

Symposium on Planetary Science 2016

PROGRAM

- Date:** February 22-24, 2016
- Location:** 4th floor, Aoba Memorial Hall, Tohoku University
(Poster: 1st floor, Aoba Memorial Hall)
- Cosponsor:** Planetary and Space Physics group, Tohoku University
Institute for Space-Earth Environmental Research, Nagoya University
- The 17th Symposium on Planetary Science
 - Joint seminar of DCs and PDs on solar-terrestrial and planetary sciences
 - Exploration of planetary atmospheres and magnetospheres with HISAKI
- SGEPSS subcommittee on computer simulations for solar, terrestrial and planetary sciences
- SGEPSS subcommittee on environment of airless bodies, moons, and spacecraft

Information on oral presentation:

25min: 20min talk + 5min discussion / 20min: 15min talk + 5min discussion

#In the session “Joint seminar of DCs and PDs on solar-terrestrial and planetary sciences”
(Feb. 23 AM), each presentation shall be “20min: 12min talk + 8min discussion”.

Monday, Feb. 22

13:00—13:10 **Welcome:**
T. Obara (Tohoku Univ.)

Joint session: SGEPSS subcommittee on computer simulations for solar, terrestrial and planetary sciences
SGEPSS subcommittee on environment of airless bodies, moons, and spacecraft

Chair: H. Usui (Kobe Univ.) and M. N. Nishino (Nagoya Univ.)

13:10—13:30 **Summary of environment of airless bodies, moons, and spacecraft**
M. N. Nishino (Nagoya Univ.), H. Usui (Kobe Univ.), H. Tsunakawa (Tokyo Inst. Tech.), Y. Kasahara (Kanazawa Univ.), A. Kumamoto (Tohoku Univ.), and Y. Saito (ISAS/JAXA)

13:30—13:50 **Contribution of numerical simulations to planetary exploration missions**
H. Usui (Kobe Univ.)

13:50—14:15 **Mercury exploration: from MESSENGER to BepiColombo (Invited)**
G. Murakami and M. Fujimoto (ISAS/JAXA)

14:15—14:40 **Simulating Mercury's Dynamo (Invited)**
F. Takahashi (Kyushu Univ.)

14:40—14:50 **Break**

- 14:50—15:10 **Global structure of Mercury's magnetosphere : Dependence on solar wind parameters**
M. Yagi (Tohoku Univ.), K. Seki (Univ. Tokyo), Y. Matsumoto (Chiba Univ.), D. C. Delcourt, and F. Leblanc (CNRS)
- 15:10—15:30 **Simulation study of whistler-mode chorus and related wave-particle interactions in planetary magnetospheres**
Y. Katoh (Tohoku Univ.)
- 15:30—15:55 **Motion of dust grains around an asteroid (Invited)**
H. Senshu (Chiba Inst. Tech.), and H. Kimura (Kobe Univ.)
- 15:55—16:15 **Effect of Surface Topography on the Lunar Electrostatic Environment: 3D Plasma Particle Simulations**
Y. Miyake (Kobe Univ.), and M. N. Nishino (Nagoya Univ.)
- 16:15—16:25 **Break**
- Chair:** T. Imamura (ISAS/JAXA)
- 16:25—16:45 **Akatsuki returns to Venus**
M. Nakamura, T. Imamura, T. Satoh, M. Suzuki and A. Yamazaki (ISAS/JAXA)
- 16:45—17:05 **Akatsuki IR1 camera awakens**
N. Iwagami (Univ. Tokyo), S. Ohtsuki (Senshu Univ.), T. Sakanoi (Tohoku Univ.), and S. Takagi (Tokai Univ.)
- 17:05—17:25 **Local time difference of dayglow periodicities at Venus**
K. Masunaga, K. Seki (Univ. Tokyo), N. Terada, F. Tsuchiya (Tohoku Univ.), T. Kimura (RIKEN), K. Yoshioka (Univ. Tokyo), G. Murakami, A. Yamazaki (ISAS/JAXA), C. Tao (NICT), and I. Yoshikawa (Univ. Tokyo)
- 17:25—17:45 **An MHD simulation of magnetic reconnection in the dayside Venusian ionosphere**
H. Sakamoto, N. Terada, Y. Kasaba, and H. Nakagawa (Tohoku Univ.)
- 17:45—18:05 **Material state change model of air-solid process on Venus-type (vs. Mars-type)**
Y. Miura (Yamaguchi Univ.)
- 18:05—18:25 **Extension of feedback instability theory for the magnetosphere-ionosphere coupling**
T.-H. Watanabe, Y. Miwa, and S. Maeyama (Nagoya Univ.)
- 18:25—18:45 **Characteristics of Jupiter's magnetospheric turbulence observed by Galileo**
C. Tao (NICT), F. Sahraoui, D. Fontaine (LPP), J. de Patoul (Univ. Exeter), T. Chust (LPP), S. Kasahara (ISAS/JAXA) and A. Retinò (LPP)

