

# East Asian Observatory: Subaru?



Paul Ho, EAO

# **Summary**

- **What is the East Asian Observatory?**
- **Should EAO work on Subaru?**
- **What are the Benefits?**
  
- **answer: Encourage Asia to Collaborate**
- **answer: Investment for long terms**

# What are the Goals of EAO?

- EAO is *not* for now, but for the Future
- EAO is to *increase* accessible budget beyond current levels
- EAO is to *benefit now* the less developed regions
  - by providing access and stimulating growth
- EAO is to *benefit later* the well developed regions
  - by providing new resources in the future
- EAO is to *allow* Asia to compete with the West
  - by combining our resources like ESO: EU
  - by coordinating our efforts to “speak” with one voice
  - by convincing our government to invest in Asia
  - by allowing young people to compete at the frontier
  - by preserving our last natural resource: people
- The Future is not “*free*”; EAO is not “*free*”
  - *the Future is not coming by itself*

# **Why was JCMT the First EAO Facility?**

## **It is a “Demonstration” Project**

- **Cost must be Manageable within Current Budgets**
  - **Success must be Rapid and Clearly Demonstrated**
  - **Risk for Failure must be Minimized**
  - **EACOA Directors must Agree**
  - **Identify Person to push the EAO**
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- **JCMT is already Operational**
  - **JCMT Science is Very Competitive**
  - **JCMT only needs Operational Budget**
  - **JCMT has a competent and professional staff**
  - **JCMT is in Hawaii where EA regions already operate**
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- **Focus on: Budget, Politics, User Community**
  - **Focus on: How to Reach Consensus**

