

## **Jagadish Shukla**

Distinguished University Professor, George Mason University (GMU)  
President, Institute of Global Environment and Society (IGES)  
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Tel: (301) 595-7000; Fax: (301) 595-9793; Web: [www.iges.org](http://www.iges.org)

### **Selected Honors and Awards**

- 2007: International Meteorological Organization (IMO) Prize  
*(Highest honor in the world in Meteorology)*
- 2005: Rossby Medal of the American Meteorological Society (AMS)  
*(Highest honor awarded by AMS)*
- 2004: Scientist of the year, Association of Indians in America (AIA)
- 2001: Walker Gold Medal of the Indian Meteorological Society (IMS)  
*(Highest medal of the IMS; first recipient of the medal)*
- 1999: Founded Gandhi College for women in a village in India  
*(See the article in the New York Times, 17 August 2003)*
- 1996: Third World Academy of Sciences (TWAS, Associate Fellow)
- 1996: Fellow, Indian Meteorological Society
- 1993: Founded Institute of Global Environment and Society (IGES)  
*(See [www.iges.org](http://www.iges.org))*
- 1989: Helped establish super computer center for monsoon forecasting, New Delhi  
*(At the behest of the then Prime Minister, Rajiv Gandhi)*
- 1988: Started weather and climate program at ICTP, Trieste, Italy  
*(At the behest of Dr. Abdus Salam, founder of ICTP)*
- 1986: Invited to lecture at the Pontifical Academy, Vatican, Italy  
*(Audience with Pope John Paul II)*
- 1983: Founded, Center for Ocean-Land-Atmosphere (COLA)  
*(COLA is considered one of the premiere centers in the world for climate research)*
- 1982: Exceptional Scientific Achievement Medal of NASA  
*(Highest medal given by NASA to a civilian)*
- 1979: Chief Scientist, MONEX experiment in the Bay of Bengal  
*(Leader of an expedition of three aircrafts and 150 scientists to Calcutta)*
- Other:
- Author/co-author of 150 scientific papers, 20 reports
  - Editor/contributor: four books
  - Ph. D. thesis adviser for 15 students at M. I. T., Univ. of Maryland, GMU
  - Chair/member of about 50 national/international panels

## **CURRICULUM VITAE OF JAGADISH SHUKLA:**

### **RESUME**

#### **ADDRESS:**

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President, Institute of Global Environment and Society, Inc. (IGES)  
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Tel: (301) 595-7000; Fax: (301) 595-9793; E-mail: shukla@cola.iges.org

#### **EDUCATION:**

Primary School (1953) – Under a banyan tree; village – Mirdha, Ballia, U.P., India  
High School (1958) – S.R.S. H.S. School, village – Sheopur, Ballia, U.P., India  
B.Sc. (Honors) (1962) – Banaras Hindu University (Physics, Math, Geology)  
M.Sc. (1964) – Banaras Hindu University (Geophysics), India  
Ph.D. (1971) – Banaras Hindu University (Geophysics), India  
Sc.D. (1976) – Massachusetts Institute of Technology (Meteorology), USA

#### **PROFESSIONAL EXPERIENCE:**

2003- present Chairman, Climate Dynamics, George Mason University  
1994 - present Professor of Earth Sciences and Global Change, George Mason University  
1991 - present President, Institute of Global Environment and Society  
1984 - 2004 Director, Center for Ocean-Land-Atmosphere Studies  
1984 - 1993 Professor, Department of Meteorology, University of Maryland  
1979 - 1983 Senior Scientist, NASA/Goddard Space Flight Center  
1978 - 1979 Visiting Associate Professor, Massachusetts Institute of Technology  
1976 - 1977 Research Associate, Princeton University  
1971 - 1976 Research Assistant, Research staff (M.I.T., Princeton)  
1965 - 1971 Junior Scientific Officer, Indian Inst. of Tropical Meteor., Pune, India

#### **HONORS AND AWARDS**

International Meteorological Organization (IMO) Prize, 2007  
Rossby Research Medal (Amer. Met. Soc.), 2005  
Scientist of the year, 2004, Association of Indians in America  
Sir Gilbert Walker Gold Medal, 2001  
Associate Fellow, Third World Academy of Sciences, 1996  
Fellow, Indian Meteorological Society, 1996  
Fellow, American Meteorological Society, 1986  
Exceptional Scientific Achievement Medal, NASA, 1982  
Exceptional Performance Award, Goddard Space Flight Center, NASA, 1981  
Outstanding Contribution to First GARP Global Experiment, 1980  
Fulbright Travel Grant, 1971  
United National Fellowship, 1967

#### **TEACHING:**

As a faculty member at MIT, UMCP and GMU, advisor/co-advisor for Ph.D.thesis of 15 students.

