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Area of specialisation: Molecular level composition of organic aerosols
Research interest: Aerosol chemical composition studies
Academic Qualifications: M. Sc. Ph. D. (Atmospheric Science)

Professional Responsibilities: Assigned research activities on aerosol chemical characterization (major ions and trace elements) and determination of molecular level organics using different analytical instruments/techniques.

Publications in Journals:

(1) Boreddy, S. K. R., **Prashant Hegde** and Aswini, A. R. (2022). Summertime high abundances of succinic, citric, and glyoxylic acids in Antarctic aerosols: Implications to secondary organic aerosol formation, **Journal of Geophysical Research: Atmospheres**, 127, e2021JD036172. https://doi.org/10.1029/2021JD036172.

(2) Boreddy, S. K. R., **Prashant Hegde,** Arun, B.S., and Aswini, A. R., S. Suresh Babu (2022) Molecular composition and light-absorbing properties of organic aerosols from west-coast of tropical India, **Science of the Total Environment**, http://dx.doi.org/ 10.1016/j.scitotenv.2022.157163.

(3) **Prashant Hegde,** Boreddy, S. K. R., Aswini, A. R., and Aryasree, S., (2021) Influence of South Asian outflow on secondary organic aerosol formation over the Indian Ocean: Inferences from water-soluble low molecular weight dicarboxylic acids and related organic compounds during ICARB 2018 experiment, **Marine Chemistry,** https://doi.org/10.1016/j.marchem.2021.104071.

(4) Aswini, A.R., **Prashant Hegde,** Boreddy, S. K. R., and Nair, P.R. (2021) Chemical characteristics of aerosols from distinct environments over the Indian region: heterogeneity in distribution and sources of carbonaceous aerosols, **ACS Earth and Space Chemistry,** 248, 105216, https://doi.org/10.1021/acsearthspacechem.1c00241.

(5) Arun, B.S., M. M. Gogoi, A. Borgohain, **Prashant Hegde,** S. S. Kundu, S. Suresh Babu (2021) Role of sulphate and carbonaceous aerosols on the radiative effects of aerosols over a remote high-altitude site Lachung in the Eastern Himalayas, **Atmospheric Research,** 263 105799 https://doi.org/10.1016/j.atmosres.2021.105799.

(6) Boreddy, S. K. R., **Prashant Hegde,** and Aswini, A. R. Aryasree, S., (2021) Chemical characteristics, size distributions, molecular composition and Brown carbon in south Asian outflow to the Indian Ocean, **Earth and Space Science**. https://doi.org/10.1029/2020EA001615.

(7) Arun, B. S., M. M. Gogoi, **Prashant Hegde,** A. Borgohain, S. K. R. Boreddy, S. S. Kundu, and S. Suresh Babu (2021) Carbonaceous Aerosols over Lachung in the Eastern Himalayas: Primary Sources and Secondary Formation of Organic Aerosols in a Remote High-Altitude Environment, **ACS Earth and Space Chemistry,** https://doi.org/10.1021/acsearthspacechem.1c00190.

(8) Boreddy, S. K. R., **Prashant Hegde**, Aswini, A. R., Williams, M. A., Elavarasi, R., and Kumar T. V. L. (2021). Seasonal variations in characteristics, sources and diurnal patterns of carbonaceous and water-

soluble constituents in urban aerosols from the east coast of tropical India, **Environmental Chemistry**, https://doi.org/10.1071/EN21017.

(9) 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., **Prashant Hegde**, and Babu S.S., (2021). Long-term changes in aerosol radiative properties over Ny-Ålesund: Results from Indian scientific expeditions to the Arctic, **Polar Science,** doi: 10.1016/j.polar.2021.100700.

(10) Ezhilkumar, M. R., Karthikeyan, S., Aswini, A. R., and **Prashant Hegde** (2021) Seasonal and vertical characteristics of particulate and elemental concentrations along diverse street canyons in South India, **Environmental Science and Pollution Research**, https://doi.org/10.1007/s11356-021-15272-9.

