Curriculum Vitae

Dr. Naresh Krishna Vissa

Associate Professor
Department of Earth and Atmospheric Sciences,
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Education

- **PhD** (2009-2013) in Atmospheric Sciences, Indian Institute of Technology Kharagpur, India.
- **M.Sc.** (2006-2008) in Meteorology, Andhra University, India.
- **B.Sc.** (2002-2005) in Physics, Chemistry, and Mathematics, Jawahar Bharathi Degree College, Kavali, India.

Research Experience:

- **Associate Professor** at National Institute of Technology Rourkela, Odisha, India: March 29, 2023 – Present.
- **Assistant Professor** at National Institute of Technology Rourkela, Odisha, India: December 29, 2014 – March 29, 2023
- **Senior Research Associate** at Lancaster Environment Centre, Lancaster University, Lancaster, United Kingdom: March 2014 – December 2014
- **Post-doctoral fellow** at Centre for Water, Law, Policy and Science, University of Dundee, Dundee, Scotland, United Kingdom: March 2013 – February 2014.

Research Interests:

- Modelling of Ocean and atmospheric interactions
- Climate change and modelling of extremes
- Physical Oceanography
- Thermodynamics of Atmosphere over ABL and MBL
- Synoptic Meteorology
- Human induced seismicity

Sponsored Projects:

- Bay of Bengal mesoscale eddies role on rainfall, convection and winds: A multi-sensor study. PI: Dr. Naresh Krishna Vissa, Co-PI Prof. Prasad Kumar Bhaskaran (IIT Kharagpur), MoES, Govt. of. India. 2017-2020.
- Probing the changes in the frequency and intensity of short-duration extreme rainfall events over east coast of India. PI: Dr. Naresh Krishna Vissa , ECR, SERB, Govt. of. India, 2017-2020.
- Interaction of urban boundary layer with mesoscale weather in coastal and continental city environment. PI: Dr. Jagabandhu Panda and CO-PI: Dr. N. K. Vissa;

Sanctioned by SERB, Govt. of India.

- Understanding the factors influencing the initiation and developments of mesoscale convective weather systems over Southern east coast of India using three dimensional coupled numerical weather models and observation. PI: Dr. Bhishma Tyagi and CO-PI: Dr. N.K. Vissa, ISRO, Govt. of India.
- Aerosol-cloud interaction and response for extreme weather events over the Himalayan Region. PI: Dr. Bhishma Tyagi and CO-PI: Dr. N.K. Vissa, DST, SPLICE, Govt. of India.
- Crustal deformation study across Narmada-Son failed rift zone, central India. PI: Dr. Bhaskar Kundu and CO-PI: Dr. N.K. Vissa, MoES, Govt. of India.

Dissertation guidance

PhD Students: Awarded: 3, ongoing: 2

1) Mr Anandh PC (2022), thesis title "Rainfall Characteristics over the Indian Subcontinent and the Influence of the Madden Julian Oscillation"
2) Mr Gopinadh Konda (2022), thesis title "Assessment of Ocean-Atmosphere Interactions for the Indian Summer Monsoon Intraseasonal Oscillations in Cmip5 and Cmip6 Models"
3) Mr Venkata Sai Gulakaram (2023), thesis title "Role of mesoscale eddies on upper ocean and atmospheric convection in the Bay of Bengal"

M.Tech. students: 11 (Atmosphere and Ocean Sciences)
M.Sc. students: 18 (Atmospheric Sciences and Applied Geology)

List of publications (SCIE):

