

Symposium on Planetary Science 2017

PROGRAM

- Date:** February 20-22, 2017
- Location:** Multimedia Education and Research Complex M601, North Kawauchi Campus,
Tohoku University, Sendai, Japan
(Poster: Lobby of the 6th floor in the Multimedia Education and Research Complex bldg.)
- Organizer:** Planetary and Space Physics group, Tohoku University
- Co-organizer:** Society of Geomagnetism and Earth, Planetary and Space Sciences (SGEPSS)
Institute for Space-Earth Environmental Research, Nagoya University
- The 18th Symposium on Planetary Science
 - Exploration of planetary atmospheres and magnetospheres with HISAKI

Information on oral presentation:

40min: 35min talk + 5min discussion / 30min: 25min talk + 5min discussion /
20min: 15min talk + 5min discussion

Monday, Feb. 20

- 13:30 – 13:35 **Welcome:**
T. Obara (Tohoku Univ.)
- Chair:** I. Murata (Tohoku Univ.) and H. Ando (Kyoto Sangyo Univ.)
- 13:35 – 14:05 **New views of Venus from Akatsuki (Invited)**
T. Satoh, M. Nakamura (ISAS/JAXA), T. Imamura (Univ. Tokyo), and
Akatsuki Science Team
- 14:05 – 14:35 **Cloud-top structure of Venus observed by Akatsuki LIR (Invited)**
T. Fukuhara, M. Taguchi (Rikkyo Univ), T. Kouyama (AIST),
T. Imamura (Univ. Tokyo), and T. Horinouchi (Hokkaido Univ.)
- 14:35 – 14:55 **Periodic variation of the zonal wind in the Venus polar region**
H. Ando (Kyoto Sangyo Univ.), N. Sugimoto (Keio Univ.), and
M. Takagi (Kyoto Sangyo Univ.)
- 14:55 – 15:15 **Study of the polar oval at the cloud top of Venus using spectral images taken by
Venus Express**
K. Muto, T. Imamura (Univ. Tokyo), and
J. Peralta (Japan Aerospace Exploration Agency)
- 15:15 – 15:35 **Study on the material transport in the Venusian cloud layer with cloud tracking
method**
Y. Nara, T. Imamura (Univ. Tokyo), and S. Murakami (ISAS/JAXA)
- 15:35 – 15:55 **One-dimensional modeling of Venusian clouds**
M. Shimokawa, T. Imamura (Univ. Tokyo), K. Sugiyama
(Nat'l Inst. Tech., Matsue College), and M. Nakamura (ISAS/JAXA)
- 15:55 – 16:10 **Break**

Chair: N. Terada (Tohoku Univ.)

- 16:10—16:40 **Mars science from Martian Moons Exploration (Invited)**
K. Kuramoto (Hokkaido Univ.), and MMX study team
- 16:40—17:00 **ESA ExoMars Trace Gas Orbiter: Current status with the relationships to our activities and our missions**
Y. Kasaba, H. Nakagawa (Tohoku Univ.), S. Aoki (IASB, Belgium),
A. Vandaele, M. Giuranna (INAF, Italy), O. Korablev (IKI, Russia),
H. Sagawa (Kyoto Sangyo Univ.), and Y. Kasai (NICT)
- 17:00—17:20 **Development status of metadata server and data archives at Tohoku University for collaborative studies using planetary radio and spectroscopic data**
A. Kumamoto, F. Tsuchiya, Y. Kasaba, H. Misawa, M. Kagitani (Tohoku Univ.),
T. Kimura (RIKEN), C. Tao (NICT), and B. Cecconi (Obs. de Paris)
- 17:20—17:40 **Training course for young scientists at Center of Planetary Science, Kobe**
M. Ueno, S. M. Miyama, F. Usui, Y. Hayashi, and M. Arakawa (Kobe Univ.)

