

NEWS AND VIEWS AT A GLANCE

This is the second edition of News at a glance. Our request to the scientific community, to contribute to this section of the journal received no response. We once again request the researchers to send specific news items of interest to our scientific community. Since only routine news may not help much and add to the knowledge base, it is decided by the editorial team to include information pertaining to important scientific events, which appeared in internationally reputed publications and Indian news media. Our views are appended to make the details more interesting. We believe that specific scientific developments that took place since publication of last issue of the journal are of use to researchers. The list is not comprehensive, as many more topics of interest are not included for want of space.

Important forthcoming scientific events: symposia, workshops and seminars

- 14 – 22 July 2012
39th Scientific Assembly of the Committee on Space Research (COSPAR)
Mysore, Karnataka, India
Sponsors: COSPAR, Indian National Science Academy, Indian Space Research Organisation, others
- 49th Annual Convention of Indian Geophysical Union (IGU) at Prof. Deen Dayal Petroleum University, Raisan Village, Gandhinagar, Gujarat State, during 29-31, October, 2012. For details please contact Dr. P. Koteswara Rao, Hon. Secretary, IGU (E-mail: igu123@gmail.com), NGRI Campus, Uppal Road, Hyderabad-500 007 or Dr. T. Harinarayana, Convenor. GERMI,



Gandhinagar, (E-mail: harinarayana@germi.res.in)

- 3rd Annual Symposium of IGCP 581 on Response of Asian Rivers to Climate Change-Past, Present and Future Scenario, 14-16 November, 2012 at NGRI, Uppal Road, Hyderabad-500 007. For details contact Dr. S. Masood Ahmed, E-mail: smasoodahmad@rediffmail.com
- National Centre for Antarctic and Ocean Research (NCAOR), Goa-403804 invites Nominations from Scientists/Researchers for forthcoming IODP Expeditions. Please contact Program Officer---E-mail: iodp.india@ncaor.org.
- * **Nobel Prize Laureate and Two Pulitzer Prize Winners at EcoSummit 2012**

Nobel Prize laureate Elinor Ostrom, Pulitzer Prize winners E.O. Wilson and Jared Diamond, Kyoto Prize winner Simon Levin, Stockholm Water Prize laureates Sven Jorgensen and Bill Mitsch and many others will be present at the first conference ever linking the Ecological Society of America (ESA), the International Association for Ecology (INTECOL) and the Society for Ecological Restoration International (SER) at the 4th International EcoSummit 2012: Restoring the Planet's Ecosystem Services, which will take place in Columbus, Ohio, USA, 30 September – 5 October 2012. One can note the importance given to environmental safety by the learned. Such an importance needs to be given by our elite personalities to educate our common man and motivate the youth to take up environment upgradation programs.

General topics, including awards / recognition

Geotourist Map of Sri Lanka, Geological Survey and Mines Bureau, Dehiwala, Sri Lanka compiled by Pradeep Nalaka Ranasinghe was released. Details are an invaluable addition to the tourist literature of Sri Lanka

* **Earth System Science 2010: Global Change, Climate and People Proceedings Now Freely Available**

The proceedings of the conference Earth System Science 2010: Global Change, Climate and People, which was held in Edinburgh, 10 – 13 May 2010 are now available at no charge at [Procedia Environmental Sciences](#)

- Dr.V.Vijaya Rao, Chief Scientist, NGRI, Hyderabad received Swami Vivekananda award for significant scientific contributions.
- Dr.Maheswar Ojha , Scientist, NGRI, Hyderabad has received CSIR young Scientist award in Earth Sciences, for the year 2012, for his contributions in the field of Gas Hydrates

Scientific and Environment related news

• **Changing polar environments: Interdisciplinary challenges**

To better understand the impacts of a seasonally ice-free Arctic on ecosystems and humans , Scientists have taken up detailed studies. Results indicate probable linkage with global warming. Further studies are in progress (EOS, vol.93,No.11,6, March,2012). Since ice melting increases sea levels and inundate coastal belts of many nations, these studies assume importance. These studies may also help in understanding the dynamics of Ozone layer. However, the explorers need to be

alert and avoid any additional changes to the already vulnerable eco system of Arctic. Pollution introduced by expedition teams in Antarctica has affected the region significantly and endangered the lives of different species of birds, fish and mammals. Hopefully, the lessons learnt from Antarctica would help the explorers of Arctic in not disturbing the eco system of Arctic.

