

Dr. Leonard J. Pietrafesa (PhD)

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Areas of Interest: Observations of and Numerical Modeling of Atmospheric, Oceanic, Estuary, Land and Hydraulic Inter-Actively Coupled Systems; Relationships between Climate and Weather Coupled Systems; Wind-Wave-Current Coupled Interactions; Precipitation and River Discharge; Climate Conditions and Weather Events; Climate, Weather and Human Health; Science and Public Policy; Developing Non-Linear, Non-Stationary Data Adaptive Data Decomposition Methodologies for Analyses; Sea Level Variability and Rise; Physical Weather and Climate Factors Affecting Biotic Systems, especially fish distributions; Sunspot Variability; Western Boundary Current Dynamics; Mid-Latitude Atmospheric Storm Formations; Oceanic Heat and Climate; Tropical Cyclone Frequencies of Occurrence and Intensification; Building the Essential Integrated Ocean-Atmospheric Observing System; Assessing Renewable Energy in Coastal Zones via Observations and Modeling; Creating a Renewable Energy Forecast System; Diversifying Student Under-Graduate and Graduate Programs; Building Industry-Government-Academia Enterprise Partnerships.

Education: 1965, BS, Fairfield University (Fairfield, CT) Physics & Mathematics; 1967 MS, Boston College/University of Chicago (Boston, MA/ Chicago, IL) Geophysical Fluid Dynamics (MS awarded from BC with concurrence from UC); 1973, PhD, University of Washington (Seattle, WA) Geophysical Fluid Dynamics-Physics. Dissertation: Baroclinic Circulation and Air-Sea Interaction on a Continental Margin.

Industry Employment: 1965-1968: Weston Geophysical Engineers and Weston Geophysical Research, Boston, MA; and Ktech Corp. 2009-2011.

Industry Consultant: 1975-2008, Environmental Research & Technology, Science Applications Inc, JAYCOR, Information Systems Lab Inc., Air-Dat Inc.

Other: USA Security Clearance (presently inactive but operative).

Academic Experience:

1/2010- Burroughs & Chapin Scholar, Coastal Carolina University

7/2008- Professor Emeritus, North Carolina State University

1/2004- 6/2008 Associate Dean, External Affairs, PAMS/NCSU

12/2000- 12/2008 Executive Director, Office of External Affairs, PAMS/NCSU

6/1989-12/2000 Head, Dept. of Marine, Earth and Atmospheric Sciences/NCSU

5/1988-8/1989 Associate Dean, Research, PAMS/NCSU

5/1989-8/1989 Acting Dean, PAMS/NCSU

7/1988-6/1990 Director, University Honors Council/NCSU

7/1992-12/1996 Director, Southeast University Consortium for Severe Storms

7/1981- 6/2008 (approved 1/1981) Full Professor, Department of Marine, Earth & Atmospheric Sciences, NCSU

7/1976 – 6/1981(approved 1/1976) Associate Professor with Tenure, Depts. of Geosciences and Marine Science & Engineering

7/1973 –6/1976 Assistant Professor, Depts. of Geosciences and Marine Science & Engineering., NCSU

Recent (Selected) National and State Committee Service (10 year window):

- 07/2008-08/2016 UCAR Membership Committee
- 07/2014-11/2015 Co-Writer of U.S. Senate Bill for legislation and re-write of U.S. House Bill in a Next-Generation Modernization of the U.S. National Weather Service (07/2014 – 03/2015) on behalf of the U.S. Weather Coalition (with Mr. T. Fahy)
- 02/2015 – 02/2016 Guest Editor – Advances in Meteorology
- 08/2013 – 07/2016 National Science Foundation IGERT Wind Energy Program External Reviewer (ISU)
- 01 2010 - Editorial Board of International Journal of Oceanography
- 01/2010 – 01/2012 Commissioner, 3rd) of American Meteorological Society - Weather & Climate Enterprise Commission
- 01/2011 -12/2013 University Corporation for Atmospheric Research (UCAR) Panel to Evaluate the National Oceanic & Atmospheric Administration (NOAA), National Weather Service (NWS), National Centers for Environmental Prediction (NCEP) Advisory Board

