

National Award for Ocean Science

Dr. V. V. S. S. Sarma



Dr. Sarma's contributions significantly advanced our understanding of biogeochemistry of the Indian Ocean. Most of his work is to defend the international allegations on India on pollution related aspects, providing suggestions to policymakers, and understanding impact of climate change in the marine waters around India. His intensive experiments in Indian estuaries showed the hitherto unknown impact on composition of plankton and food web dynamics due to changes in river discharge and he cautioned that re-routing

river channels and construction of dams would be detrimental to the estuarine nursery grounds leading to decrease in coastal fishery potential. He found that the Bay of Bengal oxygen minimum zone is formed naturally by salinity stratification and these zones are frequently aerated through anticyclonic eddies. He also showed that fertilizers from the Indian subcontinent do not contaminate international waters around as their impact is limited to waters close

to the coast. He provided insights on route of excess fertilizers and its contamination to the ground water. Thus his research significantly disproves the allegation that excess fertilizers from the India that makes Bay of Bengal as a dead zone. He showed for the first time that the CO₂ emission from the Indian estuaries are 60 times lower than that from the developed countries. Using the new isotopic techniques, he identified that Noctiluca blooms occurring in the northern Arabian Sea is caused by natural processes than hitherto hypothesized to be due to anthropogenic inputs. Dr. Sarma worked extensively on trace gases fluxes and results obtained from his observations and syntheses helped to estimate trace gases emissions and budgets of the Indian Ocean, and their global significance. These results have strong implications to future ocean biogeochemical modelling of the Indian Ocean and to plan strategies for environmental research in estuarine and coastal ecosystems of India. He chaired a UNESCO committee to prepare surface ocean carbon atlas for the Indian Ocean and to evaluating the performance of global carbon models in the Indian Ocean. He collaborated with Scientists from South and Southeast Asian Scientists to work on contribution of trace gases emissions from rivers in the south and Southeast Asia to the global carbon fluxes through a Asia-Pacific Network (APN) funded project. He is also working with French Scientist to work on sources of nutrients in the Groundwater through Indo-French Centre for Promotion of Advanced Research. He is at present collaborating with NOAA, USA on evaluation status of ocean acidification in the Indian Ocean. His research contributions and publications in India have majorly focused on understanding the human activities influence on coastal and estuarine ecosystem, impact of

policy makers' decisions on coastal environment, and defending international allegations on India and estimating trace gases fluxes from the aquatic bodies in and from the seas around India. He quantified the variability in CO₂ emissions from the Indian Ocean in time and space and described physical and biogeochemical processes responsible. These studies are of significance in describing the biogeochemistry of the region and planning research with respect to human interference and climate change on the Indian Ocean processes and feedbacks. Most of the work carried out by the nominee is a team work but the research was conceived, executed and the team was led by the nominee.

In recognition to his outstanding contributions in the field of Ocean Science, Ministry of Earth Sciences (MoES) honours Dr. V. V. S. S. Sarma with the "National Award in the field of Ocean Science and Technology" for the year 2020.