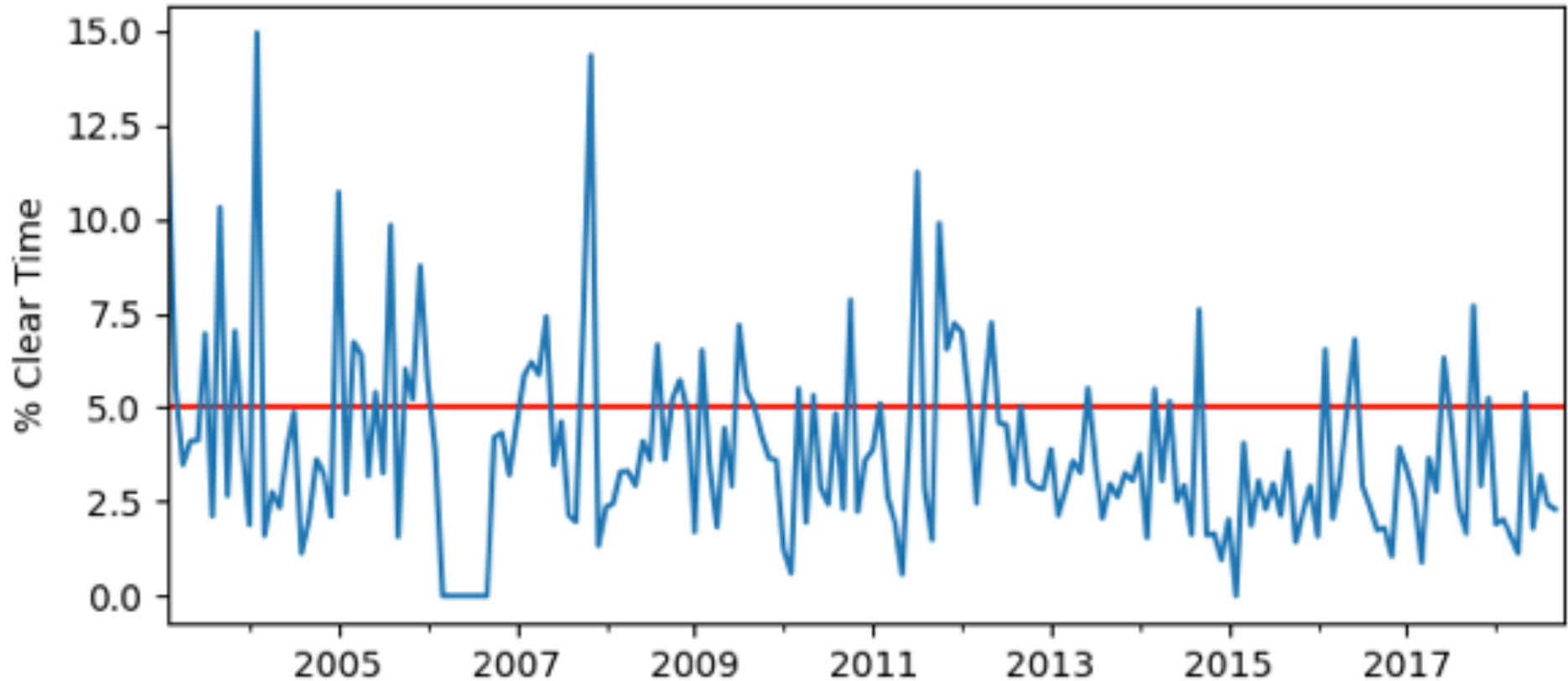


# **Metrics for Success**

- **Operations must be Effective**
- **An EA Community must be there**
- **EA Community interest and pressure to use facility**
- **EA Community competitiveness with respect to world**
- **EA Community scientific productivity**
- **Science must be at the Frontier**
- **What is the path forward?**

**EAO Tracks Everything !**

# Historical Fault Rate

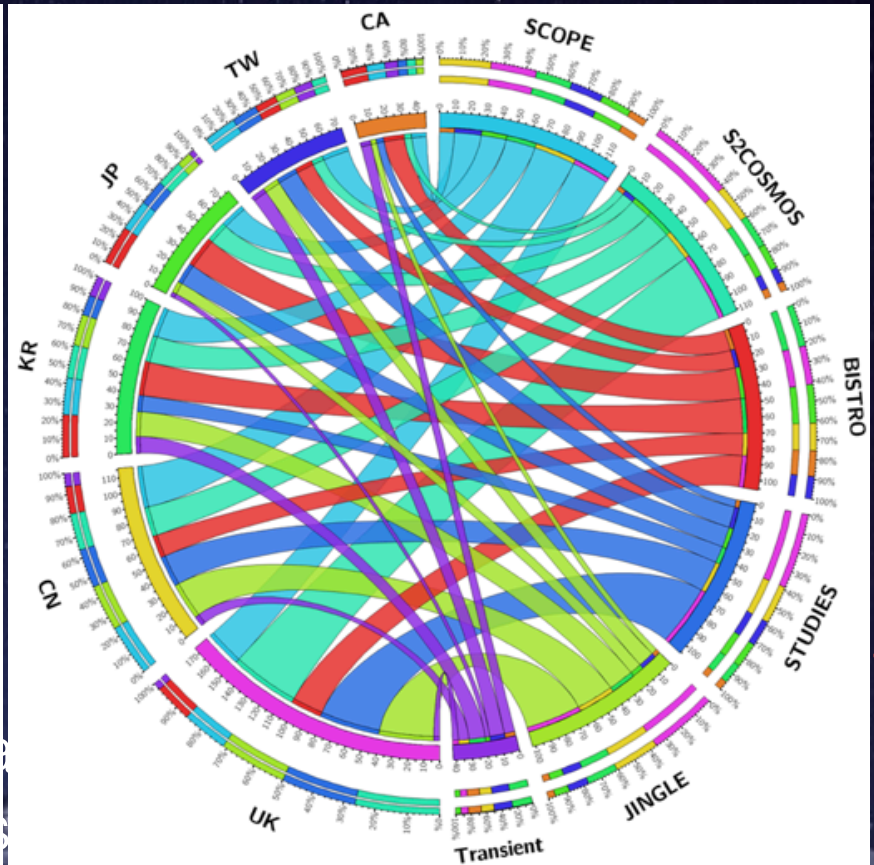
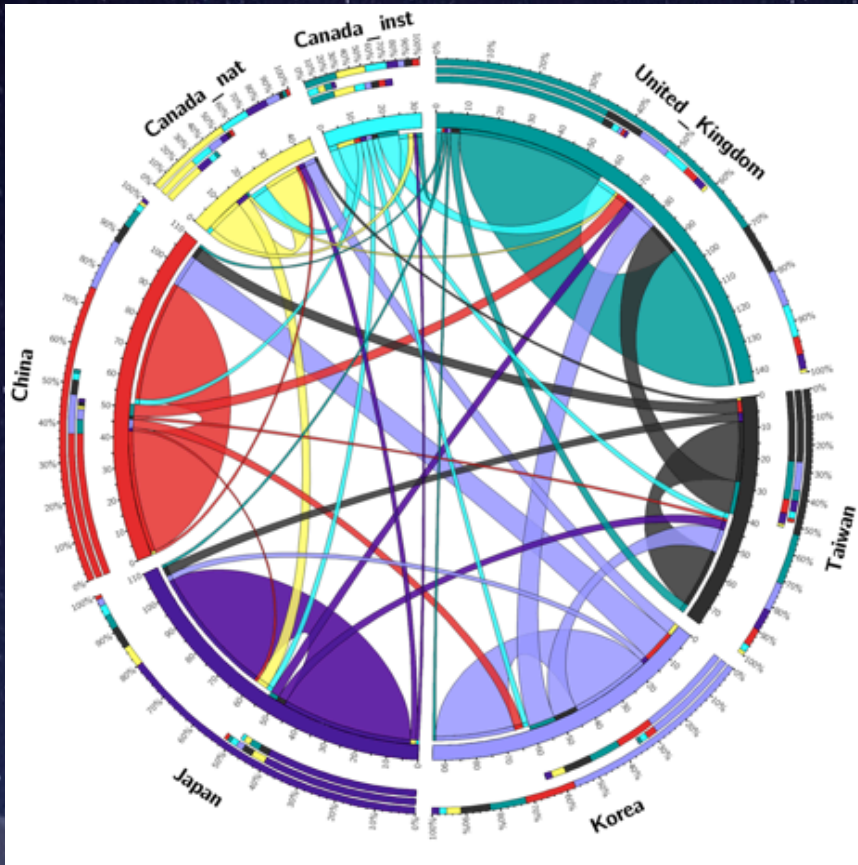