#### **SCIENTIFIC PUBLICATIONS AND LECTURES:**

Author/coauthor of about 150 scientific papers and coauthor of about 20 reports  
Editor/contributor for 5 books  
About 300 seminars, invited lectures and conference presentations

## **NATIONAL/INTERNATIONAL COMMITTEE, PANELS:**

Chairman, 2005-2007, WCRP Modeling Panel (WMP)  
Member, 2005-2007, WCRP Observations and Assimilations Panel (WOAP)  
Co-Chairman, 2006, APCC Science Advisory Committee, Korea  
Member, 2001-, Joint Scientific Committee (JSC), World Climate Research Program (WCRP)  
Member, 2000-2001, Asian Australian Monsoon Working Group, US CLIVAR  
Chairman, 1999- 2001, Seasonal-Interannual Modeling Panel (SIMAP), US CLIVAR  
Chairman, 2001, International Conference on Monsoons, New Delhi, India  
Member, 2001-, Editorial Board, Earth & Planetary Sciences, Indian Academy of Sciences  
Member, 1998-2000, Science Steering Committee, Climate Variability, US CLIVAR  
Member, 1997-2000, Science Steering Committee, Climate System Modeling (CSM), UCAR  
Member, 1995-2000, PAGES/CLIVAR Working Group, WCRP  
Member, 1995-1998, TOGA Numerical Experimentation Group (TOGA-NEG), WCRP  
Member, 1996-1998, CLIVAR Monsoon Panel, WCRP  
Member, 1996-1997, Science Working Group, International Pacific Research Center (IPRC), Hawaii  
Member, 1994-1997, U.S. Panel on GOALS, National Research Council (NRC), NAS  
Member, 1993-1996, Climate Data Analysis (CDAS), Advisory Committee for NCEP, UCAR  
Member, 1991-1995, International Scientific Steering Committee, (CLIVAR), WCRP  
Co-chairman, 1994, International Conference on Monsoons, Trieste, Italy  
Member, 1992-1994, Atlantic Climate Change Program (ACCP), OGP/NOAA  
Chairman, 1992, Steering Committee for Study Conference on GOALS, NRC/NAS  
Director, Workshop on Mediterranean Processes, August 1992, Venice, Italy  
Scientific Coordinator, 1991-1994, International Institute for Earth, Environmental and Marine Sciences and Technologies (IEM), Trieste, Italy  
Member, 1991-1993, GEWEX Panel on Continental Scale Project (GCIP)  
Member, 1991-1993, External Advisory Group, ECMWF Reanalysis (ERA)  
Member, 1991-1998, Scientific Advisory Committee, Venice Center for Marine Sciences  
Director, NATO Advanced Research Workshop (ARW) on Prediction of Interannual Climate Variations, International School for Advanced Studies (ISAS), July 1991, Trieste, Italy.  
Chairman, 1989, Organizing Committee, TOGA Ad-hoc, panel meeting on Reanalysis  
Chairman, 1989 - 1992, U.S. Panel on Tropical Ocean Global Atmosphere (TOGA), NRC/NAS  
Member, 1989 - 1994, International Monsoon Numerical Experimentation Group (MONEG)  
Member, 1989 - 2000, Editorial Board, Journal of Indian Meteorological Society, MAUSAM  
Scientific Advisor, 1989-1990, National Center for Medium Range Weather Forecasting, India  
Member, 1983-1988, U.S. Panel on TOGA (NRC/NAS)  
Member, 1984 - 1989, International Scientific Steering Group on TOGA, WCRP  
Member, 1987 - 1991, Panel on Dynamical Extended Range Forecasting (DERF), NRC/NAS  
Member, 1987 - 1990, Air-Sea Fluxes Working Group, WCRP  
Director, Summer school on physical climatology, May-June, 1988, ICTP, Trieste, Italy  
Member, 1988 - 1991, Scientific Steering Committee, Int'l Center for Earth Sciences (ICE), Trieste, Italy  
Member, 1986 - 1990, Computer Steering Committee, Goddard Space Flight Center, NASA  
Member, 1986 - 1989, Science Steering Committee for TRMM, NASA  
Chairman, 1985, Organizing Committee, Meeting on Interannual Variations of Monsoon (US TOGA)  
Member, 1984-1987, Indian Ocean Panel, Committee on Climate Change and Ocean (CCCO)  
Program Leader, 1984 - 1990, U.S.-India Science and Technology Initiative (STI) on Monsoon  
Member, 1982 - 1985, Climate Research Committee, NRC/NAS  
Member, 1982 - 1984, Advisory Board, Equatorial Pacific Ocean Climate Studies, (EPOCS)  
Member, 1983 - 1986, Committee on Climate Variations, American Meteor. Soc., (AMS)  
Lead Scientist, 1983 - 1983, Global Habitability Program, GSFC/NASA  
Member, 1975 - 1983, Panel on Monsoon Experiment (MONEX), NRC/NAS  
Chief Scientist, 1977 - 1979, Monsoon Experiment (FGGE/GWE) in Bay of Bengal (NSF)

