NEWS AND VIEWS AT A GLANCE

FORTHCOMING EVENTS:

* 103rd Indian Science Congress to be hosted by University of Mysore, Mysore from 3-7 January 2016
  Focal theme - Science & Technology for Indigenous Development in India
  www.isc103.in

*** 27-29 January 2016**

UNISDR Science and Technology Conference on the implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030
Geneva, Switzerland

*** 21-26 February 2016**

ASLO-AGU-TOS Ocean Sciences 2016 Conference
New Orleans, Louisiana, U.S.

P.S : For more details visit (source **http://unfccc.int/science/knowledge_resources/calendar_of_science_events/items/6562.php ** http://climate-l.iisd.org/events/.
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* **International Conference on Geosciences and Environment & 32 nd Annual Convention of Indian Association of Sedimentologists**
  Dates: 07 Jan 2016 → 10 Jan 2016
  Location : Annamalainagar, Tamilnadu, India
  Weblink: http://www.icgenias2015.com

* **Geotechnical and Structural Engineering Congress 2016**
  Dates: 14 Feb 2016 → 17 Feb 2016
  Location: Phoenix, United States
  Weblink: http://www.geo-structures.org/

* **Melt in the Mantle**
  Dates: 15 Feb 2016
  Location: Isaac Newton Institute for Mathematical Sciences, United Kingdom
  Weblink: http://www.newton.ac.uk/programmes/MIM/

AWARDS, FELLOWSHIPS AND RECOGNITION

** **Dr. G Parthasarathy**, Chief Scientist, CSIR-NGRI, Hyderabad has been elected as Life Member of Astronautical Society of India (ISRO) -2015 &Life Member of Astronomical Society of India (IIA)-2015
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Fellows of the National Academy of Sciences, Allahabad, for 2014

** **BHARDWAJ, Anil** , Director, Space Physics Laboratory, Vikram Sarabhai Space Centre; Sp: Planetary Science/Space Science.

** **BHATTACHARYA**, **Dipankar,** Professor, Inter-University Centre for Astronomy & Astrophysics, Pune University Campus, Ganeshkhind; Sp: High Energy Astrophysics/ Computational Astrophysics.

** **GHOSH, Probir Kumar** Director, Indian Grassland and Fodder Research Institute, Jhansi; Sp: Carbon Sequestration/Soil Water Conservation

** **KUSHWAHA, Satya Prakash Singh**, Professor & Head, Forestry & Ecology Department, Indian Institute of Remote Sensing, ISRO, Dehradun; Sp:Ecology/Biodiversity/Geoinformatics.

** **PANDEY, Om Prakash,** Emeritus Scientist, CSIR-National Geophysical Research Institute, Uppal Road, Hyderabad - 500007;

Sp. Geophysics/Geological Sciences/Earth's Thermal Evolution

** **SRIVASTAVA, Rajesh Kumar**, Professor, Centre of Advanced Study in Geology, Banaras Hindu University, Varanasi; Sp: Igneous Petrology/ Geochemistry/ Precambrian Geology.

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** **Dr. Rajiv Nigam**, Chief Scientist, CSIR-NIO has been selected by Paleontological Society of India for the award of S.N.Bhalla Gold Medal, for 2015, in recognition of his outstanding contributions in the field of Micropalaeontology. Dr.Nigam pioneered marine geological studies using Foraminifera. He contributed significantly to the growth of Indian Geophysical Union (IGU).He was Joint Secretary of IGU for many years and earlier received prestigious Dr.Siddique Memorial Lecture Award of IGU. We wish Dr.Nigam many more such awards for his noteworthy contributions in marine geosciences.

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** **Dr. Vineet K. Gahalaut**, of CSIR-NGRI, a well known seismologist assumed duties as Director, National Centre for Seismology, Ministry of Earth Sciences, New Delhi. He would be planning and executing a variety of field investigations, using different geophysical techniques, to better understand seismicity of Himalayas. He received recently Annie Talwani Award of Indian Geophysical Union, for 2014. We wish him success in his professional endeavours.

