



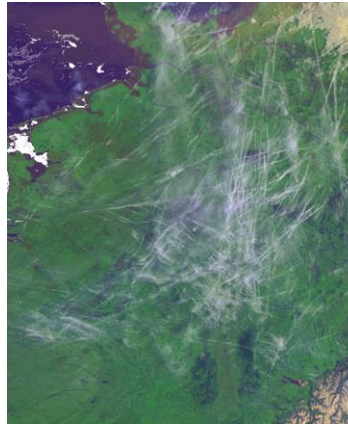
*American Institute of  
Aeronautics and Astronautics  
Dayton-Cincinnati Section*

**Lunch 'n' Learn  
April 7th, 2023**

**“Commercial Aviation Contrails  
Climate Issues and Resolution”**

**Guest Speaker:**

**Mr. Gary Wollenweber  
GE Aerospace**



Aircraft-produced contrail cirrus clouds contribute to anthropogenic climate change. Studies show contrail cirrus have as much short-term climate impact as CO<sub>2</sub>. Examination shows contrails morphing into cirrus clouds.

**Abstract:** Aircraft engine condensation trails or contrails are of interest to military mission planners, meteorologists, climatologists and conspiracy theorists. Climatologists have been studying commercial aircraft for the past decade. Recently persistent contrails have been declared equal to CO<sub>2</sub> impact on climate. This lecture will start with a review of thermodynamic phase, state, vapor pressure definitions and psychrometrics (the science of water and air mixtures). The lecture will continue with basic contrail formation/dissipation process, contrail factor chemistry, contrail prediction techniques and the contrail forming characteristics of turbojets, medium, high bypass ratio engines. Public domain contrail detection, contrail avoidance and elimination techniques will be presented. The presentation will include a brief synopsis of current commercial engine contrail management activities.

**Biography:** Mr. Gary Wollenweber is Consulting Engineer-Infrared and Thermal Design for GE Aviation's Engineering Division in Cincinnati OH. Mr. Wollenweber's primary responsibilities include engine infrared and visible signature, suppression design, technology integration, analytic assessment, measurements and leadership of infrared and thermal design product teams. Mr. Wollenweber has 45 years of experience in aircraft engine thermal design and has specialized on exhaust nozzle cooling and signature control technology since 1984. Mr. Wollenweber has Physics (Wabash College, 1974) and Mechanical Engineering (BS-Purdue 1975, MS-Purdue, 1977) degrees and is a registered Professional Engineer.

**Time:** 11:45 am

**Location:**

*China Garden Buffet  
112 Woodman Dr.  
Dayton, OH 45431*

**Lunch:**

*You will be able to  
purchase the buffet*

