

## James (Jim) Clement Ignatius Dooge (1922–2010)

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James (Jim) Clement Ignatius Dooge died peacefully at his home in Dublin, Ireland, on 20 August at age 88. His passing has left an unusual sense of loss among the scientific community.

Jim was an active member of AGU for almost 60 years. He joined in 1951 and was honored as Robert E. Horton Medal winner (1959), Fellow (1980), Bowie medalist (1986) for his “outstanding contribution to fundamental geophysics and for unselfish cooperation in research,” and Langbein Lecturer (1994) for “lifetime contributions to the basic science of hydrology and/or unselfish service promoting cooperation in hydrologic research.”

Jim successfully combined two remarkable careers—in hydrology and politics—winning honors, medals, and awards at home and abroad. His career in politics was marked by distinction at national and international levels. He was a member of the Irish Senate (1961–1977 and 1981–1987), chairman of the Senate (1973–1977), Irish Minister for Foreign Affairs (1981–1982), and acting president of Ireland as a member of several presidential commissions. At the European level the Dooge Committee led to the formation of the 1986 Single European Act and the 1992 Treaty of Maastricht (the first major revision of the 1957 Treaty of Rome), the foundation of the present-day European Union. In later years some U.S. hydrologists liked to greet him affectionately as “Senator.”

He was extraordinarily successful in the politics of science, particularly at the interface between East and West during the Cold War. He was elected a foreign member of the academies of science of Hungary (1971), Italy (Accademia Pattavina, 1981; Collegium Ramazzini, 1990), Poland (1985), and Russia (1994). He was made a Commander of the Order of Merit of the Republic of Poland in 1986. Hohai University (Nanjing, China) made him an honorary professor in 1986. He chaired many important international committees. A complete picture of his life's work must await the publication of his autobiography, entitled *A Medley of Memories*, the cataloging of his archive, and examination by historians.

Jim graduated from the National University of Ireland in 1942 with degrees in civil engineering and science (mathematics, mathematical physics, and geology). His love of applied mathematics, understood as realistic problems rigorously analyzed, remained with him all his life.

Jim's commitment to hydrology was grounded in his earliest professional experience as a young civil engineer. In the Irish Office of Public Works, Dublin, he worked with engineering hydrologists, especially Eamon Nash, on the design of postdrainage

river channels using synthetic unit hydrographs. Jim and Eamon became friends and, years later, distant colleagues in sister colleges (Cork, Galway, Dublin) of the National University of Ireland. They tested their hydrological ideas on each other, sometimes by telephone calls during lectures, much to the delight of their students.

In 1954, at the invitation of University of Iowa professor Chesley J. Posey, Jim moved with his wife, Roni, and their young family to the university. There, he was a research assistant and instructor in the Department of Civil Engineering, which was the beginning of a long and fruitful relationship with the United States and its people. He often recalled with pleasure his and his family's time during the summers of 1954–1956 at the Rocky Mountain Hydraulic Laboratory, Allenspark, Colo., in the Roosevelt National Forest, an academic facility jointly run by staff from the universities of Iowa and Illinois and Colorado State University.

In 1958, Jim was appointed to the Chair of Civil Engineering (one of twelve founding chairs in Queen's College Cork, established 1845) and head of the Department of Civil Engineering at University College Cork in Ireland. In 1959, Jim published his paper “A general theory of the unit hydrograph” in the *Journal of Geophysical Research* (64(2), 241) and received the AGU Horton Medal “for a paper of outstanding excellence in the field of hydrology.” Both the publication and the award brought him international recognition.

In August 1967, at the invitation of Heggie Holtan, director of the Hydrograph Laboratory of the U.S. Department of Agriculture (USDA), Beltsville, Md., Jim delivered a course of lectures at the Department of Agricultural Engineering of the University of

Maryland (Beltsville) entitled “Linear Theory of Hydrologic Systems.” The lectures, published 6 years later as USDA Technical Bulletin No. 1468, became a classic and demonstrated Jim's method of working: a presumption in favor of simplicity using a small number of parameters, enabling a complete and rigorous analysis. Looking back 40 years later, he wrote, “The ability of such simplified analytical approaches [at different hydrological scales] to represent the more complex prototypes without serious error is remarkable and sometimes paradoxical.”