Tuesday, Feb. 23

Joint seminar of DCs and PDs on solar-terrestrial and planetary sciences

#Each presentation shall be 12min talk + 8min discussion.

Chair: N. Terada (Tohoku Univ.) and Y. Miyoshi (Nagoya Univ.)

9:00—9:05 **Opening remarks**

9:05—9:25 **Comparative study of proton and oxygen ion supply into the inner magnetosphere during a geomagnetic storm**

K. Mitani (Nagoya Univ.), K. Seki (Univ. Tokyo), K. Keika (Nagoya Univ.),
L. J. Lanzerotti (New Jersey Inst. Tech), M. Gkioulidou, D. G. Mitchell
(Johns Hopkins Univ.) and C. A. Kletzing (Univ. Iowa)

9:25—9:45 **Study of the magnetic storm phase dependence of the inner boundary of the plasma sheet electrons based on THEMIS satellites observations**

K. Ohki, A. Kumamoto and Y. Katoh (Tohoku Univ.)

9:45—10:05 **The distribution of the turbulent structured plasma in the magnetosphere estimated by magnetic data observed by LEO satellites**

Y. Yokoyama, T. Iyemori, K. Nakanishi and T. Aoyama (Kyoto Univ.)

10:05—10:25 **Study on characteristics of drift resonance between outer radiation belt electrons and a monochromatic Pc5 wave based on GEMISIS-RC and RB simulations**

K. Kamiya (Nagoya Univ.), K. Seki (Univ. Tokyo), S. Saito (Nagoya Univ.),
T. Amano (Univ. Tokyo), Y. Miyoshi (Nagoya Univ.), Y. Matsumoto (Chiba Univ.)
and T. Umeda (Nagoya Univ.)

10:25—10:40 **Break**

10:40—11:00 **An MHD simulation study of the Kelvin-Helmholtz instability at the Martian ionopause with a day-to-night density gradient**

S. Aizawa, N. Terada, Y. Kasaba, M. Yagi (Tohoku Univ.) and Y. Matsumoto
(Chiba Univ.)

11:00—11:20 **Mass Dependent Solar Wind Ion Reflection over Lunar Magnetic Anomalies**

D. Kato (Univ. Tokyo), Y. Saito, S. Yokota (ISAS/JAXA) and M. N. Nishino
(Nagoya Univ.)

11:20—11:40 **Study of lunar subsurface evolution based on the SELENE observation data and impact experiment**

K. Ishiyama, A. Kumamoto, N. Nakamura (Tohoku Univ.), Y. Takagi (Aichi Toho Univ.)
and S. Hasegawa (ISAS/JAXA)

11:40—12:00 **Characteristics of Jovian Low-Frequency Radio Emissions during the Cassini and Voyager Flyby of Jupiter**

M. Imai (Kyoto Univ.)

12:00—12:20 **Study on EMIC rising tone emissions observed by THEMIS probes**

S. Nakamura, Y. Omura (Kyoto Univ.) and V. Angelopoulos (UCLA)

12:20—13:10 **Lunch**

++++
13:10—14:00 **Poster Session 1: core time**
 @1st floor, Aoba Memorial Hall
 # Posters can be displayed all the time during the symposium.
++++

Special session: Current and future planetary missions and the sciences

Chair: Y. Kasaba (Tohoku Univ.)

