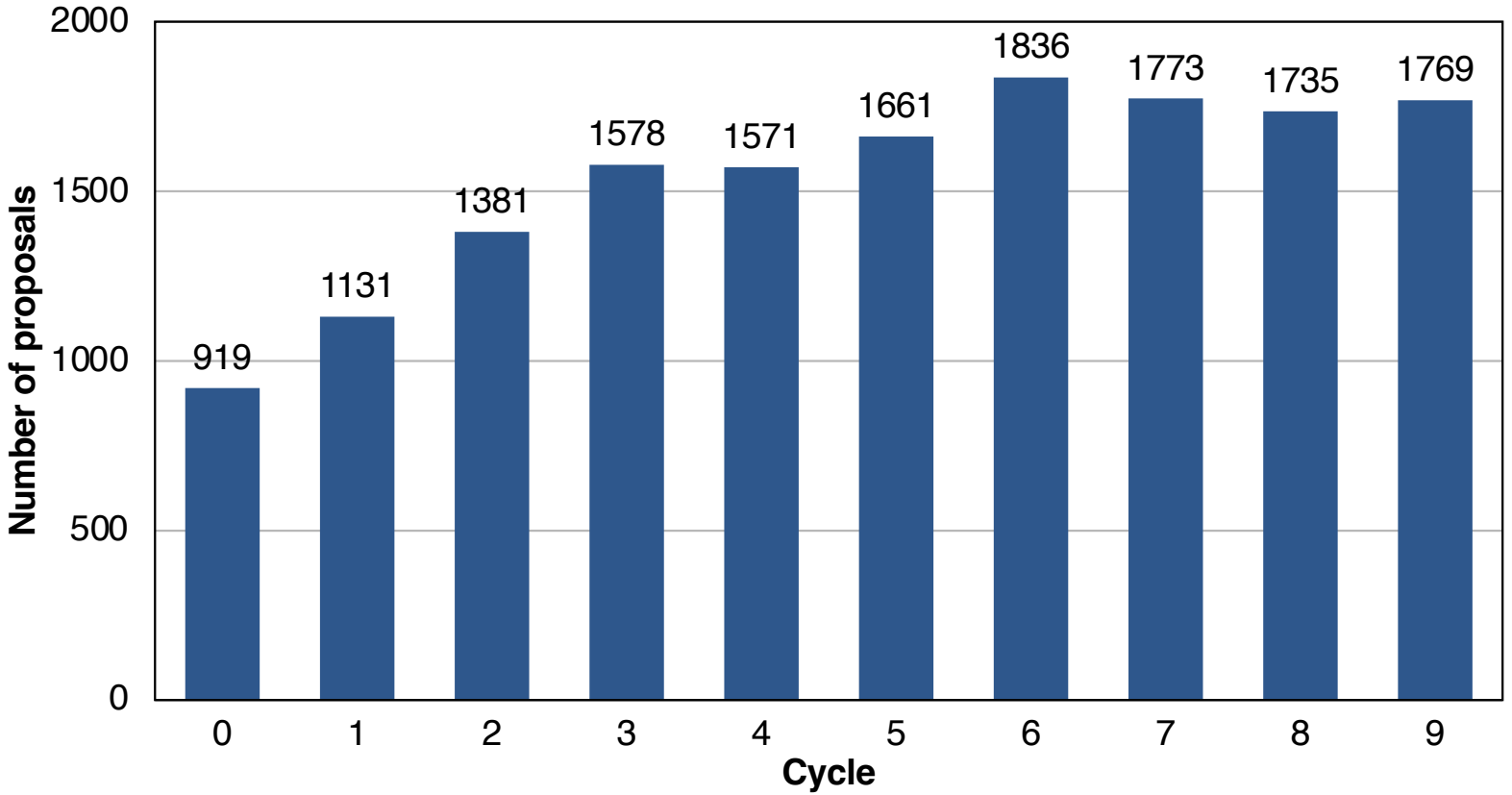
ALMA/45m/ASTE Users Meeting



国立天文台 NAOJ National Astronomical Observatory of Japan