## **SERVICE TO COMMUNITY:**

### **a. Scientific Programs**

He has been chairman/member of numerous national and international panels and committees concerned with the advancement of the atmospheric and oceanic sciences including the monsoon climate program of the World Meteorological Organization. He was the **founding member/chair** of the scientific steering group of the following national and international programs:

- MONEX – Monsoon Experiment (US and WCRP)
- STI – Science and Technology Initiative (US – India)
- TRMM – Tropical Rain Measurement Mission (NASA)
- DERF – Dynamical Extended Range Forecasting (NAS/NRC)
- TOGA – Tropical Ocean Global Atmosphere (US and WCRP)
- GOALS – Global Ocean Atmosphere Land Systems (NAS/NRC)
- CLIVAR – Climate Variability (International SSG)
- ERA – External Advisory Committee on ECMWF Reanalysis
- GCIP – GEWEX Continental Scale Project (CLIVAR)
- ACCP – Atlantic Climate Change Program (NOAA)
- SIMAP – Seasonal-Interannual Modeling & Prediction (US CLIVAR)
- AAMWG – Asian Australian Monsoon Working Group (US CLIVAR)
- COPES- Coordinated Obs. and Prediction of the Earth System (WCRP)
- WMP- WCRP Modeling Panel (WCRP)

### **b. Institution Building**

#### **i. COLA and IGES, USA**

He is the founder of the Institute of Global Environment and Society (a non-profit institute registered in Maryland) and the Center for Ocean-Land-Atmosphere Studies (COLA). IGES and COLA freely provide models, data, and data analysis and display software (GrADS) to the research community. COLA has also developed a desktop weather forecast system that can be used for research and operational forecasts.

#### **ii. NCMRWF, India**

When India received the first supercomputer from the USA under a special (Ronald Reagan-Rajiv Gandhi) agreement for monsoon forecasting, he was invited by India to establish the scientific infrastructure of the monsoon forecast supercomputer center in New Delhi. He was the scientific leader in establishing the National Center for Medium Range Weather Forecasting (NCMRWF) in New Delhi, India. He helped recruit the scientific staff and implemented a global data analysis-assimilation-forecast system in India to make weather forecasts using a global model.

#### **iii. Physics of Weather and Climate, Italy**

He conducted regular workshops, symposia and training courses for the benefit of the scientists from developing countries at the International Center for Theoretical Physics (ICTP), Trieste, leading to the establishment of a permanent research group at ICTP.

- iv. **CPTEC, Brazil**  
He organized the training of researchers from Brazil at COLA to use and develop the COLA atmosphere model for routine weather predictions at CPTEC, Cachoeira Paulista, Brazil.
- v. **IRI, USA**  
He was one of the members of the group that proposed the scientific plan for the establishment of the International Research Institute for Climate Prediction at Columbia University, New York.
- vi. **IPRC, USA**  
He was one of the members of the Science Working Group that prepared the scientific plan for the establishment of the International Pacific Research Center at Univ. of Hawaii, Honolulu.
- vii. **Gandhi College, India**  
He has established a degree college for the education of students, especially women, in the rural village of Mirdha in the Ballia district of India.
- viii. **Climate Dynamics, GMU, USA**  
He is the founding chair of the Climate Dynamics Ph.D. program which he helped establish at George Mason University.

**SCIENTIFIC WORKING GROUPS: Joint Modeling Experiments; Committees**

AMIP, CLIVAR NEG-1, DSP, ECMWF-ERA, MONEG, NCEP-CDAS, NCAR-CSM, SMIP, TOGA-NEG, TPOP; MONEX, TRMM, TOGA, GOALS, CLIVAR, ACCP, JSC

**INSTITUTION BUILDING:**

Center for Ocean-Land-Atmosphere Studies (COLA), Maryland, USA

Institute of Global Environment and Society (IGES), Calverton, Maryland, USA

National Center for Medium Range Weather Forecasting (NCMRWF), New Delhi, India

Physics of Weather and Climate, ICTP, Trieste, Italy

CPTEC, Brazil, Organizer training of Brazilian scientists at COLA

International Pacific Research Center (IPRC), U. Of Hawaii, Co-author, Initial Science Plan.

