

Development of filter photometers onboard the TARANIS satellite and JEM-GLIMS

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TARANIS (Tool for the Analysis of RAdiations from lightNings and Sprites) is a French micro-satellite mission and will be launched in 2012 in order to study transient luminous events (TLEs), terrestrial gamma-ray flashes (TGFs) and lightning discharges. TLEs, such as sprites, elves and blue jets, are lightning-associated transient optical emission occurring above thunderclouds. Though the quasi-electrostatic field model (QE model) is a most reliable generation mechanism of sprites, it is suggested that recent observational results may not be explained by the model perfectly.

We are developing a multi-band filter photometer that is one of the optical instruments onboard the TARANIS satellite. The photometer consists of four channels. one of them has 150-280nm wide-band pass filter and FOV of 42.7 deg. two of them has 337 +/-5 nm narrow-band pass filter and FOV of 42.7 deg. Three of them has 762.5 +/-5 nm narrow-band pass filter and FOV of 42.7 deg. Four of them has 600-900 nm wide-band pass filter and FOV of 86.8 deg.

The photometers will measure the absolute optical intensity of lightning discharges and TLEs. We have produced a bread-board model (BBM) of the photometer and have carried out calibration experiments. Based on these tests, we have started the fabrication of the engineering model (EM) of the photometer.