

Curriculum Vitae

Prof. (Dr.) Gufran Beig

PERSONAL DETAILS

Name in full	PROF. (DR.) GUFRAAN BEIG
Field of Specialization	ENVIRONMENTAL AND ATMOSPHERIC SCIENCES: <i>Air Quality and Climate Change: Advance Modeling and Forecasting, Air Quality Management, Impact Assessment, Mitigation and Public Outreach</i>
Vision	<i>Science backed Services to nation and knowledge sharing</i>
Research Experience	-38 years of research experience (since 1983 onwards)
Teaching Experience	-15 years of Teaching experience.
Last Position /Designation	<i>Scientist –G (Level -14) and Founder Project Director, SAFAR Indian Institute of Tropical Meteorology Dr. Homi Bhabha Road, Pashan, Pune - 411 008 Ministry of Earth Sciences, Govt. of India</i>
Qualification	<i>Ph.D. (Physics), PDF-NCAR (USA) Atmospheric Sciences</i>
Established Major Facilities /Institutions	<i>(a) SAFAR-India: First Indigenous Metro Air Quality Forecasting Framework for India -Committed to “National Clean Air Program-NCAP” of MoEFCC, GoI (P59-60); (b) Environmental Information System Center at IITM; (c) Multi-Hazard Early Warning System to Assess Impact of Air Quality on Health, Agriculture & Ecosystem; (d) MAPAN: Pan-India Air Quality and Weather Network.</i>
E-mail	<i>gufranbeig@gmail.com</i>
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MAJOR CREDENTIALS

<ul style="list-style-type: none"> ● SHANTI SWARUP BHATNAGAR AWARD: Conferred by Prime Minister of India, Council of Scientific and Industrial Research, Government of India.
<ul style="list-style-type: none"> ● NORBERT GERBIER-MUMM INTERNATIONAL AWARD: Conferred by United Nation’s World Meteorological Organization, Geneva, Switzerland.
<ul style="list-style-type: none"> ● FELLOW (FASc) of “Indian Academy of Sciences”, India.
<ul style="list-style-type: none"> ● GOLDEN JUBILEE AWARD: Conferred by Governing Council of IITM, ESSO, Ministry of Earth Sciences, Govt. of India for lifetime achievements in atmospheric Science.
<ul style="list-style-type: none"> ● HONORARY PROFESSOR: Conferred by Amity University, India.
<ul style="list-style-type: none"> ● TECHNOLOGY DEVELOPMENT: Designed and Developed India’s First Metro Air Quality Forecasting system having societal implications in the field of Environmental.

- **INTERNATIONAL LEADERSHIP:** Led group of scientists from 19 different countries for the assessment of climate change signal in the upper atmosphere leading to WMO award.
- **PUBLICATIONS:** Published 200 papers in Refereed SCI International journals with 6000 citations (IF = 41), 25 scientific reports, 18 papers as book chapters and edited 8 books.

SCIENTIFIC PUBLICATIONS

● PAPER PUBLISHED in Refereed International SCI Journals	200
● Technical Scientific Report Published	25
● Papers published in Book / Technical report	18
● Book Edited	09

PAPER CITATIONS AND H-INDEX

● Number of Citations	6000
● H-INDEX	41

SCIENTIFIC SUPERVISION /GUIDE

Guidance to Ph. D. degree as Supervisor (Awarded):	18
Guiding for Ph. D. degree (In Progress-Registered):	05
Guidance for M. Tech. /M.Sc. dissertation as Supervisor:	30
Research Guidance to IAS (Indian Academy of Sciences) Interns:	18
Trained under Green Skill Development Program of MoEFCC:	104

SYNOPSIS OF RESEARCH WORK

Scientific work includes two aspects of research and development- (a) fundamental contributions in the field of Atmospheric and Environment Science, in particular, tropical atmospheric chemistry, focusing on air pollutants and short-lived climate forcing agents, and (b) system development and impact assessment for practical applications to the society. I have been involved in all three core aspect of research and development, namely, experimental, theoretical modeling and diagnostic works. Designed and developed India's first metro air quality forecasting framework for four Indian mega cities and dedicated to nation as an operational service. Developed high-resolution gridded emission inventories of major air pollutants and greenhouse gases for different metro cities that fulfilled the critical input for forecasting models as well as helped plan mitigation strategies. In other important assessment of climate change signals in the upper atmosphere has been done for the first time which revealed cooling in this region as a result of increase in greenhouse gases. This finding has strong implications in navigation system, radio communication, and satellite movement.