- 11/2008 – 12/2010 Chair of UCAR Panel to Evaluate the NOAA, NWS, National Centers for Environmental Prediction, National Hurricane Center, the Tropical Prediction Center and the Ocean Prediction Center
- 11/08 -11/2011 Chair of the Association of Public & Land-grant Universities (APLU) Board on Oceans, Atmosphere & Climate (BOAC)
- 05/2010 - Chair of American Geophysical Society Focus Group on Science & Society (AGU-SIPS);
- 05/2010- Council Member of the American Geophysical Union
- 08/2010- Editorial Board of American Geophysical Union EOS
- 01/2008 – 1/2010 Commissioner Elect of the AMS Commission on the Weather & Climate Enterprise
- 01/2006- 01/2010_Member, NOAA Science Advisory Board Social Science Working Group
- 08/05 – 08/2012 Member, NOAA Science Advisory Board Climate Working Group
- 10/2002- 02/2009 Board of Trustees (BoT) of UCAR (Elected twice on the 1st ballot by the general membership)
- 06/2004- 06/2008 North Carolina Coastal Resources Beach Committee, Dept. of Natural & Environmental Resources
- 03/2005 – 07/2008 North Carolina Ocean Resources Committee, Dept. of Natural & Environmental Resources
- 06/2002- 11/2006 Chair of NOAA Science Advisory Board (FACA approved)
- 06/1998-2007 Member, NOAA Science Advisory Board (FACA approved)

Advice to State of North Carolina (NC):

- Advised Governors J. Holshouser (3 years)r, J. Hunt (8 years), J. Martin (8 years) on coastal issues;
- Was on the National Academy of Sciences Cape Hatteras Lighthouse Committee that recommended the successful relocation of the Lighthouse;
- Was on five Coastal & Ocean Committees advising the NC Legislature, 1975-2010 on coastal processes, sea level rise, inlet dynamics, coastal storms, offshore drilling and mining

Federal Testimony, Written and Oral:

- Twice before the U.S. Senate
- Seven times before the U.S. House of Representatives (most recently March 2012).

Professional Organizations: American Meteorological Society –Elected Fellow 1995; Sigma Xi (past local chapter president); Phi Kappa Phi; Society for Non-Linear Mathematics; American Geophysical Union since 1966; Oceanography Society (Charter- Lifetime member), since 1986; American Meteorological Society, since 1970.

Publications: 219 peer reviewed and published. 18 Recent Selected Publications:

- 1) Pietrafesa, L.J., T. Yan, S. Bao, P.T. Gayes, M. Slattery, 2015. On sea level variability in U.S. coastal waters and relationships with climate factors. Journal of Oceanography. Special issue on Continental shelf processes. In review.
- 2) Xiaofeng Li, Binqing Liu, L.J. Pietrafesa, 2015. Coupling of satellite observations with a weather model to study atmospheric occluded fronts. J. of Geosciences and Remote Sensing. Accepted.
- 3) T. Yan, L.J. Pietrafesa, S. Bao, P.T. Gayes, 2015. Land-falling hurricanes on the U.S. eastern seaboard. Journal of Climatology. Accepted for publication.
- 4) T. Yan, S. Bao, L.J. Pietrafesa, P.T. Gayes, R.L. Nichols, 2015. Breaking wave simulations and verifications. Journal of Oceanography. Special issue on Continental shelf processes.. In review.
- 5) Pietrafesa, L. J., D.A. Dickey, T. Yan, S. Bao, T. Henwood, P.T. Gayes, 2015. On the Analysis of Cholera outbreaks and other diseases and medical conditions, in Haiti following the 2010 earthquake up to 2012. In review.
- 6) Yan, T., L.J. Pietrafesa, S. Bao, 2014. Modal Inter-comparisons between the North Atlantic Accumulated Cyclone Energy and the Atlantic Meridional Oscillation and the Pathology of the 2013 Hurricane Season. (In press) Journal of Natural Science, 6, ****;
- 7) Pietrafesa, L.J., S. Bao, N.E. Huang, T. Yan, T. Karl, M. Slattery, 2014 On Great lakes Water Level Variability. Journal Of Coastal Research. In review.
- 8) Pietrafesa, L.J., P.T. Gayes, S. Bao, T. Yan, 2013 On Atmospheric-Oceanic-Land Temperature Variability and Trends. International Journal of Geosciences, 4, 417-443;
- 9) Bao, S., L. Pietrafesa, D. Dickey, N.E. Huang, 2011 Tropical Cyclone Activity in the North Atlantic and Pacific Oceans, Journal of Adaptive Data Analysis;
- 10) Yan, T., L.J. Pietrafesa, D. Dickey, N. Huang, 2011, Forecast of the 2010 Hurricane Season, Journal of