14:00—14:25 **Venus explorer Akatsuki and beyond (Invited)**
 T. Imamura (ISAS/JAXA)

14:25—14:50 **Mercury exploration mission BepiClombo (Invited)**
 G. Murakami, and M. Fujimoto (ISAS/JAXA)

14:50—15:15 **Synergetic Multi-Wavelength Observation of Jupiter's Magnetosphere:
Recent Results and Plans for JUNO Mission (Invited)**
 T. Kimura (RIKEN), Hisaki Science team, R. Kraft (Harvard-Smithsonian Astrophys.
Obs.), R. Elsner (NASA), G. Branduardi-Raymont (Univ. Coll. London), R. Gladstone
(SwRI), and Y. Ezoe (Tokyo Met. Univ.)

15:15—15:40 **JUICE/PEP instrument and its science (Invited)**
 Y. Futaana (Swedish Inst. Space Phys.) and JUICE/PEP team

15:40—15:55 **Break**

15:55—16:20 **A review of MAVEN initial results: Dynamic variation of Martian upper
atmosphere and new aurora (Invited)**
 K. Seki (Univ. Tokyo), N. Terada, H. Nakagawa (Tohoku Univ.), and MAVEN PS team

16:20—16:45 **Mars Moons Exploration Mission: Its Sciences and Scope (Invited)**
 K. Kuramoto (Hokkaido Univ.) (presented by N. Terada (Tohoku Univ.))

16:45—17:05 **CPS-ISAS cooperative center of excellence to incubate future missions in planetary
sciences**
 M. Ueno, M. Arakawa, Y. Hayashi (Kobe Univ.), M. Ozaki (ISAS/JAXA),
and M. S. Miyama (Kobe Univ.)

17:05—17:20 **Break**

17:20—18:45 **Discussions on Future Plans**

++++
19:00—20:30 **Banquet**
 @ Shikisai, 3rd floor, Aoba Memorial Hall
++++

Wednesday, Feb. 24

Chair: G. Murakami (ISAS/JAXA)

- 9:00—9:20 **Oxygen ionic composition in the Io plasma torus**
M. Kagitani (Tohoku Univ.)
- 9:20—9:40 **Variations in Jupiter's sodium nebula due to volcanism on Io**
M. Yoneda (Kiepenheuer Inst.), M. Kagitani, F. Tsuchiya, T. Sakanoi, H. Misawa, and S. Okano (Tohoku Univ.)
- 9:40—10:00 **Io's volcanic influence on the Io plasma torus: HISAKI observation**
F. Tsuchiya (Tohoku Univ.), K. Yoshioka (Univ. Tokyo), T. Kimura (RIKEN), G. Murakami (ISAS/JAXA), M. Yoneda (Kiepenheuer Inst.), R. Koga, M. Kagitani (Tohoku Univ.), H. Nozawa (Nat'l Inst. Tech., Kagoshima College), C. Tao (NICT), T. Sakanoi, Y. Kasaba (Tohoku Univ.), A. Yamazaki (ISAS/JAXA) and I. Yoshikawa (Univ. Tokyo)
- 10:00—10:20 **Time variation of 130.4nm atomic oxygen emission near Io observed by Hisaki/EXCEED**
R. Koga, F. Tsuchiya, M. Kagitani, T. Sakanoi (Tohoku Univ.), M. Yoneda (Kiepenheuer Inst.), I. Yoshikawa, K. Yoshioka (Univ. Tokyo), G. Murakami, A. Yamazaki (ISAS/JAXA) and T. Kimura (RIKEN)
- 10:20—10:40 **Ion and electron distribution in the Io plasma torus deduced from the remote observation by EXCEED on Hisaki.**
K. Yoshioka (Univ. Tokyo), G. Murakami (ISAS/JAXA), T. Kimura (RIKEN), F. Tsuchiya, M. Kagitani (Tohoku Univ.), A. Yamazaki (ISAS/JAXA), I. Yoshikawa (Univ. Tokyo) and Y. Kasaba (Tohoku Univ.)

10:40—10:50 **Break**

Chair: Y. Katoh (Tohoku Univ.)

