NEWS AT A GLANCE

FORTHCOMING EVENTS

1) **ISEB23 — The International Society of Environmental Biogeochemistry's 23rd Symposium**
24 Sep 2017 - 29 Sep 2017 • Palm Cove, QLD, Australia

Topics: Environmental Biogeochemistry, environmental sciences, microbiology, chemistry, soil science, geoscience, limnology, ecology, marine and atmospheric science

Event website: http://www.iseb23.info

2) **EGU Galileo conference**
25 Sep 2017 - 29 Sep 2017 • Furnas, Portugal

Topics: Planetary sciences, Geology, Geophysics, Atmospheric sciences, Habitability

Event website: http://www.egu-galileo.eu/gc2-habitability/

3) **39TH Annual convention, seminar and exhibition on Exploration Geophysics**
5 Oct 2017 -7 Oct 2017, Banaras Hindu University, Varanasi, India

Special Theme: Near Surface Resource Exploration

For further details: anandchaturvedi80@yahoo.com, Ph: +91-9491031530

4) **IMS — International Meeting in Sedimentology: 33rd IAS and 16th ASF joint meetings**
10 Oct 2017 - 12 Oct 2017 • Toulouse, France

Topics: sedimentology, geology, stratigraphy, geochemistry, paleoenvironment, paleoclimate, sources to sink, sedimentary basins, processes

Event website: https://ims2017.sciencesconf.org/

5) **4TH ICEES — 4th International Conference on Earthquake Engineering and Seismology**
11 Oct 2017 - 13 Oct 2017 • Eskişehir, Turkey

Topics: Seismology and seismotectonics, attenuation relationships and seismic hazard, earthquake source models, seismic networks, seismic wave analysis, tsunami, pre-earthquake studies, earthquake studies in applied geology

Event website: http://www.tdmd.org.tr/TR/Genel/KonferansAnaSayfaEN.aspx?

AWARDS AND RECOGNITION

*Dr. Shakeel Ahmed, Chief Scientist & Head of Indo-French Centre for Groundwater Research at CSIR-National Geophysical Research Institute, Hyderabad received Savitri Chadha Memorial award (Award of Excellence in Groundwater Investigation and Management for 2016). This award is given annually by the Indian National Committee of International Association of Hydrogeologists (INC-IAH). The award carries a certificate, trophy, and an amount of Rs. 25000/-. The award was presented by H.E. Governor of Haryana, Prof. Kaptan Singh Solanki at a workshop organized by the INC-IAH on 17th December, 2016 at the Manav Rachna International University, Faridabad

*Indian Space Research Organisation (ISRO) Chairman A. S. Kiran Kumar participated in annual service excellence awards function at M R Kurup Auditorium at Satish Dhawan Space Centre, Sri Harikota. He presented awards to 30 employees of the administration department for the years 2013, 2014 and 2015.

*Prof.Sunil Kumar Singh assumed duties as Director of CSIR-NIO, Goa.

*Dr.V.M.Tiwari, Director, CSIR-NGRI has been elected as the President of Association of Exploration Geophysicists (AEG).

*Dr.R.K.Tiwari, Former Chief Scientist of CSIR-NGRI has received Raja Rammana Fellowship of Department of Atomic Energy (DAE-BRNS).

SCIENTIFIC ACTIVITIES

* **Earth Day** is an annual event celebrated on April 22. Worldwide, various events are held to demonstrate support for environmental protection. First celebrated in 1970, Earth Day events in more than 193 countries are now coordinated globally by the Earth Day Network. CSIR-laboratories celebrated the earth day by pledging support for environmental protection.

***World Environment Day** is held on 5 June every year, and it is the United Nation's principal vehicle for encouraging worldwide awareness and action for the protection of our environment. This day is celebrated to project the importance of the natural environment and allows a global platform to raise awareness on the environmental issues worldwide, with plans to mitigate these issues as a global community. This year's theme of the World Environment Day is…. 'Connecting people to nature - in the city and on the land, from the poles to the equator'. CSIR-laboratories celebrated 2017 World environment day on 5th June 2017.