1) Mandal, M., Konda, G**., Krishna Vissa, N**., & Chowdary, J. S. (2023). Influence of boreal summer monsoon intraseasonal oscillations on the occurrences of Marine Heatwave events over the North Bay of Bengal. Climate Dynamics, 1-19.
2) Konda, G., Gulakaram, V. S., & **Vissa, N. K**. (2023). Intraseasonal variability of subsurface ocean temperature anomalies in the Indian Ocean during the summer monsoon season. ***Ocean Dynamics***, *73*(3-4), 165-179.
3) Gorja, M. M. K., Challa, V. S., Viswanadhapalli, Y., **Vissa, N. K.**, & Balasubramanian, V. (2023). Sensitivity of cloud microphysics on the simulation of heavy rainfall in WRF-a case study for the 7–10 August 2019 event over Kerala, India. ***Atmospheric Research***, 288, 106715.
4) Sengupta, A., **Vissa, N. K**., & Roy, I. (2023). Assessing the performance of satellite derived and reanalyses data in capturing seasonal changes in extreme precipitation scaling rates over the Indian subcontinent. ***Atmospheric Research***, 288, 106741.
5) Gorja, M. M. K., Gulakaram, V. S., **Vissa, N. K**., Viswanadhapalli, Y., & Tyagi, B. (2023). Analysis of Large-Scale Environmental Features during Maximum Intensity of Tropical

Cyclones Using Reanalysis Data. ***Atmosphere***, 14(2), 333.

6) Konda, G., & **Vissa, N. K**. (2023). Evaluation of CMIP6 models for simulations of surplus/deficit summer monsoon conditions over India. ***Climate Dynamics***, 60(3-4), 1023-1042.
7) Albert, J., Gulakaram, V. S., **Vissa, N. K**., Bhaskaran, P. K., & Dash, M. K. (2023). Recent Warming Trends in the Arabian Sea: Causative Factors and Physical Mechanisms. ***Climate***, 11(2), 35.
8) Gulakaram, V. S., **Vissa, N. K**., & Bhaskaran, P. K (2023). Mesoscale eddies with anomalous sea surface temperature and its relation with atmospheric convection over the North Indian Ocean. ***International Journal of Climatology***, 43(7), 3094-3113.
9) Anandh, P. C., & **Vissa, N. K**. (2023). Disentangling the statistical and synoptic characteristics of the sub-daily rainfall extremes over Indian sub-continent. ***Arabian Journal of Geosciences***, 16(1), 97.
10) Sengupta, A., **Vissa, N. K.**, & Roy, I. (2023). Seasonal variations in the dynamic andthermodynamic response of precipitation extremes in the Indian subcontinent. ***Climate Dynamics***, 61, 831–848.
11) Tyagi, B., **Vissa, N. K**., & Ghude, S. D. (2022). Evolution of Pollution Levels from COVID-19 Lockdown to Post-Lockdown over India. ***Toxics***, 10(11), 653.
12) Konda, G., & **Vissa, N. K.** (2022). Robustness of BSISO and air-sea interactions in the CMIP (Phase-6) models over the North Indian Ocean. ***Dynamics of Atmospheres and Oceans***, 99, 101316.
13) Sahu, R. K., Choudhury, G., **Vissa, N. K**., Tyagi, B., & Nayak, S. (2022). The Impact of El-Niño and La-Niña on the Pre-Monsoon Convective Systems over Eastern India. ***Atmosphere***, 13(8), 1261.
14) Sahu, R., Tyagi, B., **Vissa, N.K.**, & Mohapatra, M. (2022). Pre-monsoon thunderstorm season climatology of convective available potential energy (CAPE) and convective inhibition (CIN) over eastern India. ***Mausam***, 73(3), 565-586.
15) Anandh, P. C., & **Vissa, N. K.** (2022). Role of synoptic-scale circulations, mechanisms, and precursors during extreme rainfall events over the Southern Indian Peninsula. ***Meteorology and Atmospheric Physics***, 134(2), 1-16.
16) Lahiri, S. P., & **Vissa, N. K**. (2022). Assessment of Indian Ocean upwelling changes and its relationship with the Indian monsoon. ***Global and Planetary Change***, 208, 103729.
17) Kundu, B., Panda, D., **Vissa, N. K.,** & Tyagi, B. (2022). "Novel 2019 Coronavirus Outbreak" through the Eyes of GNSS Signal. ***Journal of the Geological Society of India***, 98(1), 83-87.
18) **Vissa, N. K.,** & Tyagi, B. (2021). Aerosol dipole pattern over India: consequences on rainfall and relation with wind circulations. ***Acta Geophysica***, 69(6), 2475-2482.
19) Nellipudi, N. R., Viswanadhapalli, Y., Challa, V. S., **Vissa, N. K**., & Langodan, S. (2021). Impact of surface roughness parameterizations on tropical cyclone simulations over the Bay of Bengal using WRF-OML model. ***Atmospheric Research***, 262, 105779.
20) **Vissa, N. K.,** Anandh, P. C., Gulakaram, V. S., & Konda, G. (2021). Role and response of

