



# ADS-B ASE Processing

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ASE Workshop  
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**FAA**



Federal Aviation  
Administration

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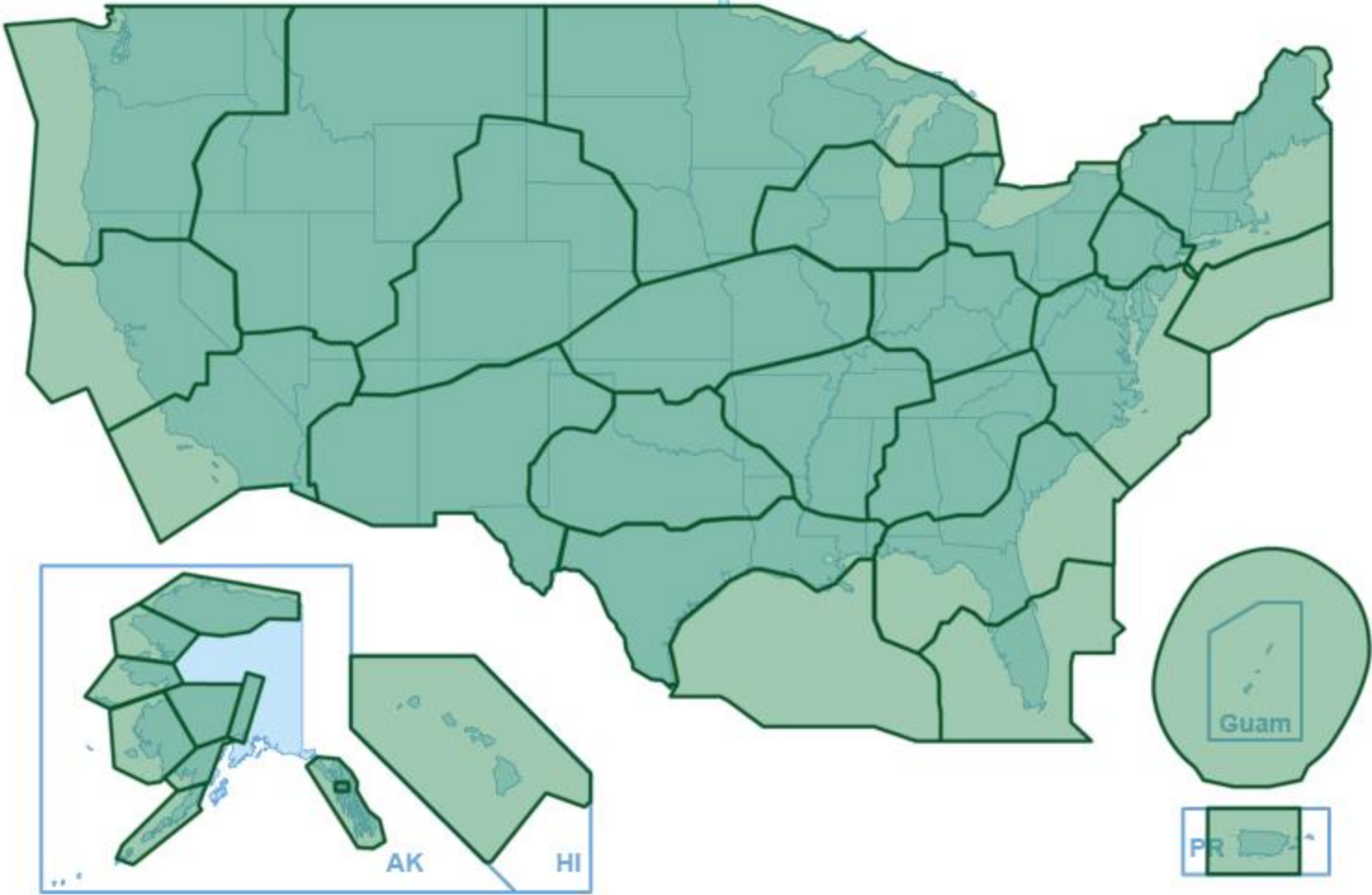
# Service Volume and Stations