*NEERI developed 'Neerdhur' multi-fuel cook stove to control indoor air pollution.

*NEERI has conducted two days Work Shop on "Solar Energy Utilization (SUN) for Sustainable Development on March 23-24, 2017".

SCIENCE NEWS

Air Pollution

Pollution of any type is detrimental to the wellbeing of Man and severely affects his/ her health. A combination of air, water and food and environment pollution is killing millions of people. Air pollution in particular has reached severe proportions, in the recent past. In the name of development we are converting our cities in to concrete jungles (devoid of greenery) and with aimless speeding of vehicles on busy roads of below average/ limited quality we are producing air pollution in a significant way. With the introduction of high speed four and two wheelers youngsters in particular and commuters of all ages in general are regularly producing dust storms and smog. This deterioration of air quality has assumed monstrous proportions in the last 10 to 15 years. In our country, till the end of 20th century, air pollution used to affect mainly New Delhi. Mumbai and Kolkata were affected periodically. Presently this menace has covered almost all the cities and even towns. In Hyderabad we never witnessed heavy air pollution even 10 years back. With the construction of Metro Rail track, Hyderabad has achieved the distinction of becoming the second highly polluted city in India. If the present trend continues more than half the population would suffer severe respiratory problems, leading to premature death. I give below very alarming details that are harming a significant number of pregnant women and infants in our country due to air pollution. Unless a radical change is brought out in our way of commuting and hazardous way of living we would suffer severely in the foreseeable future. Scientists have to address this menace with commitment and help our citizens. I am happy to say that one of our editorial board members (Prof.Umesh Kulshrestha, New Delhi) is carrying out noteworthy research studies on air pollution and published number of books and high quality research papers. JIGU itself has published many of his papers.

****Air pollution linked to 2.7 million premature births a year**

Curbing outdoor air pollution might help prevent 2.7 million premature births a year, a condition that threatens children's lives and increases their risk of long-term physical and neurological problems. Fine particles in the air from diesel fumes, fires and other sources, might increase the risk of premature births - alongside other risks including a mother's age and health - according to a study published in the Environment International journal. Air pollution may not just harm people who are breathing the air directly - it may also seriously affect a baby in its mother's womb. The majority of premature births linked to air pollution occur in South and East Asia. India alone accounts for about 1 million premature births and China for another 500,000.

Diesel vehicles, forest fires, crop burning, and cooking with wood, dung or charcoal, are major contributors to the problem. A pregnant woman in a city in China or India may inhale more than 10 times pollution compared to those living in rural England or France. In Western sub-Saharan Africa, North Africa and the Middle East premature births were mainly linked to exposure to desert dust. Every year, an estimated 15 million babies are born prematurely and nearly 1 million of them die of complications, the World Health Organisation says.

Pre-term birth complications are the leading cause of death among children under 5 years old, the UN agency says.

Countries need to work together to address pollution, a cross-border problem. For example in a city, maybe only half the pollution comes from sources within the city itself - the rest will be transported by the wind from other regions or even other countries. (**Source:** http://www.hindustantimes.com/world-news/air-pollution-linked-to-2-7-million-premature-births-a-year-say-scientists/story-yESvAmdgYz3Gq6fjyKZHqN.html)

****Delhi air pollution: Lessons to learn from London, Beijing and other cities to tackle smog**

Diwali, the festival of lights is celebrated with great fervour in India. But along with the celebrations come the apocalyptic dark skies, heavy with smog. Despite several initiatives undertaken by the Delhi government, the national capital crumbled under the weight of the hazards of air pollution. On November 1, 2016 a day after Diwali, residents of Delhi woke up to an average PM 2.5 level of over 700 $\mu g/m^3$. This is said to be the highest level recorded ever worldwide.

Delhi has been ranked one of the most polluted cities in the world, but the air pollution story does not belong to this city alone. Many other capital cities of the world have faced such crisis and have successfully battled smog. According to a statement issued by Environment Ministry, "Burning of solid waste and crops, vehicular emissions and dust from construction sites are major contributors to New Delhi's smog".

