



PROFILE

My primary research interests encompass aerosol-radiation, aerosol-cloud and aerosol-cryosphere interactions, through the application of ground and satellite-based measurements and model simulations.

Currently, I am involved in evolving accurate regional characterization of aerosols over the SOUTH ASIAN & POLAR REGIONS to assess the impact on regional and global climate. Towards this, I am instrumental in operating a national network of Aerosol observatories (ARFINET) over India, generating primary aerosol data for research and societal applications.

I am also responsible for the commissioning and operationalization of aerosol laboratories in the pristine ARCTIC, ANTARCTIC & HIGH-ALTITUDE HIMALAYAS, for studying snow darkening and glacier melt due to aerosols.

I have DESIGNED & EXECUTED several MULTI-PLATFORM FIELD EXPERIMENTS on-board SHIP & AIRCRAFTS to study the impact of aerosols on radiations and clouds at distinct environments.

CONTACT

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DR MUKUNDA M GOGOI

SCIENTIST-SF

PROJECTS

ARFI project of ISRO-GBP Co-Principal Investigator
Aims at the accurate estimates of aerosol radiative forcing over India. The ARFINET is designed to make comprehensive measurements of all the aerosol parameters needed for climate impact assessment.

ARCTIC Project Principal Investigator
Aims at characterizing the source processes and climate impacts of Polar aerosols based on continuous long-term observations and dedicated field experiments at Ny-Ålesund in Svalbard archipelago.

GOSAT-RA Project Principal Investigator
A joint effort for the generation of gridded aerosol data sets over India by utilizing improved data assimilation techniques based on GOSAT-2 retrievals and ARFINET measurements.

RAWEX Scientific Investigator
Focuses on the quantification of regional atmospheric warming by elevated absorbing aerosols over the Indian region.

ICARB Scientific Investigator
An integrated approach to quantify the spatio-temporal heterogeneity of aerosols over India and the adjoining oceans.

Integrated Polar research program of SPL
Extensive scientific observations on aerosol parameters and snow albedo measurements at the last frontiers.

WORK EXPERIENCE

SCIENTIFIC EXPEDITIONS TO ARCTIC
Representing India, participated in the Scientific Expeditions to the Arctic during Spring-2012, Summer-2013, Autumn-2014 (Team Leader) and Autumn-2015; opened up new collaboration and scientific understanding on aerosol-cryosphere interaction.

SHIP BORNE EXPERIMENTS
Conducted ship-borne experiments in the northern Indian Ocean during Jan-Feb, 2018.

AIR BORNE EXPERIMENTS
Conducted extensive air-borne experiments of aerosols on-board instrumented-aircraft over distinct regions of India during 2012, 2013 and 2016.

HIMALAYAN EXPERIMENTS
Established a chain of aerosol observatories over the Himalayas for the continuous monitoring of free-tropospheric aerosols.

R&D IN SCIENCE AND TECHNOLOGY

RECOGNITIONS/ AWARDS

GUEST EDITOR

Frontiers in Earth Science
(Atmospheric Science)

GOSAT-RA PI

- Selected for joint research collaboration with JAXA and NIES, Japan (2019-2021)

GOLD MEDAL FOR YOUNG SCIENTIST

- INTROMET-2014

BEST ARTICLE AWARD

- 'आर्कटिक मे भारत', गगन, Vol-47, 2019
- Terrestrial Atmospheric and Oceanic (TAO) Sciences, Vol-20, No 3, 2009

BEST PAPER AWARDS

- URSI-2020
- NCPS-2019
- NSSS-2016
- IATA-2016
- NSSS-2012

ACADEMIC

Ph.D. Supervision – 02
M. Phil. Projects – 03
M. Sc. Projects – 06

QUALIFICATION

2008 Post-Doctoral Fellow, SPL
2007 Ph.D., Dibrugarh University, Assam
2001 M.Sc., Dibrugarh University (DU)
1998 B.Sc., J.B. College, DU
2011 Hindi Praveen
1997 Diploma in Computer Tech.

POSITIONS

- Scientist**, SPL, VSSC
Since Sep 2008
- Research Associate**, SPL, VSSC
Dec 2007 – Sep 2008
- Research Fellow** (ISRO-GBP)
Sep 2002 – Aug 2006

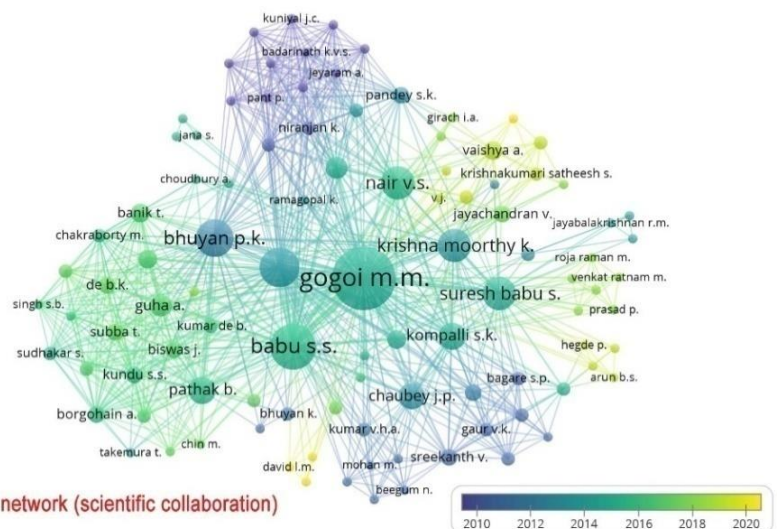
MEMBERSHIP

European Geophysical Union
Indian Society of Remote Sensing
Indian Meteorological Society
Indian Aerosol Science & Technology Association



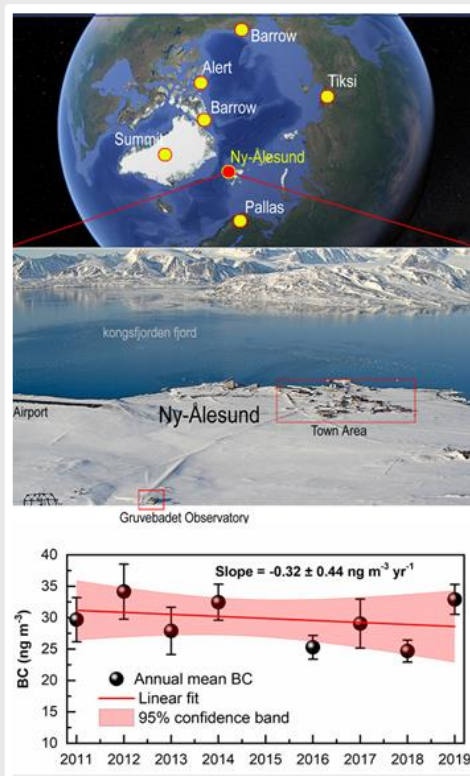
Being a multi-parameter problem with large heterogeneities in space, time, and spectral domain aerosol characterization needs a sustained, region specific and synergistic approach. In this context, my scientific research is inclined to the integration of multi-platform measurements with satellite remote sensing and model simulations to address specific science problems pertinent to (i) regional aerosol direct radiative forcing, (ii) snow darkening due to light absorbing aerosols and snow albedo forcing and (iii) continental impact of aerosols on far oceanic and polar regions, in addition to understanding aerosol microphysics, life cycles and CCN characteristics.

SCIENTIFIC COLLABORATION



Co-author network (scientific collaboration)

RESEARCH HIGHLIGHTS



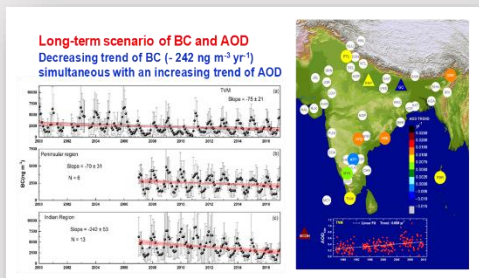
Based on long-term monitoring of aerosol radiative properties over Ny-Ålesund (in Svalbard Archipelago) as part of the Indian scientific expeditions to the Arctic, the decreasing trend in BC during 2010-2019 is revealed.

This observation is consistent with many other Arctic sites (e.g., Alert, Barrow) showing declining trend in BC concentrations. Several aspects, such as a reduction in the emissions of fossil fuel BC and changes in the atmospheric circulation pathways, could be considered for the overall decline in BC concentrations in the Arctic.

<https://doi.org/10.1016/j.polar.2021.10070>

PUBLICATIONS (PEER-REVIEWED INTERNATIONAL JOURNALS)