**EAO Era (>2015) Performance has been Excellent**  
**Total time lost per semester ~ 50 hrs**

# BUILDING the EA COMMUNITY

## first JCMT Large Programs

**A New Community in EA: 233 out of 396 unique scientists**



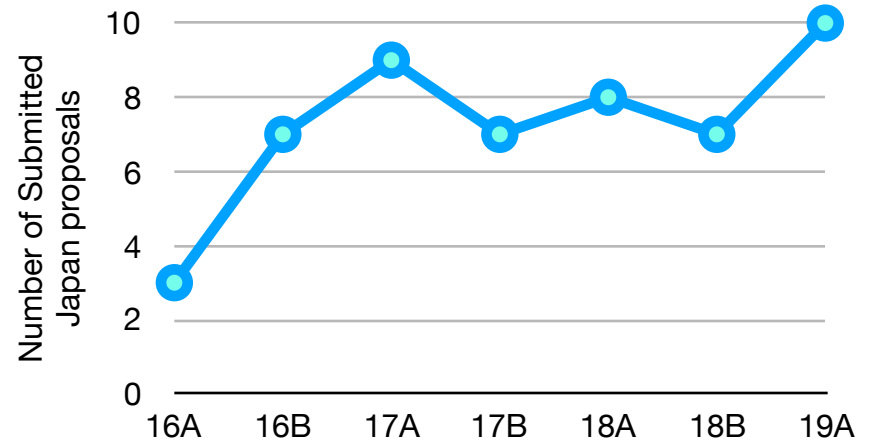
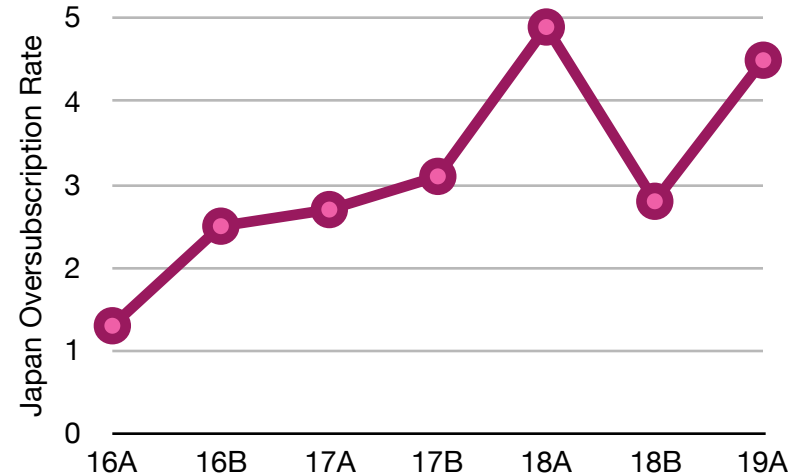
# Japan: an engaged JCMT community