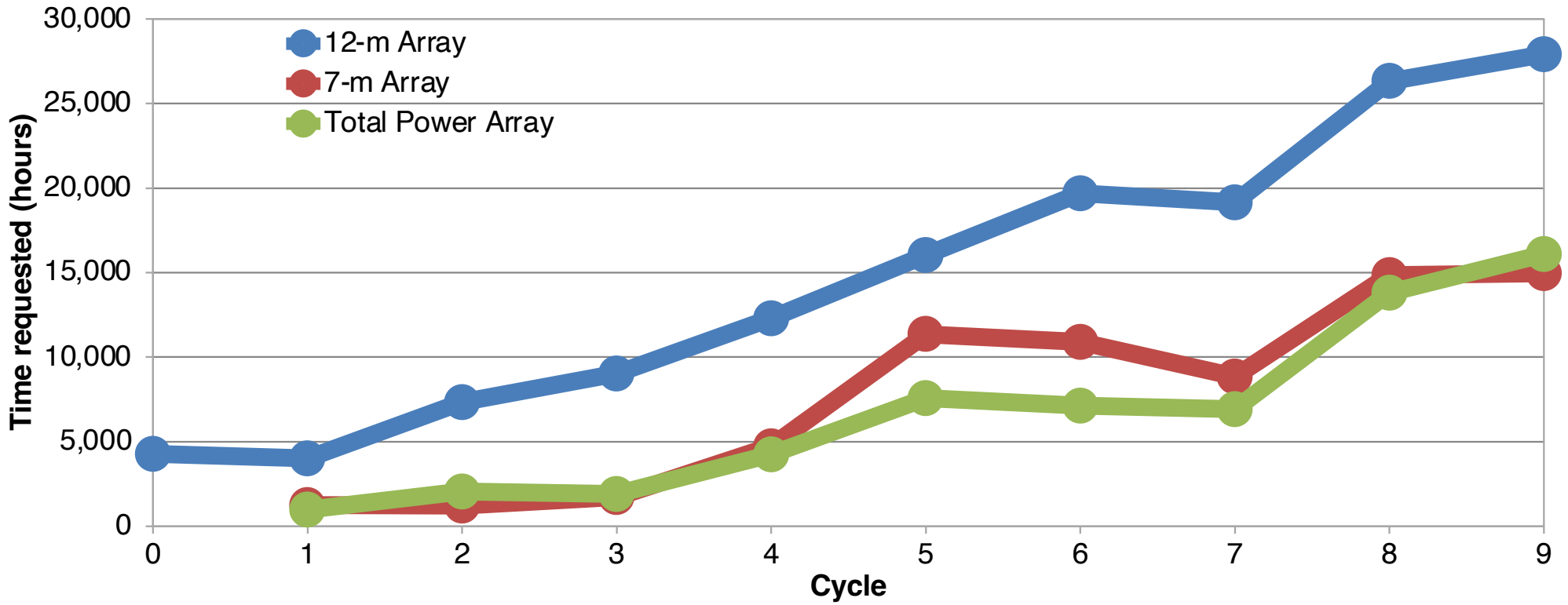
Number of submitted proposals by Cycle

Slight increase in the number of submitted proposals in Cycle 9.



