

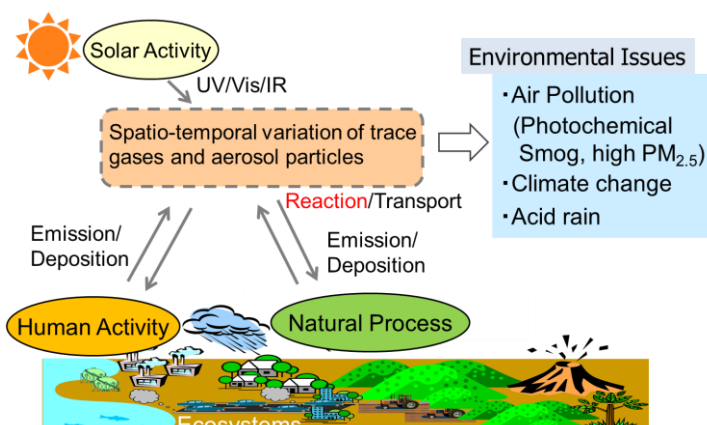
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Aerosol particles and trace gases in the atmosphere originate from a variety of natural and anthropogenic sources. Primary particles emitted directly to the atmosphere as liquids or solids, while secondary particles formed by nucleation and condensation of precursor gases as well as through reactions in cloud droplets. These particles influence Earth's radiation balance both directly by absorbing and scattering solar radiation and indirectly by acting as cloud condensation nuclei. It has also been recognized that fine particulate matter, such as $PM_{2.5}$, negatively impacts human health of many people.



We are studying on source/sink/transformation and properties of atmospheric gaseous compounds and aerosol particles, based on observations and laboratory experiments, to understand their impacts on climate change, atmospheric environment, and human health. Recent research topics of our group are as follows.

- 1) Development and evaluation of instruments to measure gaseous trace compounds and aerosol particles in the atmosphere
- 2) Multi-points observations of air pollutants using low-cost instruments around Nagasaki and developing countries in Asia and Africa
- 3) Determination of optical properties (light absorption and scattering) of carbonaceous particles (black and brown carbon) and their relation with chemical properties based on laboratory experiments and field observations using a series of techniques including laser spectroscopy



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