1. **Gogoi, Mukunda M.**, Santosh K Pandey, Arun B S, Vijayakumar S Nair, Roseline C Thakur, Jai Prakash Chaubey, Anoop Tiwari, Manoj M R, Sobhan Kumar Kompalli, Aditya Vaishya, Prijith S S., Prashanth Hegde, and S Suresh Babu, Long-term changes in aerosol radiative properties over Ny-Ålesund: Results from Indian scientific expeditions to the Arctic, *Polar Science*, 100700, <https://doi.org/10.1016/j.polar.2021.100700>, 2021.
2. **Gogoi, Mukunda M.**, S Suresh Babu, Arun B S, K Krishna Moorthy, Ajay A., Ajay P, Arun Suryavanshi, Arup Borgohain, Anirban Guha, Atiba Shaikh, Binita Pathak, Biswadip Gharai, Boopathy Ramaswamy, Harilal B Menon, Jagdish Chandra Kuniyal, Jayabala Krishnan, K Rama Gopal, M Maheswari, Manish Naja, Parminder Kaur, Pradip K Bhuyan, Pratima Gupta, Prayagraj Singh, Priyanka Srivastava, R S Singh, Ranjit Kumar, Shantanu Rastogi, Shyam Sundar Kundu, Sobhan Kumar Kompalli, Subhasmita Panda, Trupti Das, Yogesh Kant, Response of ambient BC concentration across the Indian region to the nation-wide lockdown: Results from the ARFINET measurements of ISRO-GBP, *Current Science*, 120, 2, 341-351, doi: 10.18520/cs/v120/i2/341-351, 2021.
3. Thakur, Roseline C., B S Arun, **M M Gogoi**, MelothThamban, Renoj J Thayyen, B L Redkar, S Suresh Babu, Multi-layer distribution of Black Carbon and inorganic ions in the snowpacks of western Himalayas and snow albedo forcing, *Atmospheric Environment*, 261, 118564, <https://doi.org/10.1016/j.atmosenv.2021.118564>, 2021.
4. Kompalli, S K, S Suresh Babu, K Krishna Moorthy, S K Satheesh, **M M Gogoi**, Vijayakumar S Nair, V Jayachandran, Dantong Liu, Michael Flynn, and Hugh Coe, Mixing state of refractory black carbon aerosol in the South Asian outflow over the northern Indian Ocean during winter, *Atmospheric Chemistry and Physics*, 21, 9173-9199, <https://doi.org/10.5194/acp-21-9173-2021>, 2021.
5. Srivastava, P., M. Naja, T. R. Seshadri, H. Joshi, U. C. Dumka, **M.M. Gogoi** and S. Suresh Babu, Implications of Site-specific Mass Absorption Cross-section (MAC) to Black Carbon Observations at a High-altitude Site in the Central Himalaya, *Asia-Pacific Journal of Atmospheric Sciences*, <https://doi.org/10.1007/s13143-021-00241-6>, 2021.
6. Vyas, B M, **M.M. Gogoi** and Subin Jose. Multi-year characterization of Aerosol Black Carbon concentrations over a semiarid tropical site Udaipur, *Environmental Science and Pollution Research*, doi:10.1007/s11356-020-12300-y, 2021.
7. **Gogoi, Mukunda M.**, V. Jayachandran, A. Vaishya, S. Suresh Babu, S.K. Satheesh and K.K. Moorthy, Air-borne in-situ measurements of aerosol size distributions and BC across the IGP during SWAAMI-RAWEX, *Atmospheric Chemistry and Physics*, 20, 8593-8610, doi:10.5194/acp-20-8593-2020, 2020.
8. **Gogoi, Mukunda M.**, R.C. Thakur, S. Gazi, V.S. Nair, R. Mohan and S.S. Babu, Vertical distributions of the microscopic morphological characteristics and elemental composition of aerosols over India, *Journal of Atmospheric Chemistry*, 77, 117-140, doi: 10.1007/s10874-020-09406-5, 2020.
9. Subba, T., **M.M. Gogoi**, B. Pathak, P. K. Bhuyan and S. Suresh Babu, Recent trend in the global distribution of aerosol direct radiative forcing from satellite measurements: regional impacts, *Atmospheric Science Letters*, e975, doi:10.1002/asl.975, 2020.
10. Nair, V.S., Jayachandran V., S.K. Kompalli, **M.M. Gogoi**, and S.S. Babu, Cloud Condensation Nuclei properties of South Asian outflow over the



Statistically significant and consistent increasing **trend in aerosol optical depth** over India has been revealed from the analysis of long-term data (back to ~ 25 years at some stations) from the ARFINET, indicating a faster increase in the sub-micron anthropogenic component of the total aerosol system.

First time regional synthesis of Black Carbon aerosols revealed surprising observation of **decreasing trend in the near surface BC** concentration. This finding contrasts with the generally increasing trend in the columnar AOD, and the steadily increasing trend in anthropogenic activities over this region. These observations imply possible long-term climate consequences.

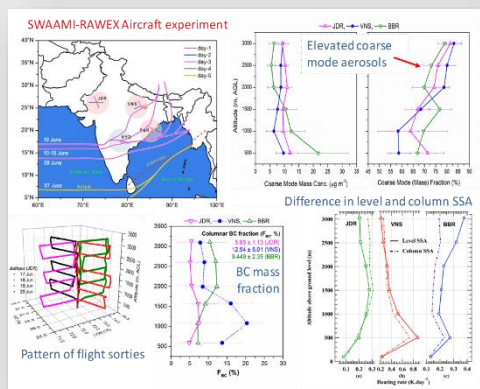
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11. Joshi, H., L.M. David, T. Gupta, **M.M. Gogoi**, S.S. Babu and M. Naja, Absorption characteristics of aerosols over the central Himalayas and its adjacent foothills, *Atmospheric Research*, 233, 104718, doi:10.1016/j.atmosres.2019.104718, 2020.
12. Jayachandran V., S.S. Babu, A. Vaishya, **M.M. Gogoi**, V.S. Nair, S.K. Satheesh, and K.K. Moorthy, Altitude profiles of CCN characteristics across the Indo-Gangetic Plain prior to the onset of the Indian summer monsoon, *Atmospheric Chemistry and Physics*, 20, 561-576, doi:10.5194/acp-20-561-2020, 2020.
13. Kompalli, S. K., V. S. Nair, V. Jayachandran, **M.M. Gogoi** and S. Suresh Babu, Particle number size distributions and new particle formation events over the northern Indian Ocean during continental outflow, *Atmospheric Environment*, 238, 117719, doi:10.1016/j.atmosenv.2020.117719, 2020.
14. **Gogoi, Mukunda M.**, C.R. Tandule, V., Jayachandran, S.K. Kompalli, V.S. Nair, K. Rama Gopal, S.S. Babu, Spatial gradient of aerosol mass concentrations and size distributions over south-eastern Arabian Sea and equatorial Indian Ocean during ICARB-2018, 213, 727-738, doi:10.1016/j.atmosenv.2019.06.038, 2019.
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Plain during SWAAMI-RAWEX campaign, Atmos. Chem. Phys., doi:10.5194/acp-2018-686, 2018.

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24. Dhar, P, B.K. De, T. Banik, **M.M. Gogoi**, S.S. Babu and A. Guha, Atmospheric aerosol radiative forcing over a semi-continental location Tripura in North-East India: Model results and ground observations, *Science of the Total Environment*, 580, 499-508, doi:10.1016/j.scitotenv.2016.11.200, 2017.
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27. Babu, S.S., V.S. Nair, **M.M. Gogoi**, K. Krishna Moorthy, Seasonal variation of vertical distribution of aerosol single scattering albedo over Indian sub-continent: RAWEX aircraft observations, *Atmospheric Environment* 125 (B), 312-323, doi:10.1016/j.atmosenv.2015.09.041, 2016.
28. Pathak, B., T. Subba, P. Dahutia, P.K. Bhuyan, K.K. Moorthy, **M.M. Gogoi**, S.S. Babu, L. Chutia, P. Ajay, J. Biswas, C. Bharali, A. Borgohain, P. Dhar, A. Guha, B.K. De, T. Banik, M. Chakraborty, S.S. Kundu, S. Sudhakar, S.B. Singh, Aerosol characteristics in north-east India using ARFINET spectral optical depth measurements, *Atmospheric Environment*, 125 (B), 461-473, doi:10.1016/j.atmosenv.2015.07.038, 2016.
29. Nair, V.S., S.S. Babu, **M.M. Gogoi**, K.K. Moorthy, Large-scale enhancement in aerosol absorption in the lower free troposphere over continental India during spring, *Geophysical Research Letters*, 43, 11,453-11,461, doi:10.1002/2016GL070669, 2016.
30. **Gogoi, Mukunda M.** and S.S. Babu, Aerosol optical properties over the Svalbard region of Arctic: Ground-based measurements and Satellite Remote Sensing, *Remote Sensing of the Atmosphere, Clouds, and Precipitation VI*, Proc. of SPIE Vol. 9876 98761C-1, doi: 10.1117/12.2224081, 2016.
31. **Gogoi, Mukunda M.**, S.S. Babu, K.K. Moorthy, S.K. Satheesh, M. Naja, V.R. Kotamarthi: Optical properties and CCN activity of aerosols in a high-altitude Himalayan environment: Results from RAWEX-GVAX, *J. Geophysical Research*, *Atmosphere*, 120, doi:10.1002/2014JD022966, 2015.
32. Guha, A., B.K. De, P. Dhar, T. Banik, M. Chakraborty, R. Roy, A. Choudhury, **M.M. Gogoi**, S.S. Babu and K.K. Moorthy: Seasonal characteristics of Aerosol Black Carbon in relation to long-range transport over Tripura in Northeast India, *Aerosols and Air Quality Research*, 15, 786-798, doi:10.4209/aaqr.2014.02.0029, 2015.
33. Talukdar, S., S. Jana, A. Maitra and **M.M. Gogoi**, Characteristics of black carbon concentration at a metropolitan city located near land-ocean boundary in Eastern India, *Atmospheric Research*, 153, 526 - 534, doi:10.1016/j.atmosres.2014.10.014, 2015.
34. **Gogoi, Mukunda M.**, K. K. Moorthy, S.K. Kompalli, J.P. Chaubey, S.S. Babu, M.R. Manoj, V.S. Nair, T.P. Prabhu: Physical and optical properties of aerosols in a free tropospheric environment: Results from long-term



Just prior to the onset of monsoon, vertical profiles of aerosol size distribution and BC absorption shows region specific characteristics over India, leading to a decreasing trend in the vertical structure of single scattering albedo (SSA) from west to east of IGP.

Biomass burning and dust aerosols contribute up to lower free tropospheric altitude in spring and a decrease in aerosol concentration from winter to spring within ABL. Columnar AAOD shows weak seasonal variations despite being prominent in case of BC mass concentrations.

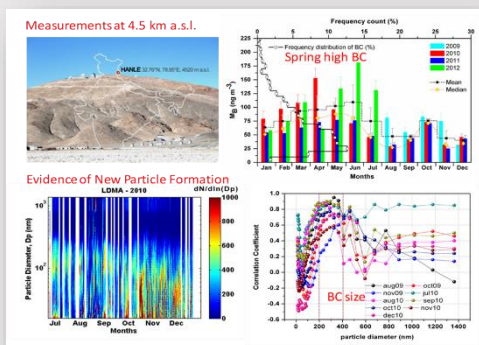
<https://doi.org/10.5194/acp-20-8593-2020>
<https://doi.org/10.1007/s12040-019-1246-y>

Vertical distributions of the microscopic morphological characteristics and elemental composition of aerosols over India reveals the dominance of non-spherical coarse mode particles (> 90%) in the lower free tropospheric regions of the Indo-Gangetic Plains. These particles could be responsible for enhanced aerosol absorption in the elevated region of the atmosphere during spring.

<https://doi.org/10.1007/s10874-020-09406-5>

observations over western trans-Himalayas, *Atmospheric Environment*, 47, 262-274, doi:10.1016/j.atmosenv.2013.11.029, 2014.

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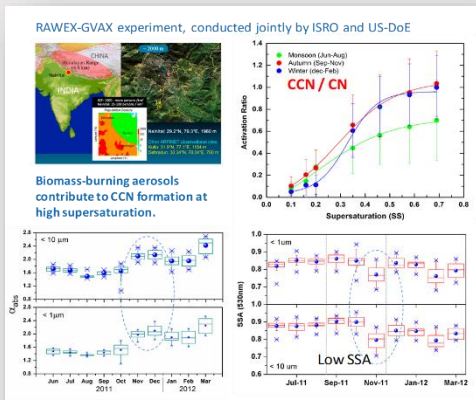
Over the **Himalayas**, highest values of BC in the trans-Himalayan site Hanle (4.5 km asl) highlighted the influence of advection. Size range of BC have been estimated in the typical range of 200-400 nm.

