RESEARCH SCIENTIST
Professional Summary

1128 Ocala Road, Apt # i4

Core Qualifications

Experience
Research Scientist
August 2008 to Current Beaumont Hospitals

- Ocean & Atmospheric Sciences, Florida State University with Prof.
- T.
- N.
- Krishnamurti.

Research Associate
January 2007 to July 2008 Engine Group i¼ Sterling Heights
Teacher
January 1999 to January 2000 Res-Care, Inc.

- Downscaling techniques, Multimodels and Statistical methods Liner regression method used to downscale the coarse resolution climate models against fine resolution rainfall datasets from rain gauges.
- Various methods least-square minimization (e.g.
- superensemble method), Best Linear Unbiased Estimator (BLUE), Principal Component Regression (PCR) and Singular Value Decomposition (SVD) were used to show the rainfall forecast from multimodel methods.
- These forecasts are verified for their accuracy by RMSE, Correlations, Bias, Equitable Threat Scores (ETS), RPSS, ROC curves, Brier Skill Scores, Hidke Skill Scores.
- Numerical modeling studies on monsoonal heat and Arctic ice melt WRF Global model simulation is executed 25km to simulate the three flood events over South Asian region.
- The moist static energy (gz + CpT + Lq) released from monsoonal rainfall over South Asian regions generates a monsoonal wave train which reach to Arctic sea ice region within 6-7 days.
- Climate modeling, Climate Change CMIP5 simulations are used to simulate the rainfall and variability temperature variability over Greater Horn of Africa.
- Monsoon dynamics and variability In the context of monsoon dynamics; monsoon onset, monsoonal isochrones, active-break cycle and withdrawal of the South Asian summer monsoon is investigated.
- The variability of rainfall over South Asian region arise from a complex interaction between large scale, mesoscale and small scale processes.
- Atmospheric models, WRF model and Coupled Climate models are used to research on these issues.

Bickford Senior Living

- Conduct a large number of numerical simulations using WRF, Global WRF, WRFDA, WRF-CHEM, FSU-Coupled models, FSU Spectral model and COLA-Spectral Model T30 in my research work.
- Data Processing and Scientific Visualization Packages I have analyzed large volumes of atmospheric, satellite observations and reanalysis of various data-products.
- I have worked with different meteorological packages and visualization tools such as GrADS, Ferret, Matlab, NCL, IDL, CPT and Python.
- Data Formats and Data Extraction I am proficient in working with Reanalysis, Radar, and Orbital datasets with formats e.g.
- self-describing files (GRIB1 and 2, HDF4 and 5, NetCDF3 and 4).

Accomplishments

- TRMM 3B43 rainrate data sets within a suite of coupled atmosphere ocean models for seasonal monsoon forecast.
- PMM science team meeting.
- Vinay Kumar and T.
- N.
- Krishnamurti, 2011: Prediction of south Asian monsoon rainfall using superensemble multimodel scheme.
- WCRP OSC, Climate Research in Service to Society, 24-28 October 2011, Denver, CO, USA.
- http://conference2011.wcrp-climate.org/abstracts/C25/Kumar_C25_W73A.pdf, Session: C25, Poster: W73A.
- Krishnamurti T.
- N., Vinay Kumar, Akhilesh Mishra1, Anu Simon1 and Akiyo Yatagai, 2010: Seasonal Climate forecasts with the FSU Multimodel Superensemble including a downscaling component for the Japan region.
- Presented at Makuhari, Japan.
- Krishnamurti, T.
- N., Viany Kumar, S.-H.
- Chen and S.-C.
- Lin, 2010: Seasonal*climate*forecasts*with*the*FSU*Multimodel*Superensemble including downscaling

component*for*the*TAIWAN*region.

- Sept 2010, National Taiwan University of Science and Technology, Taiwan.
- Krishnamurti, T.
- N., and Viany Kumar, 2010: Seasonal*climate*forecasts*with*the*FSU*Multimodel*Superensemble including downscaling component*for*the*Japan*region.
- Jul 2010, Japan Geoscience Union Meeting 2010 ,May 23-28 at Makuhari, Chiba, Japan.
- Workshops and Trainings WRF tutorial on "WRF-CHEM and WRF-DA workshop" at UCAR Boulder (Colorado), July 27 - Aug 7 2015.
- Completion of a "Comprehensive Training in Atmospheric Science" at the Indian Institute of Tropical Meteorology, Pune, 7th Aug - 22nd Nov 2006.
- Attended workshop on "Data assimilation and methods for Numerical Weather Prediction" held in Indian Institute of Science, Bangalore 2-5 Feb 2005.
- Participated in INDO-US WORKSHOP: "Workshop on Weather and Climate Modeling" conducted by NCMRWF, New Delhi, 7-9 Feb 2002.