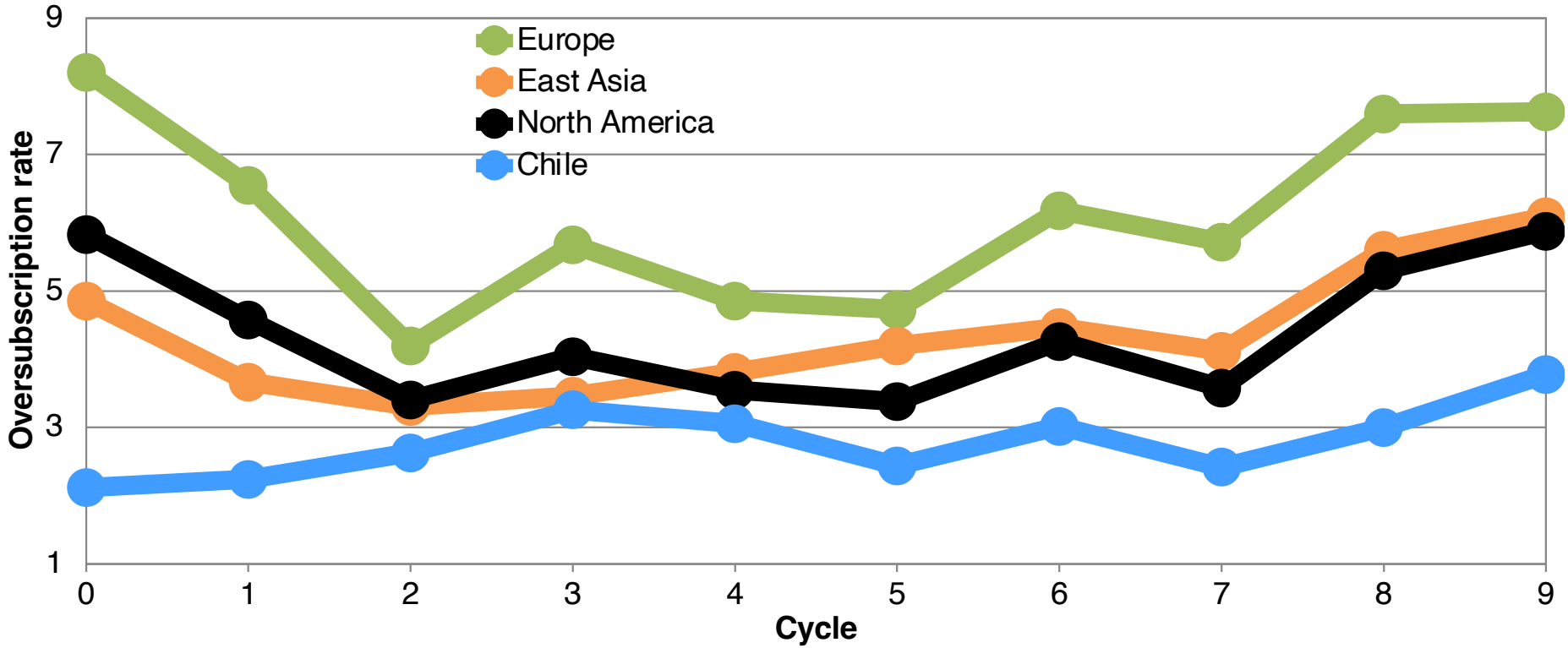
Time requested by Cycle

A record amount of time requested on all three arrays, although the rate of increase is smaller than in Cycle 8.



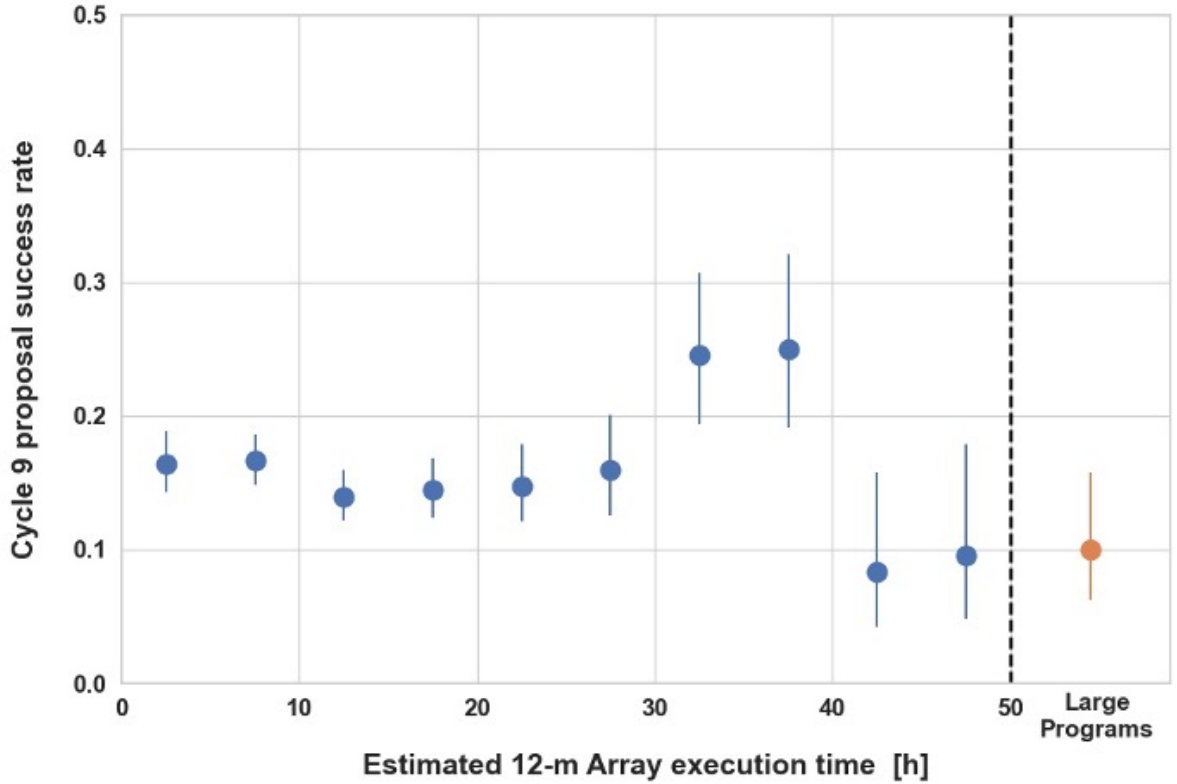
Oversubscription rate on 12-m array by Cycle and region