The region also depicted strong signatures of **new particle formation** with a strong solar control on the processes.

Dominance of mineral dust aerosols (~67%), along with BC (~4% to total aerosol mass) is quantified over the western Himalayas, inferring far reaching implications on regional radiative balance and impact on snow/glacier coverage.

<https://doi.org/10.1016/j.atmosenv.2013.11.029>

<https://doi.org/10.1016/j.atmosenv.2019.117017>

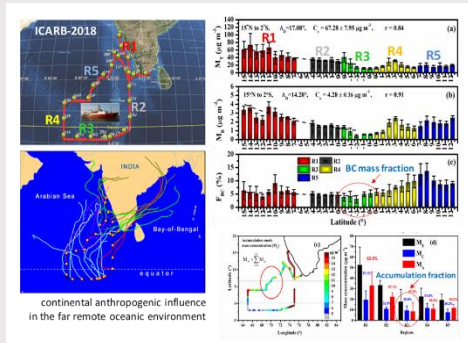


Cloud Condensation Nuclei (CCN) at a central Himalayan site reveals higher CCN activity during late autumn due to the contribution of biomass burning aerosols, indicating the influence of seasonal changes in aerosol composition.

Altitude profiles of CCN characteristics across the IGP, just prior to the onset of the Indian summer monsoon (ISM) of 2016, indicated highest CCN activation efficiency over the eastern IGP (~72%), despite highest CCN concentrations in the Central IGP above the planetary boundary layer (PBL).

<https://doi.org/10.1002/2014JD022966>
<https://doi.org/10.5194/acp-20-561-2020>
<https://doi.org/10.5194/acp-20-3135-2020>

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Over the marine environment, CCN properties and activation fraction showed the impact of size segregated aerosol number concentration, especially the ultrafine particle events, over the northern **Indian Ocean (NIO)**.

Aerosol measurements over the equatorial Indian Ocean (EIO) showed significantly higher values of BC mass fraction (FBC~ 3.7%), indicating the continental anthropogenic influence even at the far oceanic region during dry winter.

Several NPF events with conspicuous bimodal size distributions and 3–10 times enhancement in nucleation particle (<25 nm) concentrations were noticed over the southeastern Arabian Sea, NIO and EIO. NPF occurred more frequently over the remote oceanic EIO, but more intensely over the regions in the continental proximity demonstrating the varying precursor vapor source strengths.

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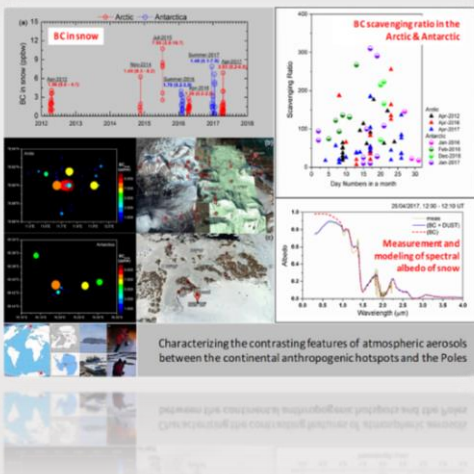
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Measured and model simulated albedo indicated the role of dust absorption, in addition to that of BC, in changing the snow albedo properties in the Arctic.

Airborne BC over the Svalbard region of Norwegian Arctic have revealed a consistent springtime time enhancement (nearly 3-times higher than the lowest BC concentrations in summer); delineating more than 25% of this enhancement to the long range transported biomass burning aerosols.

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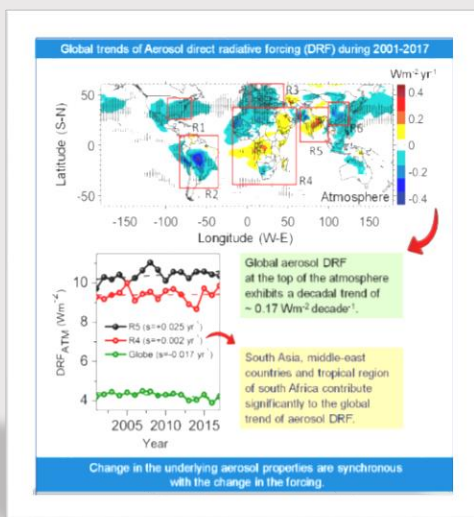
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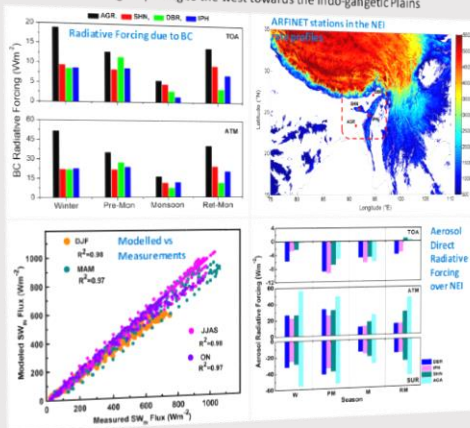
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The NEI is surrounded by high hills and mountain ranges in its north, east and south with a single opening to the west towards the Indo-gangetic Plains



Over **north-eastern India (NEI)**, for the first time, regional synthesis of spectral aerosol absorption, supplemented with fire count and fire radiative power from MODIS, UV-aerosol index and aerosol layer height from OMI reveals higher radiative impact due to fossil fuel-based BC over the western part against the biomass burning dominance in the eastern part.

The abundant BC (10-15%) in the region is responsible for surface dimming by $-26.14 \text{ Wm}^{-2}\tau^{-1}$ (nearly $\frac{3}{4}$ of the radiation absorption in the atmosphere) having a potential atmospheric forcing of $+ 43.04 \text{ Wm}^{-2}\tau^{-1}$.

Satellite retrieved direct radiative forcing highlights the west to east gradient of aerosol distribution within the NEI.

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RESEARCHGATE

https://www.researchgate.net/profile/Mukunda_Gogoi3

RG score: 33.15

h-index: 22

RG Read: 16000 +

Citations: 1400 +

ARCTIC PROJECT

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SUPERVISION OF STUDENTS

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M.Sc. Project Students

Afili S (2021), Department of Physics,
MSM College, Kayamkulam, India.

Mishida Sherin P (2016), Department of
Physics, Al-Ameen College, Kochi, India.

Sami Mol K (2016), Department of
Physics, Al-Ameen College, Kochi, India.

Shahana Parveen K (2016), Department
of Physics, Al-Ameen College, Kochi,
India.

Afhan A P (2014), Central University of
Bihar, India.

Divya Bhadrans (2011), Department of
Physics, Sree Narayana College, Kollam,
India.

Parvathy Sivadas (2011), Department of
Physics, Sree Narayana College, Kollam,
India.

Vimuna V.M (2010), Department of
Physics, St. Xaviers College,
Thiruvananthapuram, India.

Jayalekshmi V. (2010), Department of
Physics, St. Xaviers College,
Thiruvananthapuram, India.

Tropical Meteorology Symposium (INTROMET), SRM University, Chennai, 21 – 24 Feb 2014.

23. Babu, S Suresh, **Mukunda M Gogoi**, Vijayakumar S Nair, K Krishna Moorthy, Do East Asian aerosols perturb the radiation balance more than IGP aerosols? Results from W_ICARB Experiment, International Tropical Meteorology Symposium (INTROMET), SRM University, Chennai, 21 – 24 Feb 2014.
24. Chaubey, J. P., **Mukunda M Gogoi**, S K Kompalli, Manoj M R, S Suresh Babu and K Krishna Moorthy, Vertical Heterogeneity in Black Carbon Aerosols over Norwegian Arctic: Local and Long-range Transport, International Tropical Meteorology Symposium (INTROMET), SRM University, Chennai, 21 – 24 Feb 2014.
25. **Gogoi, Mukunda M.**, S Suresh Babu, K Krishna Moorthy, S K Satheesh, Manish Naja and V R Kotamarthi, Aerosol CCN activity at a high-altitude Himalayan environment: Relationship with optical properties, International symposium on Geosphere-Biosphere interactions in a future earth, Bangalore, 07 April 2014.
26. **Gogoi, Mukunda M.**, S. Suresh Babu, K. Krishna Moorthy, S K Kompalli, Vijayakumar S. Nair, Atmospheric and surface deposited black carbon over the high-altitude Himalayas, implications to regional climate, Second Annual Regional Atmospheric Science (SARAS) workshop, Pokhara, Nepal, 7-9 June 2014.
27. Pathak, B., Pradip K. Bhuyan, **Mukunda M Gogoi**, A Borgohain, B De and S B Singh: Aerosol characteristics in the sub-Himalayan range: Implication to regional climate, Second Annual Regional Atmospheric Science (SARAS) workshop, Pokhara, Nepal, 7-9 June 2014.
28. **Gogoi, Mukunda M.**, S. Suresh Babu, K K Moorthy, S K Satheesh, Manish Naja and V Kotamarthi, Factors affecting the CCN activity at a high-altitude location in Indo-Gangetic Plains, 11th Annual meeting of Asia Oceania Geosciences Society (AOGS), Sapporo, Japan, 28 Jul - 1 Aug, 2014.
29. **Gogoi, Mukunda M.**, S Suresh babu, K Krishna Moorthy, Jai Prakash Chaubey, Vijayakumar S nair, Manoj M R, Sobhan K Kompalli, Lakshmi N B, Roseline C Thakur, Thamban Meloth and S Rajan, Aerosol characteristics over Norwegian Arctic: Results from Indian Scientific Expeditions, International Symposium on Arctic Research (ISAR-3), Tokyo, Japan, 14-17 Jan, 2013
30. Pathak, B., A. Borgohain, **Mukunda M Gogoi**, P K Bhuyan, S S Kundu, S Sudhakar and T Takemura: Spatial heterogeneity in near surface aerosol characteristics across Brahmaputra valley: Results from a land campaign, Workshop on Atmospheric Composition and the Asian Summer Monsoon (ACAM), Kathmandu, Nepal, 09-12 Jun, 2013.
31. **Gogoi, Mukunda M.**, S Suresh Babu, K Krishna Moorthy, Jai Prakash Chaubey, Vijayakumar S Nair, Manoj M R, S K Kompalli, Lakshmi N B, Roseline C Thakur, Thamban Meloth, S Rajan: Aerosol Characteristics over Norwegian Arctic: Results from Indian Scientific Expeditions, Third International Symposium on Arctic Research (ISAR-3), Tokyo, Japan, 14-17 Jan, 2013.
32. **Gogoi, Mukunda M.**, Moorthy, K.K., Babu, S. S., Chaubey, J. P., V Sreekanth, S K Kompalli and Prabhu, T.P., "Columnar aerosol extinction characteristics: Measurements from a free-tropospheric observatory in western-Himalayas", International Conference of Solar Radiation and Aerosol (ICSRA), organized by Institute of Engineering, Tribhuvan University, Khatmandu, Nepal, 14-15 April, 2011
33. Chaubey, J. P., Babu, S. S., **Mukunda M Gogoi**, S K Kompalli, V. Sreekanth, Moorthy, K.K. and Prabhu, T.P., "Black Carbon aerosol over a high altitude (~

