CHALLENGES IN AERONAUTICAL RESEARCH FOR THE 1990'S

Bruce Holmes, Acting Deputy Director for Aeronautics
NASA Langley Research Center
Hampton, Virginia

New opportunities for greater performance of civil air transportation aircraft derived from the continuing advancements in the aeronautical disciplines: advancements in aerodynamics, structures and materials, propulsion, and flight controls technologies. These opportunities impact future subsonic transports, high speed civil transports, and hypersonic vehicles. There are, however, new constraints within which progress will be made, including stringent environmental constraints on engine emissions and noise, old and new safety constraints on operations (especially in severe weather), aging airframes, and changing transportation marketplace demands affecting all of these vehicle classes. In this presentation, some of the specific NASA aeronautical research will be discussed in three areas: 1) Advanced Subsonic Transport Airplanes, 2) Next Generation High Speed Civil Transport Aircraft (SST's), and 3) Next Century Hypersonic Vehicles. This presentation depicts the exciting progress which is possible in Aeronautics during the 1990's.

Continued U.S. investment in an aggressive aeronautics research program during the 1990's can pay handsome dividends for air transportation in the next century. The research planning described reflects an awareness of and sensitivity to modern, stringent environmental constraints, changing marketplace demands, and advanced-technology-driven opportunities. Our planet needs affordable global transportation in the next century. This presentation describes the technical foundations of those future systems.