(11) Boreddy, S. K. R., **Prashant Hegde**, Aswini, A. R. (2021) Chemical characteristics, size distributions, and aerosol liquid water in size-resolved coastal urban aerosols allied with distinct air masses over tropical peninsular India. **ACS Earth and Space Chemistry,** 5, 3, 457–473, https://doi.org/10.1021/acsearthspacechem.0c00282.

(12) Aswini, A.R., **Prashant Hegde** (2020) Impact assessment of continental and marine air-mass on size-resolved aerosol chemical composition over coastal atmosphere: Significant organic contribution in coarse mode fraction, **Atmospheric Research,** 248, 105216, https://doi.org/10.1016/j.atmosres.2020.105216

(13) Boreddy, S. K. R., **Prashant Hegde**, Aswini, A. R. (2020) Geochemical characteristics of trace elements in size-resolved coastal urban aerosols associated with distinct air masses over tropical peninsular India: size distributions and source apportionment. **Science of the Total Environment**, https://doi.org/10.1016/j.scitotenv.2020.142967

(14) Aryasree, S., Nair, P.R. and **Prashant Hegde** (2020) Radiative characteristics of near-surface aerosols at a tropical site: An estimation based on concurrent measurements of their physico-chemical characteristics. **Journal of Earth System Science,** 129, 185, https://doi.org/10.1007/s12040-020-01444-7.

(15) Boreddy, S. K. R., **Prashant Hegde**, Aswini, A. R., Girach, I. A, Koushik, N., and Nalini K. (2020) Impact of ice-free oases on particulate matter over the East Antarctic: inferences from the carbonaceous, water-soluble species and trace metals, **Polar Science,** 24, 100520, https://doi.org/10.1016/j.polar.2020.100520.

(16) Aswini, A. R., **Prashant Hegde**, Aryasree, S., Girach I. A. and Nair P. R. (2019) Continental outflow of anthropogenic aerosols over Arabian Sea and Indian Ocean during wintertime: ICARB-2018 campaign, **Science of the Total Environment**, https://doi.org/10.1016/j.scitotenv.2019.

(17) Arun, B. S, Aswini, A. R, Gogoi, M. M., **Prashant Hegde**, Kompalli, S. K., Sharma P., and S Suresh Babu (2019) Physico-chemical and optical properties of aerosols at a background site (~ 4 km a.s.l.) in the western Himalayas, **Atmospheric Environment**. doi.org/10.1016/j.atmosenv.2019.117017.

(18) **Prashant Hegde,** B, M, Vyas, A R Aswini, S Aryasree and P. R. Nair (2019) Carbonaceous aerosols over a semi-arid location in North West India: seasonal variations and source characteristics, **Journal of Arid Environments,** https://doi.org/10.1016/j.jaridenv.2019.104018.

(19) Aswini, A R, **Prashant Hegde**, P. R. Nair and S Aryasree (2018) Seasonal trends in carbonaceous aerosols over a tropical coastal location in response to meteorological processes, **Science of the Total Environment**, 656, 1261–1279, https://doi.org/10.1016/j.scitotenv.2018.11.366.

(20) Aswini, A.R., **Prashant Hegde**, and P. R. Nair, (2018) Carbonaceous and inorganic aerosols over a sub-urban site in peninsular India: Temporal variability and source characteristics **Atmospheric Research**, 199, 40-53. http://dx.doi.org/10.1016/j.atmosres.2017.09.005.

(21) **Prashant Hegde,** and Kawamura, K. (2017) Chemical constituents of carbon and nitrogen aerosols over Thumba region. **Archives of Environmental Contamination and Toxicology,** 73, 3, 456-473. doi: 10.1007/s00244-017-0426-5.

