

Commission G Report

October 31, 2016

1. Meeting announcement/report

(Meetings conducted)

- 2016 Beacon Scintillation Symposium was held at Trieste, Italy on June 27 – July 1, 2016. This meeting is co-sponsored by URSI Commission G. <http://t-ict4d.ictp.it/beacon2016>
- 41st COSPAR Scientific Assembly was scheduled at Istanbul, Turkey on July 30 – August 7, 2016. But the meeting was cancelled.
- AOGS 13th Annual Meeting was held at Beijing, China on July 31 – August 5, 2016. <http://www.asiaoceania.org/aogs2016/>
- International Symposium on the Whole Atmosphere (ISWA) was held at Ito Hall, The University of Tokyo on September 14-16, 2016. Observations and studies of all height of the atmosphere especially featuring PANSY radar were discussed. <http://pansy.eps.s.u-tokyo.ac.jp/iswa/>
- MU radar /Equatorial Atmosphere Radar Symposium was held at RISH, Kyoto University on September 8-9, 2016. This is the annual meeting for the cooperative use of the facilities. Commission G of Japanese URSI co-sponsors this symposium.

(Meetings in future)

- The 18th EISCAT symposium which will be held from 26th to 30th May 2017 at National Institute of Polar Research (NIPR), Tokyo, Japan, in connection with the JpGU-AGU joint meeting in Makuhari, Japan (from 21st to 25th May 2017) and the 15th MST (Mesosphere/Stratosphere/Troposphere) radar workshop to be held in NIPR. http://eiscat.nipr.ac.jp/about/18th_eiscat_symposium.html
- The 15th International Workshop on Technical and Scientific Aspects of MST Radar, to be coded as MST15/iMST2, will be held at the National Institute of Polar Research (NIPR), Tokyo, Japan during May 27-31, 2017. It will overlap with the 18th EISCAT symposium (May 26-30, 2017) being held at the same venue, and participants of both events can attend sessions of both meetings. <http://www2.rish.kyoto-u.ac.jp/mst15/index.html>

2. Research Report

2.1. Report from National Institute for Polar Research (NIPR)

(Yasunobu Ogawa, NIPR)

=== Recent papers related to EISCAT ===

Oyama, S.-I., K. Shiokawa, Y. Miyoshi, K. Hosokawa, B. J. Watkins, J. Kurihara, T. T. Tsuda, and C. T. Fallen, Lower thermospheric wind variations in auroral patches during the substorm recovery phase, *J. Geophys. Res. Space Physics*, 121, doi:10.1002/2015JA022129, March, 2016.

Miyoshi, Y., S. Oyama, S. Saito, S. Kurita, H. Fujiwara, R. Kataoka, Y. Ebihara, C. Kletzing, G. Reeves, O. Santolik, M. Clilverd, C. J. Rodger, E. Turunen, and F. Tsuchiya, Energetic electron precipitation associated with pulsating aurora: EISCAT and Van Allen Probe observations. *J. Geophys. Res. Space Physics*, 120, 2754-2766, doi: 10.1002/2014JA020690, April 2016.

Tsuda, T., M. Yamamoto, H. Hashiguchi, K. Shiokawa, Y. Ogawa, S. Nozawa, H. Miyaoka and A. Yoshikawa, A proposal on the study of solar-terrestrial coupling processes with atmospheric radars and ground-based observation network, *Radio Science*, 51, doi: 10.1002/2016RS006035, September 2016.

Yamazaki, Y., M.J. Kosch, Y. Ogawa, and D. R. Themens, High-latitude Ion Temperature Climatology during the International Polar Year 2007-2008, *J. Space Weather Space Clim.*, 6, A35, doi: 10.1051/swsc/2016029, October 2016.

Turunen, E., A. Kero, P. T. Verronen, Y. Miyoshi, S.-I. Oyama, and S. Saito, Mesospheric ozone destruction by high-energy electron precipitation associated with pulsating aurora, *J. Geophys. Res.*, 121, doi:10.1002/2016JD025015, September 2016.

=== Recent papers related to PANSY ===

Minamihara, Y., K. Sato, M. Kohma, and M. Tsutsumi, Characteristics of vertical wind fluctuations in the lower troposphere at Syowa Station in the Antarctic revealed by the PANSY radar, *SOLA*, 12, 116-120, <http://doi.org/10.2151/sola.2016-026>, 2016.