- 4.52 km) station in western Indian Himalayas International Conference of Solar Radiation and Aerosol (ICSRA), organized by Institute of Engineering, Tribhuvan University, Kathmandu, Nepal, 14-15 April, 2011
34. Kompalli, S K., V Sreekanth, Chaubey, J. P., **Mukunda M Gogoi**, Babu, S. S., Prabhu, T.P. and Moorthy, K.K., "Aerosol number size distribution measurements at Hanle, a free tropospheric high-altitude site in Western Himalayas", International Conference of Solar Radiation and Aerosol (ICSRA), organized by Institute of Engineering, Tribhuvan University, Kathmandu, Nepal, 14-15 April, 2011
 35. Chaubey, J. P, S Suresh Babu, Manoj M R, **Mukunda M Gogoi**, Anoop Tiwari and K Krishna Moorthy, Optical and Physical properties of atmospheric aerosol over Arctic during summer, International conference on Polar Science and Technology (ICPST), Bangalore, 28-29 Dec, 2011.
 36. **Gogoi, Mukunda M.**, S. Suresh Babu, Vijayakumar S. Nair and K. Krishna Moorthy: Spatial distribution of aerosol single scattering albedo over Bay-of-bengal inferred from concurrent shipboard measurements, Annual Meeting of Asia Oceania Geosciences Society (AOGS), Hyderabad, 5-9 July, 2010.
 37. Beegum, S N., **Mukunda M Gogoi**, S. S. Babu and K. K. Moorthy: Aerosol Microphysics and source characteristics over Port-Blair, Annual Meeting of Asia Oceania Geosciences Society (AOGS), Hyderabad, 5-9 July, 2010.
 38. Pathak, B., Pradip K Bhuyan, Kalyan Bhuyan, Gayatri Kalita and **Mukunda M Gogoi**: Long-term climatology of aerosols over Dibrugarh - a rural continental site in NE India, Annual Meeting of Asia Oceania Geosciences Society (AOGS), Hyderabad, 5-9 July, 2010.
 39. Bhuyan, P.K., **Mukunda M Gogoi**: Comparison of MODIS and MWR derived aerosol optical depth over Dibrugarh: Northeastern India, 4th Annual Meeting of Asia Oceania Geosciences Society (AOGS), Bangkok, 31 July- 4 August 2007.
 40. Bhuyan, P.K., **Mukunda M Gogoi**, K.K. Moorthy: Spectral and temporal characteristics of aerosol optical depth over a wet tropical location in North East India; 35th COSPAR Scientific Assembly, Paris, 18-25 July 2004.

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41. Arun B. S., **Mukunda M. Gogoi**, A Borgohain, S S Kundu and S Suresh Babu, Optical properties and radiative effects of aerosols in the eastern Himalayas, Tropmet-2020, 14-17 December, 2020.
42. Vaishya, A., S. Suresh Babu, V. Jayachandran, **Mukunda M. Gogoi**, N. B. Lakshmi, Radiative heating due to elevated aerosols across the Indo-Gangetic Plain, URSI Regional Conference on Radio Science (RCRS), Indian Institute of Technology (BHU), Varanasi, 12 - 14 February, 2020.
43. **Gogoi, Mukunda M.**, Inversion techniques in satellite remote sensing of aerosols, Division of Electrical Sciences, Indian Institute of Science, Bangalore, 5 February, 2019
44. Mishra, M. K., **Mukunda M. Gogoi**, V. Kalimuthan, N.R. Vijayasankar, Sreejith P., Prijith S. S., Dipanwita Haldar, Supriya Sharma, Emerging Trends in Spatial Data Analytics, ISRO Structured Training Program, IIRS, Dehradun, 28-31 May 2019.
45. Arun B S, **Mukunda M. Gogoi**, Aswini A R, Prasant Hegde, Arup Borgohain, S S Kundu, S Suresh Babu, Characterization of zonal asymmetry in aerosols types over the 'Third Pole': Radiative Implications", National Conference on Polar Sciences (NCPS), NCPOR, Goa, 20-22 August 2019.

46. **Gogoi, Mukunda M.**, Moderate-resolution Multi-angle Multi-spectral Polarization Imager, Brain storming session – SPL, 20 Aug, 2019.
47. Subba, T., **Mukunda M. Gogoi**, Application of hybrid-synergistic approach for the accurate estimation of aerosol radiative forcing over south Asia: regional perspectives and climatic implications, Special session on Aerosols and Radiative Effects, 20th National Space Science Symposium (NSSS), Savitribai Phule Pune University, Pune, 29-31 January 2019.
48. Vaishya, A., **Mukunda M. Gogoi**, Vertical structure of optical and radiative effects of aerosol across the IGP: East-West contrast and seasonality, 20th National Space Science Symposium (NSSS), Savitribai Phule Pune University, Pune, 29-31 January 2019.
49. Srivastava, P., **Mukunda M. Gogoi**, Source characterization of carbonaceous aerosols: Multi-year analysis from Nainital, a high-altitude site in the central Himalayas, 20th National Space Science Symposium (NSSS), Savitribai Phule Pune University, Pune, 29-31 January 2019.
50. Kaur, P., **Mukunda M. Gogoi**, Comparison of satellite retrieved Aerosol Optical Depth (AOD) from INSAT-3D and MODIS with ground-based measurements over a semi-continental site of Tripura, 20th National Space Science Symposium (NSSS), Savitribai Phule Pune University, Pune, 29-31 January 2019.
51. Srivastava, P., Naja, M., **Mukunda M. Gogoi** and S. Suresh Babu, Tracing carbon aerosols: long term analysis from Nainital, a high-altitude site in the central Himalayas, National Conference on Polar Sciences (NCPs), NCPOR, Goa, 20-22 August 2019.
52. Arun B. S., **Mukunda M. Gogoi**, S. Suresh Babu, In-situ and modelling investigation of light absorbing aerosols over the Himalayas", 31st Kerala Science Congress (KSC), Kollam, 27-28 January 2019.
53. Kaur, P., Prasanth S., P. Dhar, B. K. De, S. Suresh Babu, **Mukunda M. Gogoi**, A. Guha, Comparison of satellite retrieved Aerosol Optical Depth (AOD) from INSAT-3D and MODIS with ground-based measurements over a semi-continental site of Tripura, 20th National Space Science Symposium (NSSS), Savitribai Phule Pune University, Pune, 29-31 January 2019.
54. Subba, T., **Mukunda M. Gogoi**, B. Pathak, P. K. Bhuyan, S. S. Babu, Estimation of aerosol radiative forcing: a synthesis of hybrid analysis, Conference of Indian Aerosol Science and Technology Association (IASTA), 26-28 November 2018.
55. Subba, T., **Mukunda M. Gogoi**, Binita Pathak, Pradip K. Bhuyan, S. Suresh Babu, Eugene E. Clothiaux, Application of hybrid-synergistic approach for the accurate estimation of aerosol radiative forcing over south Asia: regional perspectives and climatic implications, 20th National Space Science Symposium (NSSS), Savitribai Phule Pune University, Pune, 29-31 January 2019.
56. Arun, B. S., A. R. Aswini, **Mukunda M Gogoi**, Sobhan K Kompalli, Prashant Hegde, And S Suresh Babu, Summertime aerosol characteristics at a free-tropospheric site Himansh (4080 m a.s.l) in the western Himalayas, Conference of Indian Aerosol Science and Technology Association (IASTA), 26-28 November 2018.
57. Vyas, B. M. and **Mukunda M. Gogoi**, Distinct influence of long-range transport on the seasonal inhomogenities in aerosol properties and air pollutants over Udaipur in western India, Conference of Indian Aerosol Science and Technology Association (IASTA), 26-28 November 2018.
58. Prasanth. S., P. Kaur, B. K. De, P. Dhar, **Mukunda M. Gogoi** and Anirban Guha, Do aerosols suppress the Gross and Primary Production over the north-eastern region India: a decadal study (2001-2010), TROPMET National

Symposium on Understanding weather and climate variability: research for society, Banaras Hindu University, Varanasi, 24-27 October 2018.