- The drought is the consequence of the failure of both the seasonal short rains and long rains. The failure of the short rains is predictable through *La Niña* but not that of long rains. *Lyon and DeWitt* (Eos, Vol. 93, No. 11, 13 March 2012) show that the abrupt decline in the East African long rains was linked to abrupt changes in sea surface temperatures. This result is useful in understanding Indian monsoon activity, as enhanced sea surface temperatures are noticed in Bay of Bengal.
- *Nakata and Snieder* (Eos, Vol. 93, No. 11, 13 March 2012) identified a number of relationships that seem to affect shear wave vertical velocities in the near surface. They found that in the months following a major earthquake, shear wave velocities at nearby stations were cut by 3–4%. They further found that shear wave velocities were significantly reduced following periods of heavy rainfall. They suggest that groundwater infiltration would fill any cracks in the subsurface, increasing pore pressure and reducing seismic wave velocities. This result signifies the importance of fluids and faults interaction .Prior to and during the 11th April ,2012 Sumatra earthquake ground water fluctuations have been noticed at Kakinada, Andhra Pradesh. There is every possibility for occurrence of similar phenomenon at different locations along the east coast. It would be interesting to

study the ground water fluctuations at some select places(having permanent and/ or portable seismological observatories), using piezometric monitoring data of CGWB wells and correlate the results with seismological data to find out any probable droppage in seismic velocities. The Japanese study may also help in better understanding the reservoir triggered mechanism. If not exactly similar, the studies carried out in Koyna-Warna region(using portable seismological net works, earth tide recording gadgets set up in observation wells and other related studies) have clearly established the role of fluids and faults in generating significant and continued low level seismic activity. The proposed 2 km deep well and location specific pre and post drilling studies are expected to provide significant results to understand genesis of continued seismic activity and the inter relationship between surface manifestations and sub surface structural complexities .

- Clouds and atmospheric aerosols scatter incoming solar radiation, increasing the proportion of diffuse radiation that reaches the surface. A new instrument developed by the U.S. Geological Survey can measure the quantity and angular distribution of such diffuse radiation, allowing scientists to better understand rates of photosynthesis, atmospheric carbon dioxide exchange, and photosynthetic light use efficiency in terrestrial ecosystems. (**D. G. Dye, Eos, Volume 93, Number 14, 3 April 2012**). Since we have achieved significant development in our space research such additional data inputs would add to the knowledge base.
- *Temmerman et al* (Eos, Vol. 93, No. 14, 3 April 2012) suggest that a large-scale plant die-off would lead to sediment infilling of marsh channels and reduced sedimentation to the previously vegetated

platforms. They say that this would further reduce the survival of future marshland vegetation, triggering a runaway feedback cycle culminating in permanent marsh loss. This is of significance in saving marshland vegetation in our country.

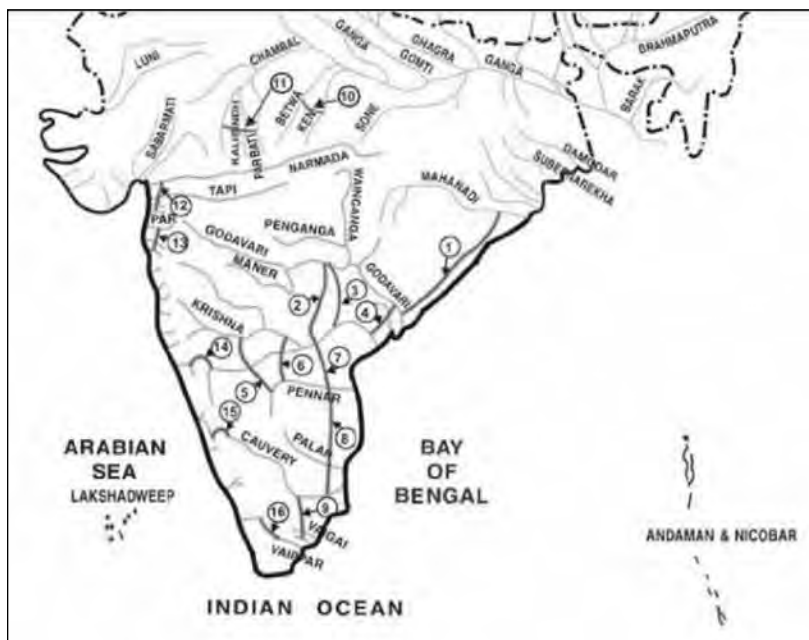
- Solar radio bursts are associated with solar events that can interfere with GPS and communications systems, so scientists would like to learn more about the dynamics of these bursts. Type III solar radio bursts, which are generated when high-energy electrons are ejected from the Sun, are characterized by a rapid drift in frequency from hundreds of megahertz to tens of kilohertz. Scientists believe that the process of producing type III solar radio bursts is associated with the excitation of Langmuir waves, which are oscillations in the electron density in a plasma, followed by the conversion of these waves into radio emissions (EOS, Volume 93, Number 14, 10 April, 2012). This information assumes importance, as NASA predicts significant solar bursts and sun storms in late 2012 and 2013. It is time for us to be prepared to meet the adverse affects due to these natural but rare events.
- A 7.6 M earthquake struck southern Mexico on 20th March, 2012. This was followed by a 7.0 M aftershock on 12th April. A 8.7 M earthquake hit Sumatra region on 11th April. This was followed by an aftershock of 8.2 M. Fortunately no tsunami resulted , sparing millions of people living in different coastal zones of Indonesia, Singapore, India, Sri Lanka. However, tsunami monitoring surveillance net work has recorded increase in tidal amplitude to the tune of `10 cm to 0.5 mtrs at different locales, including Paradeep. Even though the recent seismic activity is associated with strike-slip mechanism the impact due to the magnitude of this