New Delhi's counterpart, Beijing, was once known as the world's most polluted city. With an un-daunting resolve, it implemented innovative measures to clean its air quality within a span of eight years.

Lessons Delhi can learn from its counterparts: Effective implementations and prompt decisions have come handy for once polluted cities of many countries. Pennsylvania government formed federal laws and agencies to control pollution, including Pennsylvania's 1970 'Environmental Bill of Rights', which states that "the people have a right to clean air, and pure water".

London's "The Clean Air Acts of 1956 and 1968" were a direct outcome of the killer smog, which banned emissions of black smoke. In California, public movements such as Stamp out Smog created awareness and took on the automobile industry. Citizens protested against pollution. Since then the city has improved considerably. (**Source:** http://www.business-standard.com/article/current-affairs/delhi-air-pollution-lessons-to-learn-from-london-beijing-others-to-tackle-smog-116110400661_1.html).

It is time for everyone to act to save Indians from this menacing disaster. Scientists of our country are capable of solving this problem, provided all the stake holders come forward to implement needed measures to curb the menace. At present rate of deterioration we may reach a pollution level that becomes irreversible. At that time even if all are ready to contribute to safety of the environment curative measures may not yield proper results, due to exorbitant costs of cleaning. It is time we introduce various measures to quantify levels of pollution and initiate measures to restrict further deterioration. I give below an innovative way of curbing the pollution that is affecting even the healthy.

****Novel Air Pollution Study Gauges Individual Cyclists' Risks**

Urban bicyclists and outdoor sports enthusiasts may soon learn more about the air pollution they breathe and its health risks as an unusual 3-year study gets underway. A jogger or cyclist breathes harder than someone sitting still, and that can drastically affect how much pollution a person actually inhales. The "traditional metrics" are just pollutant concentrations, stated a research professor at Columbia University, NY. Pollution is typically measured by how much of it is in the air, as micrograms per cubic meter, for example. But a jogger or cyclist breathes harder than someone sitting still, and that can drastically affect how much pollution a person actually inhales.

New York City skies still rank among the dirtiest in the United States. This poor air quality makes the city a pollution laboratory, the researchers note. The Columbia project focuses on fine particulate matter, called PM2.5 because it is smaller than 2.5 micrometers—about 1/20 the width of a human hair. It further focuses on black carbon, a subset of PM2.5 produced by burning organic matter. Most black carbon in cities comes from diesel exhaust. Long-term exposure to black carbon has been linked to an increased risk of heart failure and respiratory problems. As a part of the study the researchers expect to outfit the first small group of volunteers in 3rd week of June, 2017, with two sensors to measure PM2.5 and black carbon, a GPS device, a biometric shirt called a Hexoskin that measures breathing rates and heart-rate variability, and an automatic blood-pressure reader.

The recent advent of smaller, cheaper sensors is making it possible for pollution researchers to deploy many more sensors than before and to mount them on people or small vehicles like bicycles. As a result, scientists can measure concentrations at the street level at scales fine enough to look at individuals' exposures. Although the second phase of the study will be more comprehensive, to be taken up by end of July, the pilot study of 40 riders has already revealed some key information, such as how unevenly pollution is distributed in space and time. Researchers speculate that their study might also serve as a call to cyclists to change their behaviour by taking a different route, commuting at a different time, or even pedalling slower through the dirtiest part of their commute.

(**Citation:** Kaufman, R. (2017), Novel air pollution study gauges individual cyclists' risks, *Eos, 98,* https://doi.org/10.1029/2017EO075893. Published on 13 June 2017).

Since in all our mega cities we have a significant number of commuters using bicycles, it would be useful to carry out such experiments to specifically identify zones that have different levels of pollution in time and space. This in turn could help preventive and curative measures to safeguard the vulnerable segments of our urban population.

Eminent International Geophysicists of Indian Origin

When I have started the sub-section "Living Legends" I focused on elderly eminent Indian Earth scientists (Geologists, Geochemists & Geophysicists). Once after covering more than twenty scientists I found it very difficult to gather relevant information of others. Since it was essential to continue this sub-section, as the details given would motivate young researchers to carry out research following the significant achievements made by the "Living Legends", I switched over to Outstanding Contributions made by Indian scientists belonging to not only earth sciences but also other branches of science. Under this category 5 Outstanding Scientists' contribution to Indian science was covered.

