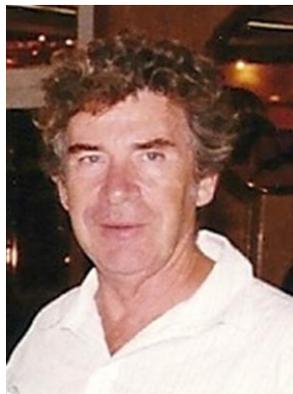


## Yitzhak Mahrer

Nitsa Haikin<sup>1</sup> and Roger Pielke Sr.<sup>2</sup>

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Prof. Yitzhak (“Isaac” in English, "Itzik" in Hebrew) Mahrer passed away in Rehovot (Israel) on 28 September 2017 at the age of 74 years. He was a pioneer mesoscale weather and air-quality modeler, especially for the area of the Eastern Mediterranean, and was involved in many complex-terrain and coastal dynamic studies. Isaac was also one of the earliest contributors to the Regional Atmospheric Modeling System (RAMS). His research emphasized the interactions of land-surface and ocean processes with the atmosphere, and while his emphasis was on mesoscale weather and climate processes, his work also included global, regional, and microscale studies. The practical implications of his research related to air quality solutions, wind energy siting, irrigation scheduling, soil protection processes, and greenhouse microclimate management.

He was born in Jerusalem (and thus is a “sabra”) in 1943 to Jewish parents who had fled the Nazis. His father had been a judge in Germany, as were his ancestors. As a child he loved to fix things, and at the end of his military service when his father asked what he would like to study at university, Yitzhak replied "to be an electrician." His father thus signed him into the Physics and Mathematics program at the Hebrew University in Jerusalem, where they do study electricity. During his first year there, he met Rachel, the love of his life, and they were soon married; they have three children and eight grandchildren.

Yitzhak completed his PhD in 1973 in Atmospheric Sciences at the Hebrew University with Jehudda Neumann as his advisor. Together they produced a seminal paper in mesoscale meteorology in 1971 in the *Journal of Atmospheric Science*, entitled: "A Theoretical Study of the Land and Sea Breeze Circulation". During 1974-7 Yitzhak did a post-doc at the University of Virginia, Charlottesville (USA), where he met Roger Pielke Sr., who became not only a colleague, but a good friend. Roger convinced him to take guitar, flight, and scuba diving lessons, but Rachel claims that Yitzhak was a far better scuba diver than guitar player.

Yitzhak could not stay away from Israel for long, and in 1977, he returned to join the Department of Soil and Water at the Hebrew University, but in 1984 he did a year of research with Pielke at Colorado State University in Fort Collins. In 1986 he became an Associate Professor, and then in 1991 a Full Professor of the Hebrew University; between 1989 and 1995 he was Director of his Department. He always pursued his electrician passion, and would fix things in the department by himself. As a teacher, Yitzhak always treated his students as friends and family.

He was exceptionally gifted at “thinking outside the box”, and thus produced many new insights, including development and implementation of a terrain following coordinate system still in use, as well as the first non-hydrostatic sea breeze model. Yitzhak worked closely with many top mesoscale modelers on a variety of studies, including George Kallos, Pinhas Alpert, Roni Avissar, Menahem Luria, Gurdal Tuncel, and others. One such effort was the establishment of collaborations with George Kallos for development of a desert dust-cycle modeling system (SKIRON) for Mediterranean dust forecasts. Yitzhak was later a PI in a bi-lateral Israeli-Italian project, funded by the Italian ministry of Environment, for a modeling system for urban air pollution, from the mesoscale down to the street and building scale. This project included pollutant measurements and modeling, and Yitzhak led the mesoscale to microscale effort.

He was also part of an extensive MiddleEast Regional Cooperation (MERC) Program project, which focused on regional transboundary pollutant transport. This USAID effort was designed to promote cooperation for solutions of regional problems, build scientific infrastructure in Arab countries, and train the next generation of Israeli and Arab scientists. It generated large field-study meteorological and air quality data sets, RAMS simulations, as well as the first regional pollutant emission inventories and CAMX photochemical simulations. His latest research and publications with colleagues and students include studies of topographic flows, atmospheric influences on agricultural phenomena, local and regional air pollution patterns, sea-breeze circulations, and impacts from multi-layer inversions.

The scientific community, as well as his family and friends, have thus lost one of the founders of mesoscale meteorology, as well as a man with a bright creative mind, shy smile, and humorous and friendly personality. Additional personal memories of Yitzhak can be found <https://pielkeclimatesci.files.wordpress.com/2018/04/final-personal-words-yitzhak-mahrer-4-16-18.pdf>