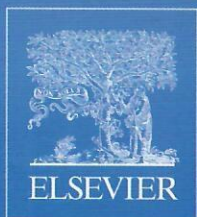
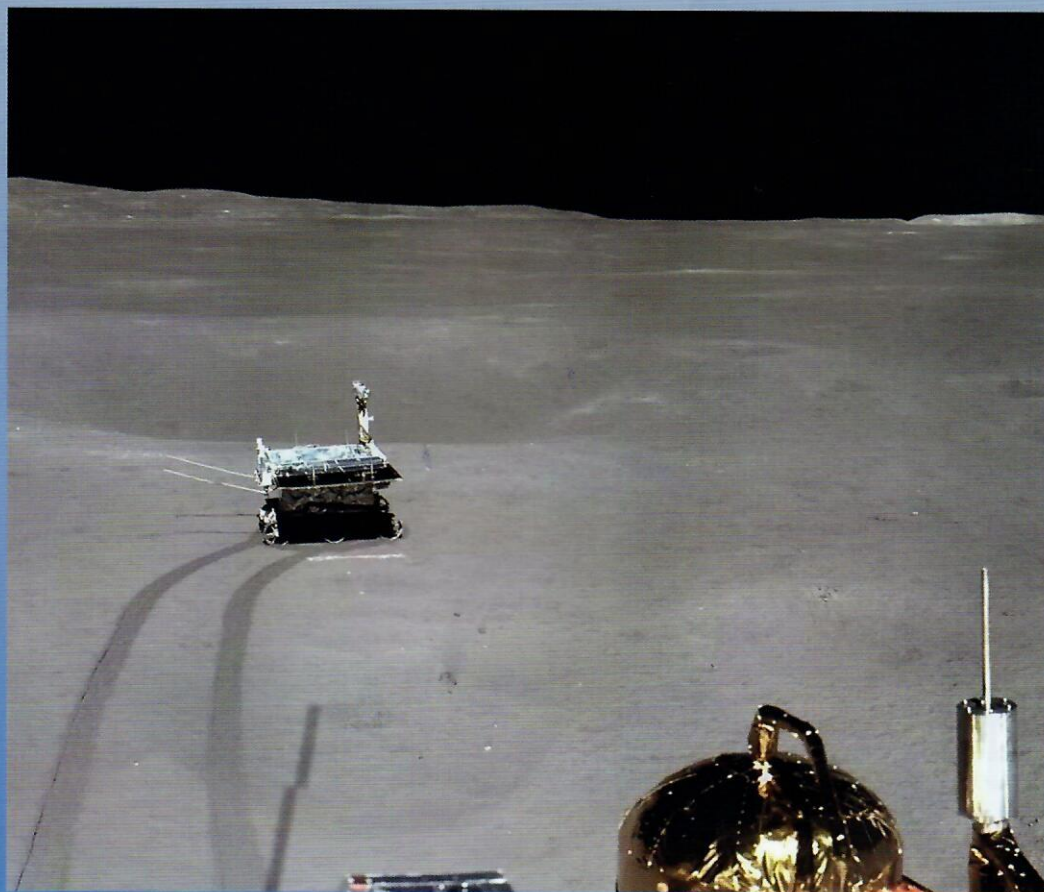




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SPACE RESEARCH TODAY



and enhancing international collaborations within the realm of radiation belt science.

S.A. Haider—Chair, C3 Sub-Commission on Planetary Atmospheres and Aeronomy



Professor S. A. Haider received his MSc from Kanpur University in 1979 and his PhD from Banaras Hindu University (BHU) in 1984. He joined the Physical Research Laboratory (PRL), Ahmedabad as a scientist D in 1993. Later he became Professor (2009) and Senior Professor (2014) at PRL. He was also Chairperson of Planetary Science Division (PSDN) at PRL during 2016-2018. Currently, he is a coordinator of the planetary sciences and exploration programme at PRL.

He worked in the Space Research Laboratory (IKI), Russia, as a post-doctoral fellow from 1989 to 1990 awarded to him from the Russian Academy of Sciences. He also worked in the Institute of Space and Astronautical Science (ISAS), Japan as a visiting scientist of JSPS and ISAS in 1999 and 2000-2001 respectively. He was also awarded Foundation for Promotion of Sciences (FAPES) fellowships in 2008-2009 and 2015-2016 to work as a visiting professor in INPE, Brazil.

With *Chandrayaan 2*, *Mangalyaan 2* and *Venus orbiter* ISRO is planning to explore the Moon, Mars and Venus in 2019, 2022 and 2023 respectively. Under S.A. Haider's leadership, PRL is making satellite payloads to be flown onboard these missions for the studies of atmosphere, surface and interplanetary sciences. There are two payloads: (1) Solar X-ray Monitor (XSM) and (2) Alpha Particle X-ray Spectrometer

(APXS) that are fully developed in PRL for the *Chandrayaan-2* mission. These payloads have been delivered to ISRO HQ. *Chandrayaan 2* is scheduled to fly to the Moon in January 2019. The four atmospheric payloads (Langmuir Probe with Electric field (LPEX), Energetic Ion Spectrometer (EIS), Dust Analyzer (MODEX) and Radio Occultation (RO) experiments) have been selected for *Mangalyaan 2*. Five other payloads: (1) MODEX, (2) XSM, (3) Lightning, (4) Radiation monitor and (5) Ion-Neutral Mass Spectrometer are shortlisted for *Venus Orbiter*. S.A. Haider is a Co-PI/Advisor of these experiments proposed for Mars and Venus missions.

