Evolving Perspectives on the Atmosphere and Climate of Mars

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The planet Mars has both fascinated and tantalized humankind since the invention of the telescope and now well into the age of exploration from space. The first of three waves of space missions to Mars were flyby spacecraft that returned images of a heavily cratered planet with a thin atmosphere, suggesting Mars was more like the Moon than an older Earth. However, Mariner 9, the first spacecraft to orbit another planet, found vast channel and valley networks carved into its surface, as well as towering volcanoes, suggesting that ancient Mars was once much more Earth-like. Subsequent missions have landed on the planet and new orbiters have probed the planet at ever increasing spatial resolution and spectral coverage. As a result of the latest round of space exploration, Mars is revealed to be a complex, diverse planet—one whose climate has changed dramatically over time from an ancient atmosphere where water was active on its surface to a drier, thinner atmosphere shaped by periodic ice ages, to the present atmosphere where dynamic change continues today.

Biography: Dr. Richard Zurek

Dr. Zurek holds a Ph.D. in Atmospheric Sciences from the University of Washington (Seattle) and has been employed at the Jet Propulsion Laboratory (JPL), California Institute of Technology since 1976. Rich is currently the Chief Scientist for the Mars Program Office at JPL.

While at JPL, Dr. Zurek has studied the atmospheres of Earth and Mars, including the causes and effects of the great dust storms that occur episodically on Mars. As a Theoretical Investigator on the Upper Atmosphere Research Satellite (UARS), he helped pioneer studies separating transport from photochemical effects on ozone change as observed from space. Prior to that, he analyzed data from the Mariner 6 & 7 fly-bys, the Mariner 9 orbiter, and the Viking Orbiters and Landers.

He currently serves as the Project Scientist for the Mars Reconnaissance Orbiter (MRO), now starting its tenth year of observations of the atmosphere, surface, and subsurface of Mars; he is also a Co-Investigator lead on the Mars Atmosphere and Volatile Evolution (MAVEN) mission, now in its first extended science mission. Within the Mars Program Office, he has been heavily involved in the development and implementation of current and future missions to Mars.