Record oversubscription rate in East Asia, North American, and Chile. Europe still has the highest oversubscription



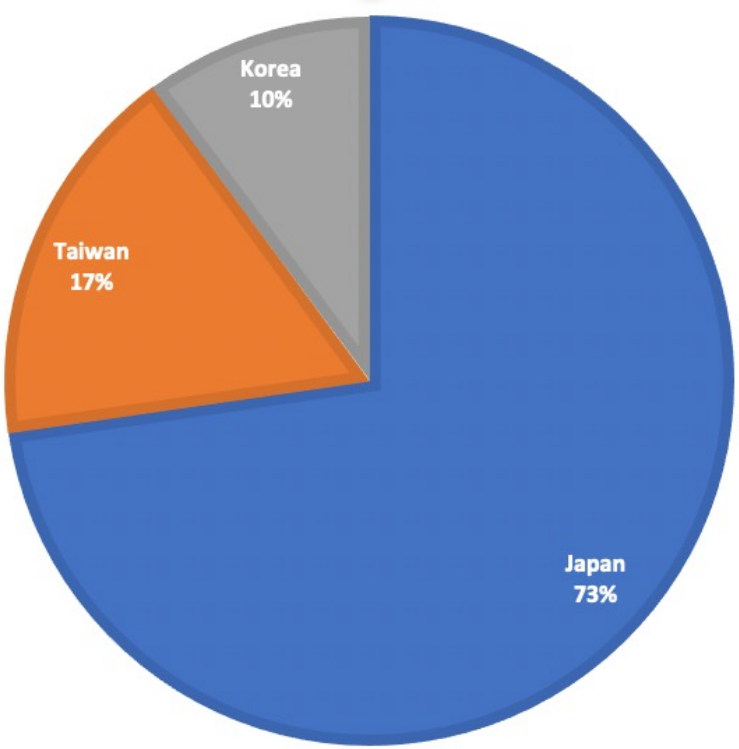
Success rate (Grade A+B) vs. requested 12-m array time