59. **Gogoi, Mukunda M.**, S Suresh Babu, Aditya Vaishya, Vijayakumar S Nair, Radiative implications of spring time aerosols in the Ny-Alesund (Svalbard Island), National Conference on Polar Science (NCPS), NCAOR, Goa, 16-17 May, 2017
60. Vaishya, A., **Mukunda M Gogoi** and S Suresh Babu, Regional and synoptic source influence on Arctic aerosols during spring, National Conference on Polar Science (NCPS), NCAOR, Goa, 16-17 May, 2017
61. Subba, T., **Mukunda M Gogoi**, Binita Pathak, Pradip K Bhuyan, Dynamics of aerosol radiative forcing in the Brahmaputra Basin: synergy of model and ground-based observation, 19th National Space Science Symposium (NSSS), VSSC, Trivandrum, 9-12 February 2016,
62. **Gogoi, Mukunda M.**, S. Suresh Babu, K. Krishna Moorthy, Pradip K. Bhuyan, Binita Pathak, Tamanna Subba, S. S. Kundu, Arup Borgohain, Barin Kr. De, Anirban Guha and S. B. Singh, Anthropogenic Linkages of Absorbing Aerosols over Northeastern India, 19th National Space Science Symposium (NSSS), VSSC, Trivandrum, 9-12 February 2016
63. **Gogoi, Mukunda M.**, S. Suresh Babu, Vijayakumar S. Nair and K. Krishna Moorthy, Altitude profiles and seasonality of aerosol number size distributions over Indian mainland from aircraft measurements, 19th National Space Science Symposium (NSSS), VSSC, Trivandrum, 9-12 February 2016.
64. **Gogoi, Mukunda M.** and S. Suresh Babu, Study of atmospheric aerosols in the Svalbard region of Arctic: Present status and future plans, 19th National Space Science Symposium (NSSS), VSSC, Trivandrum, 9-12 February 2016.
65. Udayasoorian, C., A. R. Suguna, V. S. Suganthy, R. Murugaragavan, S. Suresh Babu, **Mukunda M. Gogoi** and S K Kompalli, Aerosol characteristics over high altitude location Ooty in southern India, 19th National Space Science Symposium (NSSS), VSSC, Trivandrum, 9-12 February 2016.
66. **Gogoi, Mukunda M.**, Characterization of Polar aerosols: Source processes and Climate Impact, Arctic Team Selection Meeting, NCAOR, Goa, 28 April 2016.
67. Subba, T., B. Pathak, **Mukunda M Gogoi**, P. Ajay, P. K. Bhuyan. Long term climatology of aerosol radiative forcing in the Brahmaputra valley and its implications. International Conference on climate change mitigation and technologies for adaptation, Shillong, 20-21 June 2016.
68. **Gogoi, Mukunda M.** and S. Suresh Babu, An assessment on INSAT-3D Aerosol Optical Depth over India, National Symposium on Recent Advances in Remote Sensing and GIS with Special Emphasis on Mountain Ecosystems & Annual Conventions of Indian Society of Remote Sensing & Indian Society of Geomatics, Dehradun (India), 7 – 9 December 2016.
69. **Gogoi, Mukunda M.** Investigation of Polar aerosols: Source processes and long-range transport, Arctic Project Review and Team Selection Meeting, NCAOR, Goa, 30 Mar 2015.
70. **Gogoi, Mukunda M.** Design and development of a Data Management System for ARFI Project of ISRO-GBP, ISRO Seminar for Computer and Information Technology (ISCIT), VSSC, Trivandrum, 19-20 Mar 2015.
71. **Gogoi, Mukunda M.**, K Krishna Moorthy, S K Kompalli, Jai Prakash Chaubey, S Suresh Babu, Manoj M. R., Vijayakumar S Nair and Tushar P. Prabhu: Results from long-term aerosol observations over HANLE: Physical and Optical properties, ARFI, ICARB, RAWEX & NOBLE Project Review Meeting, VSSC, Thiruvananthapuram, 8-9 Jan 2014.

72. Chaubey, J.P., K K Moorthy, S Suresh Babu, **Mukunda M Gogoi**, Sobhan K Kompalli, Manoj M R Long Term Monitoring of the Aerosol Characteristics over Arctic and Antarctic: ARFI initiatives over Polar Regions, ARFI, ICARB, RAWEX & NOBLE Project Review Meeting, VSSC, Thiruvananthapuram, 8-9 Jan, 2014.
73. Nair, V. S., S. Suresh Babu and K. Krishna Moorthy, **Mukunda M Gogoi**, S K Kompalli Aerosol-Cryosphere interactions: Implications of Soot on Snow, ARFI, ICARB, RAWEX & NOBLE Project Review Meeting, Thiruvananthapuram, 8-9 Jan, 2014.
74. **Gogoi, Mukunda M.**, S Suresh Babu, Manoj M R, K Krishna Moorthy, Aerosol spectral absorption characteristics over the northwestern region of India: source processes and long-range transport, National Space Science Symposium, Dibrugarh University, Assam, 28 Jan-1 Feb, 2014
75. **Gogoi, Mukunda M.**, Trends in aerosol optical depth over India, 18th National Space Science Symposium, Dibrugarh University, Assam, 28 Jan-1 Feb, 2014.
76. **Gogoi, Mukunda M.**, Investigations of atmospheric aerosols and their long-term characterization over the Arctic, Arctic Project Review and Team Selection Meeting, NCAOR, Goa, 25 Mar 2014.
77. **Gogoi, Mukunda M.**, Poonam Ghiladial, Anila, Shikhar, Sandeep Soni: Validation of Spatio-temporal AWS rainfall data with TRMM retrievals over Rajasthan region, National workshop on 'Geoinformatics for Meteorology and climatology Applications', Sponsored by Indian Meteorological Society Dehradun Chapter & Indian Institute of remote Sensing, ISRO, Dehradun, November 18-29, 2013.
78. **Gogoi, Mukunda M.**, S Suresh Babu, K Krishna Moorthy, Jai Prakash Chaubey, S K Kompalli, V Sreekanth, Manoj M R, Tushar P Prabhu, S. P Bagare, Bhuvan C Bhatt, Vinod K Gaur and N S Singh: Aerosols Physical and Optical Characteristics in Free Tropospheric Environment: RAWEX Observations in Western Trans-Himalayas, 17th National Space Science Symposium, Sri Venkateswara University, Tirupati, 14-17 February, 2012.
79. Chaubey, J P., S Suresh Babu, V Sreekanth, S K Kompalli, **Mukunda M Gogoi**, K Krishna Moorthy, Tushar P Prabhu, S. P Bagare, Bhuvan C Bhatt, Vinod K Gaur, N S Singh: Fine and ultra-fine particles at near free-tropospheric environment in Trans-Himalayas: Results from RAWEX, 17th National Space Science Symposium, Sri Venkateswara University, Tirupati, 14-17 February, 2012.
80. Kompalli, S K., K Krishna Moorthy, Jai Prakash Chaubey, S Suresh Babu, **Mukunda M Gogoi**, Tushar P Prabhu, Particle Growth events over a high altitude near pristine Himalayan location and a tropical coastal station in India, 17th National Space Science Symposium, Sri Venkateswara University, Tirupati, 14-17 February, 2012.
81. Chaubey, J P., S Suresh Babu, **Mukunda M Gogoi** and K Krishna Moorthy: Aerosol Properties over Oceanic Region between Coastal India to Coastal Antarctica: Seasonality and Latitudinal Gradients, 17th National Space Science Symposium, Sri Venkateswara University, Tirupati, 14-17 February, 2012.
82. Babu, S S., Jai Prakash Chaubey, **Mukunda M Gogoi**, Vijayakumar S Nair and K Krishna Moorthy: Aerosol properties over Indian Antarctic stations, Maitri and Bharti, 17th National Space Science Symposium, Sri Venkateswara University, Tirupati, 14-17 February, 2012.
83. Chaubey, J P., K Krishna Moorthy, S Suresh Babu, S K Kompalli, **Mukunda M Gogoi**, V Sreekanth, Tushar P Prabhu, S. P Bagare, Bhuvan C Bhatt, Vinod K Gaur, N S Singh: High Altitude (~ 4520 m amsl) measurements of Black Carbon

SERVICE

REVIEWER OF JOURNALS

- Advances in Space Research
- Atmospheric Environment
- Atmospheric Chemistry and Physics
- Atmospheric Research
- Climate Dynamics
- Current Science
- Egyptian Journal of Remote Sensing
- Environmental Pollution
- Environmental Science Pollution Research
- International Journal of Climatology
- Journal of Earth Systems Sciences

- aerosols over Western trans-Himalayas: Results from RAWEX, 17th National Space Science Symposium, Sri Venkateswara University, Tirupati, 14-17 February, 2012.
84. Joshi, H., P Pant, S Suresh Babu, **Mukunda M Gogoi**, U C Dumka and H C Chandola: Climatology of Black Carbon mass concentration over a high-altitude location in the central Himalayas: Distribution of potential sources, 17th National Space Science Symposium, Sri Venkateswara University, Tirupati, 14-17 February, 2012.
 85. Chaubey, J P., K Krishna Moorthy, S Suresh Babu, Manoj M R, **Mukunda M Gogoi**, Anoop Tiwari and S Rajan: Summertime Black Carbon Aerosols in the Arctic Boundary Layer, 17th National Space Science Symposium, Sri Venkateswara University, Tirupati, 14-17 February, 2012.
 86. **Gogoi, Mukunda M.**, Investigations of atmospheric aerosols and their long-term characterization over the Arctic, Brainstorming and review meeting on Arctic research proposals, NCAOR, Goa, 28 February, 2012.
 87. De, B. K., A. Guha, R. Roy, T. Banik, A. Choudhury and **Mukunda M Gogoi**: Aerosol Physical and Optical Characteristics over an ARFINET station Agartala in Northeastern India, 17th National Space Science Symposium, Sri Venkateswara University, Tirupati, 14-17 February, 2012.
 88. Babu, S S., **Mukunda M Gogoi**, K Krishna Moorthy, V. S. Nair, Arun Kumar V H and J. P. Chaubey" Influence of long-range transport and source impacts on the optical and radiative properties of Bay-of-Bengal aerosols" Results from ICARB experiments of ISRO-GBP. TROPMET, Hyderabad, 14-16 December, 2011.
 89. **Gogoi, Mukunda M.**, ARFI contribution to CTCZ, CTCZ group meeting, Indian Institute of Science, Bangalore, 26-27 November, 2011.
 90. **Gogoi, Mukunda M.**, S. Suresh Babu, V. S. Nair, C.B.S. Dutt and K. Krishna Moorthy: Scattering Properties of Atmospheric Aerosols over the Bay of Bengal during Winter-ICARB, National Space Science Symposium, (NSSS), Saurashtra University, Rajkot, 24-27 February, 2010
 91. **Gogoi, Mukunda M.**, B. Pathak, K. K. Moorthy, P. K. Bhuyan, S S. Babu, K. Bhuyan, and G. Kalita: Multi-year investigations of near-surface and columnar aerosols over Dibrugarh, Northeastern location of India: Heterogeneity in source impacts, IASTA-conference, Bose Institute, Darjeeling, 24-26 March, 2010.
 92. Pathak, B., P. K. Bhuyan, **Mukunda M Gogoi**, G. Kalita and K. Bhuyan: Validation of ground-based measurements of aerosol optical depth with satellite observation over Dibrugarh, IASTA-conference, Bose Institute, Darjeeling, 24-26 March, 2010.
 93. **Gogoi, Mukunda M.**, K Krishna Moorthy, P. K. Bhuyan, S Suresh Babu: Climatological features of columnar aerosol properties and the influence of synoptic conditions-First time results from the northeastern region of India, National Space Science Symposium, (NSSS), Ooty, 26-29 February 2008.
 94. **Gogoi, Mukunda M.**, P.K. Bhuyan, K. Krishna Moorthy: Validation of ground based spectral aerosol optical depth measurement with satellite observations, Vth Conference of Physics Academy of North East (PANE), Guwahati, Assam, 1-2, March 2007.
 95. **Gogoi, Mukunda M.**, P.K. Bhuyan, K. Krishna Moorthy: Possible impact of a major oil well fire on aerosol optical death over Dibrugarh; India, National Space Science Symposium (NSSS), Vishakhapatnam, February 2006.
 96. **Gogoi, Mukunda M.**, P K Bhuyan, P S Pillai and K Krishna Moorthy: Effect of changes in Atmospheric water vapor on Aerosol optical depth over a Sub-

tropical location in North East India; 4th Asian Aerosol Conference (4AAC), Mumbai, 13-16 December 2005.