- 10:50—11:10 **Statistical study of the response of Jovian EUV aurora to the solar wind from Hisaki observations**
H. Kita (Tohoku Univ.), T. Kimura (RIKEN), C. Tao (NICT), F. Tsuchiya, H. Misawa, T. Sakanoi, Y. Kasaba (Tohoku Univ.), G. Murakami (ISAS/JAXA), K. Yoshioka (Univ. Tokyo), A. Yamazaki (ISAS/JAXA) and I. Yoshikawa (Univ. Tokyo)
- 11:10—11:30 **Database development of global Jovian magnetospheric simulation**
K. Fukazawa (Kyoto Univ.), T. Kimura (RIKEN), F. Tsuchiya (Tohoku Univ.), G. Murakami (ISAS/JAXA), H. Kita (Tohoku Univ.) and C. Tao (NICT)
- 11:30—11:50 **Effect of gyro-viscosity on Kelvin-Helmholtz instability**
T. Umeda, N. Yamauchi and Y. Wada (Nagoya Univ.)
- 11:50—12:10 **Formation of Giants Planets during the Phase of Bipolar Flow in the Primitive Solar Nebula -- A Review of Early Studies on the Origin of Solar System**
H. Oya (Tohoku Univ.)

12:10—13:00 **Lunch**

++++
13:00—13:50 **Poster Session 2: core time**
 @1st floor, Aoba Memorial Hall
 # Posters can be displayed all the time during the symposium.
++++

Chair: N. Iwagami (Univ. Tokyo)

- 13:50—14:10 **Initial Results with IR2 onboard Venus Orbiter Akatsuki**
 T. Satoh (ISAS/JAXA) and IR2 Team
- 14:10—14:30 **Study of the temperature structure of the Venusian atmosphere by radio
holographic analysis of radio occultation data**
 M. Miyamoto (Univ. Tokyo), T. Imamura, H. Ando (ISAS/JAXA), T. Tsuda
 (Kyoto Univ.) and Y. Aoyama (NIPR)
- 14:30—14:50 **The arch observed at the limb of Venus**
 M. Kanao, M. Nakamura, T. Imamura, and T. Shimizu (ISAS/JAXA)
- 14:50—15:10 **Comparison of Martian Magnetic Pileup Boundary with Ion Composition Boundary
Observed by MAVEN**
 K. Matsunaga (Nagoya Univ.), K. Seki (Univ. Tokyo), D. A. Brain (UC, Boulder),
 T. Hara (UC, Berkeley), K. Masunaga (Univ. Tokyo), J. P. McFadden (UC, Berkeley),
 J. S. Halekas (Univ. Iowa), D. L. Mitchell (UC, Berkeley), C. Mazelle (CNRS & Univ.
 Paul Sabatier), J. E. P. Connerney (NASA) and B. M. Jakosky (UC, Boulder)
- 15:10—15:30 **Study of the gravity waves on Martian atmosphere using a high-resolution Mars
General Circulation Model**
 T. Kuroda (Tohoku Univ.), A.S. Medvedev (MPI), E. Yiğit (George Mason Univ.) and
 P. Hartogh (MPI)
- 15:30—15:55 **ESA ExoMars Trace Gas Orbiter: Current status (just prelaunch) and the
relationships to our Mars mission (Invited)**
 Y. Kasaba, H. Nakagawa, T. Sakanoi (Tohoku Univ.), S. Aoki, M. Giuranna (IAPS, Italy),
 A. Vandaele (IASB, Belgium) and O. Korablev (IKI, Russia)
- 15:55—16:00 **Final Words**
 T. Obara and H. Misawa (Tohoku Univ.)

Posters

Information on poster presentation:

Session core time 1: 13:10-14:00 on Feb. 23

Session core time 2: 13:00-13:50 on Feb. 24

Location: @1st floor, Aoba Memorial Hall

Board size: 112cm (width) × 168cm (height)

Posters can be displayed all the time during the symposium.