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Mangipudi Venkata Ramana (Dr.M.V.Ramana), Former Chief Scientist of NIO, Goa and a renowned Marine Geophysicist took charge as Director, **Mauritius Oceanography Institute, Mauritius (**MOI) in November 2013 (approved by the Prime Minister of Mauritius). MOI undertakes scientific research in collaboration with local and international institutions to contribute to the regional and global matrix of oceanographic science. Like many other small island developing states, Mauritius too faces the problem by the land-based developmental activities which affect adversely and impact the marine coastal environment. A major responsibility of the MOI is to monitor the marine environment around Mauritius, Rodrigues and the Outer Islands, and advise the Government on appropriate policies and strategies for the intelligent management of the living and non-living resources under its jurisdiction. During the period of stay, Dr.Ramana involved: i) in finalization of Rodrigues legal continental shelf report preparation and submission to UN (2014 and 2015), ii) finalization of new MOI laboratory building plans and initiated the construction works of the approximately 3400 sq meters laboratory building at Albion, iii) reorganization of MOI scientific projects and identified training needs to MOI scientific and technical staff members towards sustainable development of research activity and iv) explored several international scientific collaboration programs (Germany, France, US, Australia, China etc). Dr. M V Ramana after serving for more than 18 months at MOI as Director, returned to India in June 2015. He contributed significantly to the growth of Indian Geophysical Union (IGU).

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Dr.M.Ravi Kumar of CSIR-NGRI , a renowned seismologist with significant experience in Receiver Function and Seismic Tomography studies, took charge as Director, Institute of Seismological Research (ISR), Raisan, Gandhinagr, Gujarat, on 14th October, 2015.We wish him success in taking the institute further forward in carrying out high quality scientific research in seismology and allied subjects.

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SCIENCE NEWS

***Space News

ISRO releases Mars atlas to mark Mangalyaan's first birthday in space .

India's Mars Orbiter spacecraft 'Mangalyaan' completed one year in the Red Planet on 24th Sept,

2015. To mark the occasion, the Indian Space Research Organisation (ISRO) has released a 'Mars atlas' in Bengaluru in the last week of September, 2015.

Mars mission will last for many years, says ISRO

As it prepares to celebrate the first anniversary of its spacecraft's tryst with Mars, ISRO on 24th Sept, 2015 said the mission to the Red Planet will last for "many years" as there is not much of a "problem" and they have not had any failures so far. Data collected by MOM would be open to the scientistific fraternity said ISRO Chairman.

ISRO focussing on low cost access to space

Indian Space Research Organisation is moving forward with the development of heavy lift launchers and reusable launch vehicles with its main focus being the low cost access to space, its chairman A S Kiran Kumar said here today

India launched first space observatory Astrosat on September 28

Indian space agency ISRO launched its first multi wave length space observatory 'Astrosat' aimed at studying celestial bodies on September 28. It is similar to the NASA`s Hubble Space Telescope but 10 times smaller. Astrosat aims at understanding the high energy processes in binary star systems containing neutron stars and black holes, to estimate magnetic fields of neutron stars, to study the star birth regions and high energy processes in star systems lying beyond the Milky Way galaxy.

Launching of foreign satellites by ISRO

Few minutes after launching Astrosat ISRO successfully put in orbit Canada`s NLS-14 nano satellite, Indonesia`s LAPAN-A2 micro satellite and four identical LEMUR nano satellites for the US. It is revealed that a total of 23 satellites from nine countries are to be launched by ISRO in the next few years.

There is liquid water on the surface of Mars—Scientists claim

Scientists from Georgia Institute of Technology, Atlanta using a spectrometer on board NASA`s Mars Reconnaissance Orbitor found infra-red signatures for hydrated salts. Presence of the hydrated salts-a mix of chlorates and percholorates has been confirmed by the scientists at all four sites inspected: the Hale, Palikir and Horowitz craters and a large canyon Coprates Chasm. The flows only appear when the surface of Mars rises above -23 C(during Martian summer).The water can run in such frigid conditions because the slts lower the freezing point of water, keeping it liquid far below 0 C.

