

East Asian Astronomers Meeting-9 14-17 October, 2013, @NCU, Taiwan

Cooperation in East Asian Astronomy: Past and Future

Norio Kaifu (NAOJ)

What is EAMA?

- EAMA is an astronomers-based cooperation in EA since 1990
- Core Regions (China, Japan, Korea, Taiwan) + other Asian Countries
- EAMA aims continuous and systematic cooperation

一衣帶水 : *We are neighbors*

- EACOA was established by EAMA in 2005



1990 黄山會議

Organized by

Liu Cai-pin 劉彩品

Norio Kaifu 海部宣男

(50 from China, Japan, Korea)



EAMA Symposiums

- 1990** “Star Forming Regions” Huanshian, China (50)
- 1992** “Millimeter-Wave and Infrared Astronomy” Daejon, Korea (100)
- 1995** “Ground-Based Astronomy in Asia” Tokyo, Japan (215)
- 1999** “Observational Astrophysics in Asia and its Future”
Yunnan, China (118)
- 2001** “EAMA Core Meeting” Taipei, Taiwan (60)
- 2004** “Asian View of Cooperation in Astronomy” Seoul, Korea (130)
- 2007** “East Asian Network of Astronomy: Research, Education
and Popularization” Fukuoka, Japan (140)
- 2010** “East Asian Network on Astronomy” Shanghai, China (100)
- 2013** “Cooperation on Current and Future Astronomy”
Jhongli, Taiwan (140)

EAMA Working Policies

- Promote cooperation of astronomy in East Asia
- Promote mutual understanding and exchange
- Promote realistic and effective cooperation
- Organize symposium regularly (once a 3years)
- Organize working groups
- Target: **East Asian Observatory** in future

1993 EAMA Site survey for optical & Radio(ALMA) sites



Gobi Desert

Delingha

Third East-Asian Meeting on Astronomy
**GROUND-BASED ASTRONOMY
IN ASIA**

Edited by
Norio Kaifu



National Astronomical Observatory, Japan

1995 EAMA-3 Proceedings

**with a list of East-Asian
astronomical institutes
and Telescopes**

EAMA-1 **1990**

1991

EAMA-2 **1992**

1993

1994

EAMA-3 **1995**

1996

1997

1998

EAMA-4 **1999**

2000

EAMA-5 **2001** discussion to organize **EAYAM**

2002

2003 ▪ **EAYAM-1**

EAMA-6 **2004** **EA VN Consortium** established
(propose **EACOA**) (**EAYAM WG**) (ALMA)

2005 **⇒ EACOA** established

2006 ▪ **EAYAM-2**

EAMA-7 **2007**

2008 ▪ **EAYAM-3**

2009

EAMA-8 **2010**

2011 ▪ **EAYAM-4**

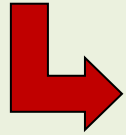
2012

EAMA-9 **2013**

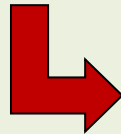
Products from EAMA

- Many contacts, exchanges and cooperation
- EAYAM: East Asian Young Astronomers Meeting
- EAVN: East Asian VLBI Network (to KaVA, EAVN)
- EACOA: East Asian Core Observatories Association
- Site survey (toward “East Asian Observatory”)
- ALMA Cooperation (to ALMA ARC)
-

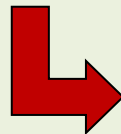
Present EAMA



(Next Step)
EAMA activities with WGs
+
**EA Core Observatories
Association**



(Intermediate Structure)
United Observatories
Funding Agencies



(Future Target)
East Asian Observatory

EACOA

Association of East Asian Core Astronomical Institutes

Established in 2005

based on the proposal by EAMA-6 (2004)

MOU by:

National Astronomical Observatories of China (NAOC)

National Astronomical Observatory of Japan (NAOJ)

