COSPAR 2020 AWARDS

Press Release

(for immediate release)

Committee on Space Research (COSPAR)

To be presented on 30 January during the 43rd COSPAR Scientific Assembly

28 January – 4 February 2021, Sydney, Australia

See below for complete citations and a brief description of COSPAR.

- COSPAR Space Science Award for outstanding contributions to space science:

William J. Borucki (USA), Astrobiology and Space Research Directorate, NASA Ames Research Center, Moffett Field, California

Ken McCracken (Australia), CSIRO and Jellore Technologies, retired, New South Wales

- COSPAR International Cooperation Medal for distinguished contributions to space science and work that has contributed significantly to the promotion of international scientific cooperation:

John Kiss (USA) and **Francisco Javer Medina Díaz (Spain)**, College of Arts & Sciences, University of North Carolina—Greensboro, Greensboro, North Carolina and PCNPµG Lab (Plant Cell Nucleolus, Proliferation & Microgravity), Centro de Investigaciones Biológicas – CSIC, Madrid

- COSPAR William Nordberg Medal commemorating the late William Nordberg and for distinguished contributions to the application of space science in a field covered by COSPAR:

Daniel J. McCleese (USA), Jet Propulsion Laboratory, California Institute of Technology, Pasadena, California

- COSPAR Harrie Massey Award honoring the memory of Sir Harrie Massey, FRS, for outstanding contributions to the development of space research in which a leadership role is of particular importance:

Alexander Held (Australia), CSIRO Centre of Earth Observation - Astronomy and Space Science, Canberra ACT

- COSPAR Distinguished Service Medal recognizing extraordinary services rendered to COSPAR over many years.

Jean-Louis Fellous (France), Committee on Space Research (retired), Paris

- Vikram Sarabhai Medal (a joint award of COSPAR and the Indian Space Research Organization) honoring Vikram Sarabhai, one of the architects of modern India, for outstanding contributions to space research in developing countries:

Alexi Glover (ESA/ESOC), Space Safety Programme Office, European Space Agency, ESA-ESOC, Darmstadt

- Jeoujang Jaw Award (a joint award of COSPAR and the Chinese Academy of Sciences) recognizing scientists who have made distinguished pioneering contributions to promoting space research, establishing new space science research branches and founding new exploration programs:

Wing-Huen Ip (China: Academy of Sciences located in Taipei), Institute of Astronomy, National Central University, Taoyuan

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- Yakov B. Zeldovich Medals (a joint award of COSPAR and the Russian Academy of Sciences) conferred on young scientists for excellence and achievements, honoring the distinguished astrophysicist Yakov B. Zeldovich. One medal is awarded for each COSPAR Scientific Commission:

- *COSPAR Scientific Commission A*

Takatoshi Sakazaki (Japan), Graduate School of Science, Kyoto University, Kyoto

- COSPAR Scientific Commission B

Michele T. Bannister (United Kingdom / New Zealand), Astrophysics Res. Centre, Queens Univ. Belfast

- COSPAR Scientific Commission C

Takanori Nishiyama (Japan), National Institute of Polar Research, Tokyo

- COSPAR Scientific Commission D

Daniel B. Graham (Sweden / Australia), Swedish Institute of Space Physics (IRF), Uppsala

- COSPAR Scientific Commission E

Ildar Khabibullin (Russia / Germany), Space Research Institute (IKI) Russian Academy of Sciences, Moscow and Max Planck Institute for Astrophysics, Garching

- COSPAR Scientific Commission F

Giorgio Baiocco (Italy), Radiation Biophysics & Radiobiology Gr., Physics Dep., University of Pavia, Pavia

- COSPAR Scientific Commission G

Katharina Brinkert (United Kingdom / Germany), Department of Chemistry, Univ. of Warwick, Coventry

- COSPAR Scientific Commission H

Vitali Müller (Germany), Max Planck Institute for Gravitational Physics, Hannover

- Outstanding Paper Awards for Young Scientists

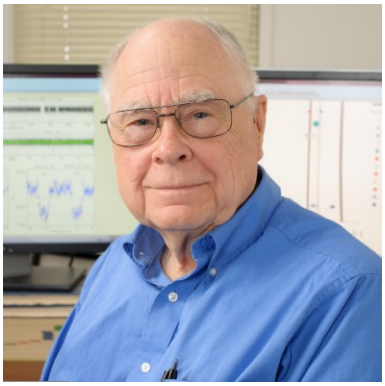
List of thirty-two 2020 recipients available at:

http://cosparhq.cnes.fr/assets/uploads/2020/07/Outstanding-Paper-Award-Recipient-List_2020_Web.pdf.

