Editorial

Thank You:

The two year term of present editorial board comes to an end after release of April issue. New team comes to office on 1st April, 2016. The outgoing team extends unequivocal support to the incoming team. We look forward to a glorious future for the journal.

I enjoyed writing the editorials. My editorials have been unconventional, containing not only scientific and technical details but also some ethical and moral norms. I structured these editorials with the sole aim of propagating the importance of various facets of scientific research. I strongly believe that scientists and technical experts need to be basically humane, responsible, committed to their profession and receptive to societal needs. I decided to write these editorials to motivate young researchers to carry out research, with the belief that their concerted efforts would help to enhance the existing knowledge base. I am indebted to those who have lent support to my initiative.

JIGU Achievements:

During the last two years I tried my best, with the support of couple of committed editorial board members, to enhance the visibility of JIGU. I do believe that to a reasonable extent the core group has succeeded in meeting various targets, including bringing out quarterly issues on time and initiating efforts to make the journal an internationally cited journal. However, the success has not gone to our head as we are aware that lot more has to be done. Such a development needs unequivocal support from one and all. A word of appreciation can do wonders and we appreciate hearing them; the only remuneration we look for. The vibration of good words has a positive effect on our world, whereas the vibration from negative words has the power to destroy. That is just one of many things I have learned as editor of JIGU. Irrespective of any criticism and shortage of needed resources our voluntary services yielded good results and we are proud to state that quality of the journal has improved considerably and researchers from both the academic and research institutes are happy to contribute original articles to JIGU. In place of 5 to 6 articles of average quality it is in a position to publish regularly 10 to 12 articles of good quality, including those from other countries. We are also happy in bringing out two special volumes of JIGU, covering two important topics. I place on record our thanks to guest editors for excellent efforts and selecting JIGU for publishing the significant studies. The entire cost of publication has been met by respective guest editors using sponsored support. Readers can access these publications by visiting www.j-igu.in.

Future initiatives to strengthen Journal of IGU

IGU and JIGU mission and vision centre on advancing earth, ocean, atmosphere and space sciences for the benefit of humanity, and communicating its power to ensure a sustainable future for us all. Our ability to collaborate with organizations that share our values – who can also help to amplify the reach and impact of our work – is critical to serving our mission and realizing our vision. After strengthening the base, JIGU has succeeded in providing a dependable platform to publish studies of local importance, without collecting page charges. In this process, while receiving accolades from young researchers and budding scientists, it has encountered some setbacks for want of needed finances. This can be overcome only when it can receive sponsored support from corporate sector. But, IGU (JIGU sponsor) interaction with the corporate sector has been insignificantly limited and transactional, focused nearly entirely on event and program sponsorships. We recognize that by developing a more strategic relationship with the corporate sector, IGU could not only provide more value to you (JIGU readers and IGU members), through access to emerging educational and research tools and technologies, as well as productive avenues for generating and sharing the results of your quality research but also help JIGU to strengthen its administrative set up and provide additional support to university students, teachers and other deserving researchers who are handicapped for want of funds in meeting colour figure reproduction charges.

As meticulously planned and executed, for decades, by American Geophysical Union (AGU), for thoughtful framing of the development of new relationships, IGU has to create a new vision and JIGU has to enhance its visibility. As being planned by AGU, we need to ensure that a regular long –term financial support from individual donors and corporate sector is received for overall development. The Executive committee of IGU approved a new support policy during EC meeting held on 3rd November, 2015 at NCAOR, Goa, to guide the formation of relationships with a variety of different partners. This was felt essential to build Corpus Fund for IGU and JIGU.

I do hope IGU is firmly committed to ensuring that the new vehicles for engagement that these partnerships require are as beneficial to IGU members& JIGU well-wishers as they are to our new partners. IGU's core function is to provide value to its members while working to advance the earth,ocean and space sciences and share that knowledge within and outside of the scientific community for benefit of scientific community and our society. I believe that this new policy will greatly contribute to our ability to thrive in that role. However, such a development could be achieved only when the concerned focus primarily on initiating measures to strengthen IGU and JIGU base and resources.

Need to motivate one and all to achieve the best

As an elderly colleague I wish to share with you some useful lessons to motivate one and all to do their best in all their endeavours. Even though it is difficult to put in to practice all the good acts, at least be receptive and intuitive to get exposed to good lessons. At the same time as often advocated by late Dr. A.P.J. Abdul Kalam dreams are the legitimate issue of our souls seeking expression and manifestation in this journey called life. The flashes of inspiration that come to us as prompts and messages from our hearts make us achieve something you were dreaming about. Dreams are the hints that when we are brave enough to follow them, will lead us to discover new landscapes and destinations of remarkable value. Such a positive approach is essential for our young brains to accept the challenge of taking our country forward by converting basic science into "make in India" product. As explicitly detailed in couple of my editorials we have to come out of our safe zones and ensure our technological development more innovative instead of routine blue sky research.

Finish Strong

I urge one and all, especially the youth, to believe in one`s own capabilities and aim at achieving the best. Such an achievement helps in the long run in ensuring our own and societal welfare. For success one should grab the opportunity that is within his reach. It has been an observation that productive people get ahead during the time that others waste. For success one has to make quick use of the moment. William Ward has this recipe for success:

"Study while others are sleeping;
work while others are loafing;
prepare while others are playing;
and dream while others are wishing."

In other words put in to action your positive feelings.