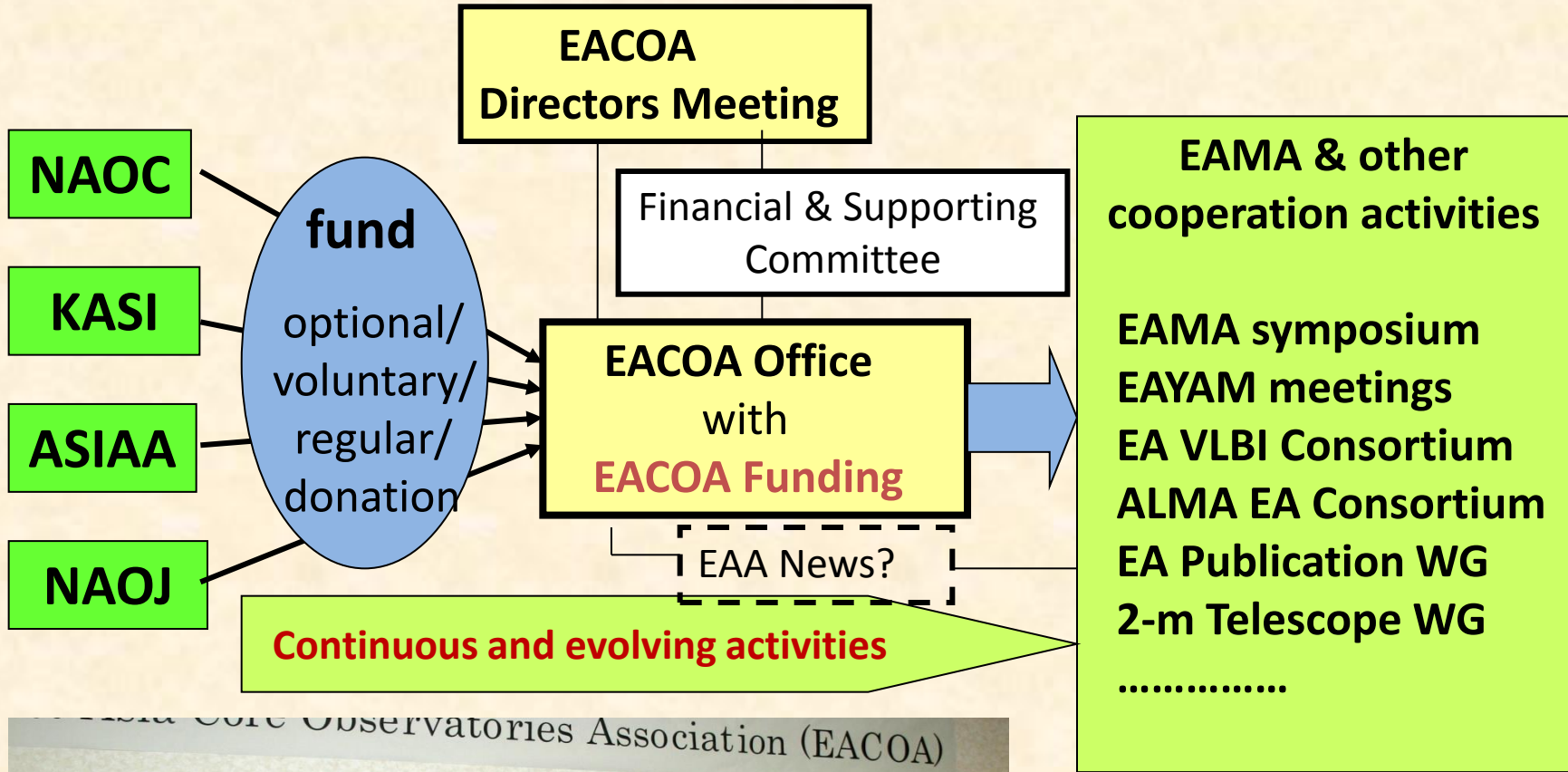
Korea Astronomical and Space Science Institute (KASI)