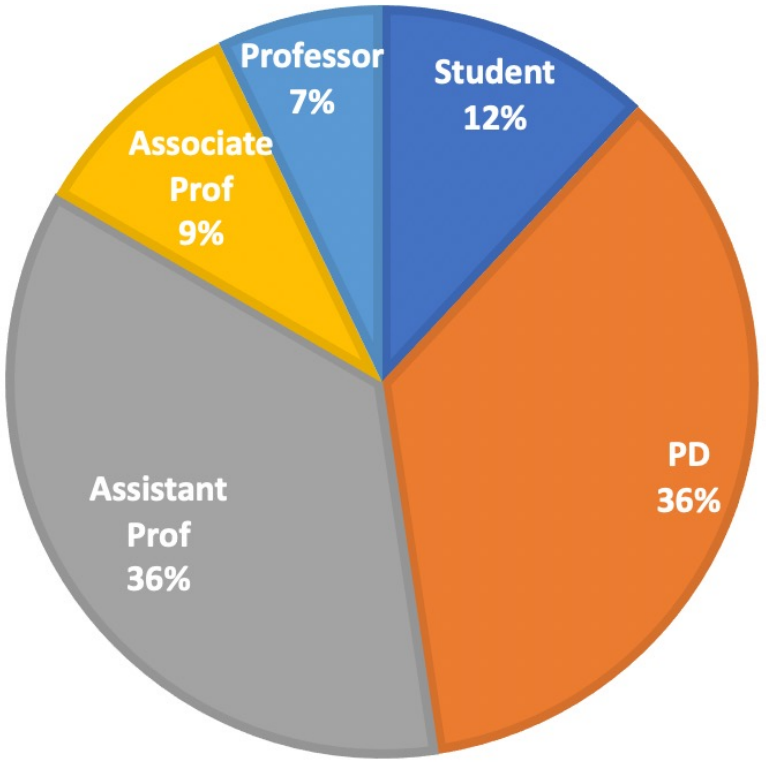
Success rate was highest in the 30-40 hour range, but proposals with >40h continue to be highly competitive



Distribution within EA

Early career (i.e. student, PD) occupies 50% of ALMA time in Japan.





Career stage within Japan

Cycle 9 proposal review process overview

Number of PIs who have participated in the Distributed Peer Review (DPR):

- Total number of proposals evaluated in DPR: 1729 proposals
- 1064 individual PIs, and 1087 individual reviewers (due to delegation)

DPR is a two-stage process:

- Stage 1: Scientific review. Submission of 1 proposal requires a review of 10 proposals. Ranked/commented based on science.
- Stage 2: Review comments by other reviewers. Modify ranks/comments if needed.
  - 49% of all reviewers completed Stage 2 (58% in Cycle 8)
  - 20% of all reviewers modified a rank (25% in Cycle 8)
  - 25% of all reviewers modified a comment (30% in Cycle 8)

Some proposals in DPR were cancelled:

- Did not complete their reviews in good faith (e.g. cut-and-pasted the same review for multiple proposals)

Feedback from reviewers and PIs

Reviewer survey

- Positive comments on reviewer tool
- Top concern is the proposal assignments (i.e. proposals assignment inconsistent with reviewer's expertise)
- Reviewers ratings of their expertise on assignments
  - 90% with "my field" or "some knowledge"
  - 10% with "little/no knowledge"
- JAO is investigating combining machine learning with keywords to better identify reviewer expertise: PeerReview4All (Stelmakh et al. 2018)
- Also in communication with the ESO proposal handling team

PI survey

- Top concern was the quality of the comments and expertise of some reviewers
- 7 out of 10 reviews rated the comments as "very" or "somewhat" helpful

