

A.P.J. Abdul Kalam (1932-2015)

My interactions with him and his love for Earth Sciences

On the evening of July 27, 2015 India lost one of her most illustrious sons Dr. Avul Pakir Jainulabdeen Abdul Kalam, popularly known as A. P. J. Kalam or just Dr. Kalam. He departed while delivering a lecture to the students of IIM, Shillong at about 6.30 pm. 27th July also happens to be the Foundation Day of the Ministry of Earth Sciences (MoES), Government of India. The news came just after the foundation day celebrations were over at the Vigyan Bhavan in New Delhi. I walked back in the memory lane, when on 27th July 2004 the celebration of the foundation of the Department of Ocean Development (DOD) was held for the first time, where the then Hon'ble President of India, Dr. A. P. J. Abdul Kalam was the chief guest. In 2006 the scope of DOD was enlarged, the India Meteorological Department, the Indian Institute of Tropical Meteorology and a few other meteorological related programs were merged with DOD and the Ministry of Earth Sciences was established.

At the time of writing this short note, two weeks have passed since we lost Dr. Kalam. The news media is full of articles on Dr. Kalam having a character of a 'Karmyogi' and his contributions in building a self-reliant India, his simplicity, his unending enthusiasm for teaching and interacting with children and young students. Biographical details of Dr. Kalam, how he rose from a very difficult childhood to reach his zenith of achievements through



Dr. Abdul Kalam keenly interacting on the importance of Gas Hydrates in the Indian context.

determination, commitment, and hard work to make dreams come true, are all over the media. Here, I shall try to put together his love for Earth Sciences and his support and commitment for the same as I learnt through personal interactions with Dr. Kalam.

My first interactions with Dr. Kalam were during 1990 to 1992, when he was the Chief Executive of the Integrated Guided Missile Development Program. When in Delhi, he used to stay at the DRDO Guest House in Asiad Village, or 'Khel Gaon' as popularly known. At that time, I happened to be an Advisor to the Department of Science and Technology, Government of India, and was also staying at Asiad Village. I would some times run into him during the morning walks, and he would very patiently hear about the work that was being carried out in different disciplines of Earth Sciences. He was particularly very keen on the issue of the artificial water reservoir triggered earthquakes.

On January 26, 2001 we had the devastating Bhuj earthquake of magnitude 7.8 that claimed some 20,000 human lives and caused wide spread damage to property. As a matter of fact, such a devastating earthquake occurred in India almost after 51 years. The Assam earthquake of August 15, 1950 was the previous large earthquake in India. Although the Assam earthquake was much bigger, being of magnitude 8.7, having occurred in a remote area with very low population density, it had claimed only ~ 1500 human lives. At that time I was the Director of the National Geophysical Research Institute, Hyderabad. We had done an immediate field survey to map the extent of damage by the Bhuj earthquake. By this time Dr. Kalam had risen to the position of the Principal Scientific Advisor to the Government of India and Chairman, Ex-officio, of the Scientific Advisory Committee to the Cabinet (SAC-C). He called and invited me to give a talk on the Bhuj Earthquake and what the Government of India should do to prevent such colossal damage and loss of lives in the future. The talk was fixed at 11 am on the 9th February 2001 at Vigyan Bhavan, New Delhi. In the mean time I was asked to join the Department of Ocean Development (DOD) as Secretary. I went to Delhi from Hyderabad in the evening of the 8th February 2001, joined DOD in the morning of February 9

itself and went to Vigyan Bhavan to give the 11 am talk. All the members of SAC-C and a few other invited administrators and scientists were present. Dr. Kalam introduced the topic and invited me to give the talk. The talk lasted for about 40 minutes. The questions that he asked were thought provoking. The keenness of Dr. Kalam to pick up all the minute details about the Bhuj earthquake, what could have been done to make society earthquake resilient, what needs to be done in India now so that the tragedy of 26th January is not witnessed again, set the tone of discussions and the session was over only by 3 pm.

