National Award for Atmospheric Science & Technology
Prof. S. K. Satheesh

In recent years, Prof. Satheesh has conceived and led numerous field experiments in remote and hostile environments, in pursuit of the science of aerosols, employing research ships and aircrafts, besides network of ground-based observatories. The campaigns in which Prof. Satheesh was the Chief Mission Scientist remain benchmarks in scientific planning, meticulous execution, creative data analysis and interpretation. These have led to the discovery of elevated aerosol layers over India and strong meridional gradients in elevated aerosol warming, which was shown to have strong influence on Indian monsoon system as well as on tropical cyclones.

By realizing the cataclysmic effects of vertical transport of surface aerosols, Prof. Satheesh pursued high altitude balloon experiments, which have provided the first experimental evidence to prove a hypothesis known as "self-lofting" by which, black carbon particles can reach stratospheric altitudes and would aggravate stratospheric ozone loss, thereby delay the recovery of ozone hole by several decades (a global catastrophe).

Synthesizing observations with models, Prof. Satheesh has quantified for the first time, the climate forcing potential of in-situ injected BC particles by high-altitude aircrafts.

Prof. Satheesh's description of light-absorbing aerosols over the most heterogeneous and complex terrains of Asia and Africa, which is now widely used in global climate models to improve the prediction capability of monsoon, are invaluable, outstanding and commendable. His articles on the radiative impact of natural aerosols has brought to light the complexity of aerosols-radiation interaction due to natural aerosols, mitigation of which is impossible. These are among the top most-sought-after papers in the area of Earth and Planetary Sciences.

Prof. Satheesh's field experiments over the Indian Ocean, provided the first experimental evidence of the aerosol-induced absorption and consequent warming in the lower troposphere. He has demonstrated for the first time that aerosol radiative impact at the Earth’s surface and lower atmosphere can alter natural hydrological cycle and cloud properties. This was a revolutionary exposé that sounded a clear warning that current estimates of climate change were doomed to failure because they did not account for the differences between top and bottom of the atmosphere caused by light-absorbing particles. A series of publications by Prof. Satheesh and his research group during 2000 to 2015 paved way for the global acceptance of the importance of light-absorbing particles, specifically black carbon aerosols, in climate science. Now, climate impacts of black carbon aerosols have become a global issue, not only in climate science but also climate change policy, and the latest IPCC assessment report (AR-6) has chapter titled “Short-Lived Climate Forcers”, dedicated to black carbon aerosols. All these vindicate the scientific insight of Prof. Satheesh.

Currently, as the Executive Director of Future-Earth South Asia Regional office, Prof. Satheesh is responsible of entwining these knowledges for action plans for sustainable development.

In recognition to his outstanding research contributions in the field of Atmospheric Science and Technology the Ministry of Earth Sciences honours Prof. S. K. Satheesh with the “National Award in the field of Atmospheric Science and Technology” for the year 2019.