PHYSICS NOBEL WINNERS ALSO SOLVED SOLAR MYSTERY

Although they won the prize for showing neutrinos have mass, the two Nobel-winning physicists also solved a long-standing mystery of solar neutrinos. Physicists Takaaki Kajita from the University of Tokyo in Japan and Arthur B. McDonald of Queen's University in Kingston, Ontario, Canada, received the Nobel Prize in Physics, 2015 for their pioneering discovery that neutrinos, elusive subatomic particles that are constantly streaming through all of space, even straight through the Earth, can change from one form to another. This finding in turn proved that the tiny particles have mass—a discovery that challenges the prevailing theory of particle physics, known as the standard model.

In the process of discovering the neutrino's changeable nature, the scientists also solved a decades-long mystery about the Sun: the case of the "missing" neutrinos.

"Trying to answer a question that we find right here in our own neighborhood" led to the discovery of neutrino mass, noted Georgia de Nolfo, an astrophysicist at NASA's Goddard Space Flight Center in Greenbelt, Md."We're trying to understand the Sun, and in doing that discovered something much bigger," de Nolfo continued. The

fact that neutrinos can switch types and have mass "affects the evolution of the universe and the structure of matter as we understand it."

(Citation: Wendel, J. (2015), Physics Nobel winners also solved solar mystery, *Eos, 96,*doi:10.1029/2015EO036985. Published on 7 October 2015.)

*****Interesting News**

Spying on a fault to understand earthquake genetic mechanism:

New Zealand's Alpine Fault, which runs for hundreds of kilometers along the length of the country's South Island, is one of the globe's major geological features. Geological evidence indicates that the fault produces an earthquake of about magnitude 8 every 330 years on average. Given that the most recent earthquake was in 1717, the region is due for another.

A new analysis by Bourguignon *et al.* gives insight into why these earthquakes happen by determining how often and where small temblors occur near the fault. After analyzing data from a network of seismographs along the fault's central portion—instruments that measure the ground shaking intensity, direction, and duration—the team calculated that the depth distribution and frequency of earthquakes vary consistently with distance from the fault. Quakes that occur just below the fault are scant and deep; those that erupt farther out are more frequent and shallow.

The team detected more than 1300 earthquakes between 2008 and 2010 near the townships of Harihari and Ross. They used these data and seismological techniques similar to those used to produce magnetic resonance imaging (MRI) and computerized tomography (CAT scan) images of human bodies to detail the structure of the Earth's crust next to the Alpine Fault. They concluded that variations in temperature across the Alpine Fault affect the depths of earthquakes and that variations in the rates at which the rocks are deforming control the frequency of earthquakes. Such studies are crucial for understanding the processes and factors that trigger earthquakes. (*Geochemistry, Geophysics, Geosystems*, doi:10.1002/2014GC005702, 2015)

The Southern Ocean's carbon sink gets stronger

Earth's most important sink for anthropogenic carbon dioxide is more variable than researchers realized. From the following article this is substantiated, introducing a new dimension to impact of carbon dioxide on climate.

Since 1750 Earth's oceans have absorbed nearly 30% of anthropogenic carbon dioxide emissions. Although the Southern Ocean—the circumpolar waters surrounding Antarctica—occupies just a quarter of the total ocean area, it's thought to be responsible for up to half of that uptake (see the article by Adele Morrison, Thomas Frölicher, and Jorge Sarmiento, *Physics Today*, January 2015, page 27). Air–sea fluxes of CO_2 are proportional to the difference in partial pressure Δp of the gas in the atmosphere and in the ocean. In 2007 flux estimates indicated that the Southern Ocean's carbon sink had weakened in recent decades—a trend attributable to an intensification and southward shift of the westerly winds: The stronger the winds, the greater the upwelling of deep, carbon-rich waters. According to two new studies, the slowdown ended in 2002, and by 2012 the Southern Ocean had regained its expected strength, absorbing about 1.2 petagrams (1.2×10^{12} kg) of carbon per year. To reach that conclusion, an international collaboration led by ETH Zürich postdoc Peter Landschützer used new statistical methods to interpolate the relatively scarce Southern Ocean ΔpCO_2 measurements in space and time over a 30-year period. The other study, led by University of Colorado Boulder postdoc David Munro, found the same reinvigoration by analyzing a particularly dense time series of Δp measurements through just one region—the Drake Passage, which extends from the tip of South America to West Antarctica. What accounts for the trend reversal isn't entirely clear. The westerly winds have not weakened, though circulation-driven changes in sea-surface

temperatures, which affect CO_2 solubility, is a likely factor. (**Citation**: P. Landschützer et al., *Science* 349, 1221, 2015; D. R. Munro et al., *Geophys. Res. Lett.*, in press, doi:10.1002/2015GL065194.).