Adaptive Data Analysis;

- 11) Yan, T., L.J. Pietrafesa, D.A. Dickey, T.R. Karl 2012, Snow Cover effects on Tropical Cyclone Occurrence, *Journal of Climate*;
- 12) Pietrafesa, L.J. and P.T. Gayes, 2011, Renewable Energy in a coastal domain, *Proceedings of AMS*;
- 13) Pietrafesa, L.J., D. Dickey, T. Karl, 2006, On the Variability of Sea Level Level, in *Solutions to Coastal Disasters*. Amer. Assoc. of Civil Engr;
- 14) Peng, M and J. Pietrafesa., 2006, Tropical Cyclone Induced Asymmetry of Sea Level Surge and Fall in a Storm Surge Model with Parametric Wind Fields. *Ocean Modeling*;
- 15) Peng, M., L.J. Pietrafesa., S. Bao and D. Porter 2007, On Lidar vs Other Digital elevation data and hurricane induced inundation forecast, *Ocean Modeling*;
- 16) Taylor, C., J.M. Miller, L.J. Pietrafesa, D.A. Dickey, S. Ross, 2010, Winter winds and river discharge determine juvenile southern flounder (*Paralichthys lethostigma*) recruitment and distribution in North Carolina estuaries, *Journal of the American Fisheries Society*.
- 17) Xia, M. and L. J. Pietrafesa, 2010. Winds and Orientation of a Coastal Estuary Plume. *Geophysical Research Letters*.
- 18) Li, XF, X.Yang, L.J. Pietrafesa, W.G. Pichel, Z. Li, X.M. Li, 2011. Deep-water bathymetric features imaged by spaceborne SAR in the Gulf Stream region. *Geophysical Research Letters*.

Professional and Public (Invited Only) Presentations: Total of 221 (81),

Student Committees Supervised: PhD (27) & MS (28),

Post Docs (17) and Technicians (23) Supervised: 40 Total,

Grants and Contracts as Principal or Co-Principal Investigator: 107 individual awards, totaling \$28,208,173 of Funding.

Statement:

- After receiving his Ph.D. in Fluid Physics/Geophysical Fluid Dynamics (1973) from the University of Washington, Dr. Len Pietrafesa joined the faculty at North Carolina State University (NCSU) in July 1973 as an Assistant Professor, was voted Tenure and Promoted to Associate Professor in January, 1976 and was voted to Full Professor in January, 1981
- He served as the Head of the Department of Marine, Earth and Atmospheric Sciences from 1989-2000 during which time the department's sponsored research budget increased by > 220%, student enrollment of undergraduates increased by > 230%, enrollment of graduate students increased by 170% with all students supported and ratio of female to male students went from < 10 % to > 40% and the annual graduation reached 100. Students were selected for 10 AMS annual awards
- He broadened the MEAS department curriculum by introducing undergraduate tracks in the Marine, Atmospheric and Earth Sciences, such as Marine Physics, Marine Chemistry, Marine Meteorology, etc., which have led to double degrees in Physics-Marine Sciences, Chemistry-Marine Sciences, Atmospheric-Marine Sciences, Hydro-Meteorology, Climatology and Paleontology. These have broadened new career opportunities and several have become national models
- External sponsored research expenditures in MEAS rose from \$1.9M/year in 1989 to \$6.2M/year by 1999 as Head of MEAS he reassigned teaching and student mentoring responsibilities amongst the faculty rather than following the prior rigid rule of 3 courses/faculty, which he argued did not fit faculty talent sets. The restructured teaching vs. research balance worked well and faculty teaching approval ratings, done by students, rose, while scholarly research activity increased dramatically
- As Head of MEAS, he convinced the faculty to offer lab sections to introductory courses and then convinced the University Undergraduate Teaching Committee to allow all of the introductory MEAS courses to be allowed on the University list of science courses that undergraduates could take to fulfill their General Education Requirements. This greatly increased MEAS student contact hours and the numbers of teaching assistantships that were assigned by the University to MEAS. Pietrafesa then used these TA positions to broker deals with faculty to help make them competitive with NSF proposals, etc.
- He served as Director of the University Honors Council, and was responsible for bringing such dignitaries as a Noble Prize recipient to be the Honors Convocation Speaker, the President of the National Academy of Sciences, Dr. Ralph Cicerone, to be the SigmaXi speaker, and NFL Hall of Fame player Attorney Alan Page and National Sciences Board Director Dr. Warren Washington to speak at Annual Minority Dinners.
- He also convinced the NCSU Chancellor and Provost to have an 'Honor's Convocation Day' at which all NCSU faculty and students who had received significant recognition over the previous year was honored in