<b>Service Volume</b>	<b>Station</b>
• 0	Boston Washington New York
• 1	Memphis Atlanta
• 2	Jacksonville Miami San Juan
• 5	Indianapolis Cleveland
• 6	Chicago Kansas City Minneapolis

# Service Volume and Stations

- **Service Volume**
  - 7
    - Albuquerque
    - Fort Worth
    - Huston
    - Golf of Mexico
  - 10
    - Denver
    - Salt Lake City
    - Seattle
  - 11
    - Los Angeles
    - Oakland
  - 15
    - Alaska
    - Juneau
  - 16
    - Honolulu
  - 17
    - Guam

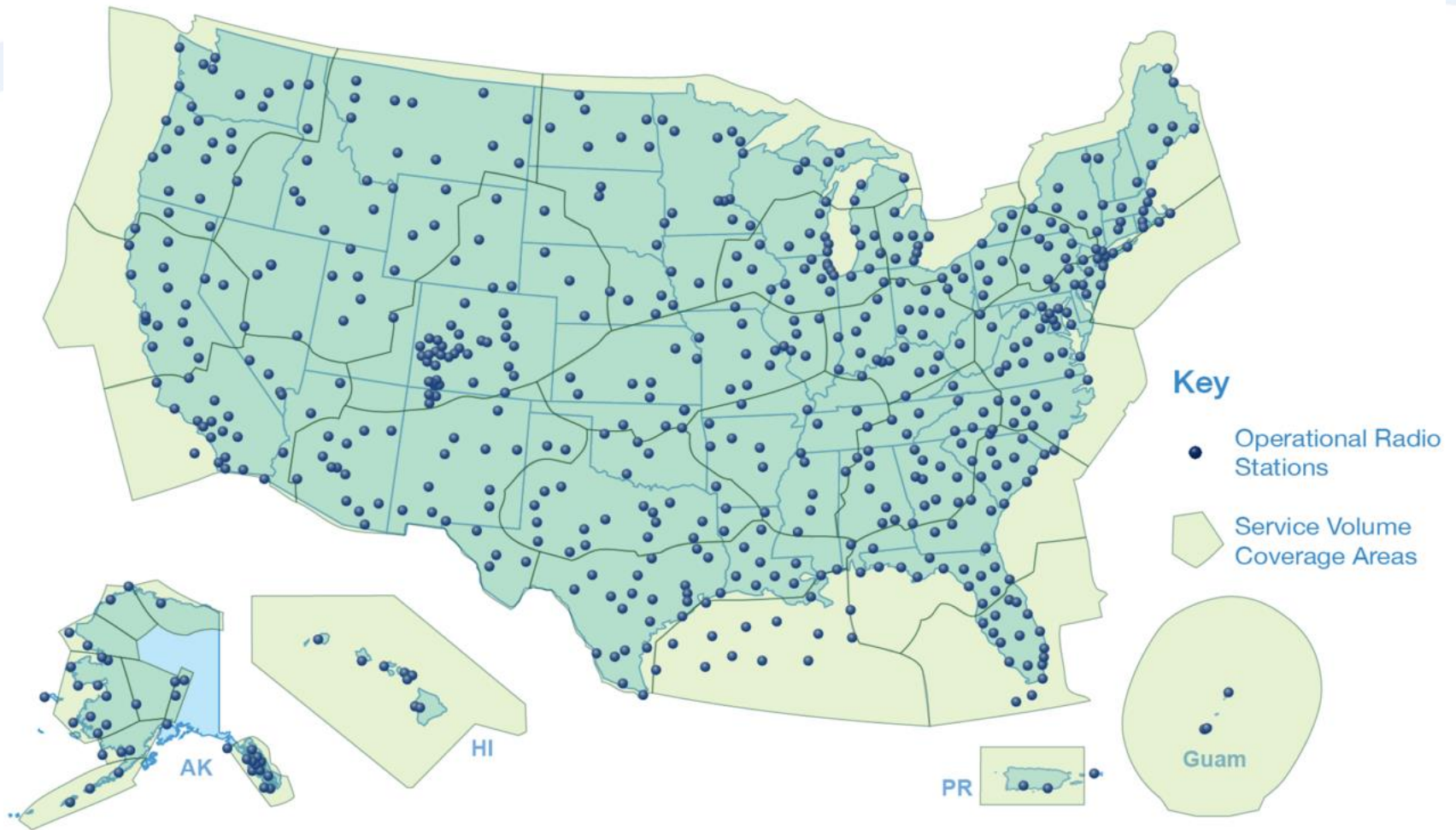
# USA Coverage Map



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Next**GEN**

# USA Operational Radio Stations



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Next**GEN**

# Raw Data

- ❑ Currently getting more than 1,000 individual Aircraft daily
- ❑ Around 1 GB of data
- ❑ Example of the Raw data

```
AA,6,3,N/A,82804335,82803935,A8F00E,1,2,7,0,invalid,n/a,0,40.74522257, -73.69804859,33000,GNSS,342.0,387.0,0,,  
AA,6,3,N/A,82804335,82803935,A8F00E,1,2,7,0,invalid,n/a,0,40.74522257, -73.69804859,33000,GNSS,342.0,387.0,0,,
```

- ❑ How the data look like after the first step of the ADS-B Processing

1	latitude	longitude	gps	modes	date	time	modes	sta	reg	NAC	link
2	(dec deg)	(dec deg)	hgt	alt		(Z)	addr	ATC			version
3		(ft)	(ft)								
4	39.51264954,	-87.13537598,	28025,	28500,	2014-12-16,	17:59:53.578,	AD3353,	ZID,	N95LL,	10,	1090ES_260B
5	39.51237106,	-87.13707733,	28050,	28525,	2014-12-16,	17:59:54.460,	AD3353,	ZID,	N95LL,	10,	1090ES_260B
6	39.51173019,	-87.14044189,	28125,	28625,	2014-12-16,	17:59:56.390,	AD3353,	ZID,	N95LL,	10,	1090ES_260B
7	39.51173019,	-87.14044189,	28150,	28625,	2014-12-16,	17:59:56.390,	AD3353,	ZID,	N95LL,	10,	1090ES_260B
8	39.51140594,	-87.14235687,	28175,	28650,	2014-12-16,	17:59:57.367,	AD3353,	ZID,	N95LL,	10,	1090ES_260B

# ADS-B ASE Processing Interface

ADS-B ASE Processing Interface (Oracle)