JCMT Users Meeting Mitaka, Japan, 2016



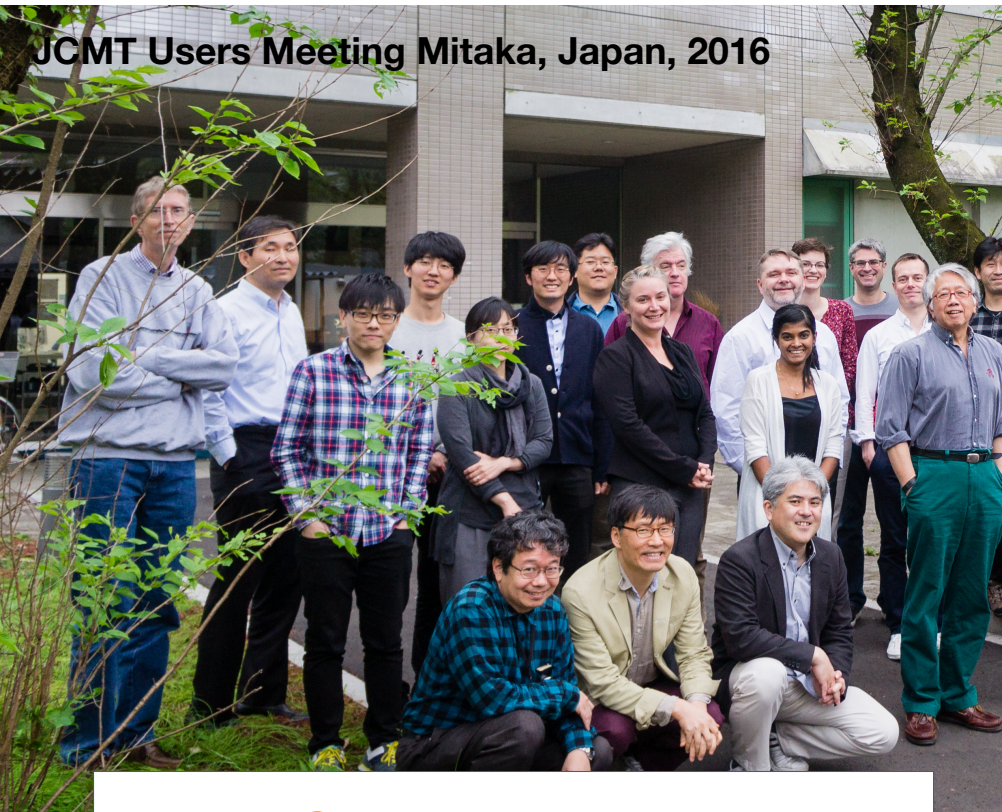
Yiping Ao  
Yusuke Aso  
Gianni Cataldi  
Ray S. Furuya  
Yuichi Matsuda  
Tomomi Shimoikura  
Satoko Takahashi  
Shunya Takekawa  
Kotomi Taniguchi  
Quang Nguyen-Luong  
Seiji Fujimoto  
Maiko Furusawa  
Rei Enokiya  
Yuanwei Wu  
Kohei Ichikawa

Xing Lu  
Shoko Kanno  
Yuki Yoshimura  
Hideo Sagawa  
Yusei Koyama  
Yoshiaki Ono  
Yuto Watanabe  
Shiho Tsujimoto  
Patricio Sanhueza  
Yuri Nishimura  
Fumitaka Nakamura  
Yusei Koyama  
Yui Yamashita  
Jun Toshikawa