More invitations followed; he lectured to students attending international hydrology courses at the United Nations Educational, Scientific and Cultural Organization (UNESCO)-IHE Institute for Water Education, Delft, Netherlands, and at the University of Padua, Italy. Jim received the Leonardo da Vinci Medal of the European Society for Engineering Education in 1990. He was made an Honorary Fellow of the IHE Institute in 1992.

In 1970, Jim left University College Cork to fill the chair of civil engineering at his alma mater, University College Dublin. The move to the capital city of Ireland facilitated both his political career and his engagement with international science. He served the Institution of Engineers of Ireland, Dublin (fellow, 1957; president, 1968–1969), the Royal Irish Academy, Dublin (member, 1973; president, 1987–1990), the International Association of Hydrological Sciences (president, 1975–1979), the International Union of Geodesy and Geophysics (member of the executive bureau, 1979–1987), the International Council of Scientific Unions (president, 1993–1996), and the World Meteorological Organization (WMO)/United Nations Environment Programme (UNEP) World Climate Program. He was a member and then chairman of the organizing committees of the WMO World Climate Conferences (1979 and 1990) and chairman of the Scientific Advisory



James (Jim) Clement Ignatius Dooge and wife Roni. Photo permission from Elsevier Limited.

Committee of the World Climate Impact Studies Programme of UNEP.

Jim cultivated research contacts and exchange agreements with academies of science and with universities in the United States, United Kingdom, Netherlands, Italy, Eastern Europe, and China. His lectures and seminars were an inspiration, stimulating dialogue and cooperation, especially among internationally minded scientists facing each other during the years of the Cold War. For example, in Poland, with Jarosław Napiórkowski and colleagues, Jim generalized his linearized channel response for flood propagation in rivers, justifying the flood-routing models of engineering hydrology.

A gifted integrator of knowledge across disciplines, Jim engaged with meteorologists, climatologists, and geographers in the developing debate over climate change in the late 1980s. At the annual meeting of the American Meteorological Society (AMS) in 1992, he presented the Horton Memorial Lecture—an exceptional honor for a hydrologist—on the sensitivity of runoff to changing climate. He began his lecture by citing the “simplest hypothesis [Budyko] that can be made: at less than geological time-scales, the soil and vegetation conditions

are dependent only on the long-term atmospheric factors of precipitation and potential evapo-transpiration.” He then went on to adjoin the conservation equation for water, and a model of the surface fluxes, with the strongest nonlinearities contained in two switches that alternate between soil control and atmosphere control of either infiltration or evapotranspiration in seasonal climates. From these hypotheses he derived and presented the associated sensitivity factors. The ideas presented in this lecture have endured, influencing current research on the Colorado River.

Jim was elected an honorary member of the European Geophysical Society (1993; now the European Geosciences Union), AMS (1994), and the British Hydrological Society (1996). In 1997, the American Society of Civil Engineers awarded him the Ven Te Chow Award for pioneering concepts and theories in hydrology and for leadership in national and international research, consultation, and education. WMO awarded him its highest prize in 1999, the IMO Prize (which originates from WMO’s predecessor, the International Meteorological Organization). In 2005, Jim received the U.K. Royal Academy of Engineering’s Prince Philip Medal from Prince Philip,

Duke of Edinburgh, which recognized him as an outstanding figure in the field of hydrology. In 2005, the Royal Irish Academy awarded him its gold medal “for a life that has been marked by extraordinarily distinguished public service and by scholarship of the highest quality and originality.”

Jim received honorary degrees from the universities of Birmingham, United Kingdom (1985); Cracow, Poland (2000), Dublin, Ireland (1998); Heriot Watt, UK (2000); Lund, Sweden (1980); and Wageningen, Netherlands (1978). Conscious of never having acquired a Ph.D., Jim was intrigued that so many doctorates should come his way.