When I was thinking about the significant achievements made by senior Indian scientists I came across a write up by an eminent geophysicist of Indian Origin living in North America. This made me to introduce a sub-section "Eminent International Geophysicists of Indian Origin". Under this category significant contribution made by a scientist of eminence is included in this and five more bi-monthly issues. Details are given below.

Significant research contributions in Geophysics by senior scientists of North America of Indian origin

Prof.Murli H. Manghnani

Professor of Theoretical and Eperimental Geophysics, University of Hawaii at Manoa, Hawaii Institute of Geophysics & Planetology, School of Ocean and Earth Science & Technology, Honolulu, Hawaii 96822, is a well known internationally renowned geophysicist with research experience in various fields of Geophysics including Reservoir Seismics, High Pressure and Materials Science, Mineral Physics, Earth & Atmospheric Sciences and Earth, Soil and Environmental Sciences.

Education

- 1957- B.S. (Honors), Bihar University, India
- 1958- M.S., and A.I.S.M. (Applied Geology), Indian School of Mines, Dhanbad, India
- 1962- Ph.D. (Geology; major: Geochemistry), Montana State University
- 1962-63- Post-Doctoral Fellowship in Geophysics, University of Wisconsin

Positions Held

University of Hawaii Hawaii Institute of Geophysics & Planetology, and Dept. of Geology & Geophysics	Professor of Geophysics, and Director, High Pressure and Materials Science Laboratory	1974- present
National Science Foundation	Program Director, Experimental & Theoretical Geophysics	1981-82
Max-Planck-Institut fur festkorperforschung, Stuttgart, W. Germany	Visiting Professor	Feb. 1978
University of Hawaii	Associate Professor of Geophysics	1969-74
University of Hawaii	Assistant Professor	1964-69
University of Hawaii	Assistant Geophysicist	1963-64
University of Wisconsin	Post-doctoral Fellow in Geophysics	1962-63

Awards/Appointments

- 1955-58- Indian School of Mines, Dhanbad, India, Scholastic Awards
- Fall 1959- California Institute of Technology, Institute Scholarship
- 1962- Society of Exploration Geophysicists, Scholarship Award
- 1970- U.S. National Academy of Sciences-National Research Council, Senior Post-Doctoral Research Associate ship, tenable at Air Force Cambridge Research Laboratories
- 1978-92- Member, International Practical Pressure Scale, AIRAPT Task Group
- 1980-82-Research Council, U.S. National Academy of Sciences Member, Committee on Geological and Material Sciences
- 1982-92-Member, International Editorial Board, "Materials Science of Minerals and Rocks" Series, TERRA Publishing Co., Tokyo (Japan) and D. Riedel Publishing Co., Dordrecht (The Netherlands)
- 1983-90-Member, Mineral Physics Committee, American Geophysical Union
- 1986-88-Chairman, Mineral Physics Committee, American Geophysical Union
- 1985-86- Expert Advisor in High-Pressure Physics, International Advisory Panel, Chinese University Development Project
- 1985-87- Specialist Advisor in High-Pressure Science and Technology, United Nations Development Project (India)
- 1986- Guggenheim Fellowship Award
- 1989- Fellow, Mineralogical Society of America
- 1990-94- Member, Earth & Atmospheric Sciences Panel, National Research Council Associate ship Programs
- 1991-93- Member, National Research Council Panel, NSF, Graduate Fellowship Program
- 1996-present- Member, Geo Soil Enviro CARS Steering Committee, Advanced Photon Source, Argonne National Laboratory.
- 1997-99- W.D. Wilson Fellowship (Ernest Oppenheimer Trust) Award, University of Witwatersrand, Johannesburg, S. Africa

Research Interests:
Prof. Manghnani's research interests include some significant studies on velocity, impedance, Anisotropy and attenuation characteristics of reservoir rocks: These studies have resulted in publication of many papers including:

1. Prasad, M., and Manghnani, M. H., 1996, Velocity and impedance microstructural anisotropy in reservoir rocks: 66th Ann. Internat. Mtg., Soc. Expl. Geophysicists, Expanded Abstracts,pp- 1854–1857.

