Eigil Friis-Christensen 1944–2018

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Egil Friis-Christensen, geophysicist and space physicist, was born on 29 October 1944 and died on 21 September 2018. He led geomagnetism into a new era of continuous observation from space and made pioneering contributions in solar–terrestrial physics. He will be remembered for his kind and approachable manner and the guidance and support he gave to those who worked with him. Egil had a rare ability to bring together scientists from diverse backgrounds, inspiring them with his deep conviction that advances in geophysics are driven by new observations.

Egil was born in Tønder, Denmark, close to the border with Germany. He moved to Copenhagen to study physics, his education culminating in the award of a Magisterkonferens (PhD equivalent) in geophysics from the University of Copenhagen in 1971. His first publication, a letter on the use of high-latitude geomagnetic ground observatory data to infer the interplanetary magnetic field structure, was published in *Nature Physical Science* 1971 (Friis-Christensen et al. 1971). He was appointed as a geophysicist at the Danish Meteorological Institute in 1972, from where, with his colleague Johannes Wilhjem, he was responsible for establishing the ambitious Greenland Magnetometer Array, personally setting up stations in remote locations. Between 1976 and 1997, he was the principal investigator of the Greenland Array, and in a series of landmark studies he systematically characterized the impact of the interplanetary magnetic field on polar current systems (Friis-Christensen & Wilhjem 1975, Friis-Christensen et al. 1985).

During this time, Egil was also the first to identify ionospheric traveling convection vortices (Friis-Christensen et al. 1988) and he helped to pioneer the northern Polar Cap geomagnetic index (Vennerstrøm & Friis-Christensen 1987), today used as a monitor of space weather. Between 1991 and 1997, he led the Solar–Terrestrial Physics Division where he carried out influential investigations of the connections between the length of the solar cycle, global temperature and climate (Friis-Christensen & Lassen 1991, Svensmark & Friis-Christensen 1997, Friis-Christensen 2018).

**Geomagnetic satellites**

In 1992, he became project scientist on the first Danish satellite, Ørsted. Launched in February 1999 (Neubert et al. 2001), Ørsted operated for more than a decade, providing the first truly global observations of gradual changes (secular variation) in the Earth’s magnetic field and new insights into ionospheric and magnetospheric current systems, for instance on the small-scale structure of field-aligned currents. Egil established an international science team from 14 countries to take advantage of these data, the most accurate observations of the Earth’s magnetic field since the NASA Magsat mission of 1979–80.

From 1996 to 2006, Egil was an adjunct professor at the Niels Bohr Institute of University of Copenhagen, and from 1997 until 2012 he served as director of the Danish Space Research Institute, overseeing its evolution into DTU Space. Egil was the lead investigator of ESA’s Swarm satellite constellation, designed to provide the first simultaneous multipoint measurements of the geomagnetic field from space (Friis-Christensen et al. 2006). Swarm was launched in November 2013 and is undertaking the most detailed survey of the Earth’s magnetic field (Olsen et al. 2015).

**He worked to promote interdisciplinary approaches and international collaboration**

Impact

Egil had a tremendous impact as a scientific leader who promoted interdisciplinary approaches and international collaboration throughout his career. He devoted considerable energy to the International Union of Geodesy and Geophysics (IUGG) and its Associations. In 1997, he initiated the “Decade of Geopotential Field Research” within the IUGG; he was executive committee member of the International Association of Geomagnetism and Aeronomy (IAGA) from 1993–2015 and in 2007–11 he served as president of IAGA and was a member of IUGG Executive Committee. He was highly regarded by his colleagues and recognized internationally for his many achievements: he was a Petrus Peregrinus Medalist of the European Geosciences Union, a Fellow of the American Geophysical Union, an Honorary Fellow of the RAS and a Foreign Member of the Royal Swedish Academy of Sciences.

Egil will be missed by all who had the privilege to work with him. His passing is a great loss, but his example of a life lived well, with integrity and curiosity, is a legacy of which we are all beneficiaries.