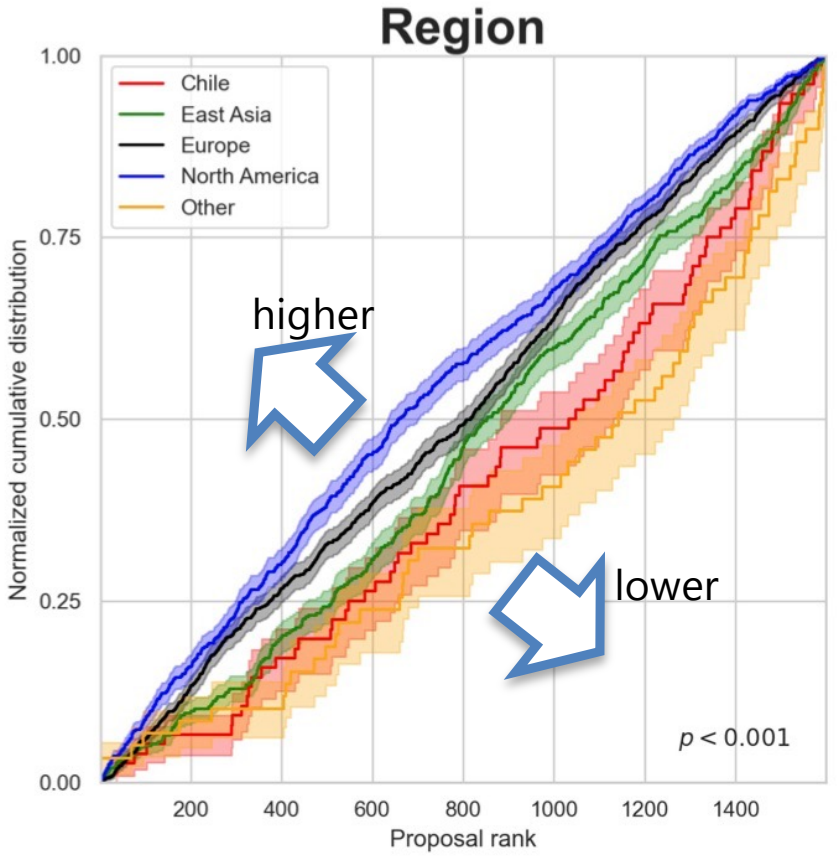
Systematics

Region

- The EA proposal ranking remains lower compared to NA and EU
- However, EA had the best (median) rank so far.

Experience

- First-time PIs have the lowest ranks, but no strong correlations thereafter (same trends as in previous cycles)



Systematics

Observing Modes

- VLBI, ToO, and full polarization modes have above-average ranks compared to other modes

Other Issues investigated but no significant trends

- Science category
- Popularity of a proposed topic
- Number of non-expert reviewers
- Amount of requested time
- Receiver band

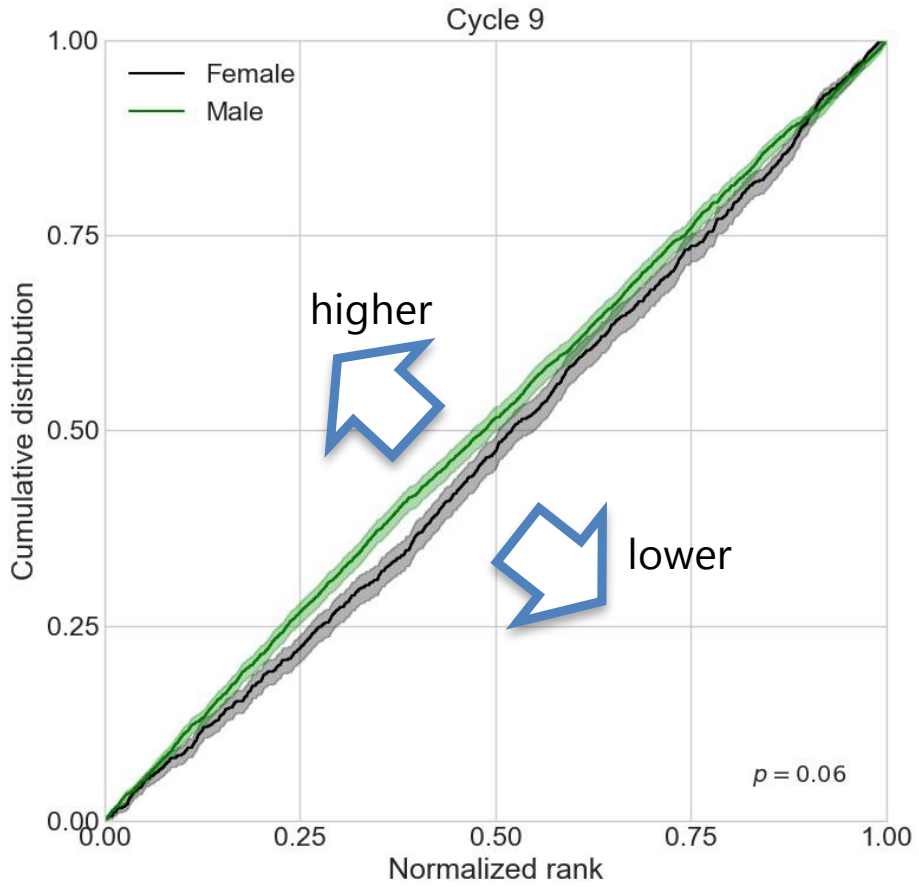
→ No significant trend was found.