Education
Ph.D Pune University India
M.Tech : Atmospheric Physics Pune University India Atmospheric Physics
M.Sc : Physics IIT ï¼ City , India Physics
B.Sc Rohilkhand University India
Certifications
Integrating Meteorological and Various Automated Sensors' (Satellite, Airborne, Terrestrial) Data to Optimize Water Resources - County as a Model Study Site. I am a Co-PI in this project (project is submitted to NSF for review). NSF STTR Proposal: Utilizing Geospatial, Weather, and Hydrological Models to Simulate Rain Harvesting for Geoengineered Hills - Study Sites: Waialeale, Lloro, Cropp Waterfall, Mt. Cameroon and Mawsynram. I am a Co-PI in this project (project is submitted to NSF for review). World Bank Project: Capacity Assessment and Modernization Plan of National Meteorological and Hydrological Services and Early Warning Systems in Honduras and Nicaragua. I am the Project Manager in this project (project is submitted to NSF for review). October 1, 2012-September 30, 2016, Project No. MM/SERP/FSU-USA/2013/INT-8-273 002, Sensitivity Studies for Indian Summer Monsoon Forecast Modeling. October 1 2012-September 30 2015, AGS-1241292. Impact of Enhanced Cloud Condensation Nuclei (CCN) on the Organization of Convection for Monsoon Depressions. January 1 2012-May 31 2015, NOAA Award NA12NWS4680006, Further Reduction in Intensity Forecast Errors for Hurricane by Extension of the Correlation Based Consensus (CBC) Method. Apr 1 2011 - March 31 2013, AGS-1047282. Predicting Major Dry Spells of the Monsoon a Week to Ten Days in Advance. March 1 2007 - February 28 2012, ATM-0636157. Diverse PBL Algorithms within Multimodels and the Design of Boundary Layer Modeling for Improved Forecasts. January 1 2005 - December 31 2011, ATM-0419618. Weather and Climate Superensemble Forecasts from Multimodels.
Interests
Research Scientist Department of Earth, Ocean & Atmospheric Sciences Florida State University Tallahassee, Fl, 32306, USA
Publications
Peer-Reviewed Journals Mesoscale modeling for the rapid movement of monsoonal isochrones. Vinay Kumar and Krishnamurti, 2015, accepted in Atmospheric Science Letters. A Pathway Connecting the Monsoonal Heating to the Rapid Arctic Ice Melt. T. N. Krishnamurti, Ruby Krishnamurti, Sweta Das, Vinay Kumar, A. Jayakumar, and A. Simon, 2015: J. Atmos. Sci., 72, 5-34. A mechanism of the MJO - T. N. Krishnamurti, R. Krishnamurti, Anu Simon, Aype Thomas and Vinay Kumar. 2015, accepted for publication in Special Issue of Yanai AMS Monograph. Onset, Variability and its Impacts on Society and Economy. Deepa, R., and Vinay Kumar, Horizons in Earth Science Research, volume 14, Benjamin Veress and Jozsi Szigethy (eds.), Nova science publishesrs, 2015, pp-272. Use of APHRODITE rain-gauge based precipitation and TRMM3B43 products for improving Asian monsoon seasonal precipitation forecasts by superensemble method. A. Yatagai, T. N. Krishnamurti, Vinay Kumar, A. Mishra, and A. Simon, 2014. J. Climate, 27, 1062-1069. Prediction of rainfall using downscaling and multimodel superensemble over Tropical South America. B. Johnson, Vinay Kumar and T. N. Krishnamurti, 2014, Clim. Dyn., 43, 7-8, 1731-1752. Lead time for medium range prediction of the dry spell of monsoon using multi-models. Jayakumar, Vinay Kumar and T. N. Krishnamurti, 2013, J. Earth Syst. Sci., 122, No. 4, 991-1004. Impacts of enhanced CCN on the organization of convection and recent reduced counts of Monsoon Depressions. T. N. Krishnamurti, A. Martin, R. Krishnamurti, A. Simon, A. Thomas and Vinay Kumar. 2013, Clim. Dyn., 41, 117-134. Improved seasonal precipitation forecasts for the Asian Monsoon using a large suite of Atmosphere Ocean coupled models: Anomaly. T. N. Krishnamurti, and Vinay Kumar, 2012, J. Clim., 25, 65-88. Improved seasonal precipitation forecasts for the Asian Monsoon using a large suite of Atmosphere Ocean coupled models: Climatology. Vinay Kumar and T. N. Krishnamurti, 2012. J. Clim., 25, 39-64. Tagging systematic errors arising from different components of the dynamics and physics in forecast models. Krishnamurti, T. N., and Vinay Kumar, 2011, Factor Separation in the Atmosphere, Pinhas Alpert and Tatiana Sholokhman (eds.), Cambridge University Press, pp-272. The crucial role of ocean-atmosphere coupling on the Indian monsoon anomalous response during dipole events. R. Krishnan, S. Sundaram, Vinay Kumar, P. Swapna, D.C. Ayantika and M. Mujumdar, 2011, Clim. Dyn., 37, 1-17. The long-lived monsoon depressions of 2006 and their linkage with the Indian Ocean Dipole. R. Krishnan, D.C. Ayantika, Vinay Kumar and S. Pokhrel, 2011, Int. J. of Clim., 30, 1334-1352. Desert Air Incursions, an Overlooked Aspect, for the Dry Spells of the Indian Summer Monsoon. Krishnamurti, T. N., A. Thomas, Anu Simon, Vinay Kumar, 2010, J. Atmos. Sci., 67, 3423-3441. Internal Feedbacks from Monsoon-Midlatitude Interactions during Droughts in the Indian Summer Monsoon. R. Krishnan, Vinay Kumar, M. Sugi, J. Yoshimura, 2009, J. Atmos. Sci., 66, 553-578. The Indian summer monsoon drought of 2002 and its linkage with tropical convective activity over northwest Pacific. M. Mujumdar, Vinay Kumar and R. Krishnan, 2007, Clim. Dyn., 28, 743-758. On the association between the Indian summer monsoon and the tropical cyclone activity over Northwest Pacific. Vinay Kumar and R. Krishnan, Current Science, Vol -88, No-4, 2005, 602-612. The association of surface wind stresses over Indian Ocean and Monsoon rainfall. J. R. Kulkarni, Vinay Kumar, V. Satyan, 2002, Met. and Atmos. Phy., 79, 3-4, 231-242. My experience in team has shaped my belief that a shared vision, effective coordination and true empowerment are those that make the 'whole' greater than the sum of its parts) Publications (Under review/preparation) in