ocean–atmosphere interactions during Amphan (2020) super cyclone. ***Acta Geophysica***, 69(5), 1997-2010.

21) Tiwari, D. K., Jha, B., Kundu, B., Gahalaut, V. K., & **Vissa, N. K.** (2021). Groundwater extraction-induced seismicity around Delhi region, India. ***Scientific reports***, 11(1), 1-14.
22) Kumari, K.V., Yesubabu, V., Dasari, H., Langodan, S., **Vissa, N.K.,** Reddy, S., Rao, V.B. (2021), Impact of assimilation of SCATSAT-1 data on coupled ocean-atmospheric simulations of tropical cyclones over Bay of Bengal. ***Atmospheric Research***, https://doi.org/10.1016/j.atmosres.2021.105733.
23) Konda, G., & **Vissa, N. K**. (2021). Assessment of Ocean-Atmosphere Interactions for the Boreal Summer Intraseasonal Oscillations in CMIP5 Models over the Indian Monsoon Region. ***Asia-Pacific Journal of Atmospheric Sciences***, 1-23.
24) Tyagi, B., Choudhury, G., **Vissa, N. K**., Singh, J., & Tesche, M. (2021). Changing air pollution scenario during COVID-19: Redefining the hotspot regions over India. ***Environmental Pollution***, *271*, 116354.
25) Gulakaram, V. S., **Vissa, N. K.,** & Bhaskaran, P. K. (2020). Characteristics and vertical structure of Oceanic mesoscale eddies in the Bay of Bengal. ***Dynamics of Atmospheres and Oceans*,** 101131.
26) Anandh, P. C., & **Vissa, N. K.** (2020). On the linkage between extreme rainfall and the Madden–Julian Oscillation over the Indian region. ***Meteorological Applications*,** *27*(2), e1901.
27) Panda, D., Kundu, B., Gahalaut, V.K., Bürgmann, R., Jha, B., Asaithambi, R., Yadav, R.K., **Vissa, N.K**. and Bansal, A.K. (2020). Reply to "A warning against over-interpretation of seasonal signals measured by the Global Navigation Satellite System". ***Nature Communications***, *11*(1), pp.1-2.
28) Sahu, R. K., Dadich, J., Tyagi, B., **Vissa, N. K**., & Singh, J. (2020). Evaluating the impact of climate change in threshold values of thermodynamic indices during pre-monsoon thunderstorm season over Eastern India. ***Natural Hazards***, 1-29.
29) Sahu, R. K., Dadich, J., Tyagi, B., & **Vissa, N. K**. (2020). Trends of thermodynamic indices thresholds over two tropical stations of north-east India during pre-monsoon thunderstorms. ***Journal of Atmospheric and Solar-Terrestrial Physics***, 211, 105472.
30) Samanta, S., Tyagi, B., **Vissa, N. K**., & Sahu, R. K. (2020). A new thermodynamic index for thunderstorm detection based on cloud base height and equivalent potential temperature. ***Journal of Atmospheric and Solar-Terrestrial Physics***, *207*, 105367.
31) Yesubabu, V., Kattamanchi, V. K., **Vissa, N. K**., Dasari, H. P., & Sarangam, V. B. R. (2020). Impact of ocean mixed-layer depth initialization on the simulation of tropical cyclones over the Bay of Bengal using the WRF-ARW model. ***Meteorological Applications***, *27*(1), e1862.
32) Choudhury, G., Tyagi, B., **Vissa, N. K**., Singh, J., Sarangi, C., Tripathi, S. N., & Tesche, M. (2020). Aerosol-induced high precipitation events near the Himalayan foothills. ***Atmospheric Chemistry and Physics Discussions***, 1-17.