COSPAR 2020 AWARDS

COSPAR Space Science Award

William J. Borucki



Minor Planet (7864) Borucki

One of the great new fields of astrophysics is the study of exoplanets. As of the end of April 2020 more than 4000 such bodies are known. More than 2000 of these were discovered by the Kepler Mission, with another 2000 candidates yet to be confirmed. The Kepler mission, which is of fundamental importance for the understanding of our place in the universe, would not have come to fruition without the ingenuity and dedication of William Borucki. Early in his career, William had distinguished himself by building spectroscopic instrumentation to determine the plasma properties of hypervelocity shock waves. He developed photochemical models of the Earth's stratosphere and mesosphere to investigate the impact of nitric oxide and fluorocarbon emissions on ozone. He also investigated the optical efficiency of lightning and used these measurements in conjunction with spacecraft observations to deduce the production rate of prebiological molecules in planetary atmospheres. But detecting an 80 ppm dimming in a star is a daunting feat, and it took William and his team years to convince the scientific community that this was a feasible method for finding exoplanets. The resounding success of the resulting Kepler Mission has more than justified his efforts.

In his own words “Going from speculation to knowledge is what science is all about”, and William’s career is a testament to his contribution to Science. He is a worthy recipient of COSPAR’s Space Science Award.

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Ken McCracken

IAU **Minor Planet (8258) McCracken**

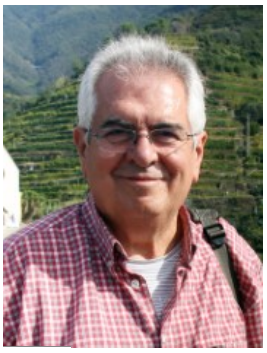
Dr. Ken McCracken began his career in space science at the University of Tasmania where he developed the four station Australian neutron monitor network for the International Geophysical Year 1957-8. At the Massachusetts Institute of Technology he developed the mathematics and digital computer code to trace the orbits of relativistic cosmic rays in the six-degree geomagnetic field, a technique still used today. His studies of the high energy solar proton events in 1960 demonstrated the validity of the Parker model of the heliospheric magnetic field. Moving to the University of Texas, Dr. McCracken was the principal investigator for cosmic ray anisotropy detectors flown on the interplanetary spacecraft Pioneers 6 through 9 and on earth-orbiting satellites Explorers 34 and 41. These six instruments gave a synoptic view of the radiation at all solar longitudes thereby elucidating the propagation and convection of both solar and galactic cosmic radiation. Returning to Australia in 1966, he established an X-ray astronomy programme using balloons and Skylark rockets launched from the Woomera rocket range. He and his colleagues established that some X-ray objects are strongly time variable. In 1969 he was appointed by the Australian Commonwealth Scientific and Industrial Research Organization (CSIRO) to establish a laboratory “to apply space technologies to exploration for minerals under the deeply weathered Australian regolith”. He received the CSIRO medal for “Advances in Geophysics”, and was joint recipient of Australia’s most senior scientific award, the “Australia Prize” for this work. He was a member of the Australian Space Board, 1987-92. Retiring from government service, he has pioneered utilization of the discoveries of the space era in interpretation of ice cores dating 150,000 years into the past. With scientists from several countries he has extrapolated the heliospheric magnetic field and the terrestrial radiation environment throughout the Holocene and beyond. Dr. McCracken started his scientific career before the commencement of the space era. His research results over 60 years have been published in more than 100 refereed publications which are well cited by both his contemporaries and younger scientists. His unique multi-faceted career in cosmic ray and heliospheric research, X-ray astronomy, interplanetary archeology, plus his economically important application of space science and technology to mineral exploration makes him extremely well qualified to receive the COSPAR Space Science Award.

COSPAR 2020 AWARDS

COSPAR International Cooperation Medal

John Kiss and Francisco Javier Medina

IAU **Minor Planet (8267) Kiss**



IAU **Minor Planet (8333) Medina**

Professor Dr. John Z. Kiss and Dr. F. Javier Medina have both been active in international spaceflight research for more than two decades during which they studied the growth and development of plants under microgravity in spaceflight. Both served as principal investigators for a joint spaceflight project named Seeding Growth (SG) where Kiss was funded by NASA and Medina by ESA and the Spanish National Research Agency to conduct studies on board the International Space Station. The major goals of the Seedling Growth program were to determine how gravity and light responses influence each other in plants and to better understand the cellular signaling mechanisms involved in plant tropisms and growth. This successful project was performed between March 2013 and July 2017, using combined American and European technology for the growth of plants in space. Learning how plants adapt to weightlessness and low-gravity environments is crucial in determining the ability of vegetation to provide a sustainable, dependable, and economical means for human life support in space. The ability of plants to provide a source of food and recycle carbon dioxide into breathable oxygen may prove vital for astronauts who will live in space for months at a time. Finally, in the long term, the new knowledge acquired should lead to significant advances in agriculture on Earth.