ESTABLISHED SCIENTIFIC GROUPS /FACILITIES/CENTERS

1. Development of Country's first air quality Forecasting System- **SAFAR -System of Air Quality and Weather Forecasting and Research**. Dedicated to Nation for Delhi, Mumbai, Pune and Ahmedabad as an operational facility. (2010-2020)
2. Developed framework of **Multi-Hazards Early Warning System** for combining air quality, weather, climate and Health services (2017-2019).
3. Establishment of a Group /Division at IITM, Pune on "**Metropolitan Air Quality and Weather Services** (MAQWS) (2011). Earlier, Established a Group /Division "**Atmospheric Pollution and Transport Modeling** (APTMM) at IITM, Pune (2004).
4. Established of National air quality, weather and climate **monitoring network in Indian universities** and research institutions known as MAPAN project (2009-2019).
5. Establishment of **ENVIS** (Environmental Information System) center at IITM on "Air Pollution and Climate Change" of Ministry of Environment, Forest and Climate Change to creating awareness on environment through Education and knowledge drain. (2003)
6. Establishment of Working Group II.F on "**Middle Atmospheric Changes and Trends**" under International Association of Geomagnetism and Aeronomy (IAGA)-2003
7. Established the International Mesospheric temperature Trend Assessment panel of Joint Working Group on trends under the auspices of IAGA and ICMA of International Union of Geodesy and Geophysics (IUGG)-2002.
8. Establishment of **Regional Research Center (RRC)** at National Physical Laboratory, CSIR, New Delhi (1994).

OTHER AWARDS

1. **Maharana Udai Singh National Award** by the Mewar Foundation, Rajasthan for the contribution in the field of environmental protection. (2007)
2. **Young Scientist Award:** Conferred by MAAS, India.
3. "**Certificate of Recognition**" for Scientific Assessment Panel by the United Nations Environmental Program (UNEP), Ozone Secretariat, Geneva. (2013)
4. **Certificates of Innovation**" by the World Meteorological Organization for the Development of India's first air quality forecasting system SAFAR (2010, 2011).
5. **Certificate of Merit Award** by the Ministry of Earth Sciences (MoES), GoI for scientific excellence (2008)
6. **The 13th Silver Jubilee Award** by the Governing Council of IITM, Pune. (2000)
7. **Clean up The World award** by the Clean up the word Program and United Nations Environment Program, U.S.A. (1994)
8. **Best Paper Award** in NSSS by, ISRO, Bangalore. (1989)
9. **Gold Medal** in the M.Sc. (Physics) degree by M.L. Sukhadia University, Udaipur (1983)

SCIENTIFIC HONORS

1. **Scientific Advisory Group (SAG) Member** of World Meteorological Organization's (UN) GAW -Urban Research Meteorology & Environment Program, 2010-2019.
2. **Scientific Steering Group (SSG) Member** of **SPARC** (Stratospheric Processes And their Role in Climate), World Climate Research Program, WMO, Geneva, 2016-2021.
3. **Scientific Steering Committee (SSC) Member** of International Global Atmospheric Chemistry (IGAC) program of IGBP: 2008-2012.
4. **Chairman** of the Joint Working Group of IAGA (International Association of Geomagnetism and Aeronomy), ICMA and CAWSES on Atmospheric Trends (July 2011-2019)
5. **Member** of the **Advisory/Selection Committee** for the **Shanti Swarup Bhatnagar (SSB)** Prize in Earth, Atmosphere, Ocean Planetary Science, CSIR, New Delhi.
6. **Member** of "Earth Environmental Sciences Research Committee", CSIR, India, 2011-2015.