97. **Gogoi, Mukunda M.**, P K Bhuyan, P S Pillai and K Krishna Moorthy: Characteristics of aerosol spectral optical depth and a study of Ångström turbidity parameters from solar radiation measurement over Dibrugarh; 4th Asian Aerosol Conference (4AAC), Mumbai, 13-16 December 2005.
98. **Gogoi, Mukunda M.**, P.K. Bhuyan, K. Krishna Moorthy, P.S. Pillai: Association of surface meteorological parameters with aerosol optical depth over Dibrugarh, India; General Assembly of the International union of Radio Science (URSI), New Delhi, 23-29 October 2005.
99. **Gogoi, Mukunda M.**, P.K. Bhuyan: Diurnal and Seasonal variation of Aerosol Optical Depth measured over a tropical location in NE India; IASTA Meeting and International Conference on Aerosols, Clouds and Indian Monsoon, Indian Institute of Technology, Kanpur, 15-17 November 2004.
100. **Gogoi, Mukunda M.**, P.K. Bhuyan: A study of aerosol optical depth characteristics over Dibrugarh, Third regional conference on Physics Research in North East India; Physics Academy of North East (PANE), Dibrugarh University, Dibrugarh, 9 November 2002.

HOBBIES AND LEISURE

<https://www.youtube.com/watch?v=SfDP6midTPo>

<https://www.youtube.com/watch?v=YYSwKPs1YNg>

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<https://www.youtube.com/watch?v=-Yb3pMrjVrw>

TRAININGS/ WORKSHOPS

- Structured Training Programme on 'New Trends in Remote Sensing and GIS Application: Global Perspective and Indian Scenario', Indian Institute of Remote Sensing, Dehradun, May 27-31, 2019.
- 'Presentation Skills', HRDD, VSSC, July 05, 2019.
- 'Big Data Analytics', HRDD, VSSC, 09-11 October, 2018.
- 'Aethalometer Inter-comparison Experiment, Indian Institute of Science, Bangalore, 01-15 April, 2017, Program Coordinator
- 'MySQL', HRDD, VSSC, 17 & 18 August, 2017.
- 'JAVA', HRDD, VSSC, 20-22 Dec, 2016.
- 'Secure Web Design', HRDD, VSSC, 8-10 Sep, 2015.
- 'AJAX and J-Query', HRDD, VSSC, 5-6 Sep, 2013.
- 'Geoinformatics for Meteorology and climatology Applications', Sponsored by Indian Meteorological Society Dehradun Chapter & Indian Institute of remote Sensing, ISRO, Dehradun, November 18-29, 2013.
- 'Bhuvan One-day workshop', Thiruvananthapuram, 19 March 2012.
- 18th ISRO Induction Training Program (IITP), 10 Oct – 3 Dec, 2008.
- DST sponsored workshop on "Sensors for Agricultural and Industrial Applications", Department of Physics, DU, 20 Sep-1 Oct, 2004.
- The short-term course on "Physics of atmosphere and Oceans", Indian Institute of Science, Bangalore, 1-12 July, 2002

GENERAL ACTIVITIES/ OUTREACH

- Guest Editor, Guest Editor, Frontiers in Earth Science (Atmospheric Science), 2021
- Co-chair: Technical session on "Aerosol-cloud-precipitation interactions" in the Tropmet-2020, the virtual National Symposium on "Weather and Climate Services over Mountainous Regions", NESAC, Shillong, during 14-17 December, 2020.

- Co-Chair, Editorial committee, 'SPL Golden Jubilee Souvenir', 2019.
- Evaluator, 27th National Children Science Congress (NCSC-2019), Thiruvananthapuram, December 27-31, 2019.
- Convener, Resource Material Committee, World Space Week-2018, Vikram Sarabhai Space Centre, Trivandrum
- Convener, Session-AS-06 'Spatial and temporal variability of aerosol in an around Indian sub-continent and the associated radiative forcing - a study from in-situ and satellite derived data', Asia Oceania Geosciences Society (AOGS), Singapore, 2017.
- Editor, Scientific Progress Report, ARFI & ICARB, 2010, 2012.
- Member, Website management committee, National Space Science Symposium (NSSS), VSSC, Thiruvananthapuram, 09-12 February, 2016.
- Member, Design and development of SPL website, 2013-2017.
- Editor, Scientific Progress Report: ARFI, ICARB, RAWEX & NOBLE, 2014.
- Member, Editorial Committee, 'NaWRoSE Proceedings', 2011.
- Member, Doctoral Committee of SPL.
- Member, Editorial Committee, 'SPL Annual Report', since 2010.

WEBINAR TALKS

- 'Eyes in the Sky: Observing earth from space', National Webinar on Material and Space Science, Sibsagar College, Joysagar, Assam, 24 Jul 2021.
- 'Tackling the big impact of short-lived tony aerosols on earth's climate along the spiral of Geologic Time Scale: rhetoric or reality!', Nowgong College, Nagaon, Assam, 11 Aug 2020.



डॉ मुकुंदा एम गोगोई

वैज्ञानिक - एस एफ

प्रोफाइल

मेरे प्राथमिक अनुसंधान हितों में एरोसोल-विकिरण शामिल है, एरोसोल-क्लाउड और एरोसोल-क्रायोस्फीयर इंटरैक्शन, ग्राउंड और सैटेलाइट-आधारित माप और मॉडल सिमुलेशन के माध्यम से। वर्तमान में, मैं क्षेत्रीय और वैश्विक जलवायु पर प्रभाव का आकलन करने के लिए दक्षिण एशियाई और ध्रुवीय क्षेत्रों में एरोसोल के सटीक क्षेत्रीय लक्षण वर्णन को विकसित करने में शामिल हूँ।

इस दिशा में, मैं भारत में एरोसोल वेधशालाओं (एआरएफआईएनईटी) के एक राष्ट्रीय नेटवर्क के संचालन में महत्वपूर्ण भूमिका निभा रहा हूँ, जो अनुसंधान और सामाजिक अनुप्रयोगों के लिए प्राथमिक एरोसोल डेटा तैयार करता है।

मैं प्राचीन आर्कटिक, अंटार्कटिक और उच्च ऊंचाई वाले हिमालय में एरोसोल प्रयोगशालाओं के चालू और संचालन के लिए भी जिम्मेदार हूँ, जो एरोसोल के कारण बर्फ के काले पड़ने और ग्लेशियर के पिघलने का अध्ययन करता है।

मैंने अलग-अलग वातावरण में विकिरणों और बादलों पर एरोसोल के प्रभाव का अध्ययन करने के लिए जहाज और विमान पर कई मल्टी-प्लेटफॉर्म फ़ील्ड प्रयोगों को डिज़ाइन और निष्पादित किया है।

संपर्क विवरण

अंतरिक्ष भौतिकी प्रयोगशाला - एस पी एल
विक्रम साराभाई अंतरिक्ष केंद्र - वीएसएससी
भारतीय अंतरिक्ष अनुसंधान संगठन
इसरो पीओ, त्रिवेंद्रम 695022, भारत

फ़ोन

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ईमेल

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वेबसाइट

<https://spl.gov.in/SPL>

परियोजनाओं

ARFI परियोजना - इसरो-जीबीपी - सह-प्रधान अन्वेषक

भारत पर एरोसोल रेडिएटिव फोर्सिंग के सटीक अनुमानों का लक्ष्य। ARFINET को जलवायु प्रभाव मूल्यांकन के लिए आवश्यक सभी एरोसोल मापदंडों के व्यापक मापन के लिए डिज़ाइन किया गया है।

ARCTIC परियोजना - प्रधान अन्वेषक

स्वालबार्ड द्वीपसमूह में Ny-Ålesund में निरंतर दीर्घकालिक अवलोकनों और समर्पित क्षेत्र प्रयोगों के आधार पर ध्रुवीय एरोसोल की स्रोत प्रक्रियाओं और जलवायु प्रभावों को चिह्नित करने के उद्देश्य से।

GOSAT-RA परियोजना - प्रधान अन्वेषक

GOSAT-2 पुनर्प्राप्ति और ARFINET मापों के आधार पर बेहतर डेटा एसिमिलेशन तकनीकों का उपयोग करके भारत में ग्रीडेड एरोसोल डेटा सेट की पीढ़ी के लिए एक संयुक्त प्रयास।

RAWEX - वैज्ञानिक अन्वेषक

भारतीय क्षेत्र में उच्च अवशोषित एरोसोल द्वारा क्षेत्रीय वायुमंडलीय वार्मिंग की मात्रा का ठहराव पर ध्यान केंद्रित करता है।

ICARB - वैज्ञानिक अन्वेषक

भारत और उससे सटे महासागरों पर एरोसोल के अनुपात-अस्थायी विषमता की मात्रा निर्धारित करने के लिए एक एकीकृत दृष्टिकोण।

एसपीएल का एकीकृत ध्रुवीय अनुसंधान कार्यक्रम

अंतिम सीमाओं पर एरोसोल मापदंडों और स्नो एल्बिडो मापन पर व्यापक वैज्ञानिक अवलोकन।

काम का अनुभव

आर्कटिक के लिए वैज्ञानिक अभियान

भारत का प्रतिनिधित्व करते हुए, स्प्रिंग-2012, समर-2013, ऑटम-2014 के दौरान आर्कटिक के वैज्ञानिक अभियानों में भाग लिया (टीम लीडर) और शरद-2015; एरोसोल-क्रायोस्फीयर इंटरैक्शन पर नए सहयोग और वैज्ञानिक समझ को खोला।

पोत जनित प्रयोग

जनवरी-फरवरी, 2018 के दौरान उत्तरी हिंद महासागर में जहाज-जनित प्रयोग किए गए।

हवाई प्रयोग

2012, 2013 और 2016 के दौरान भारत के अलग-अलग क्षेत्रों में ऑन-बोर्ड इंस्ट्रूमेंटेड-एयरक्राफ्ट में एरोसोल के व्यापक हवाई प्रयोग किए गए।