1. Comparison of upstream ULF waves observed at Mercury, Earth, the Moon, Mars, and Saturn

Y. Tsugawa (Nagoya Univ.), Y. Katoh, N. Terada (Tohoku Univ.) and S. Machida (Nagoya Univ.)

2. Mixed solid process of planets : Material state change model on Mercury (vs. Earth-Mars)

Y. Miura (Yamaguchi Univ.)

3. Short-period magnetic enhancement detected by Kaguya in the solar wind

Y. Karibe, T. Miyazawa, K. Murakami, T. Nakagawa (Tohoku Inst. Tech.), and
H. Tsunakawa (Tokyo Inst. Tech.)

4. Ground-based 5 μ m observation of waves in the atmosphere

S. Kano, N. Iwagami, M. Hosouchi (Univ. Tokyo) and
T. Kouyama (Nat'l Inst. Advanced Sci. and Tech.)

5. Axi-asymmetric feature in the Venusian polar vortex

H. Ando, T. Imamura (ISAS/JAXA), N. Sugimoto (Keio Univ.), M. Takagi (Kyoto Sangyo Univ.),
H. Kashimura (JAMSTEC), and Y. Matsuda (Tokyo Gakugei Univ.)

6. Measurements of mesospheric wind and temperature in the Venusian atmosphere using MILAHI aboard Tohoku Univ. 60cm

K. Takami, H. Nakagawa (Tohoku Univ.), H. Sagawa (Kyoto Sangyo Univ.),
S. Aoki (IAPS, Italy), Y. Kasaba, and I. Murata (Tohoku Univ.)

7. Analysis of fine structures of Venusian clouds using VMC on Venus Express

Y. Nara (Univ. Tokyo), T. Imamura and S. Murakami (ISAS/JAXA)

8. Study of the Venusian cloud formation and distribution using a GCM

K. Itoh, T. Kuroda, Y. Kasaba, N. Terada (Tohoku Univ.), K. Ikeda (Nat'l Inst. Env., Studies) and
M. Takahashi (Univ. Tokyo)

9. Convection and Microphysics of Venusian Cloud Formation

M. Shimokawa (Univ. Tokyo), K. Sugiyama, T. Imamura, M. Nakamura (ISAS/JAXA)

10. Morphology and temporal variation of the polar oval of Venus revealed by Venus Express/VMC visible images

K. Muto (Univ. Tokyo), and T. Imamura (ISAS/JAXA)

11. Ground-based mid-infrared spectroscopy of Venus atmosphere

T. M. Sato, T. Satoh (ISAS/JAXA), H. Sagawa (Kyoto Sangyo Univ.), A. Yamazaki (ISAS/JAXA),
T. Kouyama (Nat'l Inst. Adv. Industrial Sci. Tech.), and T. Imamura (ISAS/JAXA)

- 12. Observations of the periodical rotation and temporal variability of the global scale Venusian UV-feature with Pirika telescope**
M. Imai, Y. Takahashi, M. Watanabe (Hokkaido Univ.) and
T. Kouyama (Nat'l Inst. Adv. Industrial Sci.Tech.)
- 13. Effect by the amount of CO₂ atmosphere and dust in the simulations of early Martian climate**
A. Kamada, T. Kuroda, Y. Kasaba and N. Terada (Tohoku Univ.)
- 14. Development of a Planetary Magnetosphere-Ionosphere Model and its Coupling with Atmosphere Models**
N. Terada (Tohoku Univ.)
- 15. Study of the solar wind influence on the Jovian inner magnetosphere using an ionospheric potential solver**
K. Terada, N. Terada, Y. Kasaba, F. Tsuchiya, M. Kagitani, T. Sakanoi, H. Kita (Tohoku Univ.),
C. Tao (NICT), G. Murakami (ISAS/JAXA), K. Yoshioka (Univ. Tokyo), T. Kimura (RIKEN),
A. Yamazaki (ISAS/JAXA) and I. Yoshikawa(Univ. Tokyo)
- 16. Cross-correlation analysis of Jupiter's decametric common S-bursts using LWA1, NDA, and URAN2 radio telescopes**
M. Imai (Kyoto Univ.), A. Lecacheux (CNRS), T. E. Clarke (NRL, USA), C.A. Higgins
(Middle Tennessee State Univ.), M. Panchenko (Austrian Academy Sci., Austria), A. I. Brazhenko,
A. V. Frantsuzenko (Inst. Geophys., Ukraine), A. A. Konovalenko
(Inst. Radio Astron., Kharkiv, Ukraine) and K. Imai (Kochi Nat'l College Tech.)
- 17. Study on the vertical distribution of Jovian decametric S-burst sources based on the ground-based radio observation**
Y. Sasaki, A. Kumamoto, Y. Katoh, and H. Misawa (Tohoku Univ.)
- 18. The electron temperature of Io plasma torus deduced from the EUV spectra taken by HISAKI/EXCEED**
R. Hikida, K. Yoshioka (Univ. Tokyo), G. Murakami (ISAS/JAXA), T. Kimura (RIKEN),
F. Tsuchiya (Tohoku Univ.), M. Kuwabara, F. Suzuki, I. Yoshikawa (Univ. Tokyo)
- 19. Response of Io Plasma Torus to middle magnetosphere of Jupiter**
F. Suzuki, K. Yoshioka (Univ. Tohoku), G. Murakami (ISAS/JAXA), F. Tsuchiya (Tohoku Univ.),
T. Kimura (RIKEN), M. Kuwabara, R. Hikida, and I. Yoshikawa (Univ. Tokyo)
- 20. Variation characteristics of Jupiter's radio emission during the HISAKI Jupiter observation campaign in 2015**
H. Misawa, F. Tsuchiya (Tohoku Univ.), T. Kimura (RIKEN), Y. Kasaba and A. Kumamoto
(Tohoku Univ.)
- 21. Galileo observation of energetic electrons and plasma waves at nKOM source region**
S. Kurita (Nagoya Univ.) and H. Misawa (Tohoku Univ.)