Academia Sinica Institute of Astronomy and Astrophysics (ASIAA)

for

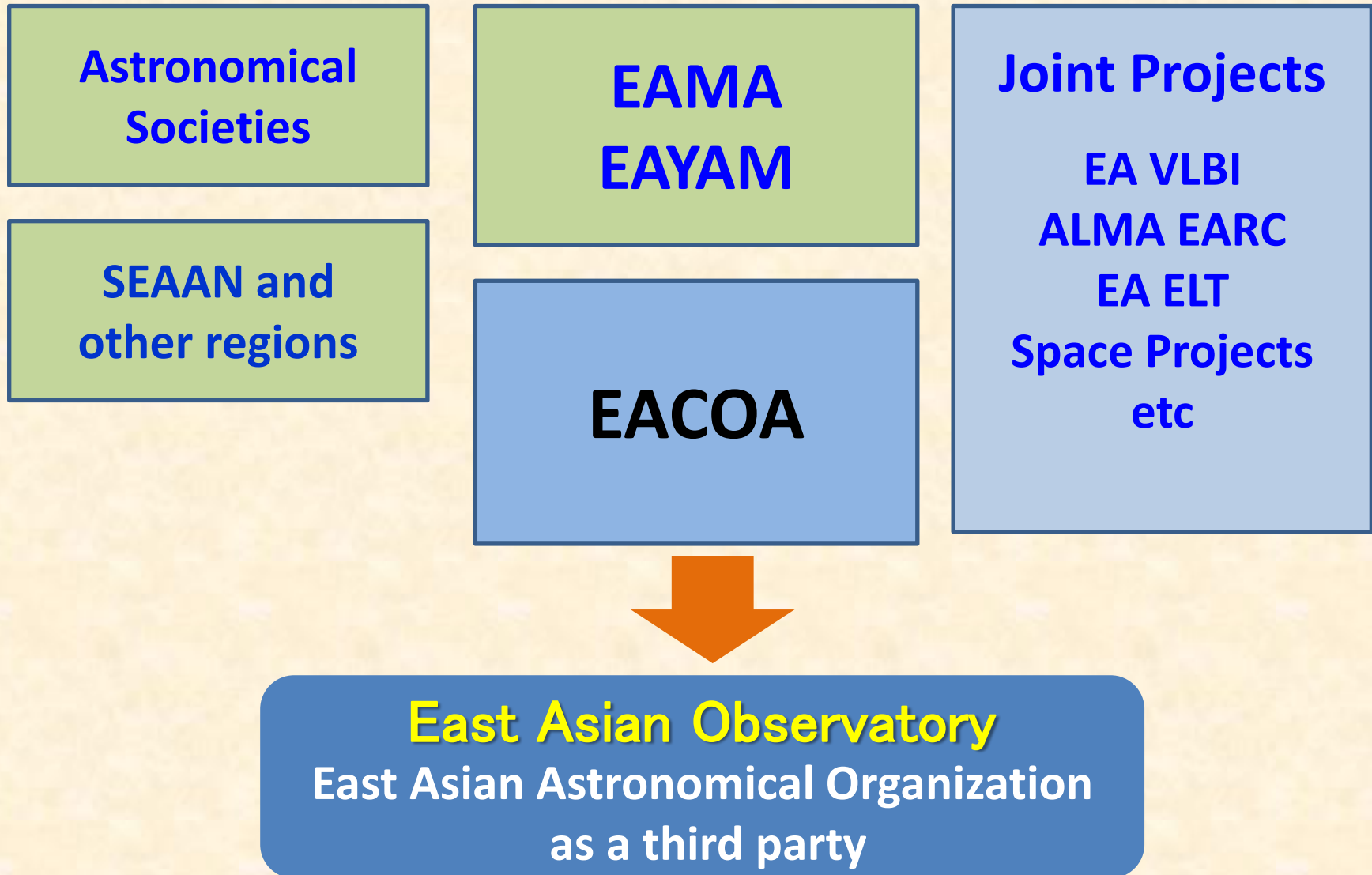
- **Directors' meetings (at least once a year)**
- **Cooperation in EA and future direction/projects**
- **Promotion of sharing resources and exchange in EA**
- **Support of the EAMA and other cooperation activities**
- **“East Asian Observatory” as future target**

EACOA was established (2005)



Conclusion of MOU for EACOA at NAOJ

Development of East Asian Cooperation in Astronomy (2006, for EACOA-2 by Kaifu)



Future Direction of EAMA and EACOA

1: Situation has changed !

