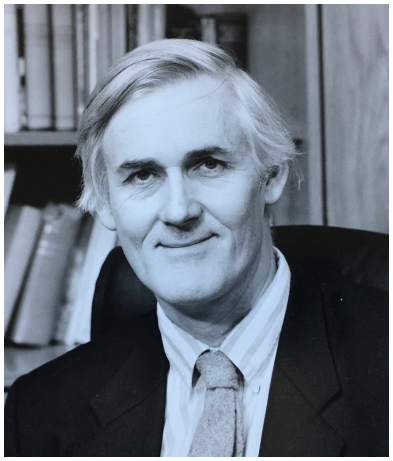
Julian Hunt CB FRS Hon FIMA (1941-2026)



Julian Hunt was born on 5th September 1941, and died on 20th April 2026 at the age of 84, after several years of progressive vascular dementia that he bore with great courage, dignity and acceptance. He had been involved for many years in IMA activities, was Vice-President 1989-93 and President 1993-95, and was elected an Honorary Fellow in 2003.

Julian was born in India, when his father Roland Hunt CMG was a Magistrate in the Indian Civil Service. After the War, Roland entered the diplomatic service and was regularly posted overseas. Julian attended the Dragon School, Oxford, then Westminster School, and would normally spend school holidays with other members of his extended family. He often recalled his encounters with his great-uncle Lewis Fry Richardson FRS, who first stimulated Julian's interest in meteorology and weather forecasting. Richardson it was who had in 1927 anticipated Kolmogorov in conceiving the 'inertial range' of scales of turbulence where, as he put it, 'big whorls have little whorls that feed on their velocity', and the associated dispersion law $\langle \mathbf{x}^2 \rangle \sim t^3$ for the separation of particles in this range. These were ideas that were to remain at the core of Julian's own research on the effects of turbulence, throughout his extended career.

Julian was also proud of his ancestry on the side of his mother Pauline (née Garnett), granddaughter of William Garnett, the first biographer (1882, with Lewis Campbell) of the legendary James Clerk Maxwell FRS. Julian was thus brought up in an atmosphere of great scientific achievement, to which he also aspired.

Admitted to Trinity College, Cambridge in 1960, Julian came under the influence of Arthur Shercliff FRS, pioneer in the magnetohydrodynamics (MHD) of liquid metals, a subject that Julian embraced for his PhD research 1963-66. MHD, as developed by

Shercliff, concerned the interaction of a strong applied magnetic field with the flow of a liquid metal such as mercury (as used in laboratory experiments at that time, before the dangers of its toxicity were fully recognised). Shercliff moved in 1964 to the University of Warwick as Founding Professor of Engineering Science, and Julian, whose research was funded by CEGB (the Central Electricity Generating Board), was seconded to the University of Warwick for this formative period of his PhD research.

This research got off to a flying start with two papers in the *Journal of Fluid Mechanics* in 1965 on aspects of duct flow in the presence of a strong transverse magnetic field, (the second of these being joint with the eminent Keith Stewartson FRS of University College London, who had clearly been attracted by problems raised by Julian in the first). The whole area of MHD duct flow was later summarised by Hunt & Shercliff (1971) in their short review "Magnetohydrodynamics at high Hartmann number" in *Annual Review of Fluid Mechanics.* On the basis of his research in this area, Julian was elected to a Fellowship at Trinity College in 1966. He was to hold a Fellowship at Trinity continuously throughout his subsequent career, in both teaching and research capacities.

Following his PhD, Julian continued to work for a time for the CEGB, and focused on aerodynamic problems arising from the disaster at the Ferrybridge cooling towers, three of which had collapsed under high winds in November 1965. The arrangement of the towers in two rows at an angle to the wind meant that the those on the downwind side were strongly affected by vortices shed from those on the upwind side, this contributing to their collapse. This much had been earlier recognised; but Julian for his part was led to study the distortion of turbulence in the wind incident on a single cylindrical structure, and to calculate the resulting extremes of the force distribution that such a structure might experience. He contributed a paper "The effect [of wind] on single buildings and structures" at a Royal Society discussion meeting in 1971. By this stage, he had been appointed to a Lectureship, joint between the Department of Engineering and the Department of Applied Mathematics

and Theoretical Physics (DAMTP) at Cambridge University. Always politically active, Julian served from 1971-74 as a Labour Councillor on the Cambridge City Council, when he successfully fought for the establishment of pedestrian zones in the city centre.

Julian's work, stemming from the Ferrybridge disaster, led him to an extended development of so-called 'rapid distortion theory', applicable whenever a turbulent wind is distorted by any large obstruction (e.g. a building complex or a group of skyscrapers) in its path. The theory applies equally to wind flow over hilly terrain, where density stratification and other atmospheric effects come into play. Julian published many influential papers in this field from 1970 on, establishing a worldwide reputation in meteorology, and leading to his election to Fellowship of the Royal Society in 1989, and appointment as Director of the Met Office from 1992 till 1997, succeeding Sir John Houghton FRS. In this capacity, Julian was elected to the Executive Committee of the World Meteorological Organisation, during the period when the effects of climate change were becoming a matter of global concern, on which Julian was able to provide much highly relevant scientific input and analysis.

After his retirement from the Met Office, Julian was appointed as Professor of Climate Modelling at University College London, and he also became a regular Visiting Professor at Delft University of Technology. He resumed Chairmanship of the company CERC that he had founded in 1986, with focus on problems of air pollution and the urban environment. In 2000 he was appointed by Tony Blair as a 'Working Peer' in the House of Lords, where he spoke on issues of UK and global environmental development. He was particularly gladdened in 2001 to be awarded the L. F. Richardson Medal by the European Geophysical Society.

Julian's scientific interest subsequently returned to MHD, now in the context of thermonuclear fusion research. He became an enthusiastic advocate for STEP (the Spherical Tokamak for Energy Production) which involves magnetic containment of plasma (hot ionised gas) in a

spherical geometry. The very challenging engineering problems in realising this project, which is a central ingredient of UK energy strategy, involve the sort of MHD for which Julian's early experience in this field was again highly relevant.

Julian's scientific investigations were characterised by great flare and originality, bold assumptions, and deep physical intuition, enabling him to make progress and to inspire co-workers in the ever-challenging field of turbulence in meteorology and in ground-based engineering projects of great practical importance. His distinction was recognised by honorary doctorates in Sweden, France and Canada, as well as in the UK. He is survived by his wife Marylla, his daughters Jemima and Matilda, his son Tristram, and eight grandchildren.

Keith Moffatt FIMA, FRS