

Publications using the Sodium LIDAR at Tromsø

(A) Refereed papers

- (1) Tsuda, T. T., S. Nozawa, T. D. Kawahara, T. Kawabata, N. Saito, S. Wada, C. M. Hall, S. Oyama, Y. Ogawa, S. Suzuki, T. Ogawa, T. Takahashi, H. Fujiwara, R. Fujii, N. Matuura, and A. Brekke, Fine structure of sporadic sodium layer observed with a sodium lidar at Tromsø, Norway, *Geophys. Res. Lett.*, 38, L18102, doi:10.1029/2011GL048685, 2011.
- (2) Matuura, N., T. Tsuda, and S. Nozawa, Field-Aligned Current Loop Model on Formation of Sporadic Metal Layers, *JGR*, 118, doi:10.1002/jgra.50414, 2013.
- (3) Tsuda, T., S. Nozawa, T. D. Kawahara, T. Kawabata, N. Saito, S. Wada, Y. Ogawa, S. Oyama, C. M. Hall, M. Tsutsumi, M. K. Ejiri, S. Suzuki, T. Takahashi, T. Nakamura, Decrease in sodium density observed during auroral particle precipitation over Tromsø, Norway, *Geophys. Res. Lett.*, 40, DOI: 10.1002/grl.50897, 2013.
- (4) Nozawa, S., T. D. Kawahara, N. Saito, C. M. Hall, T. T. Tsuda, T. Kawabata, S. Wada, A. Brekke, T. Takahashi, H. Fujiwara, Y. Ogawa, and R. Fujii, Variations of the neutral temperature and sodium density between 80 and 107 km above Tromsø during the winter of 2010-2011 by a new solid state sodium LIDAR, *J. Geophys. Res.*, 119, doi:10.1002/2013JA019520, 2014.
- (5) Takahashi, T., S. Nozawa, M. Tsutsumi, C. Hall, S. Suzuki, T. T. Tsuda, T. D. Kawahara, N. Saito, S. Oyama, S. Wada, T. Kawabata, H. Fujiwara, A. Brekke, A. Manson, C. Meek, and R. Fujii, A case study of gravity wave dissipation in the polar MLT region using sodium LIDAR and radar data, *Ann. Geophys.*, 32, 1195-1205, 2014.
- (6) Takahashi, T., S. Nozawa, T. T. Tsuda, Y. Ogawa, N. Saito, T. Hidemori, T. D. Kawahara, C. Hall, H. Fujiwara, N. Matuura, A. Brekke, M. Tsutsumi, S. Wada, T. Kawabata, S. Oyama, and R. Fujii, A case study on generation mechanisms of a sporadic sodium layer above Tromsø (69.6 deg N) during a night of high auroral activity, *Ann. Geophys.*, 33, 941-953, 2015.
- (7) Takahashi, T., K. Hosokawa, S. Nozawa, T. Tsuda, Y. Ogawa, M. Tsutsumi, Y. Hiraki, H. Fujiwara, T. Kawahara, N. Saito, S. Wada, T. Kawabata, C. Hall, Depletion of mesospheric sodium during extended period of pulsating aurora, *JGR*, 122, 1212-1220, 2017.
- (8) Kawahara, T.D., S. Nozawa, N. Saito, T. Kawabata, T.T. Tsuda, and S. Wada, Sodium temperature/wind LIDAR based on laser-diode-pumped Nd:Yag lasers deployed at Tromsø, Norway (69.6°, 19.2°), *Optics Express*, 25, A491-A501, 2017.
- (9) Mondal, S., S. Sarkhel, J. Agarwa, D. Chakrabarty, R. Sekar, T. Yuan, X. Cai, A. Lu, S. Nozawa, N. Saito, T. Kawahara, M. Mlyneczek, J. Russell, III, On the long-lasting "C-type" structures in the sodium lidargram: The lifetime of Kelvin-Helmholtz billows in the mesosphere and lower thermosphere region", *J. Geophys. Res.*, 10.1029/2019JA026630, 2019.
- (10) Narayanan, V. L., S. Nozawa, S. Oyama, I. Mann, K. Shiokawa, Y. Otsuka, N. Saito, S. Wada, T. D. Kawahara, and T. Takahashi, Formation of a bottomside secondary sodium layer associated with the passage of multiple mesospheric frontal systems, *Atm. Chem. Phys.*, <https://doi.org/10.5194/acp-2020-803>, 2020.

(B) Doctor thesis

Takahashi, T., Vertical coupling in the polar mesosphere and lower thermosphere: Event studies of gravity wave and sporadic sodium layer, Nagoya University, Japan, March 2015.

(C)NON-referred publications:

- (1) Takuo T. Tsuda, Satonori Nozawa, Takuya D. Kawahara, Tetsuya Kawabata, Shin-ichiro Oyama, Ryoichi Fujii, Yasunobu Ogawa, Norihito Saito, Satoshi Wada, Asgeir Brekke, and Chris M. Hall, A sodium lidar project at Tromsø: First report on test observations at Wako, Japan, Proceedings of CAWSES-II kickoff symposium, p121-124, 2010.
- (2) Saito, Norihito, Tomohiro Tsukihana, Takuya Kawahara, Satonori Nozawa, Tetsuya Kawabata, Takuo Tsuda, Toshiro Koizumi, and Satoshi Wada, "All-solid-state, narrowband, pulsed sodium D2 resonance light source," Conference on Lasers and Electro-Optics (CLEO/Europe 2011), (Sponsored by the European Physical Society and others), Munich, Germany, May 22-26, 2011, DOI:10.1109/CLEOE.2011.5942473
- (3) Takuo Tsuda, New sodium lidar at Tromsø, Norway, Highlights on Young Scientists, CAWSES-II TG4 Newsletter, vol.5, p.6, 2011.