

Los Alamos Chapter 691 of the Experimental Aircraft Association (EAA) will meet Saturday, November 16 at the Los Alamos Airport Terminal, and will feature an educational presentation by Keith Tschohl entitled “The Ins and Outs of Air Traffic Control Surveillance Technologies”. The meeting, open to all interested, will begin at 9:30 with coffee, pastries and informal discussion, followed by a short business meeting at 10:00 and the presentation beginning at 10:30.

Abstract

RAdio-based Detection and Ranging – RADAR– was first developed in the 1930s and rapidly improved during World War II into a practical means of locating and tracking aircraft. The introduction of radar-based surveillance into civilian air traffic control workflows in the early 1950s was a necessary catalyst for the jet age and for the explosion in air traffic that would follow. Later development of transponder-based radar technologies – Mode C (1960s), Mode S (1980s) – and today's ADS-B (2000s) technology would all build on WWII-era inventions in a series of backwards-compatible, evolutionary changes. This talk will provide an overview of the history and inner workings of these technologies.

Biography

Tschohl learned to fly while studying at the University of Wisconsin-Madison, where he received a B.S. and M.S. in Mechanical Engineering. After grad school he spent nearly two decades in Minnesota as a process engineer and design engineer for a manufacturer of precision electromechanical components. He was active in the aviation community at the Flying Cloud Airport in Eden Prairie, where he helped manage the Twin City Cloud 7 flying club, and maintained and flew an RV-7A homebuilt kit aircraft. He moved to New Mexico early last year, and now works as an R&D engineer at Los Alamos National Laboratory.

About EAA Chapter 691

EAA Chapter 691 (EAAChapter691.org) is a 501(c)(3) organization with objectives to support and promote general aviation, flight safety, R&D on emerging technologies including electric aircraft, education on aircraft construction and maintenance, STEM education for youth, and providing opportunities for introductory flights through the Young Eagles program.



Figure 1: First-generation ATC radar at Washington Center, 1948. Credit: Federal Aviation Administration

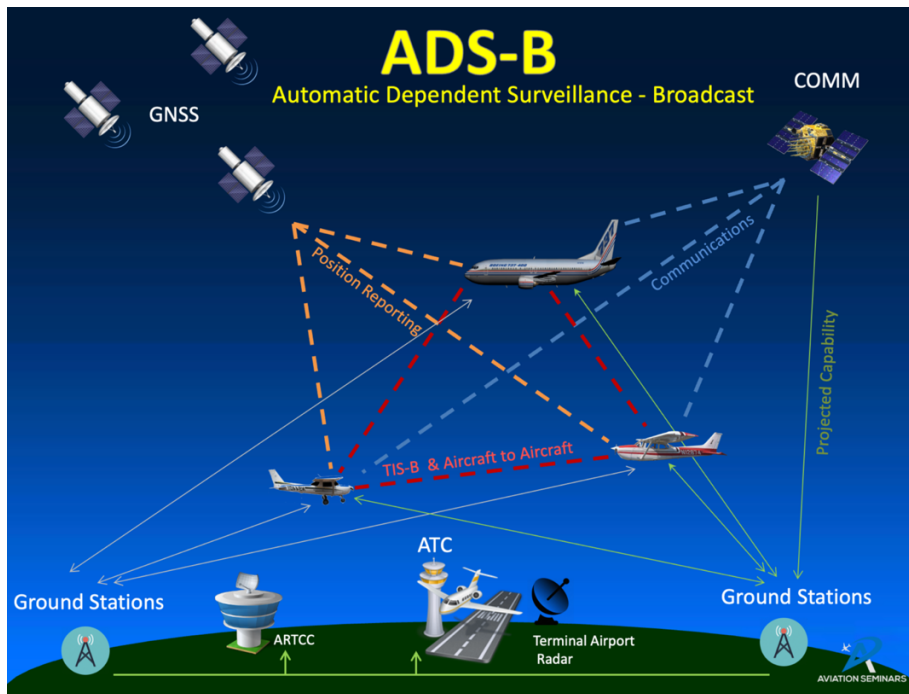


Figure 2: Schematic diagram of the modern ATC environment. Credit: Federal Aviation Administration

