The William R. Sears Memorial Lecture Series at The University of Arizona, established by the generous support of the Sears family—Mabel, David, Susan, Colin and Shelby—remembers and celebrates the work and life of Bill Sears (1913-2002) - one of the most renowned aeronautical engineers of the last century and one of the most distinguished faculty members of academia.

Bill’s technical contributions are firmly etched into the archives of aeronautics. They address, with originality and depth, areas such as wing and airplane design, unsteady aerodynamics and flow separation, aeroacoustics and adaptive wind tunnels. Bill’s contributions to the education of a distinguished group of aerospace professionals are unparalleled. The many professional honors bestowed on him include the prestigious Prandtl Ring, the von Kármán Medal, and the Guggenheim Medal. His commentaries on the lighter side of our daily activities are warm, witty, and insightful. There are many reasons, professional and personal, to celebrate Bill’s legacy.

The William R. Sears Memorial Lecture Series reminds us of this great engineer, scientist, and human being. The lecture reminds us of true scholarship and meaningful values. The lecture connects us with the golden age of aeronautics. With this lecture we express our gratitude to Bill Sears for all that he has done for us.
change. Similarly, the noise footprint of aviation is an impediment to the continued growth of the system, and more importantly is widely considered to be a health risk to the public at large.

NASA responded with a forward-looking aeronautics research program that enables a greener and more efficient air transportation system through investments in transformative and revolutionary aircraft designs and technologies to improve future performance of the subsonic commercial transport sector. In 2009, as part of Aeronautics Research Mission Directorate's (ARMD) Integrated Systems Research Program, the Environmentally Responsible Aviation (ERA) Project was created to focus on reducing the carbon and noise footprint of commercial aviation.

The integrated team researched the feasibility, benefits and technical risk of advanced commercial transport vehicle concepts and enabling technologies to significantly reduce aviation's impact on the environment, regularly reporting results and progress in national and international forums.

ERA focused on technology innovations and performance improvements targeting drag, structural weight, thrust specific fuel consumption, NOx emissions, fuel burn and noise reductions at the vehicle level.

In this lecture, Dr. Collier will highlight many of the successes, and some of the challenges associated with this 6-year project, and how the project laid the groundwork for a renewed focus on X-Plane demonstrations.

The air transportation system is expected to continue to expand at an annual growth rate of about 2 percent globally. It is projected that over 40,000 new airplanes will enter the global fleet. This expansion will increase the contribution of aviation to climate change through emission of greenhouse gases, nitrogen oxides (NOx), water vapor, and particulates. These environmental impacts from aviation are in conflict with the ever-increasing awareness of the need to reduce the human impact on the environment, with a particular and heightened focus on global climate

Biographical Sketch

Currently, Fay is the Associate Director for Flight Strategy, Integrated Aviation Systems Program. In this capacity he will lead flight demonstration activities associated with New Aviation Horizons Initiative. He is also responsible for coordination of all flight activities across NASA ARMD programs.

Previously, from 2009-2016, Fay was the Project Manager of the Environmentally Responsible Aviation Project within NASA’s Integrated System Research Program.

He directed the formulation and execution of NASA’s integrated system research project focused on the subsonic transport sector, working in partnership with Industry, FAA, AFRL and other government agencies. The technology development project was focused on research, development and integration of engine and airframe technologies that enable dramatic improvements in noise, emissions, and performance characteristics of future subsonic aircraft operating in the air transportation system. The six-year, $420M project closed out in March 2016, meeting all technical objectives.

Dr. Collier is a graduate of Virginia Tech (Aerospace Engineering, B.S., 1981, M.S., 1982, Ph.D., 1988) and the Massachusetts Institute of Technology (M.B.A., 1997) where he participated as a NASA Sloan Fellow. He serves on numerous committees for the Agency, including the AIAA Honors and Awards Committee, the AIAA International Program Committee, and the AFRL Fixed Wing Executive Council, and he was a contributor to the development of the National R & D Plan for Aeronautics. Dr. Collier is a Fellow of the Royal Aeronautical Society, and an Associate Fellow of the AIAA