Peer-Reviewed Journals Numerical simulations of a monsoonal link to the rapid Arctic ice melt. T. N. Krishnamurti and Vinay Kumar, 2015, under review in Journal of Atmospheric Sciences. A review of the multimodel superensemble forecast for NWP, Seasonal Climate and Hurricanes. T. N. Krishnamurti, Vinay Kumar, A. Simon, A. Bhardwaj, and T. Ghosh. A review paper for Review of Geophysics. Improving Multimodel Medium Range Forecasts over the Greater Horn of Africa Using the FSU Superensemble. O. Kipkogei, A. Bhardwaj, Vinay Kumar, L. A. Ogallo, F. J. Opijah, J. N. Mutemi and T. N. Krishnamurti, 2015, under review in Meteorology and Atmospheric Physics. Precipitation Data Archives for Assessing Climate Change Impacts and Adaptation. Akiyo Yatagai, Vinay Kumar and T. N. Krishnamurti. An ICCAP book chapter in Climate Change Impacts on Basin Agro-ecosystems" (provisional) to be proposed for Springer Hexagon Series. Analysis of the emission of greenhouse gases and rainfall in relation with crop production over north-western India. S. Bist, V. Soni, Vinay Kumar, A. Bhardwaj, S. Jana, S. Sahu and R. Bhatia, 2015, under review in Atmospheric Environment. March of buoyancy elements during extreme rainfall over India. T. N. Krishnamurti, Vinay Kumar, A. Simon, A. Thomas, A. Bhardwaj and Sweta Das, submitted to Journal of Hydrometeorology. On skills of some multimodel ensemble schemes for rainfall forecast over Indian region. Vinay Kumar, T. Ghosh, T. N. Krishnamurti, submitted to Theoretical and Applied Climatology. Marine stratocumulus stream and heavy orographic rainfall. T. N. Krishnamurti, Vinay Kumar, A. Simon, A. Thomas, Ruby Krishnamurti, A. Jayakumar and A. Bhardwaj, 2015: under review in Geophy. Res. Lett. Oceanic heat content and intra-seasonal oscillation of Indian summer monsoon. T. N. Krishnamurti, S. Jana, Vinay Kumar, R. Krishnamurti, and M. Ali, 2015, submitted to to Geophy. Res. Lett. Seasonal climate variability over Greater Horn of Africa from climate coupled models and multimodels methods. Vinay Kumar, T. N. Krishnamurti, and L. A. Ogallo, 2015, under preparation for Int. J. of Clim. Slow seepage of monsoonal heat. T. N. Krishnamurti, S. Dubey, and Vinay Kumar, 2015, under preparation for Journal of Atmospheric Sciences. Use of TRMM and DYNAMO datasets for addressing the mechanism of the MJO. T. N. Krishnamurti, Vinay Kumar, S. Dubey and D. Linoj, 2015, under preparation for Journal of Atmospheric Sciences. Research Reports and Proceedings paper Impacts of enhanced CCN on the organization of convection and recent reduced counts of monsoon depressions"-T. N. Krishnamurti, Andrew Martin, Ruby Krishnamurti, Anu Simon, Aype Thomas, Vinay Kumar, Published in Proceedings Volume 8529: Remote Sensing and Modeling of the Atmosphere, Oceans, and Interactions IV, November 2012. Downscaled multi-model superensemble and probabilistic forecasts of seasonal rains over the Asian monsoon belt" - T. N. Krishnamurti, Vinay Kumar, Published in Proceedings Volume 7856: Remote Sensing and Modeling of the Atmosphere, Oceans, and Interactions III, November 2010. Model studies of Indian summer monsoon drought of 2002: Influence of tropical convective activity over northwest Pacific" - Vinay Kumar, R. Krishnan and Milind Mujumdar, IITM Research Report