(22) Bindu G., P. R. Nair, S. Aryasree, **Prashant Hegde,** and S. Jacob, (2016) Pattern of aerosol mass loading and chemical composition over the atmospheric environment of an urban coastal station, **Journal of Atmospheric and Solar-Terrestrial Physics**, 121-135.

(23) **Prashant Hegde**, K. Kawamura, I. A. Girach and P. R. Nair, (2015) Characterisation of water- soluble organic aerosols at a site on the southwest coast of India, **Journal of Atmospheric Chemistry**, 73, 181-205.

(24) **Prashant Hegde**, K. Kawamura, H. Joshi and M. Naja, (2015) Organic and inorganic components of aerosols over the central Himalayas: Winter and summer variations in stable carbon and nitrogen isotopic composition, **Environmental Science and Pollution Research**, 23, 6102-6118.

(25) **Prashant Hegde,** and K. Kawamura (2012) Seasonal variations of water-soluble organic carbon, dicarboxylic acids, ketocarboxylic acids, and α-dicarbonyls in Central Himalayan aerosols. **Atmospheric Chemistry and Physics**, 12, 1–21, doi:10.5194/acp-12-1-2012.

(26) Girach, I. A., P. R. Nair, L. M. David, **Prashant Hegde**, M. K. Mishra, G. M. Kumar, S. M. Das, N. Ojha, and M. Naja (2011) The changes in near-surface ozone and precursors at two nearby tropical sites during annular solar eclipse of 15 January 2010, **Journal of Geophysical Research**, 117, D01303, doi:10.1029/2011JD016521.

(27) Kumar, R., M. Naja, S. K. Satheesh, N. Ojha, H. Joshi, T. Sarangi, P. Pant, U. C. Dumka, **Prashant Hegde**, and S. Venkataramani (2011) Influences of the springtime northern Indian biomass burning over the central Himalayas, **Journal of Geophysical Research**, 116, D19302, doi:10.1029/ 2010JD015509.

(28) Srivastava, A, K., P. Pant, **Prashant Hegde**, Sachchidanand Singh, U. C. Dumka, Manish Naja, Narendra Singh and Y. Bhavanikumar (2011) The influence of a south Asian dust storm on aerosol radiative forcing at a high-altitude station in central Himalayas, **International Journal of Remote Sensing**, 1-19, doi:10.1080/01431161.2010.531781.

(29) Srivastava, A K, K Ram, P Pant, **Prashant Hegde** and Hema Joshi (2011) Black carbon aerosols over Manora Peak in the Indian Himalayan foothills: implications for climate forcing, **Environmental Research Letters**, 1-8, 7014002, doi:10.1088/1748-9326/7/1/014002.

(30) Dumka, U. C, K. Krishna Moorthy, R, Kumar, **Prashant Hegde**, R, Sagar, P. Pant., N, Singh, and S, S, Babu, (2010) Characteristics of Aerosol Black Carbon Mass Concentration over a High Altitude location in the Central Himalayas from multi-year measurements **Atmospheric Research,** 96, 510–521.

(31) Srivastava, A K, P Pant, U. C. Dumka, and **Prashant Hegde** (2010) Black Carbon Aerosol Characteristics and Its Radiative Impact over Nainital: A High-Altitude Station in the Central Himalayas, **Journal of the Institute of Engineering**, 8, 3, 1-10.

(32) Ram, K., M. M. Sarin, and **Prashant Hegde** (2010) Long-term record of aerosol optical properties and chemical composition from a high-altitude site (Manora Peak) in Central Himalaya. **Atmospheric Chemistry and Physics,** 10, 11791-11803.

(33) **Prashant Hegde,** Pant, P. and Kumar, Y. B. (2009) An integrated analysis of lidar observations in association with optical properties of aerosols from a high altitude location in central Himalayas, **Atmospheric Science Letters**, 10, 48–57.