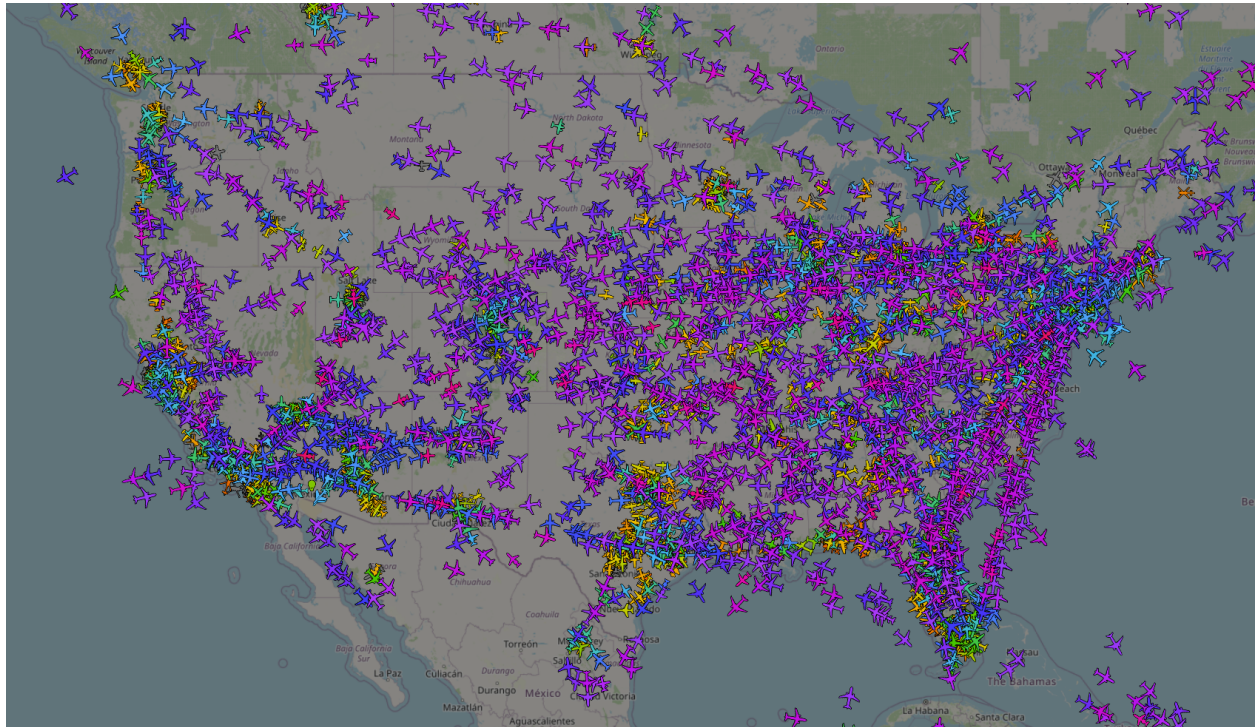


Figure 3: A view of air traffic across North America early on Tuesday evening. Credit: adsb.fi

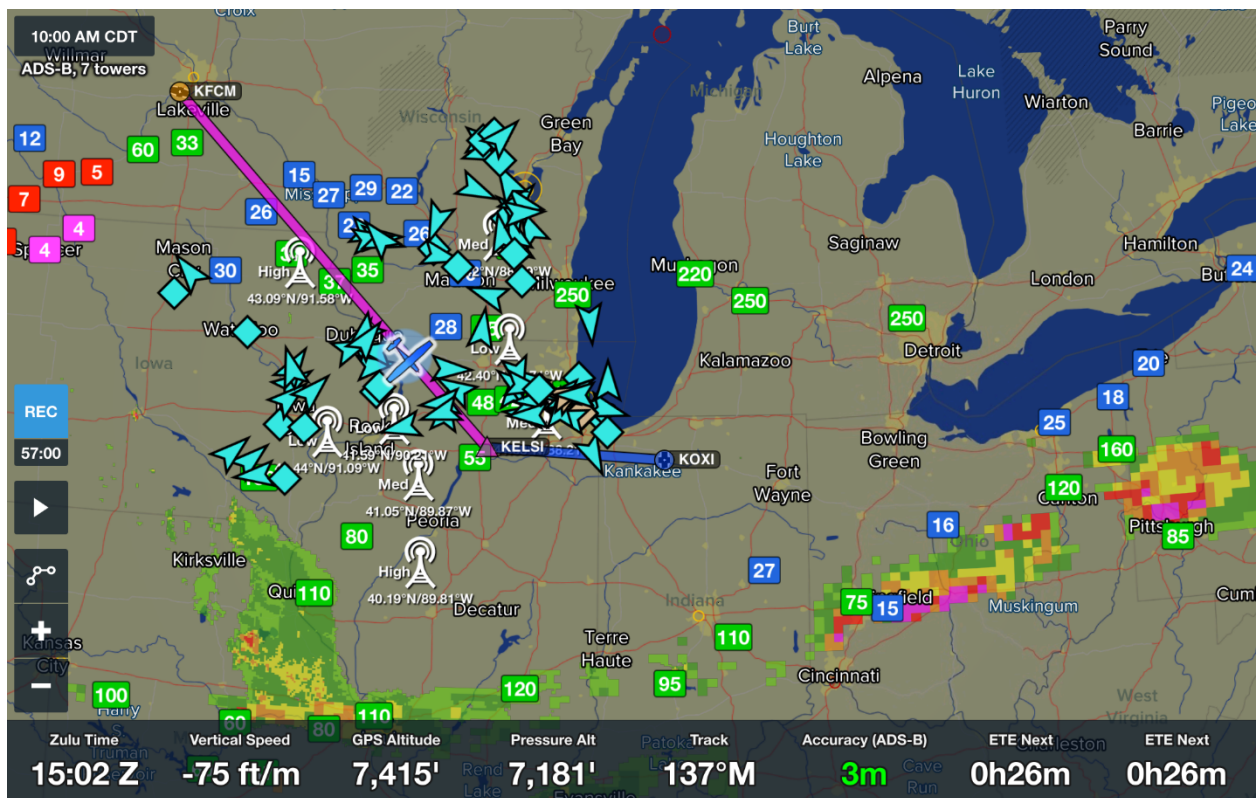


Figure 4: A typical in-flight application (ForeFlight) of ADS-B traffic and weather data. Credit: Keith Tschohl



Figure 5: Your presenter, installing an ADS-B transceiver into an RV-7A kitplane in 2019. Credit: Keith Tschohl