Mihalikova, M., K. Sato, M. Tsutsumi, and T. Sato, Properties of inertia - gravity waves in the lowermost stratosphere as observed by the PANSY radar over Syowa Station in the Antarctic, *Ann. Geo.*, 34, 543-555, doi:10.5194/angeo-34-543-2016, 2016.

2.2. Report from Institute for Space-Earth Environmental Research (ISEE), Nagoya University (Satonori Nozawa, Nagoya University)

== Recent papers ==

Martinez-Calderon, C., K. Shiokawa, Y. Miyoshi, K. Keika, M. Ozaki, I. Schofield, M. Connors, C. Kletzing, M. Hanzelka, O. Santolik, and W. Kurth, ELF/VLF propagation at subauroral latitudes: Conjugate observation between the ground and Van Allen Probes A, *J. Geophys. Res.*, 121, doi: 10.1002/2015JA022264, 2016.

2.3. Report from National Institute for Information and Communications Technology (NICT) (Minoru Kubota, NICT)

=== Recent papers===

Aoyama, T., T. Iyemori, K. Nakanishi, M. Nishioka, D. Rosales, O. Veliz and E. V. Safor, Localized field aligned currents and 4-min TEC and ground magnetic oscillations during the 2015 eruption of Chile's Calbuco volcano, *Earth, Planets and Space*, 68:148, DOI: 10.1186/s40623-016-0523-0, 2016.

Kil, H., E. Miller, G. Jee, Y.-S. Kwak, Y. Zhang, M. Nishioka, Comment on "The night when the auroral and equatorial ionospheres converged" by Martinis, C., J. Baumgardner, M. Mendillo, J. Wroten, A. Coster, and L. Paxton, *J. Geophys. Res. Space Physics*, DOI: 10.1002/2016JA022662, 2016.

Jiang, C., C. Deng, G. Yang, J. Liu, P. Zhu, T. Yokoyama, H. Song, T. Lan, C. Zhou, X. Wu, Y. Zhang, Z. Zhao, T. Komolmis, P. Supnithi, and C. Y. Yatini, Latitudinal variation of the specific local time of postmidnight enhancement peaks in F layer electron density at low latitudes: A case study, *J. Geophys. Res. Space Physics*, 121, 3476–3483, doi:10.1002/2015JA022319, 2016.

2.4. Report from Kyushu University (Huixin Liu, Kyushu University)

=== Recent papers===

Liu, H., E. Doornbos, J. Namashima, Thermospheric wind observed by GOCE: wind jets and seasonal variations, *J. Geophys. Res.*, 121, 1-13, doi:10.1002/2016JA022938, 2016.

Liu, H., Thermospheric inter-annual variability and its potential connection to ENSO and stratospheric QBO, *Earth, Planets and Space*, 68:77, 1-10, doi:10.1186/s40623-016-0455-8, 2016.

Guo, J., F. Wei, X. Feng, J. M. Forbes, Y. Wang, Huixin Liu, W. Wan, Z. Yang, C. Liu, Prolonged multiple excitation of large-scale traveling atmospheric disturbances (TADs) by successive and interacting coronal mass ejections, *J. Geophys. Res.*, 121, 2662-2668, doi:10.1002/2015JA022076, 2016.

Oyama, K.-I., M. Devi, K. Ryu, C. H. Chen, J. Y. Liu, Huixin Liu, L. Bankov, T. Kodama, Modifications of the ionosphere prior to large earthquakes: report from the ionosphere precursor study group, *Geosci. Lett.*, 2016, 3:6, 1-10, doi:10.1186/s40562-016-0038-3, 2016.

Guo, J., F. Wei, X. Feng, Huixin Liu, W. Wan, Z. Yang, J. Yao, and C. Liu, Alfvén waves as a solar-interplanetary driver of the thermospheric disturbances, *Scientific Reports*, doi:10.1038/srep-18895, 2016.

2.5. Report from Electronic Navigation Research Institute (ENRI) (Susumu Saito, ENRI)

=== Research activity ===

ENRI is leading activities to characterize the spatial gradient in ionospheric TEC for aviation use of GNSS in a framework of ICAO (International Civil Aviation Organization) Asia-Pacific region. Ionospheric TEC gradient data from States/Administrations in the Asia-Pacific region are being consolidated to develop a "threat model" for the ground-based augmentation system (GBAS) to enable precise approach guidance for airplanes.