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विशेषज्ञता का क्षेत्र: विश्लेषणात्मक रसायन विज्ञान
अनुसंधान रुचि: एरोसोल रासायनिक संरचना अध्ययन
शैक्षणिक योग्यता: एम. एससी. पीएच.डी. (वायुमंडलीय विज्ञान)

व्यावसायिक उत्तरदायित्व: एरोसोल रासायनिक लक्षण वर्णन (प्रमुख आयन और ट्रेस तत्व) और विभिन्न विश्लेषणात्मक उपकरणों/तकनीकों का उपयोग करके आणविक स्तर के जीवों के निर्धारण पर अनुसंधान गतिविधियों को सौंपा।

प्रकाशन

(1) Boreddy, S. K. R., **Prashant Hegde** and Aswini, A. R. (2022). Summertime high abundances of succinic, citric, and glyoxylic acids in Antarctic aerosols: Implications to secondary organic aerosol formation, **Journal of Geophysical Research: Atmospheres**, 127, e2021JD036172. https://doi. org/10.1029/2021JD036172.

(2) Boreddy, S. K. R., **Prashant Hegde,** Arun, B.S., and Aswini, A. R., S. Suresh Babu (2022) Molecular composition and light-absorbing properties of organic aerosols from west-coast of tropical India, **Science of the Total Environment**, http://dx.doi.org/ 10.1016/j.scitotenv.2022.157163.

(3) **Prashant Hegde,** Boreddy, S. K. R., Aswini, A. R., and Aryasree, S., (2021) Influence of South Asian outflow on secondary organic aerosol formation over the Indian Ocean: Inferences from water-soluble low molecular weight dicarboxylic acids and related organic compounds during ICARB 2018 experiment, **Marine Chemistry,** https://doi.org/10.1016/j.marchem.2021.104071.

(4) Aswini, A.R., **Prashant Hegde,** Boreddy, S. K. R., and Nair, P.R. (2021) Chemical characteristics of aerosols from distinct environments over the Indian region: heterogeneity in distribution and sources of carbonaceous aerosols, **ACS Earth and Space Chemistry,** 248, 105216, https://doi.org/10.1021/acsearthspacechem.1c00241.

(5) Arun, B.S., M. M. Gogoi, A. Borgohain, **Prashant Hegde,** S. S. Kundu, S. Suresh Babu (2021) Role of sulphate and carbonaceous aerosols on the radiative effects of aerosols over a remote high-altitude site Lachung in the Eastern Himalayas, **Atmospheric Research,** 263 105799 https://doi.org/10.1016/j.atmosres.2021.105799.

(6) Boreddy, S. K. R., **Prashant Hegde,** and Aswini, A. R. Aryasree, S., (2021) Chemical characteristics, size distributions, molecular composition and Brown carbon in south Asian outflow to the Indian Ocean, **Earth and Space Science**. https://doi.org/10.1029/2020EA001615.

(7) Arun, B. S., M. M. Gogoi, **Prashant Hegde,** A. Borgohain, S. K. R. Boreddy, S. S. Kundu, and S. Suresh Babu (2021) Carbonaceous Aerosols over Lachung in the Eastern Himalayas: Primary Sources and Secondary Formation of Organic Aerosols in a Remote High-Altitude Environment, **ACS Earth and Space Chemistry,** https://doi.org/10.1021/acsearthspacechem.1c00190.

(8) Boreddy, S. K. R., **Prashant Hegde**, Aswini, A. R., Williams, M. A., Elavarasi, R., and Kumar T. V. L. (2021). Seasonal variations in characteristics, sources and diurnal patterns of carbonaceous and water-

soluble constituents in urban aerosols from the east coast of tropical India, **Environmental Chemistry**, https://doi.org/10.1071/EN21017.

(9) 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., **Prashant Hegde**, and Babu S.S., (2021). Long-term changes in aerosol radiative properties over Ny-Ålesund: Results from Indian scientific expeditions to the Arctic, **Polar Science,** doi: 10.1016/j.polar.2021.100700.