In 2002 Dr. Kalam became the President of India. I had several opportunities to meet and update Dr. Kalam on Earth Sciences related issues. He was very keen on the work of artificial water reservoir triggered earthquakes. In 2004, it was thought that we should start celebrating the Foundation Day of the Department of Ocean Development, which happens to be the 27th July. Shri Kapil Sibal, the then Hon'ble Cabinet Minister for Science & Technology and Ocean Development discussed the possible names for the Chief guest for the occasion. The obvious choice was the President of India. But we were both concerned that with a very busy schedule that Dr. Kalam had, whether he would be willing and available for gracing us on the 27th July. We were lucky, as his personal secretary informed us that as of then there was no commitment of the Hon'ble President for the evening of the 27th July. Time for a meeting was sought and I went with Shri Kapil Sibal to invite him. He was happy to see the two of us, asked some pertinent questions about the oceans. How well it is mapped? What have we done to harness the immense thermal energy stored in the oceans? How good is our coastal zone management? He particularly wanted the involvement of high school students in the activity of the Department of the Ocean Development. Finally, a program was chalked out, which specifically kept time for the Hon'ble President to interact with the students during the Foundation Day function. Hectic preparations were made. As the President of India was the Chief Guest, it was decided to have the function in the main hall of the Vigyan Bhavan. Some thirty high schools in and around Delhi were requested to send 10 children each for the function. Other senior scientists, bureaucrats, eminent persons and the staff members of the entire DOD were also invited. An exhibition depicting the various works being carried out by DOD was



Dr. Abdul Kalam dedicating the indigenously developed Ocean Data Buoy and the Tide Gauge by the National Institute of Ocean Technology (NIOT) to the nation on the occasion of the Foundation Day of Department of Ocean Development on July 27, 2004 at Vigyan Bhawan, New Delhi.

organized. Hon'ble President arrived sharply on time, spent some 20 minutes on various exhibits put up for display. He was particularly very happy to see the indigenously developed Ocean Data Buoy and the Tide Gauge by the National Institute of Ocean Technology located at Chennai. In this Data Buoy, all the mechanical components and buoyancy floats were fully indigenized and the size had been modified to fit into a container truck for easy transportation by road to the ports. It was very cost effective, costing less than one-half of similar floats internationally. His speech was very inspiring. He dedicated the NIOT developed Data Buoy and the Tide Gauge to the nation. Then started his



Dr. Abdul Kalam interacting with the High School Students on July 27, 2004 on the occasion of Foundation Day of Department of Ocean Development at Vigyan Bhawan, New Delhi.

interaction with the students. Students asked a variety of questions, which he answered enthusiastically. For any question, for which he did not have an exact answer, he was not hesitant to ask one of us to answer. His desire to interact with students and excite them to dream big and follow it with hard dedicated work was immense.

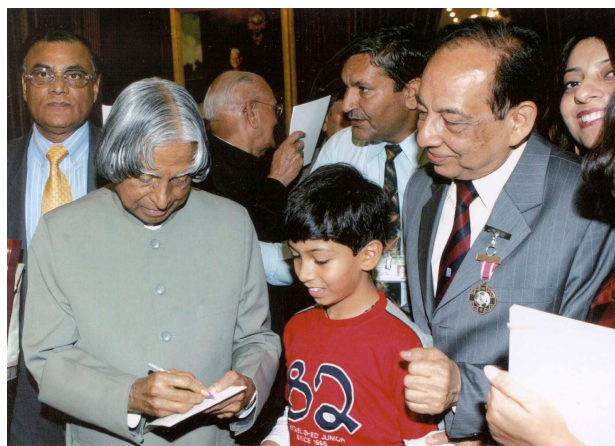
On 26th December 2004, the Mw 9.3 mega earthquake occurred in Sumatra and the resultant tsunami claimed some 250,000 lives in South and South East Asia. India lost close to 15,000 human lives. There were hectic activities at Delhi, meetings of the Group of Ministers chaired by the Hon'ble Prime Minister; Cabinet Secretary's meetings and several other meetings addressing the tsunami issue: Why there was no early warning? How many lives are really lost? Could human lives be saved?; and what should now be done? I met Dr. Kalam on the 1st January, 2005, just 5 days later and told him of the plan that the Department of Ocean Development was going to propose, which in a nut-shell was developing of indigenous tsunami warning system for the Indian Ocean, keeping in mind the fact that there were only two tsunamigenic sources in the entire Indian Ocean: namely- the ~ 4,000 km long stretch from Sumatra to Andaman Nicobar group of Islands, and the 1000 km long area off Makaran Coast in the Arabian Sea. Also to plant ocean bottom pressure recorders covering these two tsunamigenic zones so that false alarms could be avoided. Dr. Kalam whole-heartedly supported this idea, which gave me immense courage and conviction to go ahead with developing a tsunami warning system on these lines. The Indian National Science Academy (INSA) had organized a discussion meeting on the 21st January 2005 where several tsunami experts from all over the world participated. When I presented India's plan to develop a tsunami warning system indigenously, there was a sense of surprise and skepticism. The same evening a reception was organized at the Rashtrapati Bhawan for these experts and a few of us. Dr. Kalam very carefully listened to the advice and comments of all the experts and then opined that India would keep their advice in mind and shall do the needful as suggested by Dr. Harsh Gupta! His opinion and support lent enormous credibility to our efforts and a lot of credit for India to have set up a state of art tsunami warning system in a short span of some 30 months, which is now considered to be among the best in the world, goes to the faith and confidence of Dr. Abdul Kalam in India's capabilities.