1990 - 2013

Number of Core Astronomical Institutes: 1 \Rightarrow 4

Top level Ground-based Telescopes: 1 \Rightarrow 7

Number of Publications: x 10

- Astronomy in East Asian Region was developed dramatically.**
- Cooperation in East Asian Astronomy is getting more diverse, closer and higher-level.**
- EACOA is getting more active and important.**
- Role of EAMA should adapt to above situation.**

EAMA-1	1990
	1991
EAMA-2	1992
	1993
	1994
EAMA-3	1995
	1996
	1997
	1998
EAMA-4	1999
	2000
	2001
EAMA-5	2002
	2003
EAMA-6	2004
	2005
	2006
EAMA-7	2007
	2008
	2009
EAMA-8	2010
	2011
	2012
EAMA-9	2013

0 200 400 600 800 1000

Publications by NAOJ, ASIAA & KASI

← **ASIAA**

- BOAO 1.8m
- Delingha 14m

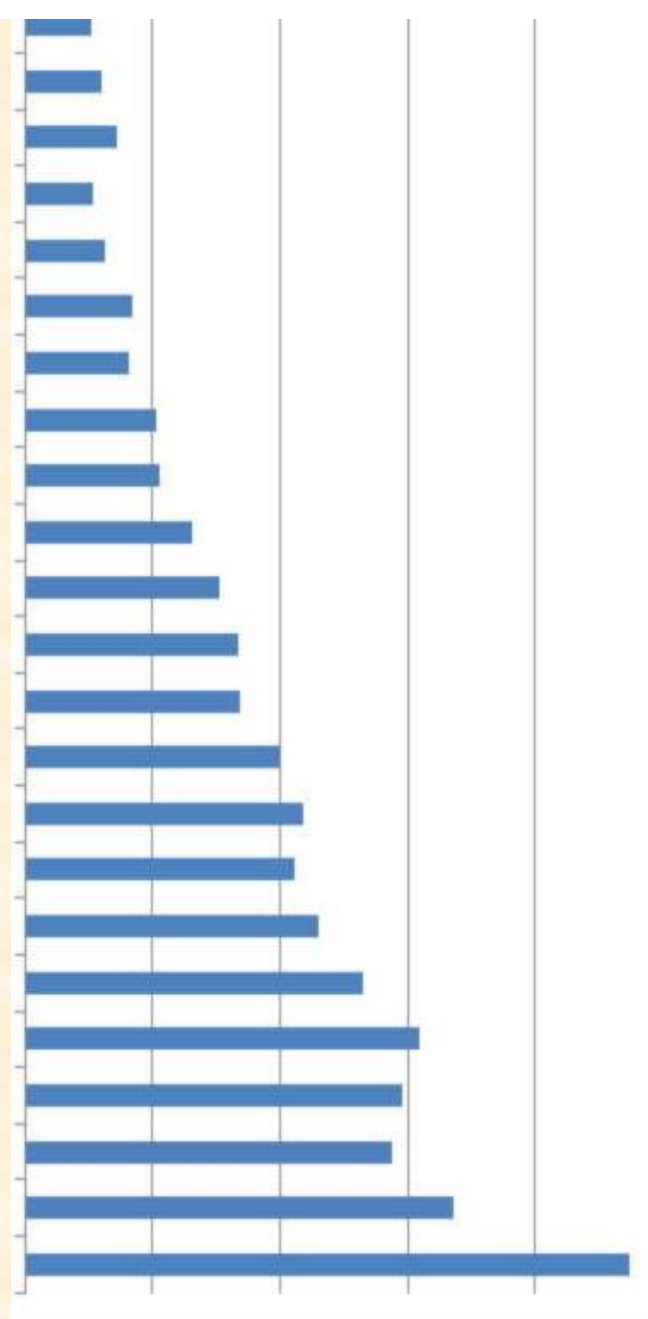
← **NAOC**

- Subaru 8.2m
- VERA
- SMA

← **KASI**

- SUZAKU