He is also involved in the modelling of planetary and cometary atmospheres. He has made pioneering contributions in the field of planetary atmospheres and ionospheres and their coupling with magnetospheres, especially in the areas of Martian ionosphere, airglow, chemistry and aurora in the cometary coma. He specializes in the development of complex models for atmospheric processes that include complex chemistry, magnetic fields and plasmas and their interaction. Based on a rigorous analysis and modelling of Mars' satellite data he has produced some results which suggest that the daytime ionosphere of Mars comprises D, E, and F layers due to the impact of galactic cosmic rays, X-rays and solar EUV radiations respectively. The night-time ionosphere is produced due to precipitation of solar wind electrons from day-side to night-side atmosphere along the interplanetary magnetic field lines near the terminator. He has also provided a detailed understanding of the effects of CME on the Martian ionosphere. He was the first to model the densities of C, H, N, O and S compounds of masses up to 40 amu in the cometary coma. He proposed that organic species produced by radiation induced processes in cometary precursor grains within the solar nebula and/or in the interstellar medium could be the source of compound of masses > 40 amu. This has made him a unique contributor to the understanding of Martian and cometary atmospheres.

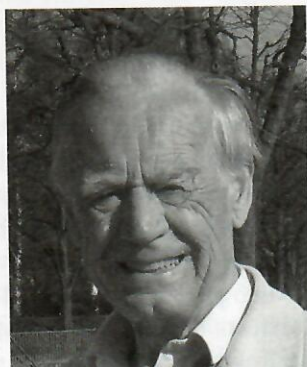
He has published approximately 100 papers in refereed journals and several chapters in books. He has also authored and edited a book on the

modelling of planetary atmospheres. He has supervised several PhDs as well as MTech and provided guidance to MSc students and summer research fellows of Indian academies. He was the editor of *Geoscience Letters* (Planetary Sciences) during the period 2014-2018. He is also a member of several committees on planetary and space sciences.

He is an elected Fellow of Indian Academy of Sciences (2010), Indian National Science Academy (2012) and National Academy of Sciences (2013). He is also J. C. Bose National Fellow (2017). He was elected President of Asia Oceania Geosciences Society (AOGS) Planetary Science for 2012-2014. About 10 international symposia of Asia Oceania Geosciences Society (AOGS) have been organized and convened by him in different countries between 2006 and 2014. Recently he was awarded the ISRO-Merit Award 2017.

In Memoriam

Chris Argent (1931-2018)



It is with great sadness that we announce the death of Chris Argent at the end of October 2018. He was one of COSPAR's longest serving officers, having started as Executive Editor on the *COSPAR Information Bulletin* (now known as *Space Research Today*) in August 1987 and retiring from that role in 2012. However, his role on the *Bulletin* and *Space Research Today* represented just a fraction of his activities in support of our community.

Chris started working for the Royal Society in February 1961 as the executive editor on the Results of the Royal Society IGY Expedition to Halley Bay; he edited three of the four volumes. Following that, he took on a committee secretary role (working initially under the direction of David—later Sir David—Martin), being given responsibility for a variety of British National Committees (corresponding to ICSU Unions and Committees). In no particular order, these included the National Committees for the International Quiet Sun Year (IQSY), the Upper Mantle Project, for IUGG and all seven of its constituent Associations with one sub-committee for each Association, the International Geological Correlation Programme (run jointly by ICSU and UNESCO), parts of the International Biological Programme and parts of the Global Atmospheric Research Programme.

Later, after the Royal Society started to run down the British National Committees, he found himself additionally with responsibility over a period of just three or four years (just before he retired from the Society in 1991) for the committees on data, oceanic research, Antarctic research and space research.

In 1967 the COSPAR Assembly was held in London (at Imperial College at the invitation of the Society). At the time M. Gazin was President. The meeting was held in conjunction with an Assembly of the IQSY of which Granville Beynon was President. It was a very stressful time for Chris as he was responsible, with colleague Philip Wigley, for all the arrangements, including accommodation in the Imperial College halls of residence. Although he was never involved in the organization of later COSPAR meetings, Chris did help organise numerous major assemblies in the UK (IASPEI and IAVCEI in Durham, IAGA in Edinburgh and again in Exeter, IAMAP in Reading, IAG in Oxford) and the lessons learnt from the 1967 COSPAR Assembly emerged in a document, published by the Royal Society, that he prepared on the organization of ICSU meetings in the UK.

Chris was Secretary of the European Geophysical Society (later to become the European Geosciences Union) from its founding in 1971 until