

Prof. Ian Axford and Planetary Exploration

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Prof. Ian Axford is regarded as a pioneer in the field of cosmic rays for his seminal work on their transport and acceleration. He has molded our views on the heliosphere and had a keen interest in understanding the structure and dynamics of magnetospheres around planetary bodies and associated plasma processes. He strongly advocated studies of the three dimensional structure of the heliosphere and was associated with major solar system exploration missions including Voyager, in which he was deeply interested.

The work of Dr. Axford and his colleagues on cosmic rays was very important in understanding the long-term cosmic ray records in lunar samples and meteorites that we pursued in the seventies. They were also very relevant when we tried to infer the ionization state of anomalous cosmic rays (ACR) in an experiment on board Spacelab-3 to check on the proposed ionization states of ACR.

The space missions geared towards studies of energetic particles, magnetic fields and plasma processes across the solar system have improved our knowledge of the magnetic and plasma environment around various planetary bodies and have also advanced our understanding of the evolution of various solar system objects. Most of the planetary missions today combine studies of planetary environment, advocated by Prof. Axford, with remote sensing and robotic studies of planetary atmosphere, surface and interior, needed for a comprehensive understanding of such bodies. A brief presentation on the newly initiated planetary exploration programme of India, guided by such an approach, will be presented.