Reynolds Coliseum. In 1989, there was an audience of 5,000 attendees and in 1990 the audience was 6,500

- He served as Associate Dean for Research, Associate Dean for External Affairs and Acting Dean, in the College of Physical & Mathematical Sciences
- He was the Director of the NOAA Center for Severe Storms in the Southeast (including NCSU, Florida State U, Georgia Tech U, U of Alabama-Huntsville, Clemson U and U of Miami) 1990 – 1996
- He was the Director of the NOAA Cooperative Program on Climate and Weather Impacts on Society and the Environment (CWISE) 1998 – 2004
- As the PAMS elected representative to the NCSU Chancellor's Vision and Planning Committee, 1989 – 1992, Pietrafesa proposed that NC State position itself as the North Carolina university that offers research opportunities to its Undergraduate students and this led directly to the creation of the NCSU Undergraduate Research Symposium that has become an annual event
- As the PAMS elected representative to the NCSU Chancellor's Vision and Planning Committee, 1989 – 1992, Pietrafesa proposed a new alignment of the NCSU "schools and colleges", such that there be a College of the Sciences, which brought together the physical, mathematical and life sciences. His argument was that: the 20th Century advanced because of the achievements in physics, mathematics and technology". But he continued that he "believed that the major breakthroughs of the 21st century would be in the life sciences, but that this could only happen if the physical, mathematical and life scientists were brought together". This proposal had broad support from other units on campus but the politics of the period precluded the realignment from happening. He continued to push the idea until his retirement in 2008 and in 2013, a new College of Science was created bringing together the very departments that he proposed so many years earlier into one unit
- On the Chancellor's Vision and Planning Committee, Pietrafesa and colleague Dr. C. Crossland proposed that NCSU redefine itself as "the Peoples' Public University of NC". This suggestion was adopted and for many subsequent years NCSU carried that banner
- He was elected a Fellow of the American Meteorological Society in 1995
- He has presented written and oral testimony to the U.S. Congress on issues such as whether or not the U.S. is prepared for severe weather and climate impacts, on the climatology of hurricanes, on the American Competitiveness Initiative, on the Report of the Commission on Ocean Policy and on the Value to the Nation of Federal Investments in Science & Technology
- He was: the driving force behind the co-location of the NOAA National Weather Service (NWS) RDU Weather Forecast Office onto the NCSU campus in Research III and was responsible for brokering University land for the long-term siting of the NWS WRD88 Radar
- He was co-principally responsible (with Dr. B.J. Copeland) for convincing the NC Legislature to fund the NCSU Center for Marine and Atmospheric Sciences and Technology (CMAST) building in Morehead City NC, a four story research, education and outreach facility
- He received an award from the National Weather Service-RDU Weather Forecast Office (WFO) for promoting focused research in the creation of new operational forecast tools, including his and his students Research to Operations successful research
- In 1995 he convinced NCSU and the NC museum of Natural Sciences to create a joint position in Paleontology; which resulted in the hiring of Dr. Dale Russell, an internationally well-known dinosaur expert
- In 1997 he recommended to Paleontologist Dr. Dale Russell that NC attempt to buy a dinosaur at a Southeby's Auction. Pietrafesa brokered the financial sponsors via Mr. V. Barfield, a noted benefactor, and the effort resulted in the purchase of a complete veloco-raptor that received world-wide acclaim when it was discovered by Dale and colleagues in the NCSU College of Veterinary medicine that the specimen had a 4 chambered heart, and was warm blooded. From this activity NCSU established two joint positions with the NC Museum of Natural Sciences
- In the late 1990's Pietrafesa and a colleague (R. Fornes) convinced the NCSU Dean of PAMS and the NCSU Provost to hire Dr. T. S. Malone, a member of the National Academy of Sciences to invite Dr. Malone to join NCSU as a Distinguished University Scholar in MEAS. Tom had relocated the national office of Sigma Xi from Yale Univ. to the Research Triangle Park
- Pietrafesa also invited Dr. R. Braham of the Univ. of Chicago to join MEAS as a University Scholar. Roscoe accepted the invitation and appointment
- With Malone, Braham and Dr, Earle Droessler, who was already on the MEAS faculty, MEAS then had three of the four players who had written the Blue Book which led to the creation of the University