हिमालय के प्रयोग

मुक्त-क्षोभमंडलीय एरोसोल की निरंतर निगरानी के लिए हिमालय के ऊपर एरोसोल वेधशालाओं की एक श्रृंखला की स्थापना की।

विज्ञान और प्रौद्योगिकी में अनुसंधान एवं विकास

सम्मान/पुरस्कार

अतिथि संपादक

पृथ्वी विज्ञान में फ्रंटियर्स (वायुमंडलीय विज्ञान)
गोसैट-आरए पीआई

JAXA और NIES, जापान के साथ संयुक्त
अनुसंधान सहयोग के लिए चयनित (2019-
2021)

युवा वैज्ञानिकों के लिए स्वर्ण पदक

• इंट्रोमेट-2014

सर्वश्रेष्ठ लेख पुरस्कार

• 'आर्कटिक में भारत',
गगन, Vol-47, 2019

• स्थलीय वायुमंडलीय और महासागरीय
(TAO) विज्ञान, Vol-20, No 3, 2009

सर्वश्रेष्ठ पेपर पुरस्कार

• यूआरएसआई-2020

• एनसीपीएस-2019

• एनएसएसएस-2016

• आई ए एस टी ए-2016

• एनएसएसएस-2012

शैक्षणिक

पीएच.डी. पर्यवेक्षण - 02

एम. फिल. परियोजनाएं - 03

एम. एससी. परियोजनाएं - 06

योग्यता

2008 पोस्ट-डॉक्टरल फेलो, एसपीएल

२००७ पीएच.डी., डिब्रूगढ़ विश्वविद्यालय, असम

2001 एमएससी, डिब्रूगढ़ विश्वविद्यालय (डीयू)

1998 बीएससी, जेबी कॉलेज, डीयू

२०११ हिन्दी प्रवीण

1997 कंप्यूटर टेक में डिप्लोमा।

पदों

• वैज्ञानिक, एसपीएल, वीएसएससी

सितंबर 2008 से

• अनुसंधान सहयोगी, एसपीएल, वीएसएससी

दिसंबर 2007 - सितंबर 2008

• रिसर्च फेलो (इसरो-जीबीपी)

सितंबर 2002 - अगस्त 2006

सदस्यता

यूरोपीय भूभौतिकीय संघ

इंडियन सोसाइटी ऑफ रिमोट सेंसिंग

भारतीय मौसम विज्ञान सोसायटी

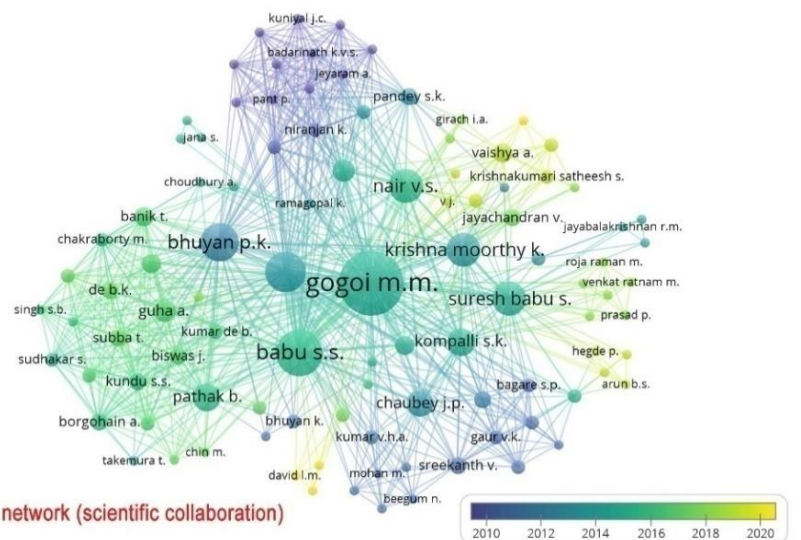
इंडियन एरोसोल साइंस एंड टेक्नोलॉजी

एसोसिएशन

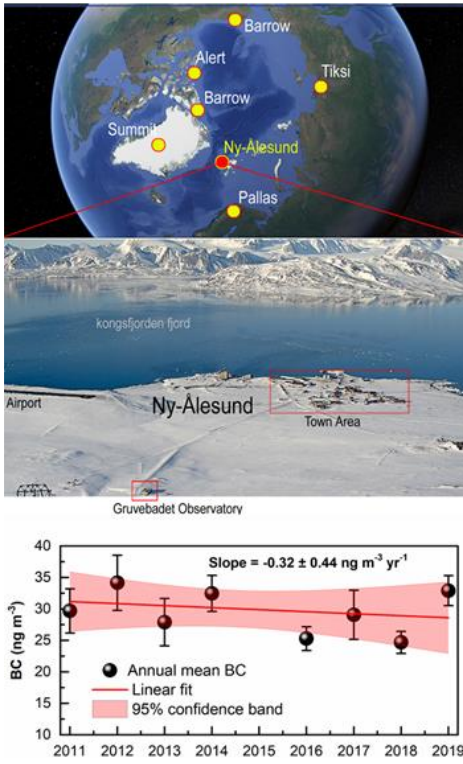


अंतरिक्ष, समय और वर्णक्रमीय डोमेन एरोसोल लक्षण वर्णन में बड़ी विविधताओं के साथ एक बहु-पैरामीटर समस्या होने के नाते एक निरंतर, क्षेत्र विशिष्ट और सहक्रियात्मक दृष्टिकोण की आवश्यकता है। इस संदर्भ में, मेरा वैज्ञानिक अनुसंधान उपग्रह रिमोट सेंसिंग और मॉडल सिमुलेशन के साथ बहु-मंच माप के एकीकरण के लिए इच्छुक है, जो (i) क्षेत्रीय एरोसोल प्रत्यक्ष विकिरण बल, (ii) प्रकाश अवशोषित एरोसोल के कारण बर्फ का काला पड़ना से संबंधित विशिष्ट विज्ञान समस्याओं का समाधान करता है। और स्नो एल्बिडो फोर्सिंग और (iii) एरोसोल माइक्रोफिजिक्स, जीवन चक्र और सीसीएन विशेषताओं को समझने के अलावा, सुदूर समुद्री और ध्रुवीय क्षेत्रों पर एरोसोल का महाद्वीपीय प्रभाव।

वैज्ञानिक सहयोग



अनुसंधान की मुख्य विशेषता

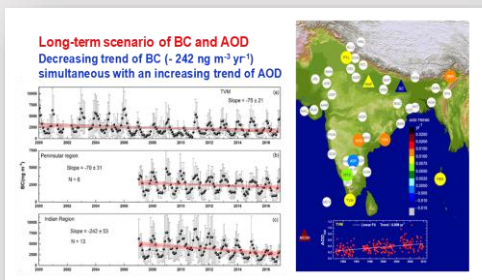


आर्कटिक में भारतीय वैज्ञानिक अभियानों के हिस्से के रूप में Ny-Ålesund पर एयरोसोल विकिरण गुणों की दीर्घकालिक निगरानी के आधार पर, 2010-2019 के दौरान BC में घटती प्रवृत्ति का पता चलता है,

हमारे अध्ययनों के समान, कई अन्य आर्कटिक स्थलों (जैसे, अलर्ट, बैरो) ने बीसी सांद्रता में गिरावट दिखाई। बीसी सांद्रता में समग्र गिरावट के लिए कई पहलुओं, जैसे कि जीवाश्म ईंधन बीसी के उत्सर्जन में कमी और वायुमंडलीय परिसंचरण मार्गों में परिवर्तन पर विचार किया जा सकता है।

<https://doi.org/10.1016/j.polar.2021.100700>

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भारत में एयरोसोल ऑप्टिकल गहराई में सांख्यिकीय रूप से महत्वपूर्ण और लगातार बढ़ती प्रवृत्ति एआरएफआईएनईटी से दीर्घकालिक डेटा (कुछ स्टेशनों पर ~ 25 वर्ष तक) के विश्लेषण से प्रकट हुई है, जो उप-माइक्रोन मानवजनित घटक में तेजी से वृद्धि का संकेत देती है। कुल एयरोसोल प्रणाली।

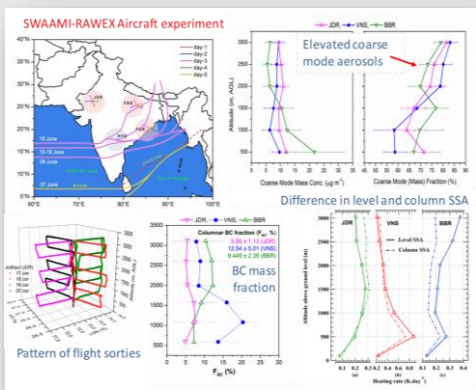
ब्लैक कार्बन एरोसोल के पहली बार क्षेत्रीय संश्लेषण ने निकट सतह बीसी एकाग्रता में घटती प्रवृत्ति के आश्चर्यजनक अवलोकन का खुलासा किया। यह खोज स्तंभ एओडी में आम तौर पर बढ़ती प्रवृत्ति और इस क्षेत्र में मानवजनित गतिविधियों में लगातार बढ़ती प्रवृत्ति के विपरीत है। ये अवलोकन संभावित दीर्घकालिक जलवायु परिणामों का संकेत देते हैं।

<https://doi.org/10.1029/2018GL081666>

<https://doi.org/10.1002/2013jd020507>

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मानसून की शुरुआत से ठीक पहले, एरोसोल आकार वितरण और बीसी अवशोषण के ऊर्ध्वाधर प्रोफाइल भारत में क्षेत्र विशिष्ट विशेषताओं को दर्शाता है, जिसे आईजीपी के पश्चिम से पूर्व में सिंगल स्कैटरिंग अल्बेडो (एसएसए) की ऊर्ध्वाधर संरचना में कमी की प्रवृत्ति होती है।

बायोमास जलने और धूल के एरोसोल वसंत में कम मुक्त क्षोभमंडल ऊंचाई में योगदान करते हैं और एबीएल के भीतर सर्दियों से वसंत तक एरोसोल एकाग्रता में कमी करते हैं। स्तंभकार एएओडी बीसी द्रव्यमान सांद्रता के मामले में प्रमुख होने के बावजूद कमजोर मौसमी बदलाव दिखाता है।

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भारत में एरोसोल की सूक्ष्म रूपात्मक विशेषताओं और मौलिक संरचना के ऊर्ध्वाधर वितरण से भारत-गंगा के मैदानों के निचले मुक्त क्षोभमंडल क्षेत्रों में गैर-गोलाकार मोटे मोड कणों (> 90%) के प्रभुत्व का पता चलता है। ये कण वसंत के दौरान वातावरण के ऊंचे क्षेत्र में एरोसोल अवशोषण को बढ़ाने के लिए जिम्मेदार हो सकते हैं।