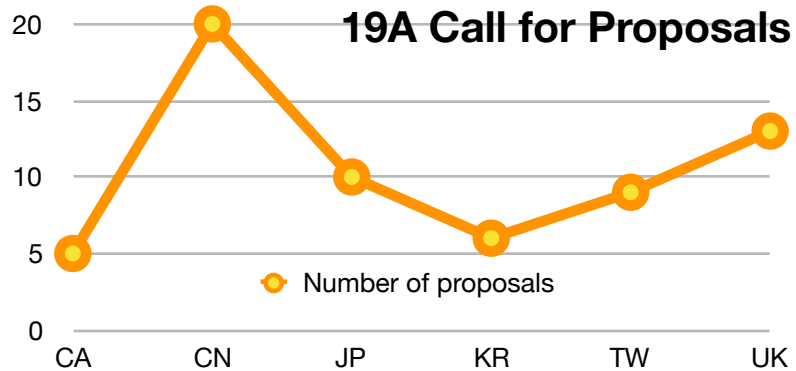
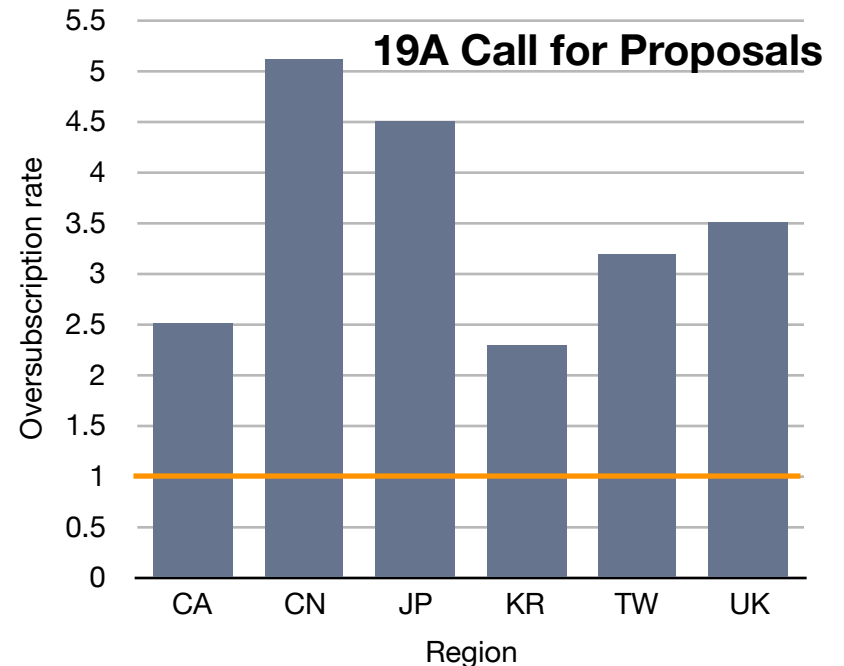
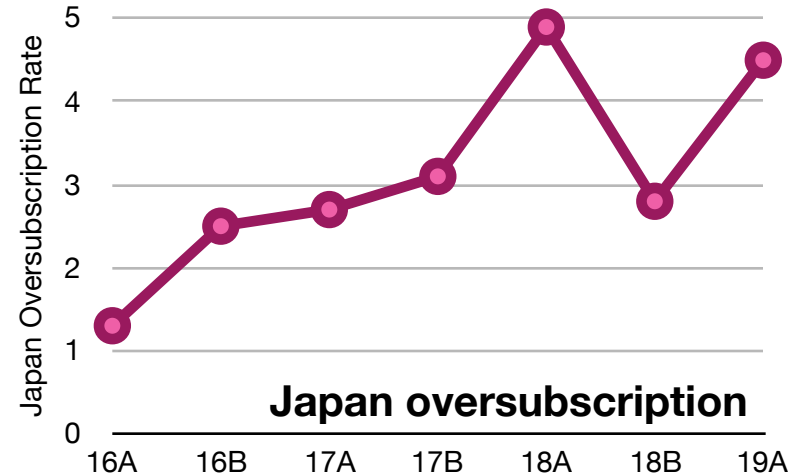