This International Cooperation Medal to Drs. Kiss and Medina recognizes their pioneering work in space plant sciences with a cooperative spirit at many levels among individuals, organizations, and space agencies. Their achievements epitomize the spirt of this Award, which is to promote people and groups to work together to achieve a common goal and derive mutual benefits in space research.

COSPAR 2020 AWARDS

COSPAR William Nordberg Medal

Daniel McCleese

IAU **Minor Planet (5641) McCleese**

Dr. Daniel J. McCleese is a pioneer in remote sensing of the atmospheres of the terrestrial planets. Since receiving his doctorate from the University of Oxford in 1976, he has designed, built and flown orbiting, state-of-the-art, remote sounding instruments to profile atmospheric temperatures, aerosols, and constituents, with the ultimate goal of systematically characterizing the atmospheres of Earth, Venus and Mars. Pursuing his interest in the climates of the terrestrial planets, Dan proposed a small space mission to pursue the observations of the Martian atmosphere which led to NASA initiating a series of planetary missions, the first of which was Mars Observer. Dan's instrument team built an atmospheric sounder that combined pressure modulation and filter radiometry to measure temperature, dust and water vapour in the Mars atmosphere using limb sounding. Space exploration is not for the faint-hearted. Mars Observer was lost in 1993 just before insertion into orbit around Mars. Dan's instrument was selected for the next Mars mission which was also lost on orbit insertion. The loss of these missions caused NASA to revamp the Mars exploration strategy, and as the Chief Scientist for JPL's Mars Exploration Program, Dan played a key role in its re-architecting.

Dan laid the scientific foundation which resulted in the Opportunity and Spirit rovers, Mars Odyssey, Mars Reconnaissance Orbiter, and the Curiosity rover. These missions are a result of Dan's tenacity and vision that have been his trademark throughout his career: 1) apply state-of-the-art instrumentation to the study of the planets, including Earth; 2) strive to assemble a systematic global planetary climatology — daily global coverage for seasonal and interannual periods; and 3) use these measurements to improve models. Despite setbacks, he persevered. His own instrument was launched in 2005, and its measurements continue today on the Mars Reconnaissance Orbiter. In various leadership roles, and as JPL's Chief Scientist, Dan guided scientific pursuits that advanced the careers of over 300 Earth and planetary scientists and astrophysicists. An internationally known and respected researcher and leader, Dan pursues the goals of Earth and space science at national and international levels. His extraordinary achievements make Daniel J. McCleese a well-deserving recipient of the Nordberg Medal.

COSPAR 2020 AWARDS

COSPAR Harrie Massey Award

Alexander Held

IAU **Minor Planet (8479) Held**

Dr Alex Held is the first southern hemisphere winner of the COSPAR Massey Award, which reflects his pioneering contributions to Earth observation and the space sector in Australia and abroad. Since arriving in Australia and joining CSIRO, Australia's national science agency, in 1991, Dr Held has focused on the use of Earth observation data to improve scientific understanding in landscape ecology and vegetation condition. Dr Held led the award-winning delivery of the Sentinel Hotspots program (2002–2006), a national capability that continues to be widely used to support bushfire response activities in Australia. He has been instrumental in developing the OpenDataCube initiative, as a foundation partner, which now has over 50 DataCube implementations globally and partners including NASA. As a member of the Australian Academy of Science's National Committee for Space Science and the Steering Committee for the 2010-2019 Decadal Plan for Space Science, Dr Held has been an influential voice in the Australian Earth observation community. Currently Director of the CSIRO Centre for Earth Observation, Dr Held is overseeing the establishment of the new satellite NovaSAR-1 as a national research facility; this will make CSIRO's ten per cent share in the UK radar satellite, with associated ground-segment, science program and user-engagement program, available to Australian researchers. In the international arena, Dr Held served as member of the steering committee of the United Nations Office for Outer Space Affairs' Program on Space Technology for Disaster Management in Southeast Asia (2004–2007) and, since 2017, has been a member of the intergovernmental Group on Earth Observation (GEO) Executive Committee and closely involved in the establishment of the Global Forest Observation Initiative, a flagship activity under GEO. He has been Chair of the Committee on Earth Observation Satellites (CEOS) and is now co-Chair of the CEOS Strategic Implementation Team (2019-2021).