Jim measured his achievements in hydrology most of all against those of his close contemporaries: Eamon Nash, Jim McCulloch, Terence O’Donnell, Dirk Kraijenhof, Michael Abbott, Zdzisław Kaczmarek, Peter Eagleson, and John Philip.

We salute Jim as one of the founding fathers of modern hydrology, and with the traditional ending to an obituary in the Irish language: *Ar dheis Dé go raibh a anam* (May his soul rest on God’s right hand).

—J. PHILIP O’KANE, Cork, Ireland; E-mail: p.okane@ucc.ie; and P. ENDA O’CONNELL, Newcastle upon Tyne, UK

## GEOFIZZ

### Is the Silver Screen the Key to Successful Public Outreach in Solar and Space Physics?

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In this time of continuing fiscal stress and economic meltdown, it is especially difficult to obtain support for the disciplines of Earth and space science. For example, my field of solar and space physics desperately needs a way to attract new attention to its important work.

History shows that even in the direst economic times, people still flock to motion pictures. Thus, new hope lies in us remaking classic films with a space physics twist. Here I present an illustrative set of such classic film remakes. Each film would be remade from a Space Physics and Aeronomy (SPA) point of view with leaders of SPA in starring roles.

#### *Singing in the Polar Rain*

Stars: Bob Schunk, Jan Sojka, and Gang Lu

Story Line: This musical comedy satirizes the challenges of transitioning ionospheric data assimilation models into an operational configuration. The protagonists continually lament how hard they have to work and how unfair their fates are, often breaking into spontaneous song.

Memorable Moment: Bob Schunk dances down the street in Logan, Utah, crooning: “Singin’ in the polar rain,

Just singin’ in the polar rain;  
What a glorious feeling,  
I’m funded again!”

#### *Schindler’s Substorm List*

Stars: Joachim Birn, Michael Hesse, and Antonius Otto

Story Line: The three lead actors sit around drinking beer and discussing (in agonizing detail) each of the substorm events analyzed and modeled in every one of Karl Schindler’s published papers. In his review of this film, Roger Ebert says, “This is a cruel and inhumane film. It makes *My Dinner With Andre* look like an action-packed adventure movie.”

Memorable Moment: There isn’t one. The closest thing is when the three actors start arguing in German about who ordered the schnapps.

#### *2010: A Space Oddity*

Stars: Len Fisk, Dave Sibeck, Frank Toffoletto, and Ray Lopez

Story Line: After initial scenes of Goddard employees foraging at the Building 21 cafeteria and then encountering an old IBM 360 computer (“The Dawn of the Omnitape”),

there is a quick transition to a meeting of the NASA Advisory Council (NAC). Dr. Heywood Umind (Len Fisk) is trying to convince the NAC members that Ulysses data have proven his theory of solar magnetism. After touching a deck of IBM punch cards in the Air and Space Museum, Umind is motivated to send a human mission to Jupiter. On the way to Jupiter, David Bowtie (Sibeck) and Frank Swimmingpoole (Toffoletto) encounter the disturbed computer AL (Lopez), which analyzes solar wind streams. AL is convinced that 2010 is an anomalous year.

Memorable Moment: Dave goes to the restroom, and AL refuses to let him back into the computer room. “Let me in,” says Dave. “I can’t do that, Dave,” says AL in an ominous but silken tone.

#### *Local Noon*

Stars: Jim Burch and Pat Reiff

Story Line: Principal investigator Kane (Burch), on the day of his spacecraft launch and revelation of his education/public outreach director choice (Reiff), gets word that his NASA mission manager wants to launch into a dawn-dusk orbit. Kane knows that only a noon-midnight orbit will answer the question of whether the dayside cusp is a cleft or the dayside cleft is a cusp. The movie traces the events leading up to the inevitable showdown between Kane and his government nemesis. Everyone, including his education/public outreach director, thinks Kane is crazy to fight headquarters, but he persists.

Memorable Moment: Jim Burch pins on his Southwest Research Institute “Vice President” button and walks out to face his