# Japan: an engaged JCMT community

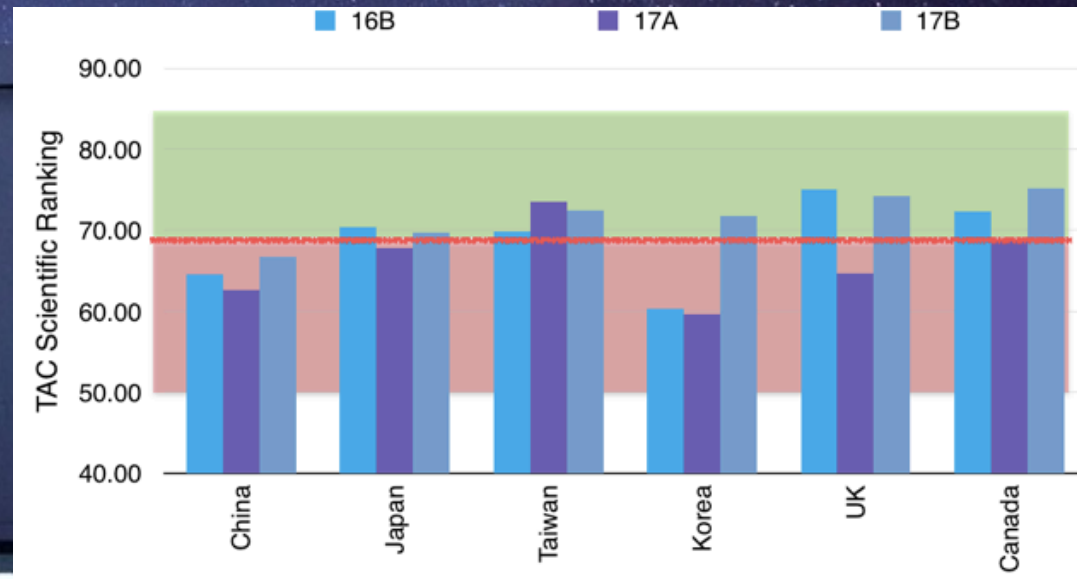
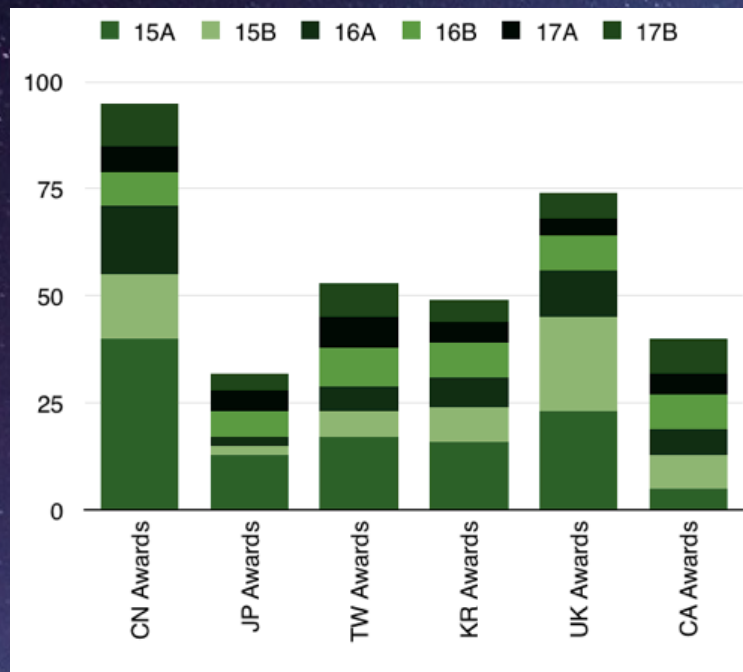