International Research Institute for Climate Prediction (IRIPC-IRI), Co-author, Initial Proposal

Gandhi Degree College, Village - Mirdha, Ballia, UP, India

Climate Dynamics Ph.D. Program, George Mason University

## **Jagadish Shukla: ( Brief Biography)**

J. Shukla was born in 1944 in a small village (Mirdha) in the Ballia district of Uttar Pradesh, India. This village had no electricity, no roads or transportation, and no primary school building. Most of his primary school education was received under a large banyan tree. He passed from the S.R.S. High School, Sheopur, in the first class with distinction in Mathematics and Sanskrit. He was unable to study science in high school because none of the schools near his village included science education. His father, the late Shri Chandra Shekhar Shukla, asked him to read all the science books for classes 6 through 10 during the summer before he was admitted to the S.C. College, Ballia, to study science. After passing the twelfth grade from S.C. College, he went to Banaras Hindu University (B.H.U.) where, at the age of 18, he passed B.Sc. (honors) with Physics, Mathematics, and Geology in the first class and then earned the M.Sc. in Geophysics in the first class in 1964.

He taught briefly in a high school in Calcutta and joined the Oil and Natural Gas Commission (ONGC) in Dehradun as a trainee. On his mother's request, he quit ONGC after only a few months. Following an interview with the Union Public Service Commission of India in New Delhi, he was selected to a gazetted officer post of the Junior Scientific Officer at the Indian Institute of Tropical Meteorology, Poona. Since his college training was in Geology and Geophysics, he studied meteorology on his own to perform his research duties at the Institute. Based on the research done while working at IITM, Poona, he received a Doctor of Philosophy (Ph.D.) degree from B.H.U. in 1971. While at IITM, Poona, he was sent by his director, Professor P.R. Pisharoty to the United States (National Meteorological Center, Washington, D.C; National Hurricane Research Laboratory, Miami) and Japan (Japan Meteorological Agency, Tokyo; Meteorology Research Institute) for advanced training in meteorology with the support of the United Nations Development Program. In Japan, he worked with Drs. K. Gambo and T. Nitta. On a recommendation from Dr. K. Gambo, he was deputed by the Government of India to attend the International Symposium on Numerical Weather Prediction held in Tokyo in 1968. At the symposium he met the preeminent meteorologist, Prof. J. G. Charney and was inspired to study at Massachusetts Institute of Technology (M.I.T.). One morning the village postman brought a letter from Prof. Norman A. Phillips, then chairman of the Department of Meteorology, M.I.T., granting admission to the graduate program. Professors Charney and Phillips were his academic co-advisors. Since he had already received a Ph.D. from BHU just before coming to MIT, Prof. Charney gave him the option either to be a post-doc, or continue as a graduate student for a second Ph.D. He chose to remain a graduate student. He started his Ph.D. work with Prof. Phillips. After Professor Phillips left M.I.T., Professors J.G Charney and E. Lorenz were his co-advisors and he completed his Sc.D. "on the structure and dynamics of monsoon depressions" in 1976.

During the year Professor Charney was on sabbatical Dr. J. Smagorinsky accepted him as a visiting graduate student in the Geophysical Fluid Dynamics Program of Princeton University to work with Dr. S. Manabe. He was also a visiting Scientist at Princeton after completing his education at M.I.T., and then, on advice of Prof. Charney, he returned to M.I.T. as a visiting Assistant Professor and worked jointly with the Modeling and Simulation Branch of Dr. Milton Halem at the NASA Goddard Space Flight Center (GSFC). He worked as a Senior Scientist at the NASA Goddard Space Flight Center (1979-1983) during which time he was a visiting Professor at I.I.T., New Delhi. In 1984, he joined the University of Maryland at College Park as Professor. In 1993, he established the Institute of Global Environment & Society (IGES) as a non-profit institute, and the Center for Ocean-Land-Atmosphere studies (COLA) as a center within IGES. In 1994, he joined George Mason University as a Professor where he founded the department of Climate Dynamics, of which he became the chairman in 2006. He became a GMU Distinguished University Professor in 2007.

### **Professional Activities:**

He is a distinguished professor and chair of Climate Dynamics at George Mason University (GMU) and President of the Institute of Global Environment (IGES). Shukla is the author or co-author of over 150 scientific papers. He has served as chairman or member of numerous national and international panels and committees. He has made significant contributions to the understanding of the predictability of weather and climate including the Asian monsoon dynamics, deforestation and desertification. His research has established that there is predictability in the midst of chaos and that there is a scientific basis for short-term climate prediction.

When India received the first supercomputer from the USA under special (Ronald Reagan-Rajiv Gandhi) agreement for monsoon forecasting, he was invited by India to be the scientific leader in establishing the National Center for Medium Range Weather Forecasting (NCMRWF) in New Delhi. He helped recruit and train the scientific staff, and implemented a global model to make weather forecasts for India. He has close collaboration with the Indian researchers in the India Meteorological Department, New Delhi; IIT, New Delhi; IISc., Bangalore; Allahabad Univ.; IITM, Poona; and Goa University. He was also instrumental in creating weather and climate research centers in Brazil, Korea, Italy and USA.

For the past 34 years, he has visited his village every year. He has established Gandhi College in his village Mirdha (District Ballia, UP) for education of rural students especially women.