This special issue of the Australian Meteorological and Oceanographical Society commemorates the contributions to Australian Meteorology and to meteorological education in Australia by the late Professor Bruce Morton, who held a Chair in the Mathematics Department at Monash University from 1967 until his retirement from there in 1991. A summary of Bruce’s career and a brief review of his contributions follows this preface. The special issue contains a series of invited review papers by prominent research scientists from around the world who interacted with Bruce in a number of ways. The topics include many of the wide range of research areas and activities that Bruce was involved in throughout his extended career.

Bruce Rutherfurd Morton
11 April 1926–15 September 2012

This special issue of the Australian Meteorological and Oceanographical Society is dedicated to the memory of Professor Bruce Morton, who died on 15 September 2012 at the age of 86. Bruce was a prominent figure in Australian meteorology and especially meteorological education. He was a founding member of the Australian Branch of the Royal Meteorological Society, its inaugural Vice-Chairman and its second Chairman. He invested much time and effort into the development of the Australian Meteorology and Oceanographic Society and served on various committees. This involvement with the society continued for many years after his retirement. Under his leadership, Monash University, where he worked for 25 years, became the leading university for an atmospheric science programme in Australia. Bruce believed very strongly in building research communities and his reach was far and wide, including the establishment of important links with the Bureau of Meteorology and CSIRO.

Bruce was born on 11 April 1926 in New Zealand. He was educated at Auckland Grammar School and then at the University of Auckland (completing a BSc and MSc), before going to Cambridge on a Rutherford Fellowship. There Bruce completed the Mathematics Tripos and a PhD in the Department of Applied Mathematics and Theoretical Physics, the latter supervised by George Batchelor and Sir Geoffrey Taylor. His PhD culminated in the now classic paper: Morton, Taylor and Turner, 1956, ‘Turbulent gravitational convection from maintained and instantaneous sources’, which is one of the most referenced papers in fluid dynamics.

After leaving Cambridge he took a position at University College in London. He did not stay there long, however, as shortly afterwards he was offered a lectureship by Professor (later Sir) James Lighthill in the Mathematics Department at the University of Manchester. One of Lighthill’s great qualities was the unwavering support he showed towards his research group, and this made such a deep impression on Bruce that it became a hallmark of his own professional life.

Vorticity as an idea for understanding fluid evolution was a major recurring theme in Bruce’s work. Among other things, he clarified the processes by which vorticity is generated and, in particular, the role of boundaries. His research on vorticity and convection had a profound effect on the field.

Bruce was appointed to a chair in Applied Mathematics at Monash University in 1967. There he established a strong group in geophysical fluid dynamics within the Department of Mathematics. Bruce believed that laboratory work played an important role in teaching and research and so established a fluid dynamics laboratory in the department. Although Bruce never considered himself to be a meteorologist, the group he built was to have a very strong influence on meteorology in Australia and overseas. For Bruce, meteorology and oceanography were two fascinating and highly relevant applications of fluid mechanics. He retired at the end of 1991, but continued to be involved in science for many years after that.

In the summer of 1996 he was an invited lecturer at a NATO Advanced Study Institute in Kloster Seeon, Southern Germany. The written version of these lectures (references 34 and 35) provide an important review of plumes and thermal sources including Bruce’s many contributions to this field.

Bruce was a popular and charismatic teacher. Although his lectures were at times a little chaotic, he communicated his great passion for fluid mechanics and deep insights in the subject. In his lectures, Bruce would often become side-tracked, perhaps when he thought of some nice
analogy or an interesting application and, consequently, students sometimes struggled to compile a coherent set of notes. However, his lectures were always inspirational and stimulating. Although often busy, he was generous with his time, always available for a chat with students and colleagues seeking advice.

Bruce was a kind, gentle, and cultured man, convinced of the importance of science education. He was also a man of great personal and professional integrity, a lover of the Arts, literature and music, and a devoted father and grandfather.

Bruce was an avid walker. While a student at Cambridge, Bruce resumed his friendship with Sir Edmund Hillary, whom he had known in New Zealand, and together they tramped the mountains of Austria and Switzerland. Even in later life when walking across the campus to a lecture or meeting, Bruce always set a cracking pace and strode along as if he were still walking with Hillary. Often, this caused some difficulty for his students and colleagues who sprinted along beside him, all the while trying to carry on a conversation as he sped to his next appointment.

While at Cambridge, he married Alison, whom he had first met while still at the University of Auckland. He was devoted to Alison and she to him. Sadly Alison died three months before Bruce and he felt her loss very deeply. Until Alison’s death, Bruce was a kind, gentle, and cultured man, convinced of the importance of science education. He was also a man of great personal and professional integrity, a lover of the Arts, literature and music, and a devoted father and grandfather.

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While at Cambridge, he married Alison, whom he had first met while still at the University of Auckland. He was devoted to Alison and she to him. Sadly Alison died three months before Bruce and he felt her loss very deeply. Until the later part of his life when he was increasingly troubled by ill health, Bruce seemed to have unlimited energy and enthusiasm for everything he undertook. He was an inspiration to all who knew him well, an outstanding role model for his students and colleagues, and is sadly missed by the Australian Meteorological and Oceanographic community. He and Alison are survived by their daughters, Clare, Janne and Anna, and seven grandchildren.

Selected publications of Bruce Morton