Tuesday, Feb. 21

***International Session**

Chair: T. Kimura (RIKEN) and G. Murakami (ISAS/JAXA)

- 9:00—9:30 **3-year observation by Hisaki (Invited)**
I. Yoshikawa (Univ. Tokyo), and Hisaki Science team
- 9:30—9:50 **Variation of Jupiter's auroral energy observed by Hisaki/EXCEED**
C. Tao (NICT, Tohoku Univ.), T. Kimura (RIKEN), F. Tsuchiya (Tohoku Univ.),
G. Murakami (ISAS/JAXA), K. Yoshioka (Univ. Tokyo), A. Yamazaki (ISAS/JAXA),
H. Kita (Tohoku Univ.), I. Yoshikawa (Univ. Tokyo), and Y. Kasaba (Tohoku Univ.)
- 9:50—10:10 **Characteristics of solar wind control on Jovian UV auroral activity obtained from Hisaki EXCEED and ground-based observations**
H. Kita (Tohoku Univ.), T. Kimura (RIKEN), C. Tao (NICT),
F. Tsuchiya (Tohoku Univ.), A. Yamazaki, G. Murakami (ISAS/JAXA),
K. Yoshioka (Univ. Tokyo), H. Misawa, T. Sakanoi, Y. Kasaba (Tohoku Univ.),
I. Yoshikawa (Univ. Tokyo), and M. Fujimoto (ISAS/JAXA)
- 10:10—10:30 **Response of jovian magnetosphere observed with Hisaki/EXCEED and ground-based observation during an outburst from on Io**
M. Kagitani (Tohoku Univ.), and EXCEED mission team
- 10:30—10:45 **Break**
- 10:45—11:25 **Early results from Juno-JEDI and how they are transforming our understanding of Jupiter's magnetosphere (Invited)**
G. Clark and the Juno-JEDI team
- 11:25—12:05 **Plasma observations at Jupiter from the Jovian Auroral Distributions Experiment: From Juno's approach through its first perijove (Invited)**
R. W. Ebert (SwRI), F. Allegrini (SwRI, Univ. Texas), F. Bagenal (LASP/UC Boulder),
S. J. Bolton (SwRI), T. K. Kim (Univ. Texas, SwRI), S. Levin (JPL), P. Louarn (IRAP, France), D. J. McComas (Princeton Univ., SwRI), D. Ranquist (LASP/UC Boulder),
M. Reno (Austin Mission Consulting, SwRI), J. R. Szalay (SwRI), M. F. Thomsen (Planet. Sci. Inst.), P. Valek (SwRI, Univ. Texas), S. Weidner (Princeton Univ.),
R. J. Wilson (LASP/UC Boulder) and J. L. Zink (Univ. Texas, SwRI)
- 12:05—12:35 **Dynamics of Jupiter's aurora unveiled by the Hisaki-JUNO-Hubble collaboration: initial results (Invited)**
T. Kimura (RIKEN), and Hisaki Science Team

12:35—13:20 **Lunch**

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13:20—14:10 **Poster Session : core time**
@ The same floor as M601 in Multimedia Education and Research Complex
Posters can be displayed all the time during the symposium.

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***International Session (continued)**

Chair: F. Tsuchiya (Tohoku Univ.) and C. Tao (NICT)

- 14:10—14:30 **A study on energy budget of Io Plasma Torus based on the EUV spectroscopic observation**
R. Hikida, K. Yoshioka (Univ. Tokyo), G. Murakami (ISAS/JAXA), T. Kimura (RIKEN), F. Tsuchiya (Tohoku Univ.), M. Kuwabara, and I. Yoshikawa (Univ. Tokyo)
- 14:30—14:50 **A study of the large-scale dynamics of the Jovian magnetosphere derived from HISAKI satellite**
F. Suzuki, K. Yoshioka (Univ. Tokyo), G. Murakami (ISAS/JAXA), F. Tsuchiya (Tohoku Univ.), T. Kimura (RIKEN), R. Hikida, and I. Yoshikawa (Univ. Tokyo)
- 14:50—15:10 **Time variation of atomic oxygen emission near Io during volcanic active event observed by Hisaki/EXCEED**
R. Koga, F. Tsuchiya, M. Kagitani, K. Sakanoi (Tohoku Univ.), M. Yoneda (Kiepenheuer Inst. Solarphys.), I. Yoshikawa, K. Yoshikawa (Univ. Tokyo), G. Murakami, A. Yamazaki (ISAS/JAXA), and T. Kimura (RIKEN)
- 15:10—15:30 **Enhanced radial diffusion in Jupiter's radiation belt induced by the solar wind**
S. Han (Univ. Tokyo), G. Murakami, A. Yamazaki, and M. Nakamura (ISAS/JAXA)
- 15:30—16:00 **Scientific Objectives of Japanese Participation to JUICE (Jupiter Icy Moons Explorer) (Invited)**
Y. Saito (ISAS/JAXA), Y. Sekine (Univ. Tokyo), Y. Kasaba (Tohoku Univ.), K. Enya (ISAS/JAXA), M. Kobayashi (Chiba Inst. Tech.), J. Kimura (Osaka Univ.), N. Namiki (NAOJ), K. Asamura, J. Haruyama (ISAS/JAXA), Y. Takahashi (Hokkaido Univ.), A. Matsuoka (ISAS/JAXA), and Y. Kasai (NICT)
- 16:00—16:30 **Geospace Exploration Project Arase (ERG) (Invited)**
Y. Miyoshi (Nagoya Univ.), I. Shinohara, T. Takashima, K. Asamura, N. Higashio, S. Mitani (ISAS/JAXA), S. Kasahara (Univ. Tokyo), S. Yokota (ISAS/JAXA), Y. Kazama, S. Y. Wang (ASIAA, Taiwan), Y. Kasahara (Kanazawa Univ.), Y. Kasaba (Tohoku Univ.), S. Yagitani (Kanazawa Univ.), A. Matsuoka (ISAS/JAXA), H. Kojima (Kyoto Univ.), Y. Katoh (Tohoku Univ.), K. Shiokawa (Nagoya Univ.), K. Seki (Univ. Tokyo), T. Ono (Tohoku Univ.), and Arase Project Team