- 22. Horizontal and vertical structures of the Jovian IR aurora from plasma and neutral atmospheres: Observation by SUBARU/IRCS with Adaptive Optics**
S. Fujisawa, Y. Kasaba (Tohoku Univ.), C. Tao (NICT), T. Sakanoi, M. Kagitani, and H. Kita (Tohoku Univ.)
- 23. Feasibility of the exploration of the subsurface structure of the Jupiter's icy moon by Jovian radio waves**
A. Kumamoto, Y. Kasaba, H. Misawa and F. Tsuchiya (Tohoku Univ.)
- 24. North-south asymmetry and seasonal variation of Saturn's radio activities**
A. Sasaki, Y. Kasaba (Tohoku Univ.), T. Kimura (RIKEN), L. Lamy, and B. Cecconi (Obs. Paris)
- 25. Test particle simulation of 500eV-50 keV electron-neutral H₂O elastic collision around Enceladus**
H. Tadokoro (Musashino Univ.), and Y. Katoh (Tohoku Univ.)
- 26. Development of energetic electron detector with 2-pi steradian field-of-view**
S. Kasahara (ISAS/JAXA)
- 27. Outline of sciences and instruments of the Near Infrared Spectrometer (NIRS4) on MMX**
T. Iwata (ISAS/JAXA), T. Nakamura (Tohoku Univ.), T. Sakanoi, Y. Kasaba (Tohoku Univ.), T. Imamura, A. Yamazaki (ISAS/JAXA), S. Aoki (IAPS, Italy), T. Sato (ISAS/JAXA), H. Nakagawa, M. Kagitani (Tohoku Univ.), M. Abe, T. Arai (ISAS/JAXA), I. Yoshikawa (Univ. Tokyo), M. Taguchi (Rikkyo Univ.), and NIRS4 Team
- 28. The geocoronal responses to the geomagnetic storm**
M. Kuwabara, K. Yoshioka (Univ. Tokyo), G. Murakami (ISAS/JAXA), F. Tsuchiya (Tohoku Univ.), T. Kimura (RIKEN), and I. Yoshikawa (Univ. Tokyo)
- 29. Sodium exosphere on exoplanets**
M. Yoneda, and S. Svetlana (Kiepenheuer Inst. Solar Phys.)
- 30. Summary of JSPS program on international collaboration for planetary plasma and atmospheric dynamics research based on Hawaiian planetary telescopes**
T. Sakanoi, M. Kagitani, H. Nakagawa, N. Terada, T. Kuroda, Y. Kasaba, T. Obara, H. Misawa, and F. Tsuchiya (Tohoku Univ.)