(10) Ezhilkumar, M. R., Karthikeyan, S., Aswini, A. R., and **Prashant Hegde** (2021) Seasonal and vertical characteristics of particulate and elemental concentrations along diverse street canyons in South India, **Environmental Science and Pollution Research**, https://doi.org/10.1007/s11356-021-15272-9.

(11) Boreddy, S. K. R., **Prashant Hegde**, Aswini, A. R. (2021) Chemical characteristics, size distributions, and aerosol liquid water in size-resolved coastal urban aerosols allied with distinct air masses over tropical peninsular India. **ACS Earth and Space Chemistry,** 5, 3, 457–473, https://doi.org/10.1021/acsearthspacechem.0c00282.

(12) Aswini, A.R., **Prashant Hegde** (2020) Impact assessment of continental and marine air-mass on size-resolved aerosol chemical composition over coastal atmosphere: Significant organic contribution in coarse mode fraction, **Atmospheric Research,** 248, 105216, https://doi.org/10.1016/j.atmosres.2020.105216

(13) Boreddy, S. K. R., **Prashant Hegde**, Aswini, A. R. (2020) Geochemical characteristics of trace elements in size-resolved coastal urban aerosols associated with distinct air masses over tropical peninsular India: size distributions and source apportionment. **Science of the Total Environment**, https://doi.org/10.1016/j.scitotenv.2020.142967

(14) Aryasree, S., Nair, P.R. and **Prashant Hegde** (2020) Radiative characteristics of near-surface aerosols at a tropical site: An estimation based on concurrent measurements of their physico-chemical characteristics. **Journal of Earth System Science,** 129, 185, https://doi.org/10.1007/s12040-020-01444-7.

(15) Boreddy, S. K. R., **Prashant Hegde**, Aswini, A. R., Girach, I. A, Koushik, N., and Nalini K. (2020) Impact of ice-free oases on particulate matter over the East Antarctic: inferences from the carbonaceous, water-soluble species and trace metals, **Polar Science,** 24, 100520, https://doi.org/10.1016/j.polar.2020.100520.

(16) Aswini, A. R., **Prashant Hegde**, Aryasree, S., Girach I. A. and Nair P. R. (2019) Continental outflow of anthropogenic aerosols over Arabian Sea and Indian Ocean during wintertime: ICARB-2018 campaign, **Science of the Total Environment**, https://doi.org/10.1016/j.scitotenv.2019.

(17) Arun, B. S, Aswini, A. R, Gogoi, M. M., **Prashant Hegde**, Kompalli, S. K., Sharma P., and S Suresh Babu (2019) Physico-chemical and optical properties of aerosols at a background site (~ 4 km a.s.l.) in the western Himalayas, **Atmospheric Environment**. doi.org/10.1016/j.atmosenv.2019.117017.

(18) **Prashant Hegde,** B, M, Vyas, A R Aswini, S Aryasree and P. R. Nair (2019) Carbonaceous aerosols over a semi-arid location in North West India: seasonal variations and source characteristics, **Journal of Arid Environments,** https://doi.org/10.1016/j.jaridenv.2019.104018.

(19) Aswini, A R, **Prashant Hegde**, P. R. Nair and S Aryasree (2018) Seasonal trends in carbonaceous aerosols over a tropical coastal location in response to meteorological processes, **Science of the Total Environment**, 656, 1261–1279, https://doi.org/10.1016/j.scitotenv.2018.11.366.

(20) Aswini, A.R., **Prashant Hegde**, and P. R. Nair, (2018) Carbonaceous and inorganic aerosols over a sub-urban site in peninsular India: Temporal variability and source characteristics **Atmospheric Research**, 199, 40-53. http://dx.doi.org/10.1016/j.atmosres.2017.09.005.

(21) **Prashant Hegde,** and Kawamura, K. (2017) Chemical constituents of carbon and nitrogen aerosols over Thumba region. **Archives of Environmental Contamination and Toxicology,** 73, 3, 456-473. doi: 10.1007/s00244-017-0426-5.

