ABSTRACT:
The focus of this presentation is on the development of Circulation Control techniques for application to commercial and military transports. Circulation Control techniques have been studied for over 90 years. This presentation will address the question “If Circulation Control is so good, why we don’t see it on airplanes.” The development process described here will overview NASA CFD and experiments associated with high lift configurations related to take-off and landing, in addition to applications of blowing to transonic cruise configurations. To gain confidence in the CFD results, fundamental 2D and 3D validation experiments will be described. This overview of CFD and experiments will include both small scale, low Reynolds (Re) number efforts and large scale, high Re efforts.

Information about the speaker: After spending 5 years in the U.S. Navy working Ground Approach Control and Automated Landing systems, Dr. Gregory Jones returned to college to finish degrees in Mechanical Engineering (1979) and Engineering Mechanics (1980). He spent 3 years at Georgia Tech in the Aeronautics Department. He completed his PhD in Engineering Mechanics at Virginia Tech in 1991. He has worked in Industry (Lockheed), Academia (Virginia Tech, ODU, & CNU), and government (NASA) focusing on fluid mechanics and aerodynamics. He is currently responsible for developing advanced flow control technologies, including circulation control and boundary layer separation control. He has also experience in wind tunnel flow diagnostics and flow quality across the speed range. He has developed Hot-wire techniques for transonic speeds that separate velocity, density, and total temperature fluctuations in addition to 2D and 3D LDV for subsonic and transonic testing.