=== Recent papers===

S. Saito, S. Suzuki, M. Yamamoto, C.-H. Chen, and A. Saito Real-time ionospheric monitoring by three-dimensional tomography over Japan, *Proceedings of ION GNSS+ 2016* (peer-reviewed), in press.

2.6. Report from Research Institute for Sustainable Humanosphere (RISH), Kyoto University (Mamoru Yamamoto, RISH)

=== Recent papers===

Watthanasangmechai, K., M. Yamamoto, A. Saito, R. Tsunoda, T. Yokoyama, P. Supnithi, M. Ishii, and C. Yatini, Predawn plasma bubble cluster observed in Southeast Asia, *J. Geophys. Res. Space Physics*, 121, 5868–5879, doi:10.1002/2015JA022069, 2016.

2.7. Report from Tohoku University (Takeshi Sakanoi, Tohoku University)

=== Recent papers===

Shimizu, C., M. Sato, Y. Hongo, F. Tsuchiya, and Y. Takahashi, Relation between charge amounts of lightning discharges derived from ELF waveform data and severe weather, *IEEJ Transactions on Fundamentals and Materials*, 136(5), 252-258, doi:10.1541/ieejfms.136.252, 2016.

Sato, Y., A. Kumamoto, Y. Katoh, A. Shinbori, A. Kadokura, and Y. Ogawa, Simultaneous ground- and satellite-based observation of MF/HF auroral radio emissions, *J. Geophys. Res. Space Physics*, 121, 4530-4541, doi:10.1002/2015JA022101, 2016.

Ozaki, M., S. Yagitani, K. Sawai, K. Shiokawa, Y. Miyoshi, R. Kataoka, A. Ieda, Y. Ebihara, M. Connors, I. Schofield, Y. Katoh, Y. Otsuka, N. Sunagawa, and V. K. Jordanova, A direct link between chorus emissions and pulsating aurora on timescales from milliseconds to minutes: A case study at subauroral latitudes, *J. Geophys. Res. Space Physics*, 120, doi:10.1002/2015JA021381, 2016.

Takahashi, N., Y. Kasaba, A. Shinbori, Y. Nishimura, T. Kikuchi, Y. Ebihara, and T. Nagatsuma, Response of ionospheric electric fields at mid-low latitudes during sudden commencements, *J. Geophys. Res.*, 120, 6, 4849-4862, DOI:10.1002/2015JA021309, 2015.

Tsugawa, Y., Y. Katoh, N. Terada, H. Tsunakawa, F. Takahashi, H. Shibuya, H. Shimizu, and M. Matsushima, Harmonics of whistler-mode waves near the Moon, *Earth, Planets and Space*, 67:36 doi:10.1186/s40623-015-0203-5, 2015.

Endo, K., A. Kumamoto, and Y. Katoh, Observation of plasma waves around the wake of an ionospheric sounding rocket, *J. Geophys. Res. Space Physics*, 120, 5160-5175, doi:10.1002/2014JA020047, 2015.

Morioka A., Y. Miyoshi, K. Iwai, Y. Kasaba, S. Masuda, H. Misawa, and T. Obara, Solar micro-type III burst storms and long dipolar magnetic field in the outer corona, *Astrophysical Journal*, pp.9,808(191),10.1088/0004-637X.808.2.191, 2015

Kaneda, K., H. Misawa, K. Iwai, F. Tsuchiya, and T. Obara, Frequency Dependence of Polarization of Zebra Pattern in Type-IV Solar Radio Bursts, *The Astrophysical Journal Letters*, L45, pp.6,808(2),10.1088/2041-8205/808/2/L45, 2015.

Perwitasari, S., T. Sakanoi, A. Yamazaki, Y. Otsuka, Y. Hozumi, Y. Akiya, A. Saito, K. Shiokawa, and S. Kawamura, Coordinated airglow observations between IMAF/VISI 1 and a ground-based all sky imager on concentric gravity wave in the mesopause, *J. Geophys. Res. Space Physics*, 120, 9706-9721, doi:10.1002/2015JA021424, 2015.