Gender

- Next slides

Difference between male/female ranks in Cycle 9: all regions

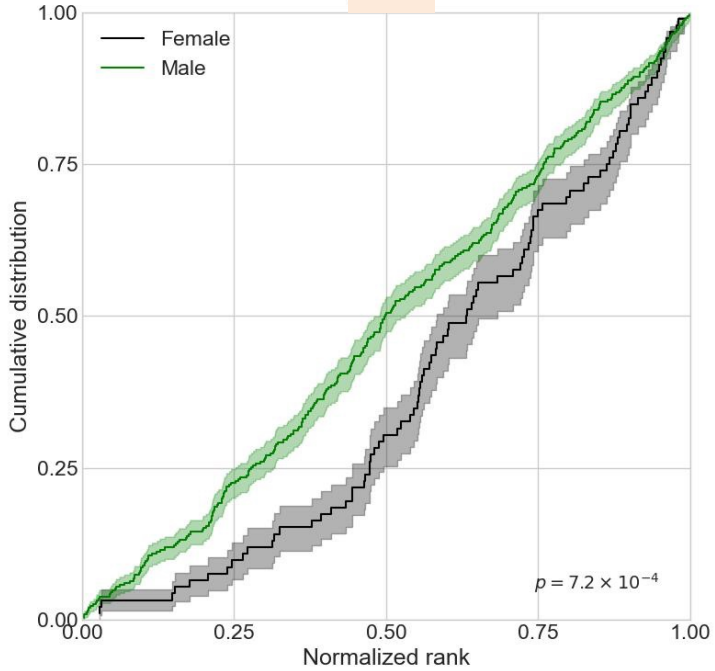
- Female PIs had poorer proposal overall ranks than male PIs in Cycle 9
- p=0.06 (i.e., about 2sigma confidence that the result could happen by chance)



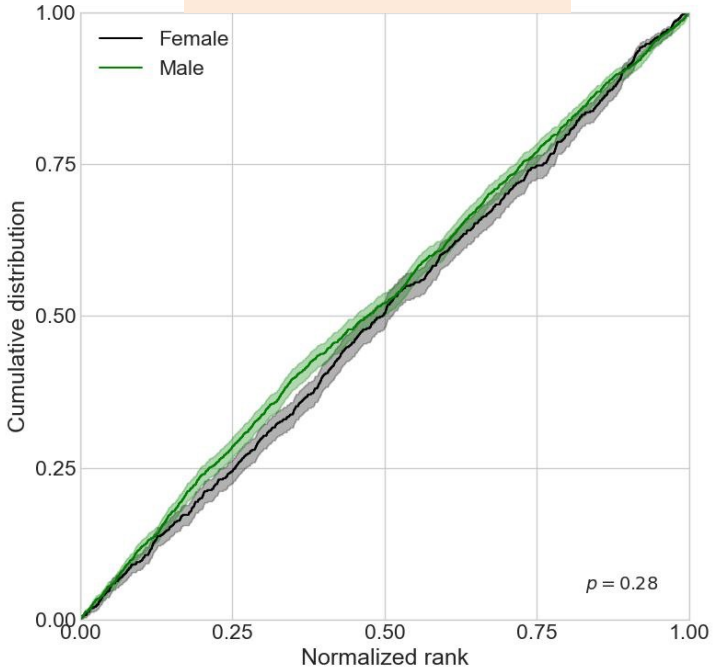
Male/female ranks in East Asia and all other regions

Largely attributed to East Asia (~ 3.4 sigma confidence); trend in EU and NA at 1 sigma