No - 110, 2006. The Indian summer monsoon drought of 2002 and its linkage with tropical convective activity over northwest Pacific" - Milind Mujumdar, Vinay Kumar and R. Krishnan, presented and published in proceeding of TROPMET 2006, 21-23 Nov 2006, IITM, Pune. Experimental dynamical seasonal forecasting of summer monsoon 2005" -R. Krishnan, A.K. Sahai, J.R. Kulkarni, S. Mandke, M. Mujumdar, Mahesh Shinde, S.P.Gharge, Vinay Kumar, Basant Samal, Suchitra Sundaram, Rajeeb Chaterjee, Sushmita Joseph and P. Swapna, performed for the monsoon seasonal prediction & published in IMS Leeward side letter, Pune, 2005. Statistical and Dynamical Prediction of Summer Monsoon 2003" - A. K. Sahai, S. Mandke, R. Krishnan, Vinay Kumar, M. Mujumdar, J. R. Kulkarni and S. P. Gharge, presented to India Meteorological Society Bulletin, Pune (India) on 29th Jan 2004. Indian Monsoon Drought of 2002: Diagnostic Analysis and GCM Simulations" - Vinay Kumar, R. Krishnan & M. Mujumdar, presented in SIVOM (Scale Interaction Variability of Monsoon) Conference and published in SIVOM's proceedings, Munnar[India], 6-10 Oct 2003. Monsoon-2003 Prediction using AGCMs" - R. Krishnan, Vinay Kumar and M. Mujumdar, published in India Meteorological Society Bulletin, Pune (India), 2003. Diagnostic Study and prediction of Summer Monsoon-2002using AGCMs"- J. R. Kulkarni, M. Mujumdar, S. Mandke, R. Krishnan, Vinay Kumar, Presented in TROPMET-2002 (Bhubneshwar), 12-14 Feb 2002. Simulation of wind stresses by AGCM for driving an Ocean Model"- J. R. Kulkarni, Vinay Kumar, M. Mujumdar and V. Satyan, Presented and published in Tropmet 2001 (Mumbai) for Meteorology for Sustainable Development proceedings. Monsoon-2001 Prediction using AGCMs"- J. R. Kulkarni, M. Mujumdar, S. Mandake, R. Krishnan, V. Satyan, S. P. Gharge, Varada Vaidya, Vinay Kumar, K. V. Ramesh, published in India Meteorological Society Bulletin, Pune, 2001. Professional Affiliations and Services Reviewer for Nature Climate Change, Journal of Climate, PLOS ONE, Climate Dynamics, JGR-Atmosphere, GRL, Journal of Hydrology, Journal of Atmospheric and Oceanic Technology, Journal of Applied Meteorology and Climatology, Weather and Forecasting and many more. Editorial team of the Journal "Environment and Natural Resources Research" http://www.ccsenet.org/journal/index.php/enrr/about/editorialTeamBio/37091 Member of Indian Meteorological Society (IMS). Presentations/Posters in Conferences Vinay Kumar and T. N. Krishnamurti, 2015: Monsoonal heating: A potential corridor for the rapid Arctic Ice melt. At 3rd annual FSU postdoctoral Symposium, Florida State University. Krishnamurti, T. N., V. Kumar, A. Simon, A. Thomas, A. Bhardwaj, and S. Das, 2015: March of Buoyancy Elements during Extreme Monsoon Rainfall. AMS Meeting, Thursday, 8 January 2015: 8:30 AM, 125AB (Phoenix Convention Center - West and North Buildings, Arizona). Krishnamurti, T. N., V. Kumar, S. Dubey, and R. Deepa, 2015: An Atmospheric Energy Conserving and a Vorticity Conserving Nonlinear Triad. A lecture for students and scientist at department of Earth, Ocean and Atmospheric Science. Krishnamurti, T. N., V. Kumar, S. Dubey, A. Bhardwaj, R. Deepa and R. H. Johnson, 2015: Use of TRMM and DYNAMO data sets for addressing a mechanism of the MJO. NASA/PMM working