Start Date: 11/11/2014 15  
Stop Date: 11/15/2014 15

Options Output

**ADS-B FTP Credentials:**  
Host: XXX.XXX.XXX.XXX  
Port: 22  
Username: XXXXX  
Password: XXXXX

**Filters:**  
Minimum NAC: 8  
Minimum Altit: 28500  
Maximum Altit: 41500  
 Overwrite Existing Files?

**ADS-B Versions:**  
 1090 ES with DO-260A  
 1090 ES with DO-260B  
 UAT with DO-260A  
 UAT with DO-260B  
 Other

**ASEP:**  
Directory: d:\aghme\

**Service Volume Station**

Service Volume	Station
<input checked="" type="checkbox"/> 0	<input checked="" type="checkbox"/> ZBW - Boston <input checked="" type="checkbox"/> ZDC - Washington <input checked="" type="checkbox"/> ZNY - New York
<input checked="" type="checkbox"/> 1	<input checked="" type="checkbox"/> ZME - Memphis <input checked="" type="checkbox"/> ZTL - Atlanta
<input checked="" type="checkbox"/> 2	<input checked="" type="checkbox"/> ZJX - Jacksonville <input checked="" type="checkbox"/> ZMA - Miami <input checked="" type="checkbox"/> ZSU - San Juan
<input checked="" type="checkbox"/> 5	<input checked="" type="checkbox"/> ZID - Indianapolis <input checked="" type="checkbox"/> ZOB - Cleveland
<input checked="" type="checkbox"/> 6	<input checked="" type="checkbox"/> ZAU - Chicago <input checked="" type="checkbox"/> ZKC - Kansas City <input checked="" type="checkbox"/> ZMP - Minneapolis
<input checked="" type="checkbox"/> 7	<input checked="" type="checkbox"/> ZAB - Albuquerque <input checked="" type="checkbox"/> ZFW - Fort Worth <input checked="" type="checkbox"/> ZHU - Houston <input checked="" type="checkbox"/> GOF - Gulf of Mexico
<input checked="" type="checkbox"/> 10	<input checked="" type="checkbox"/> ZDV - Denver <input checked="" type="checkbox"/> ZLC - Salt Lake City <input checked="" type="checkbox"/> ZSE - Seattle
<input checked="" type="checkbox"/> 11	<input checked="" type="checkbox"/> ZLA - Los Angeles <input checked="" type="checkbox"/> ZOA - Oakland
<input checked="" type="checkbox"/> 15	<input checked="" type="checkbox"/> ZAN - Alaska <input checked="" type="checkbox"/> JNU - Juneau
<input checked="" type="checkbox"/> 16	<input checked="" type="checkbox"/> ZHN - Honolulu