COSPAR 2020 AWARDS

COSPAR Distinguished Service Medal

Jean-Louis Fellous

IAU **Minor Planet (8617) Fellous**

Jean-Louis Fellous has been thoroughly immersed in COSPAR since he delivered his first talk at a science conference, the COSPAR Scientific Assembly in Konstanz, Germany in 1973. In the ensuing years, he took part in and organized many Scientific Assemblies, serving 16 years as a COSPAR officer in Scientific Commission A. In 2008 Jean-Louis was appointed Executive Director, when Roger Bonnet was President, a period that culminated in the Scientific Assembly with the highest attendance, in Bremen in 2010. In Bremen Giovanni Bignami was elected President and delegated to Jean-Louis much responsibility for the operations and new initiatives, including the COSPAR Symposium and the launch of the new journal *Life Sciences in Space Research (LSSR)*. At the Assembly in Moscow in 2014, Len Fisk was elected President, and together they entered into a particularly challenging period for COSPAR. The choice in Moscow of the site for the 2018 Assembly resulted in an initial selection of an unqualified bidder, and Jean-Louis had to coordinate an unprecedented revote by the Council and the selection of Pasadena for the Assembly in 2018. The Assembly in Istanbul scheduled for 2016 had to be cancelled, following waves of terrorism, diminishing attendance, and finally, a military coup. Jean-Louis had to arrange for the extraction from the cancelled Assembly and for all decisions and planning that were to take place at the Assembly to occur by correspondence. The Assembly in Pasadena in 2018 was a great success, new initiatives were taken (e.g., strategic seminar, new panels, newsletter) and with COSPAR no longer in a crisis mode, Jean-Louis could hand over his responsibilities to his worthy successor, Jean-Claude Worms.

COSPAR 2020 AWARDS

Joint COSPAR / Indian Space Research Organisation (ISRO) Vikram Sarahbai Medal
for outstanding contributions to space research in developing countries

Alexi Glover


credit: (ESA/J Mai)

Dr Alexi Glover is the Space Weather Service Coordinator within the European Space Agency's Space Weather Office, part of the Space Safety Programme Office, located in Darmstadt, Germany. She is responsible for development and coordination of ESA's network of space weather services which includes participation of approximately 40 research institutes and organisations from across Europe.

The domain of space weather has evolved substantially over the preceding two solar cycles, reflecting the increased need within society for reliable and timely space weather information and services. Throughout this period Dr Glover has been working at the forefront of space weather application and service development, with the aim to ensure that scientific advances in the space weather domain translate into improved information available for those in affected industries who need it, and in supporting the development of a vibrant and sustainable international space weather community with a strong scientific basis. These important challenges have led Dr Glover to take a key role in both European and international development activities.

Dr Glover served as chair of the COSPAR Panel on Space Weather between 2008-2016, co-writing the task description and participating in the development of the international COSPAR-ILWS Space Weather Roadmap. Currently she is co-moderator of the PSW International Space Weather Action Team's overarching activity focussing on capability assessment. She also serves as vice-Chair of the COSPAR Capacity Building Panel, facilitating the organisation of COSPAR supported Capacity Building Workshops in space weather. To date she has collaborated on, and lectured at, workshops hosted in Asia, Europe and Latin America which have supported the training of approximately 100 students and young researchers from more than 25 different countries.

COSPAR and the Indian Space Research Organisation are truly honoured to award the Vikram Sarabhai Medal in 2020 to Dr Alexi Glover for her outstanding contributions to development activities in the field of Space Weather.

COSPAR 2020 AWARDS

Joint COSPAR / Chinese Academy of Sciences (CAS) Jeoujang Jaw Award

for distinguished pioneering contributions to promoting space research, establishing new space science research branches and founding new exploration programs.

Wing-Huen Ip

Professor Wing-Huen Ip has made significant contributions to deep-space exploration, including comets and uter Planets. In particular, his contribution to the CASSINI-Huygens mission was recognized as pioneering and non-replaceable. He is also a pioneer in the study of the interrelation of planetesimals with Uranus and Neptune in the early solar system and in satellite-ring-magnetosphere interaction.

Due to his significant achievements in planetary science and related missions, Professor Ip is a most worthy awardee of the 2020 CAS/COSPAR Jeoujang JAW Award.

COSPAR 2020 AWARDS

Joint COSPAR / Russian Academy of Sciences (RAS) Yakov B. Zeldovich Medals
Recognising young scientists for excellence and achievements.

