



A LOW-COST AIRGLOW IMAGER: ASSEMBLING A NEW SYSTEM AND FIRST OBSERVATIONS AT THE SOUTHERN SPACE OBSERVATORY – SSO/CRS-INPE (29.4°S, 53.8°W)

Bageston, J. V.* [1]; Wrasse, C. M. [2]; Giongo, G. A. [3]; Inoue, M. H. [2];
Pereira, P. [2]; Ferrari, F. P. S. [2]

[1] Southern Regional Space Research Center (CRS/COCRE/INPE),
Av. Roraima, 1000, Camobi, Santa Maria, RS – ZIP Code: 97105-900;

[2] National Institute for Space Research (INPE),
Av. dos Astronautas, 1.758, Jardim da Granja, São José dos Campos, SP – ZIP Code: 12227-010, Brazil;

[3] Federal University of Santa Maria (UFSM),
Av. Roraima, 1000, Camobi, Santa Maria, RS – ZIP Code: 97105-900, Brazil.

ABSTRACT

Airglow observations in the Southern Brazil have been carried out at the Southern Space Observatory (SSO/CRS-INPE), in a continuous mode, by an automated airglow imager since April 2017 with the aim of study the dynamics associated to gravity waves in the upper Mesosphere region (around 90 km height). However, the first attempt to install and operate an adapted airglow imager started in January 2017. This new system was adapted from the former airglow imager operated at Ferraz Antarctic Station in 2007, 2010 and 2011. The system re-assembled in the beginning of 2017 had a very short optical system and it was not possible to obtain the correct focus in the imagens. Then, new different telecentric systems were tested in order to find the correct focal distance, and also an optimum new optical system that should give an amplified image with a best spatial resolution (a larger number of pixels in the CCD should be used) as compared to the images obtained with the first configuration of this system in 2007. After several tests with distinct telecentric sizes and relative distances between lens/filter and between the end of the telecentric and the CCD, an ideal configuration was found. This new configuration generates images approximately in the half part the full CCD size (1024 X 1024 pixels), with possibility of finding a correct focus at the stars. After cropping the original image, it was possible the maximize the proper view of the images in an area of 512 X 512 pixels. In this work we will present this new camera assembling and the first results on gravity waves observation and characterization in the upper Mesosphere over the Southern Brazil.

* José Valentin Bageston (jose.bageston@inpe.br/bageston@gmail.com)