WHY SEISMIC NETWORKS NEED DIGITAL OBJECT IDENTIFIERS?

In a move to give credit where it's due, the International Federation of Digital Seismograph Networks will link digital object identifiers to data from seismic networks and project deployments.

As seismic networks become larger and more numerous, they increasingly provide the seismology community with ever-growing troves of waveform data. These data form the basis of important studies and thus need treatment as independently citable objects.

The good news is that the scientific community generally recognizes this. The bad news is that current citation and acknowledgment practices vary widely, often omitting data providers, and it is often unclear which reference, if any, is preferred for a given network.

In response to this murky situation, which often prevents seismic data providers from receiving recognition, the International Federation of Digital Seismograph Networks (FDSN) has recommended the attribution of a digital object identifier to each seismic network [FDSN, 2014]. This recommendation follows discussion between the seismological data centers within the European Integrated Data Archive and Incorporated Research Institutions for Seismology Data Management Center about possible methods for the generation, maintenance, and promotion of persistent identifiers (PIDs) for seismic networks.

Unique PIDs make consistently citing and acknowledging seismic networks easier for users of seismological data. PIDs offer network operators, data centers, and individual scientists a straightforward way to measure the scientific impact of the data they produced, archived, and distributed.

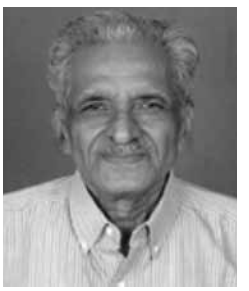
Assigning DOIs for seismic networks and project deployments is a major step toward agreement within the seismology community on common standards for acknowledging large data objects in seismology. Reproducible, verifiable research requires precise identification of the data used.

Seismic networks will be the parent objects needed for more finely grained citation of specific channels and time windows in the future. We anticipate that the growing availability of DOIs for seismic networks will assist the seismology community and encourage other geoscience groups to create citable source data sets.

Ultimately, the new practice will give data providers long-overdue credit for their scientific contributions. Such change can only encourage the generation of more high-quality data.

(**Source**: https://eos.org/opinions/why-seismic-networks-need-digital-object-identifiers)

LIVING LEGENDS-KNOW YOUR PEERS



Prof. R.G. Rastogi (Prof. Ram Gopal Rastogi)

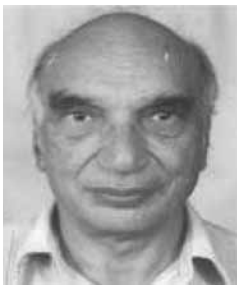
Prof.Ram Gopal Rastogi received BSc (1947) and MSc (Physics) (1949) degrees from Allahabad University, and PhD (1956) from Gujarat University, while working under the supervision of Prof.KR Ramanathan. He worked as a Lecturer in Physics at Saugar University (1949-51), Postdoctoral Research Fellow at National Research Council, Canada (1958-60), Postdoctoral Fellow at High Altitude Observatory and Guest Worker at Central Radio Propagation Laboratory, Colorado (1960-61). He was Reader/Associate Professor/ Professor at Physical Research Laboratory (PRL), Ahmedabad (1961-80), Senior Research Associate, US National Academy of Sciences at Air Force Geophysics Laboratory (1978-79), Director, Indian Institute of Geomagnetism (IIG),

Mumbai during 1980-89, CSIR Emeritus Scientist (1990-95), INSA Senior Scientist (1995-2000), and INSA Visiting Scientist (2008, onwards).