<input checked="" type="checkbox"/> 17	<input checked="" type="checkbox"/> ZUA - Guam



ADSB Extract  
Process ADSB Data  
Upload Results  
ETMS Match



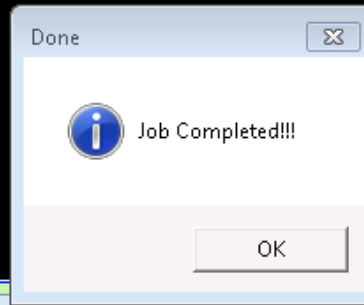
FAA

NextGEN



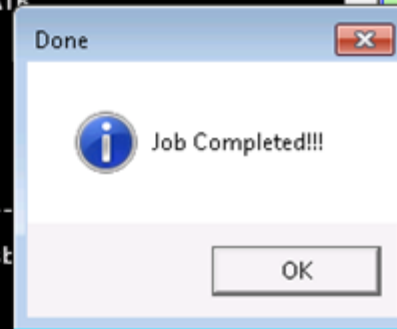
# ADS-B Extract

```
Options Output
Downloading: /home/mchmutov/ADSBm/201607/vcs17/vcs17_00156_20160719000030.zi
Downloading: /home/mchmutov/ADSBm/201607/vcs17/vcs17_00157_20160719010030.zi
vcs17_00156_20160719000030.txt : 1 : 3216 : 00:00:00.0596776
Downloading: /home/mchmutov/ADSBm/201607/vcs17/vcs17_00158_20160719020030.zi
vcs17_00157_20160719010030.txt : 1 : 3214 : 00:00:00.0750308
Downloading: /home/mchmutov/ADSBm/201607/vcs17/vcs17_00159_20160719030030.zi
Downloading: /home/mchmutov/ADSBm/201607/vcs17/vcs17_00160_20160719040030.zi
vcs17_00158_20160719020030.txt : 1 : 3210 : 00:00:00.2315474
vcs17_00159_20160719030030.txt : 3 : 6432 : 00:00:00.1521964
Downloading: /home/mchmutov/ADSBm/201607/vcs17/vcs17_00161_20160719050030.zi
Downloading: /home/mchmutov/ADSBm/201607/vcs17/vcs17_00162_20160719060030.zi
Downloading: /home/mchmutov/ADSBm/201607/vcs17/vcs17_00163_20160719070030.zi
vcs17_00161_20160719050030.txt : 2 : 3518 : 00:00:00.3931911
vcs17_00160_20160719040030.txt : 3 : 7176 : 00:00:00.6156655
Downloading: /home/mchmutov/ADSBm/201607/vcs17/vcs17_00164_20160719080030.zi
Downloading: /home/mchmutov/ADSBm/201607/vcs17/vcs17_00165_20160719090030.zi
vcs17_00164_20160719080030.txt : 1 : 3212 : 00:00:00.1038987
Downloading: /home/mchmutov/ADSBm/201607/vcs17/vcs17_00166_20160719100030.zi
vcs17_00162_20160719060030.txt : 4 : 14462 : 00:00:00.5123079
Downloading: /home/mchmutov/ADSBm/201607/vcs17/vcs17_00167_20160719110030.zi
vcs17_00165_20160719090030.txt : 1 : 3213 : 00:00:00.1377491
vcs17_00166_20160719100030.txt : 2 : 3634 : 00:00:00.0814525
vcs17_00163_20160719070030.txt : 3 : 3323 : 00:00:00.4994156
Downloading: /home/mchmutov/ADSBm/201607/vcs17/vcs17_00168_20160719120030.zi
vcs17_00168_20160719120030.txt : 0 : 0 : 00:00:00.0000127
vcs17_00167_20160719110030.txt : 2 : 3266 : 00:00:00.1361025
C820D1_1090ES_260B 469
AB34F3_1090ES_260B 1574
7C6BC2_1090ES_260B 3835
AB38AA_1090ES_260B 2951
Job Completed in 00:00:04.7386352
```