JCMT Users Meeting Mitaka, Japan, 2016



# RELATIVE COMPETITIVENESS

- We can look to the TAC rankings per region to compare performance



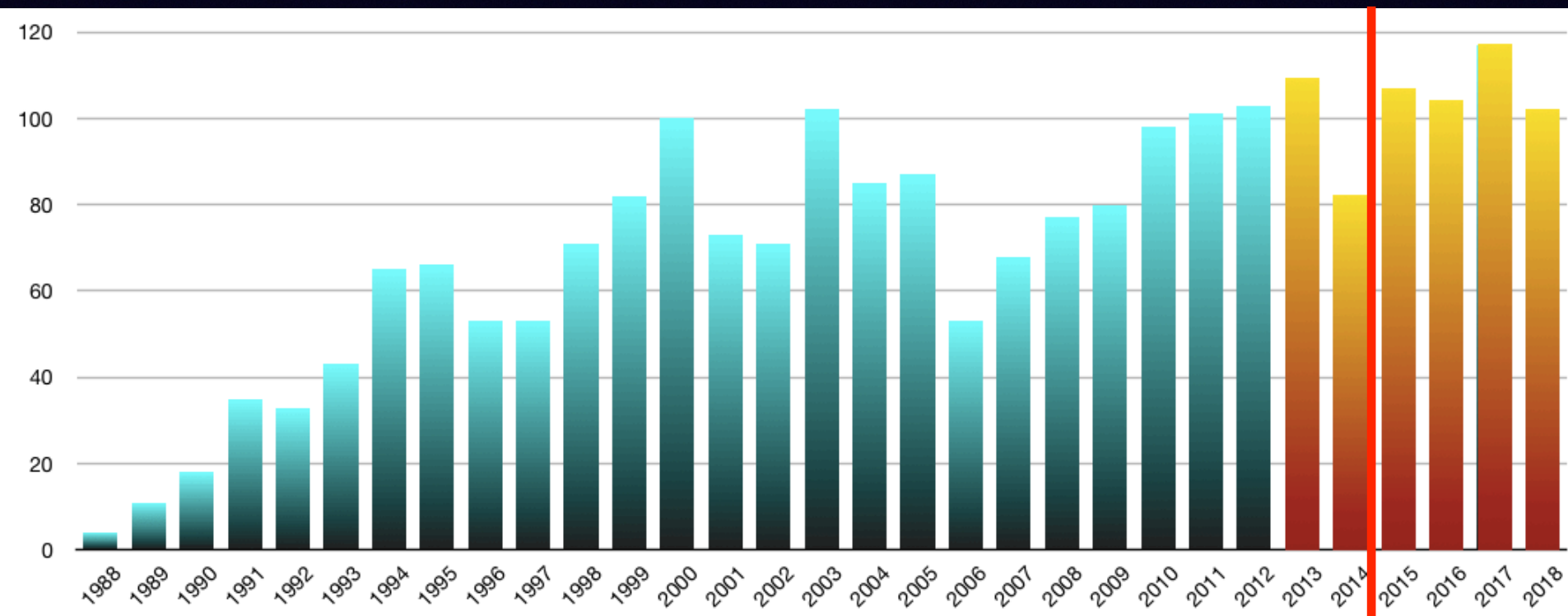


# Publication Statistics

**2015: 4 out of 85 papers from EA regions (3 more embedded overseas)**

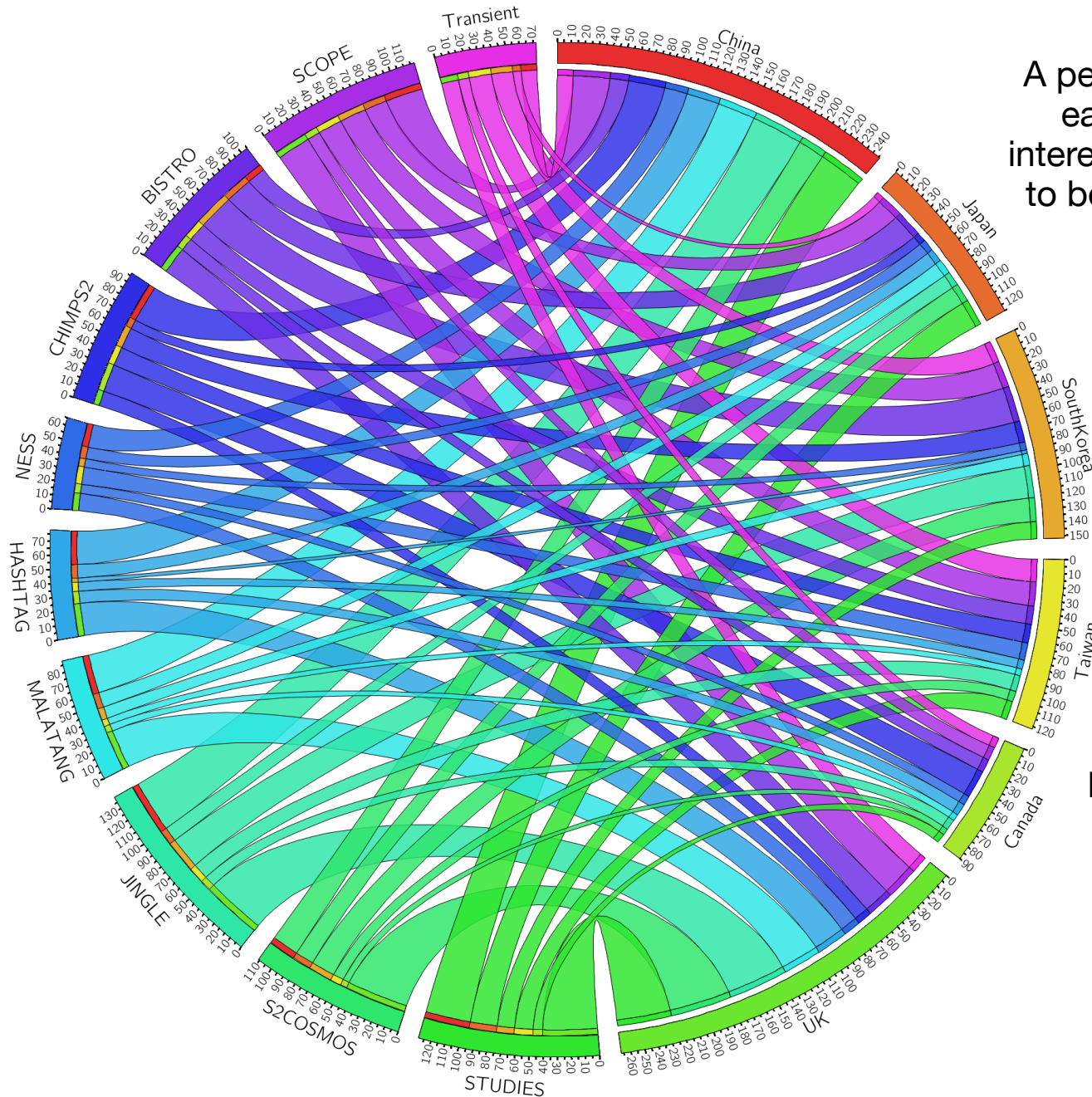
**2016: 19 out of 119 papers from EA regions (6 more embedded overseas)**

**2017: 32 out of 137 papers from EA regions (3 more embedded overseas)**



**In 2018, EA lead 53% of JCMT Partnership 1st Author Papers**

# The JCMT Large Programs - diverse membership



A period of open enrollment for each program enables any interested East Asian astronomer to become a member of any of the Large Programs.