Corporation for Atmospheric Research and the National Center for Atmospheric Research. Pietrafesa was very proud of this singular coup and loved sending all three to annual UCAR member meetings in Boulder; where they would create their own brand of havoc

- Pietrafesa was one of 6 members of a US National Academy of Sciences Panel that recommended that the Cape Hatteras Lighthouse (NC) be relocated as the only option to save it from the encroaching Atlantic Ocean. This study was done in 1997 and the Expert Panel received a national award as the most outstanding engineering event of 1997 in the U.S.
- Pietrafesa conceived of creating a Dinosaur Wing in the NC Museum of Natural Sciences; which was embraced by the Director of the Museum (Dr. E. Bennett) and funded by the NC Legislature, and has now become nationally well known (Raleigh News & Observer 10/5/2014).
- In 1997 – 1998, Pietrafesa conceived of outfitting airplanes and automobiles and trucks with mobile environmental sensors, whose data would be assimilated into National Weather Service models of the (then) future. The visualized forecast numerical model outputs would eventually be fed back to planes and vehicles in transit, in Pietrafesa's vision of future technology. He proposed starting with Midway flights from RDU to DC, NYC, FL etc. and trucks and cars traveling on I-40, I-95 and I-85. The projects were never funded, from on high either in DC or NC. However the ideas were picked up and embraced and eventually out sourced to Air-Dat (a company based in Morrisville NC) and by every major U.S. airline today (Raleigh News & Observer 10/5/2014).
- In 1967 he served as the chief scientist/engineer in charge of determining whether or not the Panama Canal could be widened at the Guyed Pass. That on-site study was funded by the U.S. DOD and serves as the blueprint for the present widening project (2013-2015)
- His research and publications are diverse and include: 1) modeling of circulation and waves in coastal and estuary systems; 2) coastal and inland inundation and flood forecasting; 3) the air-sea flux interaction between the atmosphere and the ocean in Extra-Tropical Cyclone storm genesis and intensification; 4) interactively coupled wind-wave-current modeling; 5) empirical and statistical analyses of Tropical Cyclone interactions with the Gulf Stream; 6) the climatology of the frequency of occurrence and tracks of Tropical Cyclones both in the Atlantic and Pacific Oceans and relationships to climate factors; 7) coastal Sea Level Variability and Trends and relationships to climate factors; 8) the coupling of precipitation and river discharge to coastal watersheds; 9) the identification of relationships between atmospheric and coastal oceanic phenomena and climate factors and year class strengths of flatfish; 10) was the leader in the development of a complete atmosphere-watershed-river-estuary-harbor-lake-coastal water balance mode, embraced but never implemented by NOAA; 11) discovered the dynamical mechanisms for the topographic deflection (the Charleston Bump) of the Gulf Stream and creation of (and named) the "Charleston Trough", a bowl like depression and region of continental margin upwelling in the ocean off Charleston SC; 12) conducted the pioneering research that proved that a satellite altimeter (GEOS and SeaSat) could be combined with AVHRR observations, and used to detect ocean phenomena (eg., the Gulf Stream); 13) he coined the air-sea interaction term "buoyancy stress" (Dr. T. Osborne, Univ. of Alaska and ODU) called Pietrafesa the 'father of buoyancy stress'; 14) demonstrated that air-sea buoyancy fluxes could drive coastal circulations, i.e., that no atmospheric winds need be present to have 3-D motion in the continental margin ocean; 15) showed that: water masses can accelerate or decelerate and torque lower atmosphere boundary layer winds; 16) proved that oceanic surface gravity waves and oceanic currents can dynamically and interactively couple with each other and with the atmosphere with mathematical model outputs that are more in keeping with observations thus promising improved forecasts of coastal weather in the future; 17) has recently demonstrated, with colleagues Drs. T. Yan and S. Bao, that a predictive capability is possible from a time series of data, be it disease or environmental factor data; 18) teamed with colleague Dr. P. Gayes on conducting a coastal renewable energy field and modeling program proving that SC coastal winds could provide copious amounts of power that could be harnessed to meet significant power needs of SC coastal cities; 19) has brokered NOAA support for SC and NC into providing non-federal assets real-time data to be assimilated into National Weather Service National Centers for Environmental Prediction forecast models; 20) with colleagues Drs. Yan, Bao and Gayes, has created the CCU HUGO hurricane forecast system to advise state Emergency Management officials; and 21) worked with CCU colleagues to create CCU's first PhD program which has led to the creation of the School of Coastal & Marine Systems Science
- Pietrafesa's recent foci are on: a) the linkages between weather and climate and human disease; b) an end to end modeling of physical through human systems; c) building a prototype, real time reporting coastal air-

sea observing network offshore of the Carolinas as part of his vision of a national “essential” air-sea NOAA marine buoy network that feeds data into interactively coupled models in real time; and d) predicting the outbreak and spread of infectious diseases affecting human health