- Yunnan 2.4m
- HINODE/AKARI
- LAMOST
- KVN

- ALMA



EACOA Initiatives

- ◆ **Site Survey and Development:** Ali Site in China; started 2002?
- ◆ **Joint Funding:** EACOA Fellows (5 year posts); started 2012
- ◆ **Asymmetric Funding:** CSO (90 nights); started 2013
- ◆ **Joint Operations:** JCMT; start 2014?
- ◆ **East Asian Observatory:** Subaru, AMiBA, SMA, CFHT, CSO, TMT (JCMT, UKIRT)

Future Direction of EAMA and EACOA

2: Develop new Observation Sites

(Existing Sites)

**Mauna Kea
Other Sites**

**Short – Intermediate
Timescale**

(New Sites)

**Tibet (Ali Region)
(Polar Regions)**

from
**Small Telescopes
to
Higher Level
Sciences**

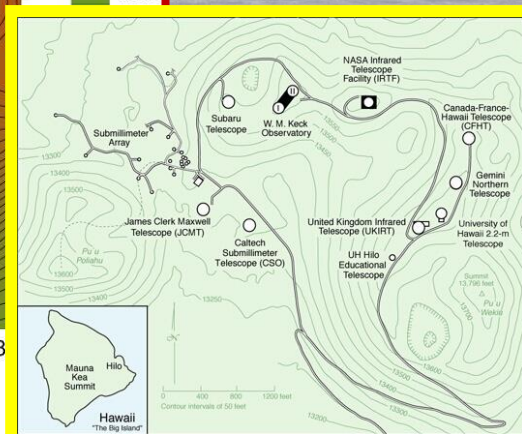
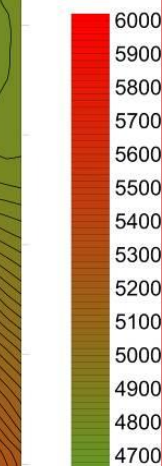
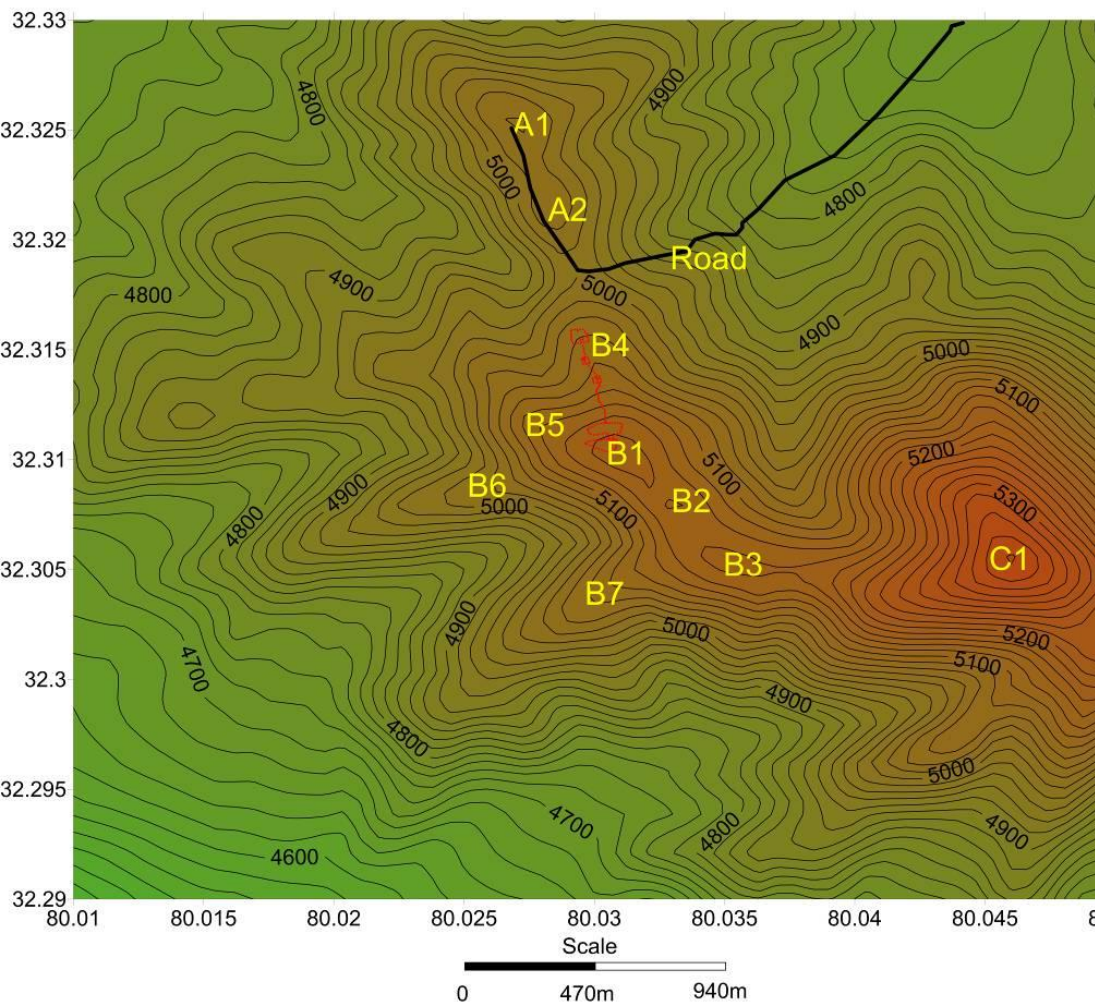
Future East Asian Observatory