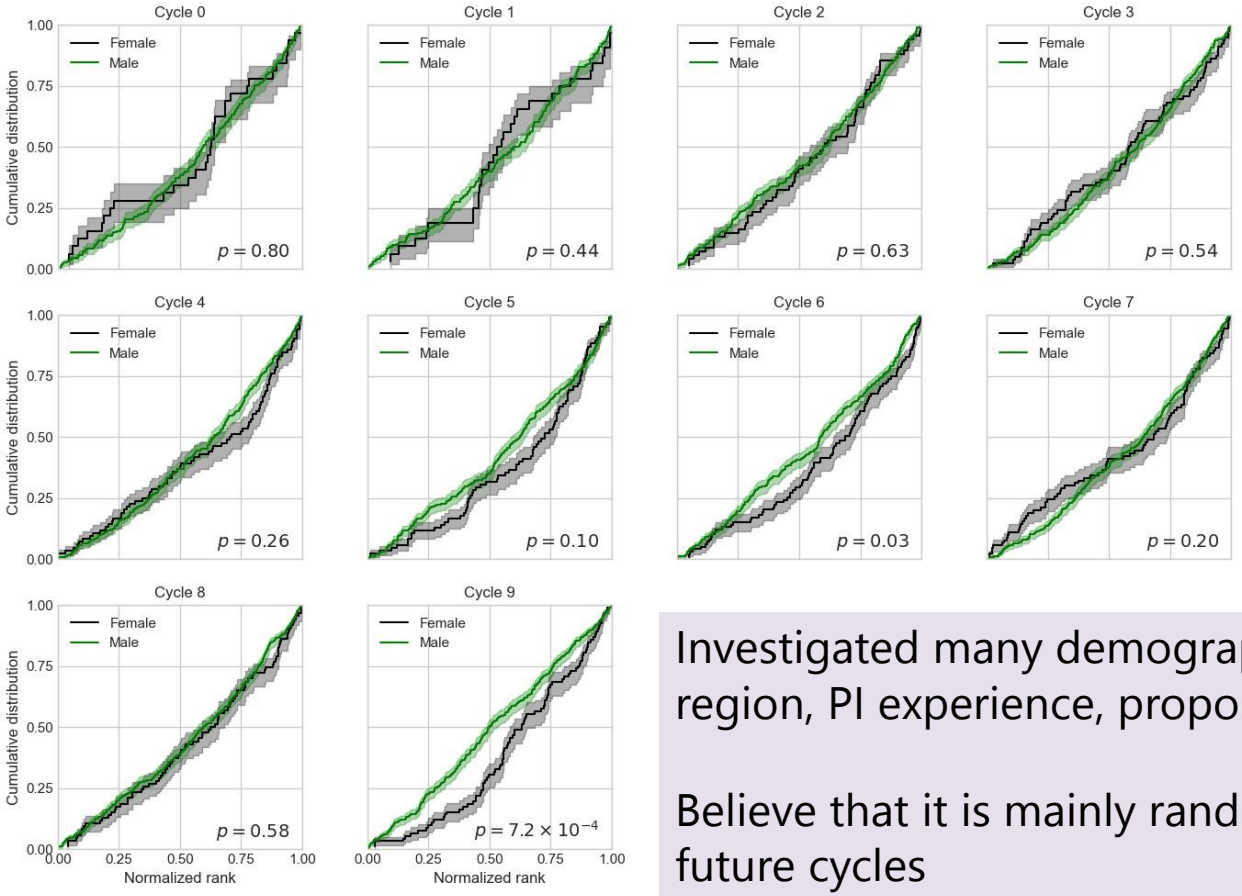
EA



CL/EU/NA+Other



East Asian ranks by Cycle



- There were some marginally significant differences in Cycle 5 and 6 (p=0.03-0.10)
- Cycle 9 is the most extreme difference seen for East Asia to date

Investigated many demographics for EA (reviewer expertise, reviewer region, PI experience, proposal category) and found no obvious cause.

Believe that it is mainly random noise, but we will monitor it closely in future cycles

Summary

Number of Proposals, Oversubscription Rate and Distribution within EA

- Record amount of time requested on all three arrays.
- Record oversubscription rate in EA, NA, and CL. EU has the highest oversubscription rate.
- Japan maintains ~75% of successful proposals in EA
- In Japan, students, PD and Assistant Profs occupy 80% of all successful proposals.

Cycle 9 proposal process and feedback

- 1087 individual reviewers for 1729 proposals
- Top concerns DPR are (1) the proposal assignment, (2) quality of the comments (and expertise of some reviewers)

Systematics

- EA ranking remains lower compared to NA and EU, but Cycle 9 was the best so far
- First-time PIs have the lowest ranks, but no significant correlations thereafter
- Ranks were different between female/male, particularly in EA.
- No obvious cause for the lower ranking in one gender over the other. Will monitor this closely in the future cycles.