FAA AUTOMATED AERONAUTICAL DATA FEEDS & NOTAMS

SLOWLY….STEADILY….TOGETHER

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Society of Aircraft Performance and Operations Engineers

LEAN ENGINEERING

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BACKGROUND FOR TODAY'S COMBINED PRESENTATION

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FAA AERONAUTICAL INFORMATION CONSUMPTION IS RAPIDLY INCREASING

Advanced Air Traffic Initiatives (TBFM, CDM, CPDLC, STARS)

Unmanned and Remotely Piloted Aeronautical Systems

3rd Party Procedure Development (PinS, RNP-AR, RVFP)

Commercial Space Launch

International Standardization on Data Exchange (AIXM, FIXM, WXXM)

SAPOE AERONAUTICAL AND GEOSPATIAL DATA NEEDS ARE INCREASING

- PBN/OEI Takeoff and Missed Approach Procedures
- Airline and 3rd Party Charting/Briefing Solutions
- Takeoff and Landing Performance Assessment
- Forecasting and Event Exploration
- Real-Time/In-Cockpit Information Dissemination
- Big Data Operations Engineering Solutions

FAA OPPORTUNITY TO COLLABORATE

Information Exchange Standards, Internal Initiatives and New User Needs are Revealing Product Deficiencies

FAA Is Working Internally To Address Internal Product Needs (AISWG)

FAA is Working Externally To Address Conformance With International Standards (ICAO/IATA/RTCA/Eurocontrol)

FAA Is Reaching Out To Industry On Aeronautical, Obstacle and NOTAM Enhancements

- Understand NAS User Needs
- Reveal Interdependencies
- Improve Existing Product Quality
- Enhance Product Delivery

SAPOE Is Uniquely Positioned To Assist

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AGENDA

Update on US Aeronautical and Obstacle Data

- Paul Hannah – Lean Engineering

Update on FAA NOTAMs

- Lynette McSpadden (Jamison) – FAA NOTAM Governance
- Amy Seador – FAA NOTAM Governance

Q&A With Members

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UPDATE ON US AERONAUTICAL DATA

FUNDAMENTAL DATABASES, SUPPORTING DATABASES AND EMERGING DATA FEEDS

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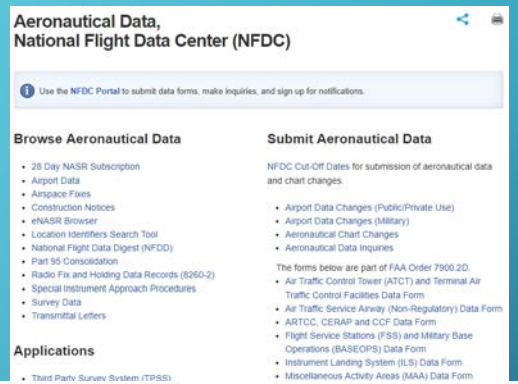
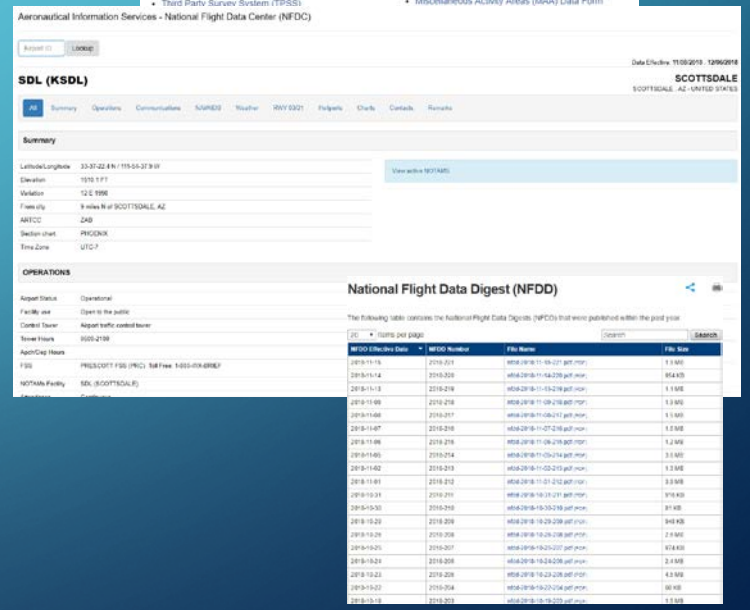
FUNDAMENTAL FAA AERONAUTICAL DATABASE NASR

National Airspace System Resources (NASR)

- Maintained by the National Flight Data Center (NFDC) a division of FAA ATO/MSS
- Authoritative Repository of current information
- NASR is the basis for many FAA Aeronautical Products