Astronomers can contribute and gain knowledge in many ways  
- observing, data reduction, data analysis, proposals at complementary telescope facilities



# **EAO-Subaru Partnership**

- **EAO is working on “Semi-Partner” status on Subaru**
- **Funding Ratio — NAOC:NAOJ:KASI:ASIAA ~ 10:10:2:1**
- **PI time distributed according to regional funding**
- **20% of EAO time used for Sharing time, together with 20% of Japan time. EAO share of ~ 3 nights will share with Japan share of ~39 nights**
- **Semi-Partner ~ 500K to 2000K**
- **Partner ~ 2000K or more, will also access SSP ~60 nights**

# How did we Get Here?

## Discussions at EAO Board Meetings

April 2016:

- Arimoto-san, the former Subaru Director, was invited to the EAO board meeting
  - Arimoto-san expressed Subaru's interests in collaborating with EAO for the joint operation of Subaru Telescope
  - EAO board also expressed a strong interests to join the Subaru Operation, and decided to have further discussions.

October 2016:

- Arimoto-san proposed to introduce "EAO time"
  - Subaru allocated 6 nights as EAO time in 2017 (17A and 17B)

April 2017:

- EAO board and Yoshida-san discussed to have "letter of Intent (LoI)" to have further and more concrete discussions on possible partnership between EAO and Subaru
  - LoI was signed in June 2017

November 2017:

- Yoshida-san proposed EAO to establish "working group" to discuss details of the partnership. He also proposed to resume "EAO time" with actual contribution as needed.

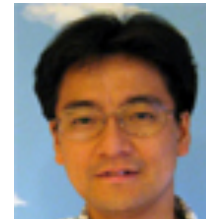
April 2018:

- Charges to the working group were discussed and determined.

# How to Reach Consensus?

## Working Group

- China
  - Jiasheng Huang (NAOC/CAS)
  - Haining Li (NAOC/CAS)
- Japan
  - Taddy Kodama (Tohoku Univ.)
  - Nagayoshi Ohashi (NAOJ/Subaru)
- Korea
  - Myungshin Im (SNU)
  - Arman Shafieloo (KASI)
- Taiwan
  - Shiang-Yu Wang (ASIAA)
  - Wen-Ping Chen (NCU)



# **Should Subaru work with EAO?**

- **No need: if Japan has enough budget**
- **No need: if Japan can establish bilateral collaborations — eg. Australia, Canada, China, India**
- **No need: if Japan has no interest in promoting other regions in Asia**
- **No need: if EAO regions work with Subaru directly**
- **No need: if potential partners will just pay per night**
  
- **Yes: if EAO brings “positives” to Subaru community**
  - **budget which will help, not only today, but tomorrow**
  - **users who are collaborators, not just “buyers”**
  - **partners who will build new instruments**
  - **partners who will increase total capabilities (speed)**
- **Yes: Japan/NAOJ is EAO**



# **Should EAO work with Subaru?**

- **No need: if Subaru has no interest**
- **No need: if EAO regions have no need or desire**
- **No need: if Subaru participation does not help EAO**
- **Yes: if EAO partnership has advantage over bilateral partners**
  - **if EAO members prefer this path (eg. new funds)**
  - **if EAO can share time on Subaru with other partners**
  - **if EAO can become major Subaru partner faster**
  - **if EAO/Subaru attracts new EAO members**
  - **if EAO becomes stronger**
- **Yes: Japan/NAOJ is EAO; EAO should help Subaru**

# **The Difficult Bits of Collaboration**

- **Why share time ?**
  - straight PI time is too expensive
  - to maximize science return for small/big partners
  - someday, Japan may be minority partner on projects
- **Why 10:10:2:1 ratio ?**
  - sets the rule for EAO partnership: by GDP
  - sets upper limit to biggest partner
  - new/smaller partners will still have a role to play
  - smaller partners can choose to contribute more
- **Why small partners have “unfair” advantages ?**
  - to encourage less developed regions to grow faster
  - smaller partners will have greater future contributions