At the National Geophysical Research Institute, work on Koyna earthquakes was continued. We had started getting near real time seismic data from seven seismic stations set up in the vicinity of the Koyna Dam, and had noticed that earthquakes of magnitude~ 4 were preceded by

a precursory nucleation phase lasting 100 to 400 hours. Recognition of the nucleation phase in real time could lead to making short time forecasts. The first forecast of a pending earthquake of magnitude 4 was made on May 12, 2006 and communicated to the Secretary, Department of Science and Technology and reported to the Geological Society of India. This forecast came true on the 22nd May 2006 and was covered by EOS and other scientific magazines. I made a special presentation to Dr. Kalam on this forecast and he was delighted. However, still a lot of work needs to be done in this area.

While receiving the Padma Award from him on the 20th March 2006, my grandson Siddharth had also come along. After the award ceremony there was tea. Siddharth went to Dr. Kalam to take his autographs. Dr. Kalam obliged him with his autograph and spent several minutes talking with him. He also took him to the window and showed him several plants in the garden, which he was very fond of. To date Siddharth remembers the personal attention given to him by the President of India and spending time with him. That was also the time that Dr. Kalam said "Gupta, continue your work on earthquake forecasting, and if you succeed in making accurate forecast, you will get the Nobel Prize".

For the 2007 Science Congress held at the Annamalai, I happened to be General President and we had chosen 'Planet Earth' as the Focal Theme. The year 2008 was proclaimed as the 'International Year of Planet Earth (IYPE)' by the United Nation. The aim of IYPE was to highlight the significance and relevance of Earth System Sciences to the public through a well-designed outreach program and enhancing scientific research in niche areas. The outreach activities of IYPE stretched over a triennium 2007- 2009. The IYPE initiative in India started with a well planned mega



Dr. Abdul Kalam giving autograph to Master Siddharth Kumar, 9 years, at Rashtrapati Bhawan on March 20, 2006 after Padma Award Ceremony.



Dr. Abdul Kalam launching the 'International Year of Planet Earth' for India by release of symbolic balloons on January 5, 2007 at Annamalai during the Indian Science Congress with the focal theme "Planet Earth".

event on January 5, 2007 during the Science Congress. The chief guest for the function was our beloved President Kalam. At that occasion we had close to 500 school children as special guests in addition to the participants of the Science Congress. Dr. Kalam addressed the gathering, highlighted

the need of IYPE, particularly for India and inaugurated the India IYPE initiative by releasing symbolic balloons. The glow on his face and the way he talked and mingled with all of us on the occasion was so reassuring. As planned, the outreach activities of IYPE stretched over the period 2007-2009 in which different federal ministries and scientific institutions participated. The highlight was the 'Exhibition on Wheels' in which a train with various IYPE themes carried out demonstrations all over India.

Dr. Kalam's interest and support to Earth Sciences related activities continued till the very end. I had occasions to continue to meet him and appraise on recent developments. Most of the time I found him very well read on these issues.

It is for us to dream big and to carry on working to make India a developed country as thought by Dr. A. P. J. Abdul Kalam.

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