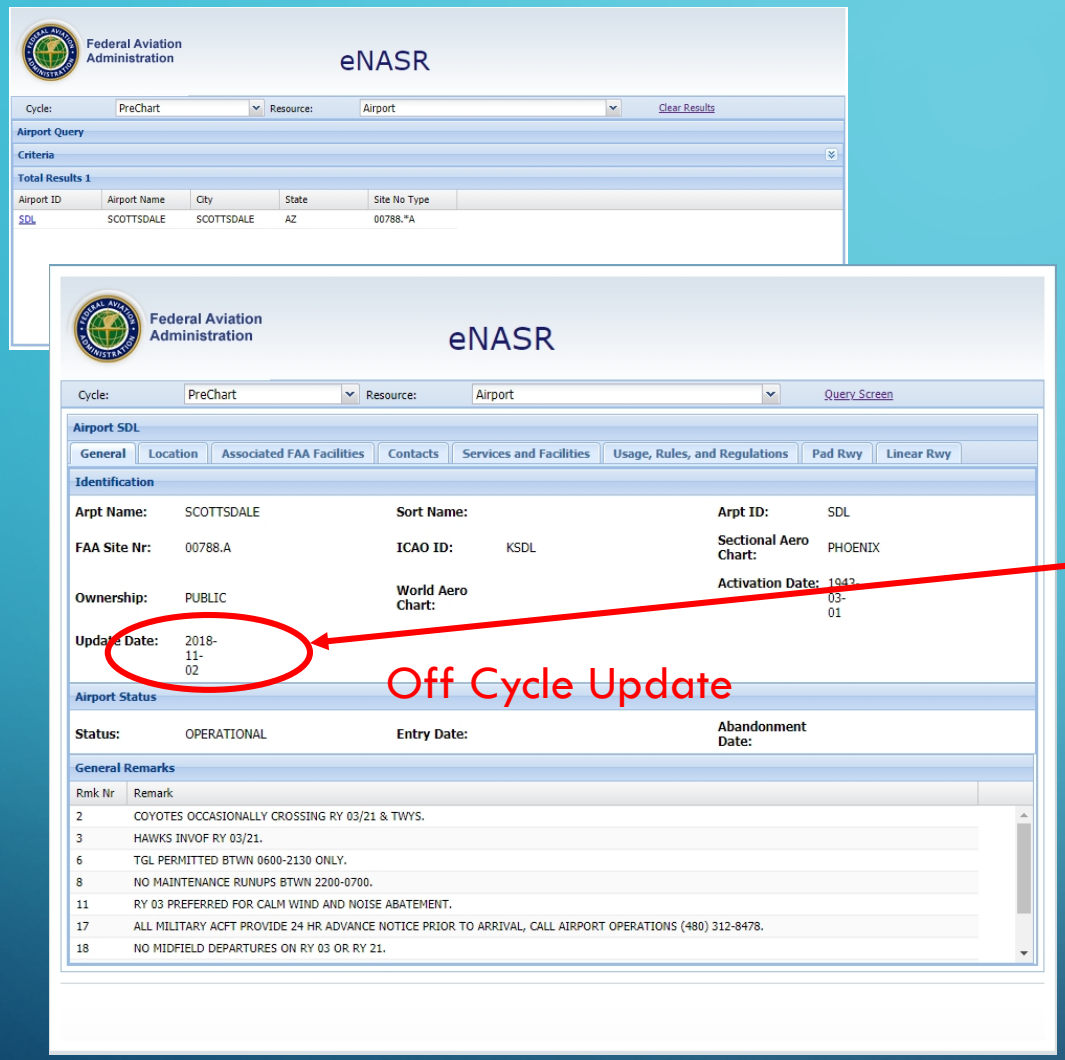




NASR Webportal/Website Access

- https://www.faa.gov/air_traffic/flight_info/aeronav/aero_data/
- https://enasr.faa.gov/eNASR/nasr/
- https://www.faa.gov/air_traffic/flight_info/aeronav/aero_data/NFDD/

NASR INSIGHT



There was, at one time, an external API for direct eNASR access

- TARGETS users can still get access through an API
- Internal FAA users and a handful of external consumers have access
- Other APIs are available, but mostly for 56 Day Products

eNASR shows current, next and pre-chart

- Pre-chart and NFDD are synced at least daily
- Once a 28 Day Cycle is Complete, then the “current” and “next” views are locked

The current “AIXM” compliant dataset produced by the US is a NASR product

Coded Instrument Flight Procedure (CIFP - FAA ARINC 424 Deliverable) is a NASR Product

FUNDAMENTAL FAA AERONAUTICAL DATABASE AGIS

Airports GIS (AGIS)

- Maintained by the FAA ARP
- Repository of Surveyed Airport Information, Planned Improvements and many other Airport to ADO information exchanges

No Unsponsored Access

- https://airports-gis.faa.gov/public/index.html
- Access is currently limited to airports, surveyors and consultants assisting airports and FAA ARP lines of business