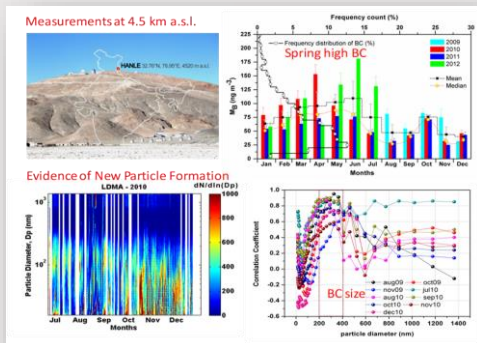
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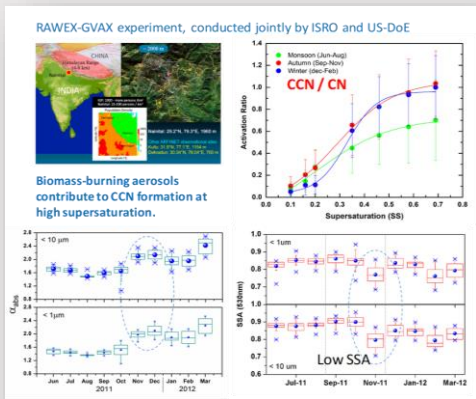


हिमालय के ऊपर, ट्रांस-हिमालयी साइट हनले में BC का उच्चतम मान (४.५ किमी एएसएल) ने संवहन के प्रभाव पर प्रकाश डाला। ईसा पूर्व की आकार सीमा का अनुमान की विशिष्ट श्रेणी में लगाया गया है 200-400 एनएम। इस क्षेत्र ने प्रक्रियाओं पर एक मजबूत सौर नियंत्रण के साथ नए कण गठन के मजबूत हस्ताक्षर भी दर्शाए।

बीसी (कुल एरोसोल द्रव्यमान का 4%) के साथ खनिज धूल एरोसोल (~ 67%) का प्रभुत्व पश्चिमी हिमालय पर मात्राबद्ध है, जो क्षेत्रीय विकिरण संतुलन और बर्फ/ग्लेशियर कवरेज पर प्रभाव के दूरगामी प्रभाव का उल्लेख करता है।

<https://doi.org/10.1016/j.atmosenv.2013.11.029>

<https://doi.org/10.1016/j.atmosenv.2019.117017>



मध्य हिमालयी स्थल पर बादल संघनन नाभिक (सीसीएन) देर से शरद ऋतु के दौरान उच्च सीसीएन गतिविधि का खुलासा करता है, जो बायोमास जलने वाले एरोसोल के योगदान के कारण होता है, जो एरोसोल संरचना में मौसमी परिवर्तनों के प्रभाव को दर्शाता है।

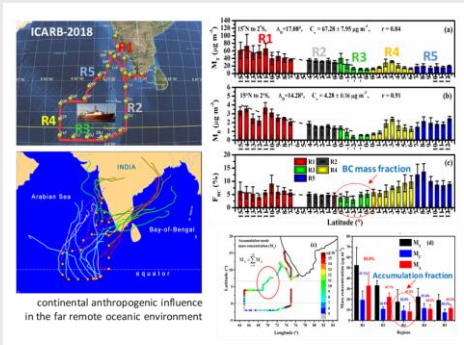
2016 के भारतीय ग्रीष्म मानसून (आईएसएम) की शुरुआत से ठीक पहले, आईजीपी में सीसीएन विशेषताओं की ऊंचाई प्रोफाइल ने पूर्वी आईजीपी (~72%) पर उच्चतम सीसीएन सक्रियण दक्षता का संकेत दिया, इसके ऊपर केंद्रीय आईजीपी में उच्चतम सीसीएन सांद्रता के बावजूद ग्रह सीमा परत (PBL)।

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समुद्री पर्यावरण पर, सीसीएन गुण और सक्रियण अंश ने उत्तरी हिंद महासागर (एनआईओ) पर आकार से अलग किए गए एरोसोल संख्या एकाग्रता, विशेष रूप से अल्ट्राफाइन कण घटनाओं के प्रभाव को दिखाया।

भूमध्यरेखीय हिंद महासागर (ईआईओ) पर एरोसोल माप ने बीसी द्रव्यमान अंश (एफबीसी ~ 3.7%) के उच्च मूल्यों को दिखाया, जो शुष्क सर्दियों के दौरान दूर महासागरीय क्षेत्र में भी महाद्वीपीय मानवजनित प्रभाव को दर्शाता है।

दक्षिण-पूर्वी अरब सागर, एनआईओ और ईआईओ पर विशिष्ट बिमोडल आकार के वितरण और न्यूक्लियेशन कण (<25 एनएम) सांद्रता में ३-१० गुना वृद्धि के साथ कई एनपीएफ घटनाएं देखी गईं। एनपीएफ दूरस्थ महासागरीय ईआईओ पर अधिक बार होता है, लेकिन महाद्वीपीय निकटता के क्षेत्रों में अधिक तीव्रता से अलग-अलग अग्रदूत वाष्प स्रोत ताकत का प्रदर्शन करता है।

<https://doi.org/10.1016/j.atmosenv.2019.06.038>

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तकनीकी रिपोर्ट

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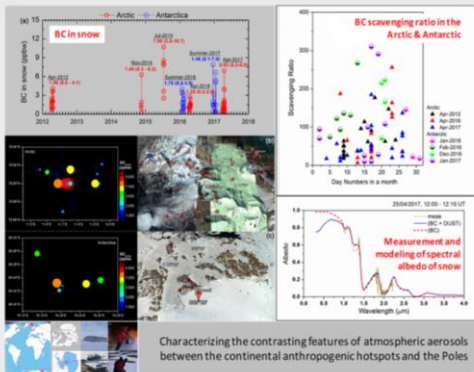
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Characterizing the contrasting features of atmospheric aerosols between the continental anthropogenic hotspots and the Poles

आर्कटिक और अंटार्कटिक में भारतीय ध्रुवीय स्टेशनों से किए गए एरोसोल मापों ने अंटार्कटिका की तुलना में आर्कटिक बर्फ में उच्च ईसा पूर्व का खुलासा किया है। इसके साथ-साथ, बीसी के मेला ढोने के अनुपात ने दोनों ध्रुवों पर बड़ी परिवर्तनशीलता दिखाई, जो वातावरण से बीसी के निष्कासन तंत्र में अंतर को दर्शाता है।

मापा और मॉडल नकली अल्बेडो ने आर्कटिक में बर्फ अल्बेडो गुणों को बदलने में बीसी के अलावा धूल अवशोषण की भूमिका का संकेत दिया।

नॉर्वेजियन आर्कटिक के स्वालबार्ड क्षेत्र में एयरबोर्न बीसी ने लगातार वसंत ऋतु में वृद्धि (गर्मियों में सबसे कम बीसी सांद्रता से लगभग 3 गुना अधिक) का खुलासा किया है; इस वृद्धि के 25% से अधिक को लंबी दूरी के परिवहन वाले बायोमास बर्निंग एरोसोल में चित्रित करना।

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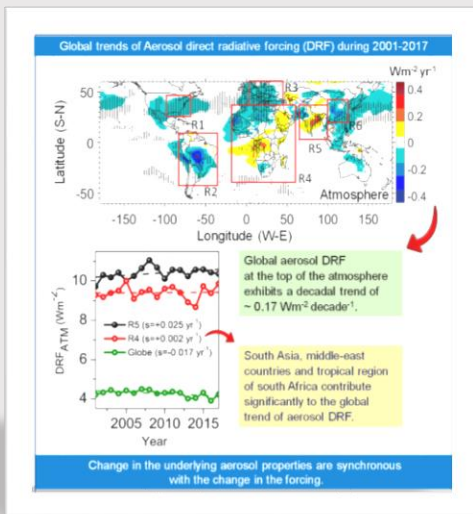
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पृथ्वी की जलवायु प्रणाली में एरोसोल के व्यापक परिणामों को समझने के लिए उपग्रह माप से वैश्विक एरोसोल प्रत्यक्ष विकिरण बल में हालिया प्रवृत्ति पर अध्ययन अद्वितीय है। इस अध्ययन ने वैश्विक महासागर की तुलना में वातावरण के शीर्ष पर और सतह पर तेजी से परिवर्तन के साथ एक सामान्य घटती प्रवृत्ति (यानी, एक कम शीतलन प्रभाव) का खुलासा किया। दक्षिण एशिया और अफ्रीका/मध्य पूर्व क्षेत्र वायुमंडलीय वार्मिंग की महत्वपूर्ण बढ़ती प्रवृत्ति को दर्शाते हैं, जबकि शेष क्षेत्रों में गिरावट दिखाई देती है।

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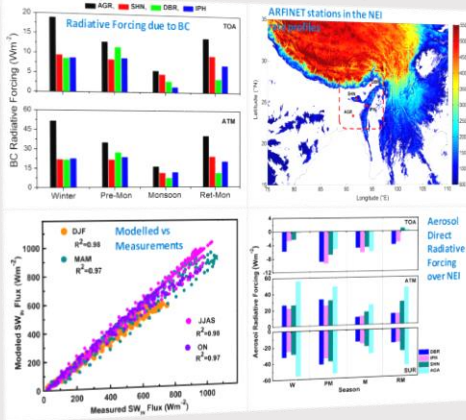
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उत्तर-पूर्वी भारत में, पहली बार, स्पेक्ट्रल एयरोसोल अवशोषण के क्षेत्रीय संश्लेषण, MODIS से अग्नि गणना और अग्नि विकिरण शक्ति के साथ पूरक, यूवी-एरोसोल इंडेक्स और OMI से एयरोसोल परत ऊंचाई जीवाश्म ईंधन के कारण उच्च विकिरण प्रभाव का खुलासा करती है।

उपग्रह से प्राप्त प्रत्यक्ष विकिरण बल एनईआई के भीतर एरोसोल वितरण के पश्चिम से पूर्व ढाल को उजागर करता है।

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RG score: 33.15

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ARCTIC PROJECT

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पोस्ट-डॉक्टरेट छात्र

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डॉक्टरेट छात्र

तमन्ना सुब्बा (वायुमंडलीय विज्ञान में पीएचडी, 2020; वर्तमान में मिशिगन विश्वविद्यालय, एन आर्बर, एमआई में पोस्ट-डॉक्टरेट शोधकर्ता)

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एम. फिल. परियोजना छात्र

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