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Impacts and Evolution: Astrobiology and Near-Earth Object Impacts

Cosmic impacts are now recognized as a major factor in the history of the Earth and other planets. Most dramatic was the discovery that the KT mass extinction of 65 million years ago was caused by the impact of a 15-km-diameter asteroid or comet. The sensitivity of the biosphere to such a relatively small impact came as a surprise, and prompts us to ask whether other mass extinctions were also triggered by cosmic impacts. Recent research on mass extinctions has demonstrated that they happened suddenly (in geological terms) and thus injects a catastrophic element into evolutionary history. Similar studies of the frequency and environmental effects of impacts can be used to evaluate the contemporary hazard. This talk concludes with discussion of the Spaceguard Survey to discover and characterize potentially threatening near-earth-asteroids, and of both technologies and policy implications of efforts to protect our planet by deflecting future impactors before they hit.

Biography: David Morrison has just been appointed Interim Director of the new NASA Lunar Science Institute (NLSI), located in the NASA Research Park at Ames Research Center. The Lunar Science Institute will link competitively-selected science teams across the nation working together to help lead the agency's research activities related to NASA's lunar exploration goals. NLSI research includes studies of the Moon (including lunar samples), from the Moon, and/or on the Moon. Morrison also continues as the Senior Scientist at the NASA Astrobiology Institute, where he participates in a variety of research programs in astrobiology -- the study of the living universe. From 1996-2001 he was the Director of Astrobiology and Space Research at Ames, managing research programs in the space, life, and Earth sciences.

Dr. Morrison received his Ph.D. in astronomy from Harvard University and has spent most of his career working in planetary science. Prior to joining NASA he was Professor of Astronomy at the University of Hawaii, where he also directed the 3-meter NASA Infrared Telescope Facility of Mauna Kea Observatory and served for two years as University Vice Chancellor for Research. He has been an investigator on the Mariner 10, Voyager, CRAF, Galileo, and Kepler space missions. Internationally known for his research on the solar system, he is the author of more than 155 technical papers and has published a dozen books, including the leading undergraduate college text in planetary science. Morrison is a Fellow of the American Association for the Advancement of Science and of the California Academy of Sciences. He is recipient of the Dryden Medal for research of the American Institute of Aeronautics and Astronautics, the Sagan Medal of the American Astronomical Society for public communication, and the Klumpke-Roberts award of the Astronomical Society of the Pacific for contributions to science education. Asteroid 2410 Morrison is named in his honor.