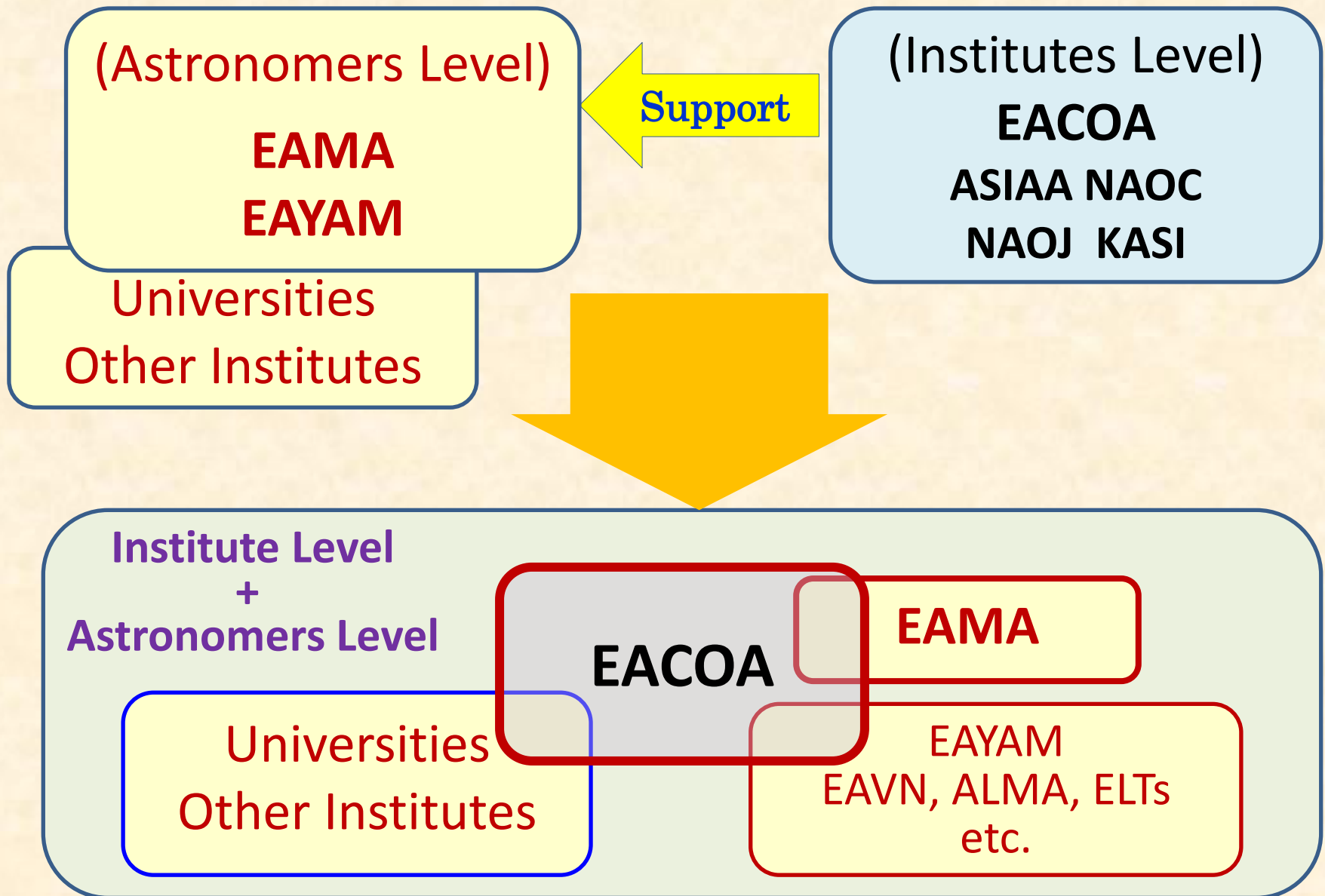
Ali Site: 5,000 – 5,400m

The candidate site at Ali area



Future Direction of EAMA and EACOA

3: Organization: More important role of EACOA



Future Direction of EAMA and EACOA

4: An Example of EACOA / EAMA meetinbgs

1) EACOA Meeting

Once a year

- **Director's Meeting (Business + Regional Progress Reports)**
- **Directors + Community Members (several - 10 astronomers)**

2) EACOA Meeting + EAMA

Once a 2 years

- **Director's Meeting (Mainly Business)**
- **EAMA Symposium**

Regional Progress Report (Directors)

Large Scale Cooperation (with Directors + Community M.)

Future Direction of EA Cooperation (Discussion)

**Cooperation in Various Scales or in Particular Areas
(optional)**

Future Direction of EAMA and EACOA

5: Evolution of EA Cooperation

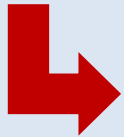
A Consideration on EAMA/EACOA: Toward new Stage of EA Cooperation

- **Now we need more robust and stable structure of cooperation.**
- **The role of EACOA should be expanded and strengthened.**
- **We need “Astronomers level” activities also.**
- **EACOR should involve more community power (universities etc).**
- **EACOA should establish wider and robust network.**
- **EAMA symposium can be merged with EACOA meeting.
(but only once a two years or so)**
- **Supporting structure (and Funding ?) of EACOA should be strengthened.**

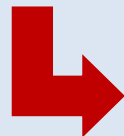
Future Direction of EAMA and EACOA

5: Evolution of EA Cooperation (cont'd)

EAMA
+
EACOA



Strengthened EACOA
+ EAMA
&
Community (Universities)



(Intermediate Structure)
United Observatories
Funding Agencies



(Future Target)
East Asian Observatory

Thank you