7. **Editorial Board Member** of an international journal "Aerosol and Air Quality Research (AAQR)", Publisher- AAGR Aerosol and Air Quality Research, Taiwan, since 2018-Onwards.
8. **Editor** of an international journal "Journal of Atmospheric and Solar Terrestrial Physics (JASTP)", Elsevier Publication Co., United Kingdom since 2007.
9. **Editor** of Indian Journal of Radio and Space Physics, CSIR, India, since 2015.
10. **Member** Expert Review Committee of **German Ministry** for education & science on research program, German Aerospace Agency, Germany, 2011-2014.
11. **Adjunct Professor**", Dept. of Atmospheric & Space Sci., University of Pune, Pune.
12. **Guest Editor** of Journal of Geophysical Research (JGR), AGU, Washington, DC, 2010-2011.
13. **Member Advisory Group** for Global Change Issues (GCI) under **Technology Vision 2035** for India, Department of Science and Technology, Govt. of India, 2011-2012.
14. **Project Leader** of task group of CAWSES-I of SCOSTEP (Scientific Committee on Solar-Terrestrial Physics), 2011-2014.
15. **Chairman** of the MTTA (Mesospheric temperature Trend Assessment) panel of the WG of International Association of Geomagnetism and Aeronomy (IAGA) and ICMA.
16. **Vice-Chairman** of the Working Group of IAGA (International Association of Geomagnetism and Aeronomy) and ICMA on Trends (2003-2010).
17. **Scientific Committee Member** of the Working Group of CAWSES-I of SCOSTEP, Canada.
18. **Young Scientist Committee Member** of IAGA, International Union of Geodesy and Geophysics (IUGG) for "IAGA-2020 vision" document (2003-2007).
19. **Guest Editor**, Journal of Atmospheric and Solar Terrestrial Physics (JASTP) (UK)-2008.
20. **Guest Editor**, Journal of Atmospheric and Solar Terrestrial Physics (JASTP) (UK)-2006.
21. **Guest Editor**, Journal of Physics and Chemistry of the Earth (JPCE) (Europe)-2005.
22. **Scientific committee members** in several international conference committees.
23. **Active Member** of The New York Academy of Sciences, NY, USA.
24. **Life member** of the India Meteorology Society (IMS) -Since 1998.
25. **Associate** of Committee for Space Research, Paris (France).
26. **Associate /Member** of Aerosol Society of India.
27. **Member** of American Geophysical Union (AGU), Washington, DC, USA -Since 2000

TECHNOLOGY INNOVATION

Development of "System of Air Quality and Weather Forecasting and Research"- SAFAR -INDIA

India's Maiden Metro Air Quality Forecasting System

(Fulfilling commitment to "National Clean Air Program-NCAP" of MoEFCC, Govt. of India, as per NCAP document Action Point P59-60)

ACCREDITATION: (1) Global Recognition: Project recognized by World Meteorological Organization (WMO), United Nations (UN) as its pilot project and provided the "**Certificate of Excellence**"; **(2) National Certification: ISO 9001:2008** -Standard Certification Council of India.

PROJECT OBJECTIVE: Providing location specific information on current and up to 3-days advance forecast for air quality and weather parameters along with current ultraviolet index (skin related) and emission scenario over the city area. Disseminating the information in an easy-to-understand format in terms of Air Quality Index (AQI) based health advisories for the benefit to society.

PROJECT INTRODUCTION: India is a developing country with rapidly growing economy. Providing clean air to its citizens without compromising the development is a big challenge. Challenge needs to be met. The delineation of appropriate, sound and practical action plan to protect Human health and vegetation from chemical weather demands a balanced proposition where mitigation measures should go hands in hand with developmental activities linked to

economic growth of the country. In view of current scenario of air pollution problem and targeting the need of hour, an ambitious project **SAFAR (System of Air Quality and Weather Forecasting and Research)** under the Indian Ministry of Earth Sciences has been conceived, developed and implemented by Dr. Beig, nominee as Project Director for 3 Metro cities namely, Delhi, Pune and Mumbai for the first time in the country for the benefit to the society and best of science. The developed project by the candidate is a step forward to fulfill the above national needs using state of the art Research and Development skill.

SAFAR –PRODUCTS for SOCIETY

- AIR QUALITY: Color-coded AQ-Index based Current & forecast with health advisories.
- HARMFUL RADIATION: Severity of UV radiation (UVI) with associated skin advisories.
- WEATHER: Current & 1-3 days’ advance forecast
- EXTREME EVENTS: Alert for extreme pollution events.
- EMISSION SCENARIO: Accounting sources of air pollution -Identify hot spots.

SAFAR- BENEFICIARIES: Major Beneficiaries are *Citizens of India* and Researcher in the field of Short-Term Climate Change, Health Sector, Local Executive Agencies like corporations, Disaster Management Unit, Environment Department, Educational Institutes and policy makers.

SOCIO-ECONOMIC BENEFITS: SAFAR system can help the nation to reduce the cost of air quality related diseases. The annual cost involved in the treatment of patient including hospitalization and ICU management for COPD and asthma along with medication is huge. As per one case study of NCR-Delhi, national capital having population of 25 million the cost saving in 5 years would be 1157.1 Crores and around 98.2 lakh patients will get benefited by taking appropriate precautionary measures only.

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