

# **Sounding rocket Program in Japan for the lower thermosphere/ionosphere study — Introduction —**

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## **Abstract**

One or two sounding rocket experiments are being conducted in Japan every year. Most of the experiments are dedicated to study the energetics and dynamics in the height region of 70-150km. This paper introduces Japanese sounding rocket projects, which might provide opportunity for further collaboration between Taiwan and Japan.

## **Introduction**

Sounding Rocket program in Japan is mainly dedicated to study lower ionosphere /atmosphere. Major proposals are 1. Sporadic E layer study (SEEK 1,2) , 2. Search of the mechanism of airglow striation around the height of 85-90km(WAVE). 3. Study on the energetics of the lower ionosphere, closely coupled with neutral behavior(NTV).

Sporadic E layer program was initiated to study the Quasi Periodic Echo(QPE) which was first reported by Kyoto University. In the past SEEK 1 and SEEK 2 experiments have been conducted so far. The project turned out to trigger its further study , which was intensively carried out in 1970's. The third SEEK experiment is under discussion.

Airglow around the height of 80-90 km very often indicates the striation, whose mechanism is still not known. Regarding this, two experiments have been conducted. It seems that the striation is generated in that altitude region, not triggered by the atmospheric gravity waves which propagate from the lower altitude.

Electron temperature observed with sounding rocket around the height of 100km is very often higher than possible neutral temperature. This problem was discussed by many people in early 1970's. However the problem still remains unsolved.

Partly associated with this problem,, anomalously high electron temperature layer was found to appear at the height of  $\sim 105$  km in northern winter at around 11LST (named as Sq focus Anomaly). A rocket experiment was conducted January in 2007 to study the problem.

## **Concluding Remarks**

The presentation was prepared with an intention to encourage future Taiwan /Japan collaboration regarding sounding rocket experiment. Indonesia is trying to start sounding rocket project as long as the author was told. Three sounding rocket launch sites which are located in the east edge of the Pacific ocean might provide excellent opportunities for future collaboration in Asian countries.