**SCCARC Talk on ADS-B and AIS by Jeff Liebermann 10/15/2021**

<http://www.learnbydestroying.com/jeffl/ADSB%20Talk%202021-10-15/>

[**http://www.learnbydestroying.com/jeffl/ADSB%20Talk%202021-10-15/ADSB%20Talk%202021-10-15.html**](http://www.learnbydestroying.com/jeffl/ADSB%20Talk%202021-10-15/ADSB%20Talk%202021-10-15.html)

**What is ADS-B?**Automatic Dependent Surveillance-Broadcast (ADS-B)

<https://en.wikipedia.org/wiki/Automatic_Dependent_Surveillance%E2%80%93Broadcast>

Virtual radar for tracking airplanes. First use to replace expensive ground based radar in Alaska as an SSR (Secondary Surveillance Radar).  
<https://en.wikipedia.org/wiki/Secondary_surveillance_radar>

**Tech**

1090 MHz ES (Extended Squitter ) Traffic only.

978 MHz UAT (Universal Access Transceiver) Traffic and Weather.

Protocols and technology:

<https://www.faa.gov/nextgen/programs/adsb/>

**Dump1090 Mode S decoder:**

<https://github.com/antirez/dump1090>

**Virtual Radar Server**

<https://www.virtualradarserver.co.uk>

Use with FlightRadar24 firmware in Raspberry Pi and web browser to decode ADS/B packets.

What I hear with my FlightRadar24 receiver via VRS:

<http://127.0.0.1/VirtualRadar/desktop.html>

**FlightRadar24**

<https://www.flightradar24.com/37.17,-122/11>

Web site to track airplanes.

My FlightRadar24 feeder status:

<http://192.168.11.60:8754>

You need to register with FlightRadar24 to get an ID, login, password, etc.

If you continuously feed data to FlightRadar24, the business class web site service is free.

**FlightAware**

<https://flightaware.com>

Web site to track airplanes. Purchased by Collins Aerospace div of Raytheon Tech.

<https://flightaware.com/adsb/>

<https://flightaware.com/adsb/stats/user/JeffLiebermann>

You need to register with FlightAware to get an ID, login, password, etc.

If you continuously feed data to FlightAware, the Enterprise class service is free.

What I hear with my FlightAware receiver:

<http://192.168.11.77/skyaware/>

**Satellites, servers, repeaters, etc**

GOMX-4 Cubesat. ADS-B repeater

<https://directory.eoportal.org/web/eoportal/satellite-missions/g/gomx-4>

ADSBexchange (Unfiltered ADS-B data)

<https://www.adsbexchange.com>

**ADS-B receiver and decoder for Android smartphone**

<https://hiz.ch/index.php/home/adsb-receiver>

<https://play.google.com/store/apps/details?id=bs.Avare.ADSB>

<https://play.google.com/store/apps/details?id=bs.Avare.ADSB.Pro> $3.00

**ADS-B Examples**

Eclipse, Fire helicopters, Kabul evacuation, Project Loon

**AIS – Automatic Identification System**

<https://en.wikipedia.org/wiki/Automatic_identification_system>

Marine channels 87B (161.975 MHz) and 88B (162.025 MHz).

Uses 9600 bits/sec [Gaussian minimum shift keying](https://en.wikipedia.org/wiki/Gaussian_minimum-shift_keying) (GMSK) [modulation](https://en.wikipedia.org/wiki/Modulation) in a 25 kHz channel using the [high-level data link control](https://en.wikipedia.org/wiki/HDLC) (HDLC) packet protocol. Sound familiar?

**Tech**

AIS receivers

<https://www.google.com/search?q=AIS+receiver&tbm=isch>

**AIS vessel tracking web sites**

<https://www.marinetraffic.com>

<https://www.vesselfinder.com>

<https://www.myshiptracking.com>

**Local stations**

Santa Cruz (at UCSC)

<https://www.marinetraffic.com/en/ais/details/stations/3455>

Mt Umunhum (Actually Bonny Doon. Burned in CZU fire 08/20/2020)

<https://www.marinetraffic.com/en/ais/details/stations/112>  
NPS (Naval Postgraduate School)

<https://www.marinetraffic.com/en/ais/details/stations/230>  
MBARI (Mt Toro)

<https://www.marinetraffic.com/en/ais/details/stations/786>

Monterey Harbor (limited coverage)

<https://www.marinetraffic.com/en/ais/details/stations/5506>