16:30—16:45 **Break**

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16:45—18:00 **Discussions on Future Plans**

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18:15—20:00 **Banquet**

@ Bush clover cafe in the North Kawauchi Campus

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Wednesday, Feb. 22

Chair: H. Misawa (Tohoku Univ.)

9:00—9:30 **Next exploration to Mercury BepiColombo: key sciences and future strategies (Invited)**

G. Murakami, and M. Fujimoto (ISAS/JAXA)

9:30—9:50 **Dependent on the solar wind condition of the precipitation band in Mercury's magnetosphere**

M. Yagi (RIKEN), K. Seki (Univ. Tokyo), Y. Matsumoto (Chiba Univ.),
D. C. Delcourt (LPP/CNRS), and F. Leblanc (LATMOS/CNRS)

9:50—10:10 **Formation of life-existing planet by multiple systems and fossils**

Y. Miura (Yamaguchi Univ., AIC Univ.)

10:10—10:30 **Space weathering as a tracer of ancient solar activities and dust flux**

S. Sasaki (Osaka Univ.)

10:30—10:45 **Break**

Chair: S. Sakai (Univ. Tokyo)

10:45—11:15 **Atmospheric Escape from Mars: A review of MAVEN results (Invited)**

K. Seki (Univ. Tokyo), D. A. Brain (LASP/UC Boulder), S. Inui,
T. Namekawa (Univ. Tokyo), and MAVEN PS team

11:15—11:35 **MAVEN/NGIMS observations and full-particle DSMC simulations of gravity waves in the Martian upper thermosphere**

N. Terada (Tohoku Univ.), F. Leblanc (LATMOS/CNRS), H. Nakagawa, K. Terada,
S. Maeda (Tohoku Univ.), A. S. Medvedev (MPS), E. Yiğit (George Mason Univ.),
T. Kuroda (Tohoku Univ., NICT), T. Hara, S. L. England (UC Berkley), H. Fujiwara
(Seikei Univ.), K. Seki (Univ. Tokyo), P. R. Mahaffy, M. Elrod, M. Benna,
J. Grebowsky (NASA/GSFC), and B. M. Jakosky (UC Boulder)

11:35—11:55 **Wavelength dependences of gravity wave distribution in the Martian upper thermosphere observed by MAVEN/NGIMS**

S. Maeda, N. Terada, H. Nakagawa (Tohoku Univ.), T. Kuroda (NICT, Tohoku Univ.),
and K. Terada (Tohoku Univ.)

11:55—12:15 **The Study of Martian Plasma Boundaries Based on Spacecraft Observations**

K. Matsunaga (Nagoya Univ., Univ. Tokyo), K. Seki (Univ. Tokyo), D. A. Brain
(LASP/UC Boulder), T. Hara (SSL/UC Berkley), K. Masunaga (Univ. Tokyo),
J. P. McFadden (SSL/UC Berkley), J. S. Halekas (Univ. Iowa), D. L. Mitchell
(SSL/UC Berkley), C. Mazelle (CNRS, Univ. Paul Sabatier), J. R. Espley (GSFC/NASA),
and B. M. Jakosky (LASP/UC Boulder)

12:15—12:20 **Final Words**

T. Obara and H. Misawa (Tohoku Univ.)

Posters

Information on poster presentation:

Session core time : 13:20-14:10 on Feb. 21

Location : Lobby of the 6th floor of the Multimedia Education and Research Complex bldg.