- Pietrafesa served on the NOAA Science Advisory Board (SAB) for 8 years and was the Board Chair for 5 years (the maximum allowed by FACA)
- He served on the NOAA-SAB Climate Working Group (6 years-max allowed)
- He served on the Social Sciences Working-Group; as the non-social scientist
- He chaired the National Centers for Environmental Prediction’s (NCEP) Ocean-Atmosphere Modeling study team that has led to improvements in NCEP forecasting architecture and in the forecasts. He then chaired two external expert panels to evaluate the NCEP Ocean Prediction Center (OPC) and the National Hurricane- Tropical Prediction Center (NHC-TPC) which has resulted in advances in the science of forecasting in ocean and coastal areas and has greatly improved advanced warning services to federal and state agencies and the public. Following that he was asked to serve on a continuing NCEP Advisory Team
- He has 219 peer reviewed publications; given 221 talks, chaired 28 MS and 27 PhD graduates, 17 post-Docs and directed 23 technicians
- His national and international service includes being Chair Emeritus of the NOAA Science Advisory Board, Chair of the USA-Peoples Republic of China Steering Committee on Virtual Co Laboratories, past Chair of the National Association of State Universities and Land Grant Colleges (NASULGC) Board on Oceans and Atmosphere, past Chair of the NASULGC CFERR Commission, past Chair of the Council on Ocean Affairs, the precursor to the Consortium on Oceanographic Research and Education (CORE), a member of the AGU Council on Public Affairs, a member of the Digital Library task force, a member of the National Research Council’s panel on the Essential Marine Buoy Network, a member of the NOAA Climate Working Group a member of the NOAA Socio-Economics Working Group (the only physical scientist in the Group), a member of the Societal Impacts Program Advisory Board, a member of the Board of the Center for Environmental Economics and a (two-terms, which is the maximum allowed) member of the University Corporation for Atmospheric Research (UCAR) Board of Trustees, including being the UCAR Board representative to the UCAR URL- University Relations Committee (now called the President’s Advisory Committee on University Relations, PACUR).
- He was one of the five co-founders of the U.S. “Weather Coalition”
- He served on the US Weather Research Program (WRP) Science Advisory Committee
- He co-chaired the Weather Research Program Prospectus Development Team (PDT) on Coastal Meteorology and Oceanography and was on the PDT for Observations and Data
- He is the chair of the Association of Public and Land-grant Universities (APLU) Board on Oceans, Atmosphere and Climate
- He is the Chair American Geophysical Union’s Committee on Science & Societal Impacts and Public Policy
- He has advised four NC governors, more than 30 U.S. Congressional representatives on issues related to science and technology and on occasion the Office of Management and Budget. He recently served on two NC Coastal Commissions.
- In 2006, he was featured on a National Geographic Television Special called: Earth Shocks, Hyper-Hurricanes. This was also broadcast on the Discovery Channel
- Prior to 1973, he worked in 12 different foreign countries for a Boston, MA based R&D Company
- He has been acknowledged nine times as a “champion for science” by the University Corporation for Atmospheric Research
- He advises congressional staffers on Capitol Hill in Washington DC
- He has written position papers for several US Congressional representatives; both in the House and the Senate
- He has been elected to the Council of the American Geophysical Union (AGU)
- He was elected as the American Meteorological Society Commissioner of the Weather & Climate Enterprise Commission.
- He was the Chair of the Expert Panel(s) to evaluate the NOAA National Weather Service National Centers of Environmental Prediction’s Ocean Prediction Center and the National Hurricane - Tropical Prediction Center
- He is on the NCEP Advisory Team that will continually assess NCEP forecasting

- He is on the Editorial Board of EOS of the AGU
- He is on the Editorial Board of the International Journal of Oceanography
- He has been an Adjunct Professor at several universities
- Because of his work on Capitol Hill on behalf of “Science”, he was honored by UCAR for 11 consecutive years, for example being recognized as a ‘champion for science’ by UCAR and put on a ceremonial box of Wheaties in 2002. His Mother was very proud