group meeting, Baltimore 13-17 July 2015. Akiyo Yatagai, T. N. Krishnamurti and V. Kumar, 2015: Use of APHRODITE Rain Gauge-Based Precipitation for Improving Middle East Seasonal Precipitation Forecasts by the Superensemble Method. AMS Meeting, Wednesday, 7 January 2015: 8:30 AM, 125AB, poster number 917 (Phoenix Convention Center - West and North Buildings). Krishnamurti, T. N., A. Bhardwaj, Vinay Kumar, R. S. Ross, K. M. Chaney, J. Bielli and S. Dubey, 2015: Study of Hurricane angular momentum of September 2014 using data assimilation and prediction experiments using a cloud-resolving model. May 5 - May 7, 2015 HS3 Science Team Meeting, NASA Ames Research Park, Building 152 Conference Center, Mountain View, CA. Vinay Kumar and T. N. Krishnamurti, 2014: Mesoscale modeling of the rapid movement of monsoonal isochrones. Presentation at NCMRWF New Delhi on 23 December as a part of Monsoon Mission project. Krishnamurti, T. N., A. Simon, A. Thomas, V. Kumar, A. Bhardwaj, and S. Das, Soma Senroy and S. K. Roy Bhowmik, 2014: Modeling and remote sending of extreme rain event near Himalays. SPIE: Oct 16 2014; Remote Sensing/Modeling II, Hong Kong, China. Krishnamurti, T. N., A. Simon, A. Thomas, and V. Kumar, 2014: An extreme monsoon rain event and the history of Buoyancy fields. Takio Murakami Memorial Symposium on Tropical Meteorology and Monsoon. July 2-3, 2014, Asia room, East West Center, Honolulu, HI. Vinay Kumar, 2013: Prediction of seasonal rainfall using multimodel ensemble schemes. Thirty third greater horn of Africa climate outlook forum (GHACOF 33): 18-20 February 2013, Bujumbura, Burundi. Krishnamurti, T. N., and Viany Kumar, 2013: African Institutions, personnel and Scientific Research on Weather and Climate. Presented at Ministry of Earth Science, New Delhi. Krishnamurti, T. N., A. Simon, A. Thomas, R. Krishnamurti, Vinay Kumar, J. Kumar and A. Bhardwaj, 2013: Stratocumulus, Towering Cumulus during Undisturbed Weather and Heavy Orographic Rains with possible Geo-Engineering Applications. Jan 21. https://www.icts.res.in/discussion_meeting/talks_tab/13/ Krishnamurti, T. N., and Vinay Kumar, 2013: Ensemble forecasts, determinis and

probabilistic metrics. At indian Institute of Science Bangalore, India. Krishnamurti, T. N., A. Simon, Vinay Kumar, and A. Thomas, 2012: Monsoon modeling on several time scales covering onset, dryspelles, depressions, droughts/heavy rains on seasonal time scales and high impact weather. TROPMET-212, Indian Meteorological Society, Deharadun Chapter, India. Krishnamurti, T. N., and Vinay Kumar, 2012: Ensemble based seasonal forecasts of rains for Kenya using a suite of Coupled Atmosphere Ocean models. Presented at ICPAC and University of Nairobi. Krishnamurti, T. N., and Vinay Kumar, 2012: Multimodel ensemble forecasts for Weather, seasonal climate and hurricanes. Seminar presented at NRL Monterey Jun 22. Krishnamurti, T. N., A. K. Mishra, Vinay Kumar and A. Yatagai, 2011. Use of

Additional Information

- VInAY KUMAR Research Scientist Department of Earth, Ocean & Atmospheric Sciences Florida State University Tallahassee, Fl, 32306, USA
- 11 Vinay Kumar's CV

Skills

ATM, CPT, Data Processing, Matlab, Radar, Modeling, NSF, pathway, PCR, processes, Proposal, Python, Research, Scientific, simulation