

## Noctilucent Cloud Research

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On January 18th, 2018, during observation and continuous photographing from the school roof of the Epsilon No.3 rocket from JAXA Uchinoura Space Center, an unusual cloud was clearly observed. The altitude of the noctilucent was calculated using data from the continuous photography and data collected from Miyazaki City and Ogimi Village, Kunigami District, Okinawa Prefecture at approximately the same time. The cloud, which appeared as a twisted string, was an artificial noctilucent cloud and occurred in the highest level of the mesosphere at a height of about 80km. Furthermore, the cylinder like cloud appeared red and blue at an altitude of about 200km in the lowest level of the thermosphere. Considering the meteorological conditions of the thermosphere, the occurrence of such clouds is unexpected, and so it is considered to have been a luminescent phenomenon in the thermosphere. The mechanism of this luminescent phenomenon in the thermosphere is speculated to be completely different from the aurora occurring in the same thermosphere, and so it is speculated that the formation of the artificial noctilucent cloud was due to the emissions from Epsilon No.3. In addition, the movement of the atmosphere at each altitude cloud will be monitored closely through continuous photography.

Keywords: Noctilucent Cloud, Epsilon No.3 rocket

