Activity Report of Commission J
March 31 to September 25, 2017

September 25, 2017
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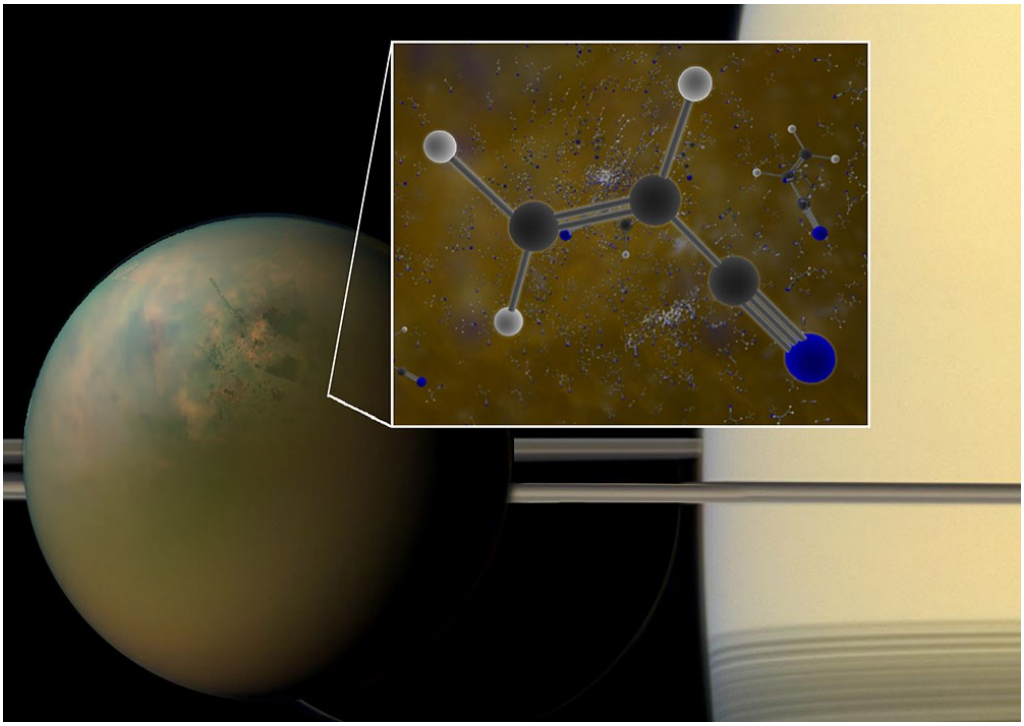
ALMA project

- Latest scientific topics from ALMA press release (July 29, 2017)

  ALMA Confirms Complex Chemistry in Titan's Atmosphere: Saturn's Moon Offers Glimpse of Earth's Primordial Past

  Saturn's frigid moon Titan has a curious atmosphere. In addition to a hazy mixture of nitrogen and hydrocarbons like methane and ethane, Titan's atmosphere also contains an array of more complex organic molecules, including vinyl cyanide, which astronomers recently uncovered in archival ALMA data. Under the right conditions, like those found on the surface of Titan, vinyl cyanide may naturally coalesce into microscopic spheres resembling cell membranes.



Molecules of vinyl cyanide reside in the atmosphere of Titan, Saturn's largest moon. Titan is shown in an optical (atmosphere) infrared (surface) composite from NASA's Cassini spacecraft. Credit: B. Saxton (NRAO/AUI/NSF); NASA

Activities of meetings

- **ALMA Cycle 5 Town Meeting**

  Date: April 5, 2017

  Venue: Mitaka, National Astronomical Observatory of Japan

  ALMA Observatory was announced the ALMA Cycle 5 Call for Proposals (CfP) for scientific observations. We use Observing Tool (OT) for proposal preparation (parameter setting, estimation of observing time etc.) and submit an ALMA proposal. In Town Meeting, we, East Asia ALMA Regional Center (EAARC), will explain capability of ALMA Cycle 5 and we will have an opportunity to consult about proposal preparation through Q&A.

- **NRO45m/ASTE Single Dish Science Workshop 2017**

  Date: August 1-2, 2017

  Venue: Nobeyama Radio Observatory

  At Nobeyama Radio Observatory, a new phase of 45m radio telescope is going to start. Now, three legacy program is finishing, and it is expected that world-leading preeminent results will come. Furthermore, we are entering the phase to achieve cutting-edge scientific output through new observations using receivers including FOREST.

  In the southern hemisphere, ASTE is offering 345 GHz and 450 GHz receiver capabilities, and new and unique results are being published, including those leading to ALMA observations. It is also expected that the new detector Deshima (On-chip Filterbank Spectrometer for Submillimeter Wave Cosmology) will open our view to high-z universe.

  In this workshop, we focus on scientific results from single-dish radio telescopes. (1) We introduce up-to-date scientific results with Nobeyama 45 m telescope and ASTE. (2) We discuss future requirements from the scientific point of view. We invite oral and poster presentations. Possible topics include; scientific results with Nobeyama 45m telescope, ASTE, or other single-dish telescopes, possibilities of new instrumental development, theoretical studies based on observational results, etc.

- **The 16th　IVS NICT Technology Development Center Symposium**

  Date: June 21, 2017

  Venue: NICT Kashima Space Technology Center, Main Building

  As an activity of Technology Development Center of IVS（International VLBI Service for Geodesy and Astrometry）, NICT has been organizing annual symposium focused on Technology development related with space geodetic techniques. Proceedings of the symposium have been published as IVS NICT-TDC News (http://www2.nict.go.jp/sts/stmg/ivstdc/news-index.html) and delivered to domestic and

international institutes and individuals working on VLBI and space geodesy.

One of the recent research subject of technology development in VLBI and in radio astronomy is broadband observation. NICT is conducting a new broadband observation technique named GALA-V for a target of distant frequency comparison. This broadband observation system is intended to be compatible with the next generation geodetic VLBI system VGOS. The subject of symposium is not limited only VLBI, but also single dish observation technique for radio astronomy, space geodetic technique and research result including GNSS, SLR and, local tie observations. We welcome contributions from broad field of view in these research subject.

- **Symposium "Evolution of Molecules in Space"**

  Date: June 27-19, 2017

  Venue: Institute of Low Temperature Science, Hokkaido University

  We try to approach the answer to the question of how the molecule evolved and the planet, the earth, and the life were formed in the solar system that was born 4.6 billion years ago in the universe where various structures were formed since Big Bang. Focusing on ice and organic matter composed of the most abundant elements (H, C, O, N), the whole picture of molecular evolution from the interstellar molecular cloud to the protoplanetary system will be explored in both experiment and theory.

- **Workshop ‘Formation of high mass star and cluster in Magellanic Clouds’**

  Date: July 26-27, 2017

  Venue: I-site Namba, Osaka

  Recent observations of molecular clouds in the Milky Way and Magellanic Clouds reveal that the interaction between molecular clouds has a major influence on the formation of high mass stars and clusters. In this workshop, through the results of detailed observations of molecular cloud and HI in the Magellanic clouds where large clusters are still being formed, through consideration of environmental differences such as heavy element quantity, the formation process of high mass star formation will be discussed. High resolution observation of nearby galaxies and comparison with theoretical studies are also important themes.

- **Radio Astronomy Forum meeting 2017**

  Date: September 11, 2017

  Venue: Hokkaido University

  Topics: Business meeting