第 2 回 ALMA 科学諮問委員会 議事概要

Date and time: March 7, 2023, 9:30 - 12:30 (JSAC starts at 11:15)

Attendees:
JSAC: Yuri Aikawa, Fumi Egusa, Kotaro Kohno, Munetake Momose, Toshikazu Onishi, Hideo Sagawa, Nami Sakai, Yoshito Shimajiri, John Silverman, Kengo Tachihara, Shigehisa Takakuwa, Yoichi Tamura
EASAC: Aeree Chung, Jongsoo Kim, Patrick Koch, Li-Hwai Lin, Sasha Trippe
Ex officio: Saku Tsuneta, Alvaro Gonzalez, Misato Fukagawa, Bunyo Hatsukade, Daisuke Iono, Ken Tatematsu, Atsushi Nishimura, Tetsuhiro Minamidani

Agenda:
EASAC 9:30-11:10
1. ALMA report
2. ASAC charges

JSAC 11:15-12:30
1. TMT update and FY23 budget
2. Domestic ALMA report
3. NRO report
4. ASTE report
5. ngVLA report

EASAC meeting:

1. Alvaro Gonzalez provided the ALMA project report
    - Statistics for Cycle 8
        - Data acquisition was the 2nd highest number of observed hours in a Cycle (3642 hours)
        - QA0 pass hours by observing cycles
            - 12 array data acquisition was the 2nd highest
            - 7 m array data acquisition was higher than at Cycle 7 despite the high technical downtime
        - Data delivery
            - 2373 MOUS (87.3%) were delivered on time, and 90% of pipelined MOUS were delivered in 33 days. Those are close to the goal (90% in 30 days).
            - ~50% of MOUS were delivered in 10 days.
            - Manual processing continues to be very challenging. 90% were delivered in 137 days.
    - Cycle 9 status
        - Cyber attack on October 29th

- ✧ The attack did not compromise ALMA antennas or scientific data but affected some communication and operations systems, forcing the suspension of scientific observations.
- ✧ Scientific observations restarted around December 17th after the affected computer system servers and services were rebuilt.
- ✧ Configurations 1 and 2 are the most affected. Carryover will follow the usual policies.

➢ After recovery from Cyber Attack
- ✧ Data acquisition is at a good pace.
- ✧ The array had the annual maintenance shutdown in Feb.
- ✧ Science observations started in ACA on February 20th ahead of schedule and in the 12m array on March 2nd.

➢ ~3500 hours or less are expected in the 12m array and the ACA.

- Cycle 10 pre-announcement
  - ➢ The call for proposals will start on April 12th with a deadline of May 10th, which is later than previous cycles.
  - ➢ Cycle 10 will start in October 2023.
  - ➢ In the main 12m array, antenna configurations C-1 to C-8 (with maximum baselines between 0.16 and 8.5 km) will be offered.
  - ➢ Projects with observations in the highest-frequency Bands 8, 9, and 10 are strongly encouraged.
  - ➢ Proposers are encouraged to submit ACA stand-alone observations for targets that can be observed in the LST range of 20h to 10h.
  - ➢ New technical capabilities: Band 1 on the 12m array anticipated from March 2024; TP Spectral scans; 4x4-bit spectral modes on the 12m array; Solar Band 3 full polarization in 12m array; VLBI + Phased array mode in Bands 1, 3, 6 and 7.
  - ➢ TP array will use the new ACA spectrometer.
  - ➢ Joint proposals with JWST, VLA, and VLT will be available.
  - ➢ The proposal review method is the same as Cycle 9. DPR for all proposals requesting <50h in 12m and <150h in 7m ACA standalone.
- Science / ARC news
  - ➢ EA ALMA Science Workshop was held in New Taipei City, Feb 14-17, 2023.
  - ➢ The conference "ALMA at 10 years: Past, Present, and Future" will be held in Puerto Varas, Chile, on 4-8 December 2023.
  - ➢ HL Tau's article has been cited in more than 1000 studies.
- Celebrating 10 years of ALMA
  - ➢ Ceremony will be held at the OSF/AOS on March 13.
  - ➢ Events in Japan are under planning.
- Publication Statistics
  - ➢ The total publication is 3179 (as of 2023 March 3rd).

- 430-470 publications per year in the last 4 years

- ALMA2030 WSU Status
  - The Observatory has established the framework to kick off the upgrade during 2018-2022.
    - Implementation plan was released in April 2022.
    - Science case was published in the arxiv / ALMA memo in November 2022.
    - System Conceptual Design Description was successful in June 2022.
    - System Requirement Review was successful in October 2022.
  - Other updates:
    - 2nd Generation Correlator (NA) and ALMA2030 DTS (EA/NA) were approved by ALMA Board in November 2022.
    - Digitizer CoDR was held on Feb 8-9.
    - Band 6v2 prototype project is proceeding.
  - ALMA Management Team and ALMA Director prioritized activities towards WSU over the next 2-3 years.
- Development Projects Update
  - Band 1 (ASIAA/NAOJ)
    - Production completed in Taiwan.
    - Integration (AIV) is proceeding smoothly. ~69 receivers are on-site.
    - Commissioning review in November 2022 was successful.
  - Band 2 (ESO/NAOJ) – in the pre-production phase
    - CDR on April 25-28 and delta CDR on November 21-22 passed.
    - The first integration of the Band 2 receiver was done onsite in February.
  - Commissioning review of ACA spectrometer was successful in November 2022.
- ALMA2030 Data Transmission System
  - This is a joint project by East Asia (lead) and North America under the scope of the ALMA2030 WSU and long baselines.
  - Phase 1 was approved by ALMA Board in November 2022.

2. The EASAC discussed the ASAC charges and the response from the Board to the previous ASAC report. The EASAC remains concerned about the DPR system. The ASAC has already proposed improvements, but it is important that EASAC continues to seek further improvements since the proposal review system is important for future science. The EASAC also discussed the prioritization of new observing modes presented. The EASAC understood that resources were limited, and raised no objections to prioritization.

JSAC

1. A. Gonzalez provided the domestic ALMA report.
   - ALMA2 has received endorsement by MEXT Committee to start from April 1st, 2023.
   - Communication of WSU plans
     - Communications of the status to the community have been done or planned.
     - Discussion about the possibility of a new framework of joint proposal between Subaru and ALMA is ongoing. Alvaro provided an update at the Subaru Users Meeting on February 2nd.

2. S. Tsuneta, the Director General of NAOJ, reported the TMT update and FY23 budget.

3. A. Nishimura provided the NRO report.
   - Restart of the development program is being considered.
   - A total of 38 refereed papers using the Nobeyama 45 m telescope were published from 2022 Feb to 2023 Jan.

4. T. Minamidani provided the ASTE status report.
   - On-site investigations and recovery from the malfunction of the sub-reflector driving system are underway.
   - The schedule for FY2023 is under consideration.

5. A. Gonzalez provided the ngVLA update.
   - ngVLA study group
     - ngVLA study group submitted an LoI of "Grand Vision" to SCJ.
     - Engineering works (time/freq reference distribution system, 3D printing, and testing of current ngVLA corrugated horn designs) are in progress.
   - Japanese SWGs plan to hold community meetings.
   - SKA-ngVLA Science Conference will be held in May.
   - NRAO ngVLA
     - Antenna PDR2 passed.
     - Red team review of ngVLA Operation Plan held in Dec-Jan.
     - Programmatic CDR is planned in April 2023.