

James R. Killian, Jr., Faculty Achievement Award 2008-2009
Citation for *Rafael L. Bras*

The James R. Killian, Jr., Faculty Achievement Award was established in 1971 “to recognize extraordinary professional accomplishments by full-time members of the MIT faculty.” It is the greatest honor the faculty can bestow on one of its members. The recipient is chosen by a faculty committee from candidates nominated by their peers for outstanding contributions to their fields, to MIT and to society.

The 2008-2009 Killian Award committee is delighted to announce that the recipient of this year’s Killian Faculty Achievement Award is **Rafael L. Bras**, the Edward A. Abdun-Nur Professor in the Departments of Civil and Environmental Engineering and Earth, Atmospheric and Planetary Sciences.

Professor Bras is an internationally acclaimed researcher in surface hydrology and hydrometeorology whose work encompasses many aspects of the Earth’s water cycle. When he started his research career as an Assistant Professor of Civil Engineering at MIT in 1976, the study of water in the environment was understood as a specialized problem of hydraulics. Together with MIT colleague Dr. Peter Eagleson, Professor Bras spearheaded a fundamental rethinking of the crucial role of water in all the various components of the Earth system, resulting in the creation of a new discipline — hydrologic science — formed from the innovative integration of traditional land hydrology with such Earth sciences as atmospheric science, ecology, geology, and geomorphology. Two key milestones in the emergence and establishment of this new discipline were the publications of Professor Bras’ two books, now considered classics in the field: *Random Functions and Hydrology* in 1985, and *Hydrology: An Introduction to Hydrologic Science* in 1990. With these books, as well as in his numerous influential research articles, Professor Bras has pioneered and refined the application of quantitative methods to deal with the complexity and heterogeneity of hydrologic processes. This ground-breaking work has not only established a whole new interdisciplinary research field, but has also transformed the education and practice of environmental engineering.

Professor Bras’s expertise in issues of water and the environment is recognized worldwide, and he has participated in a number of significant international projects. He currently serves as the chair of a distinguished panel of experts that oversees the development and construction of tidal gates to protect the city of Venice and safeguard its lagoon against flooding. His leadership on this and other projects has been exemplary. Colleagues praise his depth and breadth of expertise, commitment to excellence, tireless hard work, and perhaps most importantly his wisdom, patience, and ability to foster mutual respect in the face of complex technical and political realities.

Professor Bras’ scientific and engineering achievements have been recognized by numerous awards and honors, including the Robert E. Horton Medal from the American Geophysical Union, the Clarke Prize for outstanding achievements in water science and technology, and the Simon W. Freese Award from the American Society of Civil Engineers. He is a fellow of the American Meteorological Society, the American Geophysical Union, and the American Society of Civil Engineering. In 2001, he was elected to the National Academy of Engineering.

Professor Bras has displayed an outstanding commitment to education throughout his career. He is an inspirational teacher fully engaged in teaching and mentoring students at all levels, from undergraduates through to post-graduates. Currently, he serves as the principal faculty on the highly successful freshman subject, *Terrascope*.

Professor Bras has a distinguished record of leadership and service both to the scientific community and to MIT. He has headed the influential NASA Earth Science Advisory Committee, a national strategic science body, and his contributions were recognized with the NASA Public Service Medal in 2002. At MIT, Professor Bras has served our community in countless ways. He was department head of Civil and Environmental Engineering for nine years, and Chair of the Faculty from 2003 to 2005. In 2000, he received the Martin Luther King Jr. Leadership Award for his dedicated efforts to make diversity a reality at MIT. In 2005, he received the highest award granted by the MIT Alumni Office for his effective work in fostering relations with MIT alumni.

For his transformative scholarship in science and engineering and his exemplary contributions to education, policy, environment, and society, we are delighted to honor Professor Rafael L. Bras with the 2008-2009 James R. Killian, Jr., Faculty Achievement Award.

The James R. Killian, Jr., Faculty Achievement Award Selection Committee for 2008-2009:

Tommi S. Jaakkola
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Alexander M. Klibanov
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