Academic and Research Achievements:
Prof. Rastogi took charge of the Ionospheric Division of PRL (1961) and organized various ionospheric experiments to transform PRL into a leading radio research centre in the world. He was the first to identify the controlling role of the magnetic latitude on the development of low latitude ionospheric anomaly, and its inverse relation to the strength of background magnetic field. He developed indigenously the VHF polarimeters to record Faraday rotation of radio beacons from ATS-6 satellite and installed them at a number of universities in India. He was the first to show that the counter equatorial electrojet and the disappearance of ionospheric E-region irregularities are due to the reversal of the equatorial electric field. His work with Professor VL Patel showed that the sudden reversal of the interplanetary magnetic field causes immediate impulse in the electric field in the equatorial ionosphere. He extensively described the features of the equatorial electrojet during magnetic storms opening up new area of space weather relationship. He has supervised 24 PhD students and published more than 400 research papers in reputed intentional journals.

Other Contributions: Prof. Rastogi installed the first Vertical Ionospheric Sounder Station at Ahmedabad in 1953. He also established the Ionospheric Research Center at Thumba Equatorial Rocket Launching Site in 1963. He installed the most sophisticated NOAA ATS-6 beacon signal recorder at Ootacamund, which still remains as the only experiment of its kind in the world for recording the total electron content in the ionosphere and scintillations within the whole Equatorial F Layer Anomaly Region. During his tenure at IIG, he established its four regional centers and also collaborated with some universities in Australia, USA, Japan and Hong Kong. As Chairman of All India Coordinated Programme of Ionoshperic Theromospheric Studies (AICPITS) of Department of Science and Technology, Government of India, he formulated, organized and conducted a unique inter-university programme. As founder Chairman of the Commission Developing Countries of IAGA, he coordinated research programmes in Developing Countries. He organized two international schools on Ionosphere and Geomagnetism at Pune (1985) and at Trieste, Italy (1987).

Awards and Honours: Professor Rastogi was conferred the Hari Om Ashram Prerit Gokuldas Bombhadi Research Award in Physics by Gujarat University (1971-78), NASA Award for ATS-S Radio Beacon Programme (1977), NASA Award for MAGSAT Programme (1982), USSR Academy of Sciences Commemoration Medal for Research Contribution in Geophysics, Japanese Geophysical Society Commemoration Medal for Contribution in Geomagnetism and Ionosphere and Professor Kalapati Ramakrishna Ramanathan Medal by INSA (2002). He was elected Fellow of National Academy of Sciences (FNA). Fellow of the Indian Academy of Sciences, Bangalore, National Academy of Sciences (India), Allahabad, and **Indian Geophysical Union** and Association of Exploration Geophysicists.



Prof. Rama

Prof Rama did his BSc (Hons) (1949) and MSc (1950) in Physics from the Punjab University and obtained the PhD (1962) from Bombay University. He joined Tata Institute of Fundamental Research (TIFR), Bombay as a Research Student and superannuated as Professor in the Hydrology Groupat TIFR.

Academic and Research Achievements:
Professor Rama demonstrated a rare ability to critically look at some of the basic problems in earth sciences be they atmospheric, hydrological, geological or Oceanographic and came up with solutions based on simple experiments that can easily be carried out with indigeneous effort in this country. Noted examples are Th-234/U-238, Pb-210 and Fe-55 measurements in seawater as an

index for understanding the particulate dynamics, use of cosmogenic and radon daughter products to study atmospheric processes, using radon to trace the Indian monsoon and for studying nano-pores and micro fractures in rocks, use of environmental and artificial tritium to determine groundwater recharge rates and developing a simple and rapid technique to measure Ra-224 (half life = 3.65 d), which is of considerable importance in understanding very rapid coastal oceanic processes. He detected a suite of short lived Cosmic Ray (CR) produced radioactive isotopes in rainwater and in rocks. He then applied the CR produced isotopes alongwith radon daughter products to understand some of the exchange and mixing process in the atmosphere. He has produced the first comprehensive k-Ar dates for Deccan and Rajmahal traps of India. He conceived (and carrying out a small scale project, proved the validity) of the proposition of using the aquifers connected to the seasonal streams for storing surplus flood waters of these streams, provided the aquifers are drawn down adequately beforehand. As Emeritus Scientist at CSIR-NGRI, Prof.Rama motivated a small group of scientists to carry out significant studies using tritium lab facility. He guided researchers to work on soil gas radon to delineate groundwater potential fractures in the granitic terrain. He was elected fellow of the National Academy of Sciences (FNA),Indian Academy of Sciences, Bangalore (FASc) and Fellow of National Academy of Sciences, Allahabad (FNASc). Prof.Rama received number of awards, including **Decennial award-1987 of Indian Geophysical Union (IGU) .**