33) **Vissa, N. K.,** Anandh, P. C., Behera, M. M., & Mishra, S. (2019). ENSO-induced groundwater changes in India derived from GRACE and GLDAS. ***Journal of Earth System Science***, 128(5), 115.
34) Kundu, B., **Vissa, N. K**., Gahalaut, K., Gahalaut, V. K., Panda, D., & Malik, K. (2019). Influence of anthropogenic groundwater pumping on the 2017 November 12 M 7.3 Iran–Iraq border earthquake. ***Geophysical Journal International,*** *218*(2), 833-839.
35) Konda, G., & **Vissa, N. K**. (2019). Intraseasonal Convection and Air–Sea Fluxes Over the Indian Monsoon Region Revealed from the Bimodal ISO Index. ***Pure and Applied Geophysics***, 1-16.
36) Panda, D., Kundu, B., Gahalaut, V.K., Bürgmann, R., Jha, B., Asaithambi, R., Yadav, R.K., **Vissa, N.K**. and Bansal, A.K., 2018. Seasonal modulation of deep slow-slip and earthquakes on the Main Himalayan Thrust. ***Nature communications***, *9*(1), p.4140.
37) Anandh, P. C., **Vissa, N. K**., & Broderick, C. (2018). Role of MJO in modulating rainfall characteristics observed over India in all seasons utilizing TRMM. ***International Journal of Climatology***, *38*(5), 2352-2373.
38) Gulakaram, V. S**., Vissa, N. K**., & Bhaskaran, P. K. (2018). Role of mesoscale eddies on atmospheric convection during summer monsoon season over the Bay of Bengal: A case study. ***Journal of Ocean Engineering and Science***, *3*(4), 343-354.
39) Kundu, B., **Vissa, N. K**., Panda, D., Jha, B., Asaithambi, R., Tyagi, B., & Mukherjee, S. (2017). Influence of a meteorological cycle in mid-crustal seismicity of the Nepal Himalaya. ***Journal of Asian Earth Sciences***, *146*, 317-325.
40) Kundu, B., **Vissa, N. K**., & Gahalaut, V. K. (2015). Influence of anthropogenic groundwater unloading in Indo-Gangetic plains on the 25 April 2015 Mw 7.8 Gorkha, Nepal earthquake. ***Geophysical Research Letters***, *42*(24).
41) **Vissa, N. K**., Satyanarayana, A. N. V., & Kumar, B. P. (2013). Impact of South China Sea cold surges and PEIPAH typhoon in initiating Sidr cyclone in the Bay of Bengal. **Pure and Applied Geophysics**, 170(12), 2369-2381.
42) **Vissa, N. K**., Satyanarayana, A. N. V., & Prasad Kumar, B. (2013). Comparison of mixed layer depth and barrier layer thickness for the Indian Ocean using two different climatologies. **International Journal of Climatology**, 33(13), 2855-2870.
43) **Vissa, N. K.,** Satyanarayana, A. N. V., & Kumar, B. P. (2013). Intensity of tropical cyclones during pre-and post-monsoon seasons in relation to accumulated tropical cyclone heat potential over Bay of Bengal. **Natural hazards**, 68(2), 351-371
44) Tyagi, B., Satyanarayana, A. N. V., & **Vissa, N. K**. (2013). Thermodynamical structure of atmosphere during pre-monsoon thunderstorm season over Kharagpur as revealed by STORM data. **Pure and Applied Geophysics**, 170(4), 675-687.
45) **Vissa, N. K**., Satyanarayana, A. N. V., & Prasad Kumar, B. (2013). Response of oceanic cyclogenesis metrics for NARGIS cyclone: a case study. **Atmospheric Science Letters**, 14(1), 7-13.
46) **Vissa, N. K**., Satyanarayana, A. N. V., & Kumar, B. P. (2013). Response of upper ocean and impact of barrier layer on Sidr cyclone induced sea surface cooling. **Ocean Science**

Journal, 48(3), 279-288.