(22) Bindu G., P. R. Nair, S. Aryasree, **Prashant Hegde,** and S. Jacob, (2016) Pattern of aerosol mass loading and chemical composition over the atmospheric environment of an urban coastal station, **Journal of Atmospheric and Solar-Terrestrial Physics**, 121-135.

(23) **Prashant Hegde**, K. Kawamura, I. A. Girach and P. R. Nair, (2015) Characterisation of water- soluble organic aerosols at a site on the southwest coast of India, **Journal of Atmospheric Chemistry**, 73, 181-205.

(24) **Prashant Hegde**, K. Kawamura, H. Joshi and M. Naja, (2015) Organic and inorganic components of aerosols over the central Himalayas: Winter and summer variations in stable carbon and nitrogen isotopic composition, **Environmental Science and Pollution Research**, 23, 6102-6118.

(25) **Prashant Hegde,** and K. Kawamura (2012) Seasonal variations of water-soluble organic carbon, dicarboxylic acids, ketocarboxylic acids, and α-dicarbonyls in Central Himalayan aerosols. **Atmospheric Chemistry and Physics**, 12, 1–21, doi:10.5194/acp-12-1-2012.

(26) Girach, I. A., P. R. Nair, L. M. David, **Prashant Hegde**, M. K. Mishra, G. M. Kumar, S. M. Das, N. Ojha, and M. Naja (2011) The changes in near-surface ozone and precursors at two nearby tropical sites during annular solar eclipse of 15 January 2010, **Journal of Geophysical Research**, 117, D01303, doi:10.1029/2011JD016521.

(27) Kumar, R., M. Naja, S. K. Satheesh, N. Ojha, H. Joshi, T. Sarangi, P. Pant, U. C. Dumka, **Prashant Hegde**, and S. Venkataramani (2011) Influences of the springtime northern Indian biomass burning over the central Himalayas, **Journal of Geophysical Research**, 116, D19302, doi:10.1029/ 2010JD015509.

(28) Srivastava, A, K., P. Pant, **Prashant Hegde**, Sachchidanand Singh, U. C. Dumka, Manish Naja, Narendra Singh and Y. Bhavanikumar (2011) The influence of a south Asian dust storm on aerosol radiative forcing at a high-altitude station in central Himalayas, **International Journal of Remote Sensing**, 1-19, doi:10.1080/01431161.2010.531781.

(29) Srivastava, A K, K Ram, P Pant, **Prashant Hegde** and Hema Joshi (2011) Black carbon aerosols over Manora Peak in the Indian Himalayan foothills: implications for climate forcing, **Environmental Research Letters**, 1-8, 7014002, doi:10.1088/1748-9326/7/1/014002.

(30) Dumka, U. C, K. Krishna Moorthy, R, Kumar, **Prashant Hegde**, R, Sagar, P. Pant., N, Singh, and S, S, Babu, (2010) Characteristics of Aerosol Black Carbon Mass Concentration over a High Altitude location in the Central Himalayas from multi-year measurements **Atmospheric Research,** 96, 510–521.

(31) Srivastava, A K, P Pant, U. C. Dumka, and **Prashant Hegde** (2010) Black Carbon Aerosol Characteristics and Its Radiative Impact over Nainital: A High-Altitude Station in the Central Himalayas, **Journal of the Institute of Engineering**, 8, 3, 1-10.

(32) Ram, K., M. M. Sarin, and **Prashant Hegde** (2010) Long-term record of aerosol optical properties and chemical composition from a high-altitude site (Manora Peak) in Central Himalaya. **Atmospheric Chemistry and Physics,** 10, 11791-11803.

(33) **Prashant Hegde,** Pant, P. and Kumar, Y. B. (2009) An integrated analysis of lidar observations in association with optical properties of aerosols from a high altitude location in central Himalayas, **Atmospheric Science Letters**, 10, 48–57.