

## Evolution of New Seamless Science From Space, Sun to the Earth Surface: Observational studies of greenhouse gas species

MATSUMI, Yutaka<sup>1\*</sup>

<sup>1</sup>Solar Terrestrial Environment Laboratory

In order to understand the earth system as well as to solve global environmental problems, it is necessary to develop and to promote a science dealing with "earth-life interactive system" as a holistic interacting system of space-sun-magnetosphere-atmosphere-hydrosphere-geosphere-biosphere. Through the seamless research among those disciplines, continuous nature of the boundaries and interactions between the disciplines has to be elucidated. Our research on the measurements of greenhouse gases related climate change and atmospheric environment will be also presented and future direction of the research will be discussed.

Keywords: Global warming, Greenhouse gas, Balloon-borne measurement, Carbon dioxide, Methane, Laser isotope spectrometer