47) **Vissa, N. K**., Satyanarayana, A. N. V., & Prasad Kumar, B. (2012). Response of Upper Ocean during passage of< i> MALA cyclone utilizing ARGO data. **International Journal of Applied Earth Observation and Geoinformation**, 14(1), 149-159.

48) Tyagi, B., **Krishna, V. N**., & Satyanarayana, A. N. V. (2011). Study of thermodynamic indices in forecasting pre-monsoon thunderstorms over Kolkata during STORM pilot phase 2006–2008. **Natural hazards**, 56(3), 681-698.

Books/Book Chapters

1) Singh K., J. Panda, K. K. Osuri and **N. K. Vissa**, "Progress in tropical cyclone predictability and present status in the North Indian Ocean region", Recent hurricane research II: dynamics, prediction, and detection, ISBN 978-953-51-4702-2, 24pp, 2016.

2) Vaze, M., & **Vissa, N. K.** (2022). Impact of Tropical Cyclones on the Ocean Surface Waves Over the Bay of Bengal. In Wave Dynamics (pp. 17-30), WORLD SCIENTIFIC, Doi:10.1142/9789811245367_0002.

3) Anandh, P. C., **Vissa, N. K.**, & Tyagi, B. (2022). Statistical Characteristics of Extreme Rainfall Events Over the Indian Subcontinent. In Extreme Natural Events: Sustainable Solutions for Developing Countries (pp. 109-127). Singapore: Springer Nature Singapore.

4) Tyagi, B., Sahu, R. K., Hari, M., & **Vissa, N. K**. (2022). Thermodynamic Changes in the Atmosphere Associated with Pre-monsoon Thunderstorms Over Eastern and North-Eastern India. *Extreme Natural Events: Sustainable Solutions for Developing Countries*, 165-197.

Papers presented in National and International conferences: 19

Teaching at NIT Rourkela

- ER201 : Physics of Atmosphere {Theory}
- ER528 : Introduction to Atmosphere and Ocean Science {Theory}
- ER5405 : Physics of Ocean {Theory}
- ER5506 : Dynamics of Ocean {Theory}
- ER5542 : Introduction to Atmosphere and Ocean Science {Theory}
- ER6015 : Physical and dynamical Oceanography {Theory}
- ER6016 : Modelling of Oceanic Processes {Theory}
- ER6021 : Introduction to Climate Science {Theory}
- ER562 : Modeling and Simulation Laboratory {Practical}
- ER565 : Data Analysis Laboratory {Practical}
- ER566 : Graphical Package Laboratory {Practical}
- ER5671 : MATLAB Programming Laboratory {Practical}
- ER5672 : Data analyses and Visualization Laboratory {Practical}
- ER6073 : Programming Laboratory {Practical}

Administration:

- SAC, Games and sports vice-president (2017-2020)
- CENTRALIZED COUNSELLING FOR M. SC./M. SC. (TECH.) ADMISSION, LOC member (2015-2019)
- IIRS outreach institute coordinator (2016-2020)

Awards and Scholarships

CSIR (NET), **Junior Research Fellow**, 2007

CSIR, **Senior Research Fellow**, 2010, Indian Institute of Technology Kharagpur

References

1) **Prof. Prasad Kumar Bhaskaran**
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   Department of Ocean Engg. & Naval Architecture
   Indian Institute of Technology, Kharagpur
   Kharagpur - 721 302, West Bengal, India
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