2. Prasad, M., Manghnani, M. H., and Siegesmund, S., 1994, Velocity and attenuation characteristics of selected KTB core samples: Scientific Drilling, vol 4,pp- 221–231.

3. Manika Prasad and Murli H. Manghnaniz, 1997. Effects of pore and differential pressure on compressional wave velocity and quality factor in Berea and Michigan sandstones, Geophysics, vol.62, no.4,pp-1163-1176.

Some recently cited publications:
Hushur A, Manghnani MH, Werheit H, Dera P, Williams Q. 2016; High-pressure phase transition makes B4.3C boron carbide a wide-gap semiconductor. Journal of Physics. Condensed Matter : An Institute of Physics Journal. 28: 045403. PMID 26751337 DOI: 10.1088/0953-8984/28/4/045403

Tkachev SN, Manghnani MH, Williams Q. 2005; In situ Brillouin spectroscopy of a pressure-induced apparent second-order transition in a silicate glass. Physical Review Letters. 95: 057402. PMID 16090919 DOI: 10.1103/PhysRevLett.95.057402

Tkachev SN, Manghnani MH, Niilisk A, Aarik J, Mändar H. 2005; Raman and Brillouin scattering spectroscopy studies of atomic layer-deposited ZrO(2) and HfO(2) thin films. Spectrochimica Acta. Part a, Molecular and Biomolecular Spectroscopy. 61: 2434-8. PMID 16029867 DOI: 10.1016/j.saa.2005.02.025

Recent Research interests:
*Fundamental research of the physico-chemical and thermodynamic properties and the composition-structure-property systematic in Earth materials (hydrous mantle minerals, core materials); ceramics (oxides, silicates and their polymorphs); thin films of hard materials; silicate glasses and melts; metals (Ti, Zr, Hf, V, Cr, Mo, and their alloys) and the Fe-Ni-S and Fe-Ni-Si melts under in-situ high pressure/temperature environments.

Research-Related National and International Professional Appointments, Service and Activities:

National

• Member, Steering Committee, Geo Soil Enviro CARS (Consortium for the Advanced Radiation Sources) at APS (Advanced Photon Source), Argonne National Laboratory: A new Synchrotron X-ray Facility for Research in Earth, Soil and Environmental Sciences (1995-present). • Member, Design Team, Large-Volume Apparatus for Geo Soil Enviro CARS at APS (1995-present). • Member, High Pressure Collaborative Access Team (HPCAT) for x-ray synchrotron research at the Advanced Photon Source (APS), Argonne National Laboratory. • Reviewer of manuscripts submitted to journals: e.g., J. Geophys. Research, Geophysical Res. Lett., Cosm. Geochim. Acta, SCIENCE, Rev. Scientific Instruments, J. Acoust. Soc. Amer, and J. Am. Ceramic Society. • Reviewer of research proposals submitted to various agencies such as NSF, Petroleum Research Fund (American Chemical Society), Department of Energy. •Member, National Research Council post-doctoral associate ship and graduate fellowships panel (1989-1998). • Invited talks at various institutions and National Laboratories.

• Member, University of Hawaii Service: served on the UH Manoa Tenure and Promotion Committee during the period 1997 – 2001.

International

*Served as the U. S. convenor of the U. S.-Japan seminar on "High Pressure-Temperature Research: Properties of Earth and Planetary Sciences", held on Maui, Hawaii, January 22-26, 1996. Since 1976, such U. S.-Japan seminars in the field of High Pressure Research have been held every 5 years. Served as the U. S. convenor of all the seminars in the series.