Living with a Finish Strong attitude can help manifest greatness in your personal life no matter your background—student, parent, teacher, professional or athlete. Dedicating your life to finishing strong in all you do will take everything you pursue to the next level and beyond. It matters not who you are or what you do. What matters is the power of committing yourself to Finish Strong in all you choose to do. All of us need to reinvent ourselves at various times in our lives. At the end of the day, when you lie your head on your pillow at night, regardless of what happened during the day, when you choose to finish strong, you will rest easily knowing that you did everything you could to make the day its best. There is not a single person in the world that cannot benefit from adopting the **Finish Strong** mindset.

The Island of Knowledge

In The Island of Knowledge, physicist Marcelo Gleiser traces our search for answers to the most fundamental questions of existence. In so doing, he reaches a provocative conclusion: science, the main tool we use to find answers, is fundamentally limited.

These limits to our knowledge arise both from our tools of exploration and from the nature of physical reality: the speed of light, the uncertainty principle, the impossibility of seeing beyond the cosmic horizon, the incompleteness theorem, and our own limitations as an intelligent species. Recognizing limits in this way, Gleiser argues, is not a deterrent to progress or a surrendering to religion. Rather, it frees us to question the meaning and nature of the universe while affirming the central role of life and us in it. Science can and must go on, but recognizing its limits reveals its true mission: to know the universe is to know ourselves. An authoritative, broad-ranging intellectual history of our search for knowledge and meaning, The Island of Knowledge is a unique view of what it means to be human in a universe filled with mystery. As the island of our knowledge grows, so too does the ocean of uncertainty, which surrounds it. The urge to know our origins and our place in the cosmos is a defining part of our humanity. The specifics of the questions and of the answers are, of course, entirely different, but not the motivation: to understand where we came from and what our cosmic role is, if any. Gleiser reiterated that he is interested in understanding how we make sense of physical reality through the use of tools and ideas—not a very common theme in science popularizations, which tend to focus mostly on the science. He stated that he developed the central metaphor of the book—the island of knowledge—independently. As we learn more about the world, we become equipped to ask questions and build analogies we couldn't have considered before: for example, astronomy before and after the telescope, or nonlinear dynamics before and after computers. Science is a permanent work in progress. He concluded by saying "I think a healthy scientific community would have a good balance if "final theories" were properly renamed as fundamental theories. There are no final theories, only better ones. (**Source**:http://www.amazon.in/The-Island-Knowledge-Science-Meaning/dp/0465031714& http://scitation.aip.org/content/aip/magazine/physicstoday/news/10.1063/). The above exposition is thought provoking and those who carry out scientific research need to learn the gospel truth…..there are no final theories. What we learn is not the ultimatum. Our learning process has no ending and the timeless pursuit goes on and on.

Living in a world of uncertainty

Running meteorological models with different initial conditions helps forecasters and illustrates the atmosphere's chaotic nature. However, unexpected events happen in science too—more frequently than you might imagine.

Mathematician and meteorologist Edward Lorenz of MIT, in the early 1960s accidentally stumbled on one of the most significant findings in atmospheric science. Lorenz was using a simple computer model, which integrated a set of equations forward in time to make a prediction based on the initial state of the atmosphere. Curious about his model solutions, Lorenz decided to change the mathematical precision of the initial state. To his surprise, his minuscule changes resulted in a completely different forecast—almost as if he had used a different model! The finding led Lorenz to conclude that the atmosphere is a chaotic system, and that even the smallest errors in the initial estimate of the atmospheric conditions can limit our ability to predict weather phenomena.

Lorenz's discovery half a century ago has greatly influenced the way meteorologists predict and study weather today. Given that the atmosphere is a chaotic system, numerical forecasts will inevitably contain errors, due to instabilities of the atmospheric flow. To reduce the chances of large forecast errors, initial conditions must be known precisely and model uncertainties must be minimized. Unfortunately, direct observations are not available in much of the world, including most of the oceans, as well as remote locations where it is impossible to install and maintain weather instruments. Even with the existing observation networks, which include hundreds of weather balloons launched every day around the world, atmospheric measurements still include systematic instrumental errors.

The lack of a uniform and accurate set of observations to initialize numerical weather prediction models means that a single forecast is prone to large errors associated with both initial conditions and model uncertainty. To overcome the limitations, atmospheric scientists use ensemble prediction systems to generate multiple realizations of the future

state of the atmosphere. An ensemble prediction system generally consists of a single model, which is initialized several times, each with a different set of conditions. The initial conditions are taken from a distribution of random perturbations generated using a Monte Carlo algorithm. Each member of the ensemble differs from the other members solely by small perturbations of the initial conditions. Due both to the perturbations and the chaotic behaviour of the atmosphere, each member of the forecast will produce a different prediction. By way of this forecasting method, we can consider the whole range of scenarios and then assess the uncertainty associated with a particular weather phenomenon. Using ensemble forecasts also allows meteorologists to calculate the probability that a certain event will happen, which would be impossible if only one forecast was available. In spite of these limitations considerable progress has been achieved in reasonably forecasting important weather events. With increasing computer capabilities and more observational networks, further applications of ensemble prediction systems will emerge in the coming decades. It is fascinating to think that Lorenz, simply by changing numbers in a simple computer model, could prompt a discovery that would transform our approach to forecasting and studying weather and climate events!

(http://scitation.aip.org/content/aip/magazine/physicstoday/news/10.1063/PT.5.4015?)

These studies assume importance, as intra and inter seasonal weather aberrations and monsoon dynamics are found to vary significantly even within a limited temporal and spatial widow. Once the limitations are circumvented area specific agro meteorological advisories can significantly help one and all including the hapless farmer. Let us wish for the best.

In This Issue:

The present issue has 15 research publications. Out of which the last three are categorised as research notes. Author and title details are listed in the Contents Table. More specific information may please be extracted by going through the individual papers. Editorial is abridged, to give way to publication of additional papers.

Thank you.

P.R.Reddy