mechanism created these perturbations, leading to initial tsunami warning. Since the seismic activity in this region is continuing we need to be ever vigilant to meet any eventuality.

- Supreme court has instructed government of India to take up linkage between various rivers, to ease water scarcity resultant problems. The linkage suggested by experts committee is shown in the figure. Theoretically speaking such an initiative might help many water starving segments of our country. However, we need to be cautious(as suggested by some learned experts) in putting this initiative into practice, due to emergence of probable environmental imbalances. Since global warming has significantly altered our monsoon pattern and increased unprecedented cloud bursts (including the 2009 super floods that created unprecedented damage all along Krishna river) in addition to long periods of absence of rainfall during monsoon seasons, we are not in a position to properly predict quantum of water available for transfer through linkage channels without

adversely affecting the existing storage structures(dams and reservoirs) built across different riverers. In addition, cutting off flows into the sea can devastate marine ecology and coastal eco system. As such, it is advisable to take up these linkage works in a phased manner and collect relevant data to make bigger and longer linkages trouble free.

- An Australian study of ocean salinity over the past 50 years has revealed a “fingerprint” showing that climate change has accelerated the rainfall cycle (courtesy.. CMS Envis, India). This information and recent studies that have shown rise in sea surface temperatures clearly show the changing monsoon pattern. Even though IMD has suggested normal rain fall during 2012, they have added number of riders, keeping in view unexpected short term changes.
- **Polarimetric synthetic aperture radar utilized to track oil spills**
During the 2010 Deepwater Horizon oil spill in the Gulf of Mexico, remote sensing assets captured the growing extent of the



spill. Using this data, and, in particular, polarimetric synthetic aperture radar (SAR) data, scientists were later able to successfully observe the oil field as it evolved. This method, if conducted in real time, may aid hazard mitigation specialists in determining the size and extent of oil spills, potentially allowing them to issue warnings to specific industries and coastal areas (Eos, volume 93, number 16, 17 April 2012). Since considerable deep water drilling and extraction/ transportation of crude oil is going on in Bay of Bengal and Arabian Sea in addition to import of large quantities of crude knowledge about these studies is very important to minimize losses.

- **Science benefits of onboard spacecraft navigation**

AutoNav, a software package that enables spacecraft to navigate autonomously, eliminates the need to navigate spacecraft from Earth, helping to maximize the ability of spacecraft to collect data needed to accomplish their missions. In particular, AutoNav was directly responsible for the precise flyby navigation needed on NASA's missions to image comets, enabling the collection of nearly 1000 close-up images of comets.

(A. Cangahuala, S. Bhaskaran, and B. Owen, Eos, volume 93, number 18, 1 May, 2012)