Board size: 90cm (width) x 210cm(height)

Posters can be displayed all the time during the symposium.

1. Cloud-tracked winds on Venus nightside obtained from Venus Express VIRTIS infrared images

M. Omino (Univ. Tokyo), M. Nakamura (ISAS/JAXA), T. Imamura (Univ. Tokyo), and J. Peralta (ISAS/JAXA)

2. Stationary features at the cloud top of Venus observed in Akatsuki UV images

T. Kitahara, T. Imamura (Univ. Tokyo), A. Yamazaki (ISAS/JAXA), M. Yamada (Chiba Inst. Tech.), S. Watanabe (Hokkaido Information Univ.) and L2/L3 Team

3. Evaluation method of the atmospheric turbulent energy at the cloud top region of Venus in the data of Akatsuki IR2 with LIR and UVI

M. Toyooka, Y. Kasaba, H. Nakagawa, K. Takami (Tohoku Univ.), T. M. Sato, T. Satoh (ISAS/JAXA), M. Taguchi (Rikkyo Univ.), A. Yamazaki (ISAS/JAXA), and S. Watanabe (Hokkaido Inform. Univ.)

4. Study of the horizontal distribution of Venusian sulfuric clouds using a general circulation model: Comparison with the Akatsuki data

T. Akiba (Tohoku Univ.), T. Kuroda (NICT, Tohoku Univ.), K. Ikeda (NIES), N. Terada, Y. Kasaba, A. Kamada (Tohoku Univ.), M. Takahashi (Univ. Tokyo), T. M. Sato, T. Satoh (ISAS/JAXA), M. Taguchi (Rikkyo Univ.), A. Yamazaki (ISAS/JAXA), and S. Watanabe (Hokkaido Inform. Univ.)

5. The Martian MHD modeling: Preliminary results of comparisons between ancient and present plasma environment

S. Sakai (Univ. Tokyo), N. Terada (Tohoku Univ.), K. Seki, T. Amano (Univ. Tokyo), Y. Ebihara (Kyoto Univ.), K. Keika (Univ. Tokyo), Y. Matsumoto (Chiba Univ.), H. Nakagawa (Tohoku Univ.), and Y. Ogawa (NIPR)

6. DSMC simulations of internal gravity waves propagating and dissipating in the Martian upper thermosphere and exosphere

Kaori Terada, N. Terada (Tohoku Univ.), A. S. Medvedev (MPI), E. Yiğit (MPI, George Mason Univ.), H. Nakagawa (Tohoku Univ.), K. Seki (Univ. Tokyo), T. Kuroda (NICT, Tohoku Univ.), H. Shinagawa (NICT), H. Fujiwara (Seikei Univ.), and Y. Kasaba (Tohoku Univ.)

7. Near-Infrared Hyperspectral Imager NIRS4/MacromOmega on MMX

T. Iwata (ISAS/JAXA), T. Sakanoi, H. Nakagawa (Tohoku Univ.), J-P. Bibring, V. Hamm, C. Pilorget (Université Paris-Sud), T. Nakamura (Tohoku Univ.), S. Aoki (Inst. d'Aéron. Spatiale de Belgique), S. Crites (ISAS/JAXA), and Y. Kasaba (Tohoku Univ.)

