

Validation flights of the Airborne Radiative Transfer spectral Scanner for a Single-Engine aircraft (ARTS-SE)

*Tetsuya Jitsufuchi¹

1.National Research Institute for Earth Science and Disaster Prevention

We developed an airborne imaging system, the Airborne Radiative Transfer Spectral Scanner for a single-engine aircraft (ARTS-SE) for volcano observations in June of 2015. The platform for ARTS-SE is a single-engine Cessna 208 aircraft.

ARTS-SE consists of two imaging units. These imaging units are a push-broom imaging spectrometer and a camera system. The ARTS-SE push-broom imaging spectrometer unit covers the wavelengths from 380 to 1,100nm and 8,000 to 11,500nm with 320 bands. This unit consists of two sensor head units (SHUs). These SHUs are the visible-near infrared (VNIR) SHU and the long-wave infrared (LWIR) SHU. These sensor head units are the modified system of our conventional airborne hyperspectral scanner (ARTS). The ARTS-SE camera system unit consists of four cameras. These cameras are the two visible cameras and the two thermal infrared cameras.

Before beginning the operational use of ARTS-SE, it is important to validate its in-flight performance. Therefore, we conducted ARTS-SE instrument validation overflight of the bundle test site (Aichi prefecture), and the volcano observation test flight over an active volcano (Asamayama volcano and Hakoneyama (Owakudani)) in the late autumn of 2015. At the Asamayama volcano and Owakudani district, we could detect the geothermal activities. We are conducting validation for the rectification accuracy using the image data from bundle test site.

Keywords: airborne hyperspectral imager, volcano observations, infrared remote sensing