- Co-editor of the American Geophysical Union (AGU) Monograph: 1. "High-Pressure Research: Application to Earth and Planetary Sciences", American Geophysical Union, Monograph 67, edited by Y. Syono and M. H. Manghnani, 530 p., 1992. 2. Editor of "Properties of Earth and Planetary Materials at High Pressure and Temperature", American Geophysical Union, Geophysical Monograph 101/102, edited by Murli. H. Manghnani and Takehiko Yagi, 1997, 562 pp.
- Member of Organizin Committte Co-chairman, 11th International Symposium on Non- destructive Characterization of Materials, Berlin, June 24-28, 2002. • Member of the Organizing Committee, Six International Symposiums on High-Pressure Physics (HPMPS-6), Verbania, Italy, 25-29 August 2002.
- Member, Organizing & Program Committee, Sixth International Conference on the Science of Hard Materials, Canary Islands, Spain, 9-14 March, 1998.
- Organizer/chairman of the AIRAPT-17 CONFERENCE (International Conference on High Pressure Science & Technology-17) held in Hawaii, July 25-29, 1999.
- Editor-in-Chief of the AIRAPT-17 Science and Technology of High Pressure Conference Proceedings, published as a 2-volume book: Universities Press, 1117p., 2000.
- Invited talks at various institutions and National Laboratories.
- Organiser and co-organiser of International Seminars in High-Pressure Mineral Physics,Since 1976, Murli Manghnani, in cooperation with Professor S. Akimoto (now Professor Emeritus, University of Tokyo), Professor Y. Syono (Tohoku University), and Professor T. Yagi (University of Tokyo) in Japan, and colleagues in the U. S., has co-organized five seminars, at intervals of five years, held alternately in the U. S. and Japan. As co-editor of the five highly quoted volumes, Manghnani has taken a leading role in the editorial work and publication of the seminar proceedings:

Publication of books

1) High Pressure Research: Applications in Geophysics, Academic Press (1977), 642p. 2) High-Pressure Research in Geophysics, TERRA (1982), 632p. 3) High-Pressure Research in Mineral Physics, TERRA/AGU (1987), 486p. 4) High-Pressure Research: Application in Earth and Planetary Sciences, TERRA/AGU (1992), 530p. 5) Properties of Earth and Planetary Materials at High Pressure and Temperature, AGU, Geophysical Monograph 101 (1997), 562p.

P.R.Reddy

Air Pollution Quotations

* Even people who are healthy and athletic can be affected by air pollution.

- Jane Laping-(1819-1903) an U.S. politician affiliated with the Democratic Party.

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* The environmental effects of the automobile are well known: motor vehicles cause, for example, as much as 75 percent of the noise and 80 percent of the air pollution in our cities, and the industry must face mounting pressure from environmentalists.

- Stewart Udall-(1920-2010) an American politician and a federal government official

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* There's so much pollution in the air now that if it weren't for our lungs there'd be no place to put it all.

- Robert Orben-(1927--) an American professional comedy writer, and magician

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* The health effects of air pollution imperil human lives. This fact is well-documented.

- Eddie Bernice Johnson –(1935--) a politician from the state of Texas

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* As a black person in America, I am twice as likely as a white person to live in an area where air pollution poses the greatest risk to my health. I am five times more likely to live within walking distance of a power plant or chemical facility - which I do.

- Majora Carter-(1966--) an American urban revitalization strategist and public radio host of New York City

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* In tough times, some of us see protecting the climate as a luxury, but that's an outdated 20th-century worldview from a time when we thought industrialization was the end goal, waste was growth, and wealth meant a thick haze of air pollution.

- Alex Steffen –(1968--) an American futurist and former editor at the website World changing

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* It was exciting to be off on a journey she had looked forward to for months. Oddly, the billowing diesel fumes of the airport did not smell like suffocating effluence, it assumed a peculiar pungent scent that morning, like the beginning of a new adventure, if an adventure could exude a fragrance.

— E.A. Bucchianeri, Brushstrokes of a Gadfly, famous young American author of Non-fiction and fiction novels

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* The internal combustion engine, one of the greatest technological advancements in history, has an unfortunate downside, namely air pollution so thick that, very soon, sixty-four packs of crayons will include the color Sky Brown".

— Cuthbert Soup , an American author of children's books