# ASE Processing

```
AB34F3-ZUA-00001-23    -12.22    0.17    -12.39
D:\ADSB\20160719\AB38AA_1090ES_260B.adsb
American ADS-B ASE Processing System
Windows Based System
No Intermediate Output Files...
-----
Date       : 2016 - 7 - 19
Processing: D:\ADSB\20160719\AB38AA_1090ES_260B.adsb
Searching Start And Stop Times...
Estimating Flight Levels...
Estimating Straight Levels...
2016-07-19 ZUA    1  1 12088.00 13861.00   390 1460   19.23   15.35  145.0
2016-07-19 ZUA    1 14 24081.00 25044.00   370  790   15.82   17.91  144.9
2016-07-19 ZUA    1 15 25046.00 25496.00   370  78   17.92   18.88  145.0
Extracting Noaa Met Data from: noaa\2016\07191600.ATB
Extracting Noaa Met Data from: noaa\2016\07191612.ATB
Extracting Noaa Met Data from: noaa\2016\07201600.ATB
Applying Weckler-Ansley Regression...
AB38AA-ZUA-00001-01    77.59    -0.70    78.30
AB38AA-ZUA-00001-14    60.87    -0.89    61.76
AB38AA-ZUA-00001-15    50.13     0.00    50.13
D:\ADSB\20160719\C820D1_1090ES_260B.adsb
American ADS-B ASE Processing System
Windows Based System
No Intermediate Output Files...
-----
Date       : 2016 - 7 - 19
Processing: D:\ADSB\20160719\C820D1_1090ES_260B.adsb
Searching Start And Stop Times...
Estimating Flight Levels...
Estimating Straight Levels...
2016-07-19 ZUA    1  1 38958.00 39878.00   370  461   13.20   11.23  140.0
Extracting Noaa Met Data from: noaa\2016\07191600.ATB
Extracting Noaa Met Data from: noaa\2016\07191612.ATB
Extracting Noaa Met Data from: noaa\2016\07201600.ATB
Applying Weckler-Ansley Regression...
C820D1-ZUA-00001-01    35.15    -9.49    44.64
20160719\20160719_1090ES_260B_ASE.txt
```



# Quality Control

- ❑ Altimetry System Error less than 200
- ❑ Standard Deviation less or equal to 45
- ❑ Straight Flight Levels between 290 and 410

# Data Processed

## □ Quarterly Report for 2016

### □ 1<sup>st</sup> Quarter (Jan, Feb, Mar)

- 2,601 Individual Segment with an ASE
- 82 Non-Compliant Due to High ASE
- 404 Not Successful Monitoring Due to High SD

### □ 2<sup>nd</sup> Quarter (Apr, May, Jun)

- 3,431 Individual Segment with an ASE
- 61 Non-Compliant Due to High ASE
- 323 Not Successful Monitoring Due to High SD