Dr. C.A. Reddy (Dr Chillakuru Abhirama Reddy)

Dr.C.A.Reddy obtained his BSc (Hons) in 1955, MSc in Physics (1956) and DSc (1963), all from the Andhra University. He worked in the Physics Department of Andhra University as Demonstrator (1956-57), UGC Research Scholar (1957-59), Research Assistant (1959-61) and Lecturer (1961-64). He was Research Associate in the University of Chicago (1964-65), and Visiting

Scientist in the High Altitude Observatory (HAO) of the National Center for Atmospheric Research (NCAR) during 1965-68. Thereafter, he worked as Scientist in the newly created Space Physics Division (SPD) of Space Science & Technology Centre (SSTC) in Trivandrum where he was appointed as Associate Head (1973) and Head (1974). Upon SPD being upgraded in 1984 as Space Physics Laboratory (SPL), he was designated as its Director (1984-91). He was Visiting Researcher for at CNET of CNRS in France (1970-71), Visiting Professor at Radio Atmospheric Science Center (RASC) of the Kyoto University (1989), and at Institute of Space & Astronautical Science (ISAS), Japan (1989-90); and NRC Senior Research Associate at NASA/Goddard Space Flight Center (1992-95).

Academic and Research Achievements: Dr Reddy developed and used a very difficult experiment to measure the polarization of radio waves reflected from the ionosphere at the low-latitude of Vizag. His studies on the reflection and propagation of gravity waves in the atmosphere turned out to be seminal in this emerging research area. His work on different aspects of Blanketing Sporadic-E led to definitive new results on crucial aspects of the phenomenon. Some of his notable findings involve: (a) theoretical study of the effects of shearing winds on the Equatorial Electrojet (EEJ); (b) pioneering results on the one-to-one response of the EEJ to the Auroral Electrojet changes during magnetic sub-storms; (c) increase of phase velocity of type-I plasma waves beyond the local 'acoustic velocity' with increasing plasma velocity in the EEJ; (d) design of a new beam-switching method for VHF/HF radars using an interlaced phased array; and (e) extensive theoretical study on the reflection and attenuation of Kelvin and Rossby-Gravity waves in the low latitude middle atmosphere. While working at RASC, a large height rise of ionospheric F2-layer observed during a magnetic sub-storm was explained as the effect of a large electric field rather than a Gravity Wave propagating from auroral region. While working at

ISAS, Tokyo, he established the frequent presence of electric field-driven F-region height rises during magnetic sub-storms, and also brought out the discrepancy of theoretical predictions with the observed sub-storm-time F-region height changes. At GSFC/NASA, occurrence of very intense zonal plasma flows even at low latitudes during intense magnetic sub-storms was brought out from the study of DE-2 data. He has 80 publications in refereed scientific journals to his credit.His current research interests include Dynamics of Earth's Atmosphere; Solar Wind-Magnetosphere-Ionosphere- Thermosphere Interactions.

Awards and Honours: Dr Reddy was elected Fellow, Indian National Science Academy (FNA);Life Fellow**, Indian Geophysical Union;** and Member, American Geophysical Union.

P.R.Reddy

We Empathise...

We empathise with millions of Chennai citizens devastated due to unprecedented rains and resultant floods. As experts opine such extreme weather events will occur more frequently in future , it is time to go into basics of disaster management and work out strategies to avoid such calamities in coastal belt in particular and entire urban sector in general. Unfortunately, lessons learnt from 2006 Mumbai floods have not been put into use, as Chennai in recent years has been suffering due to insufficient rains and no special attention seems to have been made to strengthen drainage and rainwater drainage network. It has become evident, within few hours of deluge, that in low lying areas rainwater drains have become defunct and inadequate. Surface water bodies that used to receive excess flows have got silted and encroached upon, making citizens of all cadres hapless. It is time for earth scientists rise to the occasion and prepare detailed designs in co-ordination with experts from other fields of knowledge, to build structures that can store precious rainwater and divert extra flows to nearby sea. Needed strategy is to meet both floods and droughts.....

Editor