- COSPAR Scientific Commission A - Takatoshi Sakazaki (Japan)

For his pioneering work in understanding the dynamics of the upper troposphere and stratosphere, through the combination of satellite observations and theoretical analysis, and in pursuing the implications of the upper-atmosphere tides on spatio-temporal variations in ozone abundance.

- COSPAR Scientific Commission B - Michele T. Bannister (UK/New Zealand)

For significant progress in our understanding of the processes which form and control Trans-Neptunian Objects, and for the important contributions of her studies of 1l/'Oumuamua, the first interstellar object.

- COSPAR Scientific Commission C - Takanori Nishiyama (Japan)

For major contributions to studies on magnetospheric effect on the thermosphere/ionosphere and the middle atmosphere by multi-instrument observations from the space and the ground.

- COSPAR Scientific Commission D - Daniel B. Graham (Sweden/Australia)

For the investigation of magnetic reconnection using data from Cluster and Magnetospheric Multiscale.

- COSPAR Scientific Commission E - Ildar Khabibullin (Germany/Russia)

For major contribution to deciphering the historical high energy activity of the supermassive black hole Sgr A* in the center of our Galaxy and insights into the physical processes of galactic collapsed objects.

- COSPAR Scientific Commission F - Giorgio Baiocco (Italy)

For his important contributions in the use of a multifunctional approach in developing personal radiation shielding and monitoring of radiation environment against solar particle events during space travel.

- COSPAR Scientific Commission G - Katharina Brinkert (UK/Germany)

For her contribution to ground-breaking photoelectrochemical experiments in reduced gravitation, demonstrating the potential of solar-assisted oxygen and fuel production for future, long-term, crewed space missions.

- COSPAR Scientific Commission H - Vitali Müller (Germany)

For leading the design, testing, calibration, and data processing of the first inter-satellite laser interferometer of the geodesy mission GRACE-FO which may also be applied to the future gravitational wave mission LISA.

Outstanding Paper Award for Young Scientists 2020
http://cosparhq.cnes.fr/assets/uploads/2020/07/Outstanding-Paper-Award-Recipient-List_2020_Web.pdf.

COSPAR 2020 AWARDS

COSPAR TODAY

The Committee on Space Research (COSPAR) has both National Scientific Institutions and International Scientific Unions as members. Moreover, approximately 11000 scientists actively engaged in space research are COSPAR Associates. Companies and organizations interested in supporting COSPAR activities may also become Supporters of the Committee.

COSPAR acts mainly as an entity which:

• is responsible for organizing biennial Scientific Assemblies with strong contributions from most countries engaged in space research. These meetings allow the presentation of the latest scientific results, the exchange of knowledge and also the discussion of space research problems. Over several decades providing this service has brought recognition to the COSPAR Scientific Assembly as the premier forum for presenting the most important results in space research in all disciplines and as the focal point for truly international space science. In this regard it should be observed that COSPAR has played a central role in the development of new space disciplines such as life sciences or fundamental physics, by facilitating the interaction between scientists in emergent space fields and senior space researchers,
• provides the means for rapid publication of results in its journals *Advances in Space Research (ASR)* and *Life Sciences in Space Research (LSSR)*,
• strives to promote the use of space science for the benefit of all and for its adoption by developing countries and new space-faring nations, in particular through a series of Capacity Building Workshops which teach very practical skills enabling researchers to participate in international space research programs,
• organizes, on a regional scale, scientific exchange and public outreach on specific research topics, in the framework of Symposia and Colloquia,
• advises, as required, the UN and other intergovernmental organizations on space research matters or on the assessment of scientific issues in which space can play a role, for example the Group on Earth Observations (GEO), in which COSPAR is a Participating Organization,
• commissions and prepares comprehensive scientific roadmaps on important topics to allow space agencies and other entities to base decisions affecting their programs and future research on the best available science,
• prepares scientific and technical standards related to space research,
• promotes, on an international level, research in space, much of which has grown into large international collaborative programs in the mainstream of scientific research.

COSPAR's objectives are to promote on an international level scientific research in space, with emphasis on the exchange of results, information and opinions, and to provide a forum, open to all scientists, for the discussion of problems that may affect scientific space research. These objectives are achieved through the organization of Scientific Assemblies, publications and other means.

The International Science Council (ISC) established COSPAR during a meeting in London in 1958. COSPAR's first Space Science Symposium was organized in Nice in January 1960. COSPAR is an interdisciplinary entity that ignores political considerations and views all questions solely from the scientific standpoint.

Complete lists of previous award recipients may be found at:

https://cosparhq.cnes.fr/awards

Further information on COSPAR is available at:

https://cosparhq.cnes.fr/
or from the Secretariat:

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