- **Library exhibits and programs boost science education**

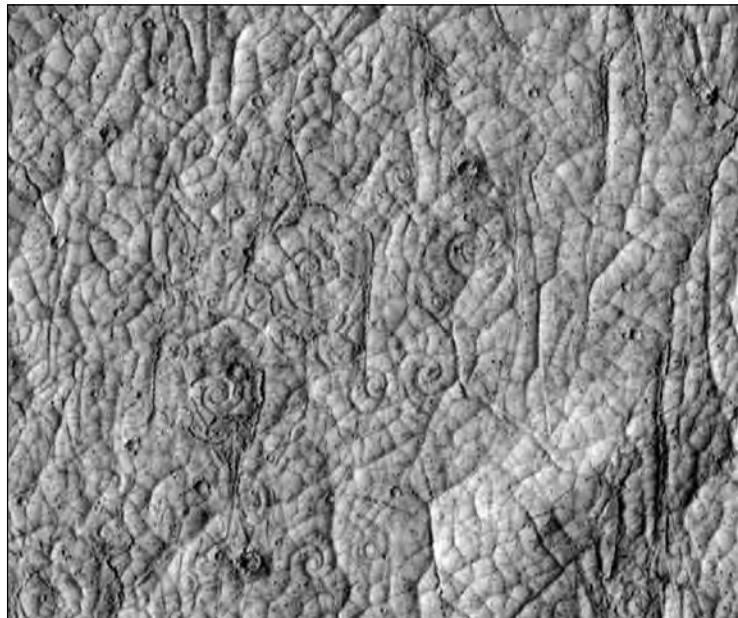
With more than 16,000 outlets, public libraries serve almost every community in USA and can be ideal venues for reaching audiences who typically do not get exposed to topics in science, technology, engineering, and mathematics (STEM). A new national education project for libraries focuses on building STEM skills through hands-on learning programs, exhibits, and the volunteering efforts of scientists.

P.B. Dusenbery and L. Curtis, Eos, volume, 93, number 18, May, 2012)

Such exhibitions are needed in India to motivate young scientists to visit libraries regularly, rather than spending time browsing through internet, which even though informative does not allow the reader to have benefits from hands on exposure to hard copies.

- **Giant coils of lava on Mars**

Giant coils of lava on Mars suggest a mysterious network of valleys on the planet was born from volcanoes, researchers say.



The origin of the Athabasca Valles region near the equator of Mars has been debated for more than a decade. Some researchers have proposed that lava once shaped the valleys, while others have thought ice was responsible. The way the ground there is patterned with multisided polygons suggests that either fire or ice could be the culprit — such patterns of cracks might have formed due to seasonal fluctuations in temperature if the surface there was rich in ice, but also might have arose as lava cooled and fractured (courtesy-Yahoo.India). Even till date considerable speculation is attached to the precise cause of Deccan volcanism, magnitude of Deccan volcanism, its areal extent and location of volcanic vents responsible for the volcanism. As such to have clearer perception regarding the cause of these giant coils present on the surface of Mars, we have to have much closer pictures and analysis of Mars rocks.

- **Real Time GPS measurements for earthquake disaster management:**

The space-based technology that lets GPS-equipped motorists constantly update their precise location will undergo a major test of its ability to rapidly pinpoint the location and magnitude of strong earthquakes across the western United States. Results from the new Real-time Earthquake Analysis for Disaster (READI) Mitigation Network soon could be used to assist prompt disaster response and more accurate tsunami warnings.

The new research network builds on decades of technology development supported by the National Science Foundation, the Department of Defense, NASA and the U.S. Geological Survey (USGS). The network uses real-time GPS measurements from nearly 500 stations throughout California, Oregon and Washington. When a large earthquake is detected, GPS data are used to automatically calculate its vital

characteristics, including location, magnitude and details about the fault rupture. Accurate and rapid identification of earthquakes of magnitude 6.0 and stronger is critical for disaster response and mitigation efforts, especially for tsunamis. Calculating the strength of a tsunami requires detailed knowledge of the size of the earthquake and associated ground movements. Acquiring this type of data for very large earthquakes is a challenge for traditional seismological instruments that measure ground shaking.

High-precision, second-by-second measurements of ground displacements using GPS have been shown to reduce the time needed to characterize large earthquakes and to increase the accuracy of subsequent tsunami predictions. NASA, NSF, USGS and other federal, state and local partners support the GPS stations in the network, including the Earth Scope Plate Boundary Observatory, the Pacific Northwest Geodetic Array, the Bay Area Regional Deformation Array and the California Real-Time Network.

"Conventional seismic networks have consistently struggled to rapidly identify the true size of great earthquakes during the last decade," said Timothy Melbourne, director of the Central Washington University's Pacific Northwest Geodetic Array. "This GPS system is more likely to provide accurate and rapid estimates of the location and amount of fault slip to fire, utility, medical and other first-response teams." The GPS earthquake detection capability was first demonstrated by NASA-supported research on a major 2004 Sumatra quake, conducted by Geoffrey Blewitt and colleagues at the University of Nevada in Reno.

For more information about NASA programs, visit: <http://www.nasa.gov>. It is heartening to learn that NGRI scientists are now in a position to acquire Real Time GPS data.