8. Three dimensional display of magnetic field vectors observed by Kaguya together with lunar magnetic anomalies

H. Takatera, and T. Nakagawa (Tohoku Inst. Tech.)

- 9. Phase-standing whistler fluctuations detected by SELENE and ARTEMIS around the Moon**
Y. Tsugawa (Nagoya Univ.), Y. Katoh, N. Terada (Tohoku Univ.), and S. Machida (Nagoya Univ.)
- 10. Low-frequency (1-12Hz) diffuse magnetic fluctuations detected by Kaguya above the polar region of the moon**
Y. Sugata, S. Ito, and T. Nakagawa (Tohoku Inst. Tech.)
- 11. Polarization of Pc1 pearls observed at Kawatabi, Miyagi**
S. Miyake, S. Yamakawa, Y. Doi, and T. Nakagawa (Tohoku Inst. Tech.)
- 12. Formation of planet for elements, molecules and rocks.**
Y. Miura (Yamaguchi Univ.)
- 13. Comet Catalina (C/2013 US10) observed by Hisaki**
K. Masunaga (Univ. Tokyo), G. Murakami (ISAS/JAXA), F. Tsuchiya (Tohoku Univ.),
T. Kimura (RIKEN), K. Yoshioka (Univ. Tokyo), A. Yamazaki (ISAS/JAXA),
K. Seki (Univ. Tokyo), N. Terada (Tohoku Univ.), and I. Yoshikawa (Univ. Tokyo)
- 14. Io-related electron heating in the Io plasma torus: Emission model**
F. Tsuchiya (Tohoku Univ.), and HISAKI science team
- 15. Temperature variation of sulfur ions in the Io plasma torus associated with a volcanic event with the Hisaki/EXCEED**
M. Shishido, T. Sakanoi, M. Kagitani, F. Tsuchiya (Tohoku Univ.), I. Yoshikawa (Univ. Tokyo),
A. Yamazaki (ISAS/JAXA), K. Yoshioka (Univ. Tokyo), G. Murakami (ISAS/JAXA),
and T. Kimura (RIKEN)
- 16. Variations of System IV period of the sulfur ions in the Io torus for the volcanic event in 2015**
R. Arakawa, H. Misawa, F. Tsuchiya, (Tohoku Univ.), F. Suzuki, K. Yoshioka (Univ. Tokyo),
M. Kagitani (Tohoku Univ.), G. Murakami, A. Yamazaki (ISAS/JAXA), T. Kimura (RIKEN), and
I. Yoshikawa (Univ. Tokyo)
- 17. Study of the EUV emission correlating with substorm-like events in the Jovian magnetosphere**
T. Mizuguchi, H. Misawa, F. Tsuchiya, and T. Obara (Tohoku Univ.)
- 18. Occurrence characteristics of Jupiter's quasi-periodic decametric radio emission in the magnetospheric plasma enhancement period**
H. Misawa, and F. Tsuchiya (Tohoku Univ.)
- 19. Study of the solar wind influence on the Jovian inner magnetosphere using an ionospheric potential solver**
Koichiro Terada, N. Terada, Y. Kasaba, H. Kita (Tohoku Univ.), C. Tao, A. Nakamizo (NICT),
A. Yoshikawa (Kyushu Univ.), S. Ohtani (APL/JHU), F. Tsuchiya, M. Kagitani, T. Sakanoi
(Tohoku Univ.), G. Murakami (ISAS/JAXA), K. Yoshioka (Univ. Tokyo), T. Kimura (RIKEN),
A. Yamazaki (ISAS/JAXA), and I. Yoshikawa (Univ. Tokyo)

- 20. The Radio and Plasma Wave Investigation (RPWI) for JUICE: Science planning and engineering model development**
Y. Kasaba, H. Misawa, F. Tsuchiya (Tohoku Univ.), Y. Kasahara, T. Imachi (Kanazawa Univ.)
T. Kimura (RIKEN), Y. Katoh, A. Kumamoto (Tohoku Univ.), H. Kojima (RISH/Kyoto Univ.),
S. Yagitani (Kanazawa Univ.), K. Ishisaka (Toyama Pref. Univ.), and Y. Miyoshi (Nagoya Univ.)
- 21. North-south asymmetry of Saturn's auroral radio emissions: The seasonal variation of their fluxes in half of Kronian year**
A. Sasaki, Y. Kasaba (Tohoku Univ.), T. Kimura (RIKEN), and C. Tao (NICT, Tohoku Univ.)
- 22. Variation of pitch angle distribution due to elastic collision by magnetospheric electrons and neutral H₂O originated from Enceladus**
H. Tadokoro (Musashino Univ.), and Y. Katoh (Tohoku Univ.)
- 23. Observation of the atomic oxygen and water molecule ion emissions in the Enceladus torus with a visible high-resolution spectrograph on Haleakala T60**
H. Ono, T. Sakanoi, M. Kagitani, and K. Kodama (Tohoku Univ.)
- 24. Current status of Haleakala Observatory, Instrumentation and its future perspective**
T. Sakanoi, M. Kagitani, T. Obara (Tohoku Univ.), Y. Yoneda (Kiepanheuer Inst., Germany,
Tonoku Univ.), S. Okano, H. Nakagawa, and Y. Kasaba (Tohoku Univ.)
- 25. Development of the small EUV imaging device PHOENIX for the EQUULEUS mission**
M. Kuwabara, K. Yoshioka (Univ. Tokyo), G. Murakami (ISAS/JAXA), and
I. Yoshikawa (Univ. Tokyo)
- 26. Test model of energetic electron detector with 2-pi steradian field-of-view**
S. Kasahara (Univ. Tokyo)