AGIS Insights

Not all US Airports are, or will be, in AGIS

- Currently only a few hundred airports in AGIS
- Targeting federally obligated/NPIAS airports (3,321 NPIAS out of 19,627 US Airports)

AC-150-5300-16/17/18 Surveys are entered into AGIS first and then later converted to UDDF

There are security sensitive datasets stored in AGIS that have prevented pure external access in the past

Current information in AGIS is synchronized with OE/AAA, AIRNAV and NASR (just not instantaneously)

FUNDAMENTAL FAA AERONAUTICAL DATABASE OE/AAA

Obstacle Evaluation/Airport Airspace Analysis (OE/AAA)

- Maintained by FAA ARP, FAA ATO/MSS and Used By Other Federal Agencies
- Authoritative Repository of planned and proposed information

OE/AAA Website and API

- https://oeaaa.faa.gov/oeaaa/external/portal.jsp
- https://oeaaa.faa.gov/oeaaa/services/list

OE/AAA Insights

Obstacle Information (OE Case Numbers) are actively being linked to other products

- OAS
- NOTAMs

OE Determined Wind Turbines are input into the DDOF/DOF prior to construction

Other OE Determined Obstacles will be input into DDOF/DOF when the 7460-2 is filed and construction has started

only accept point obstacles with

OTHER IMPORTANT FAA AERONAUTICAL DATABASES

Airport Master Record Database (5010)

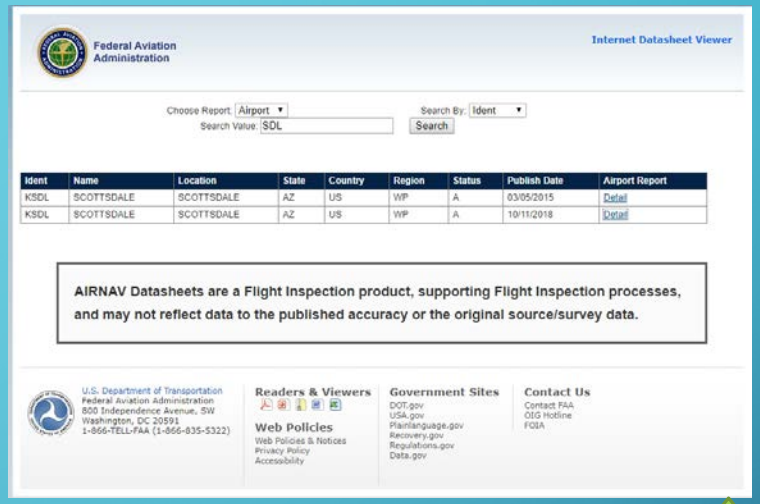
- Maintained by FAA ARP (Under Contract with GCR Associates)
- Minimum information necessary for US Airports to be included in aeronautical dissemination and charting publication
- https://www.gcr1.com/5010web/

Instrument Flight Procedures (IFP) database

- Maintained by FAA ATO/MSS
- Application that updates flight procedure information resulting from FAA flight procedure development

Airports and Navigation Aids database (AIRNAV)

- Maintained by FAA ATO/MSS
- Application that updates airport and NAVAID information resulting from flight procedures and flight inspection work
- TPSS and Flight Inspection Obstacles are stored here as well
- TARGETS users have API access to this and it may be possible to get pure external access in the future



Aviation System Standards Information System (AVNIS)

- Maintained by FAA ATO/MSS
- Repository of flight inspection sheets
- Eventually synchronized with NASR
- http://webdatasheet.faa.gov/

Flight Operations Management System (FOMS)

- Maintained by FAA ATO/SMS
- Repository of flight inspection reports (published after flight inspection)
- No external access is available except possibly to 3rd Party IFP LOA holders

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EMERGING FAA AERONAUTICAL DATA FEEDS

FAA Central Aeronautical Data Jumping Off Point "FAA Got Data"

- https://www.faa.gov/got_data/aero_data/

FAA Non-SWIM WMS, WTMS, WFS

- http://ais-faa.opendata.arcgis.com/ (Until MAY19)
- http://adds-faa.opendata.arcgis.com/
- http://uas-faa.opendata.arcgis.com/

FAA Non-SWIM APIs (Swaggerhub Site)

- https://app.swaggerhub.com/apis/FAA/APRA/1.2.0

FAA SWIM via NAS Enterprise Security Gateway (NESG/SWIM)

- https://www.faa.gov/air_traffic/technology/swim/products/

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FAA GOT DATA AND SWAGGERHUB

Aeronautical Data and Products

The following expandable tables contain aeronautical data produced by FAA's Aeronautical Information Services, the civil aviation authority providing the foundations for flight in the national airspace system.

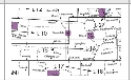
Developers: web services are available to access products and the underlying product data.

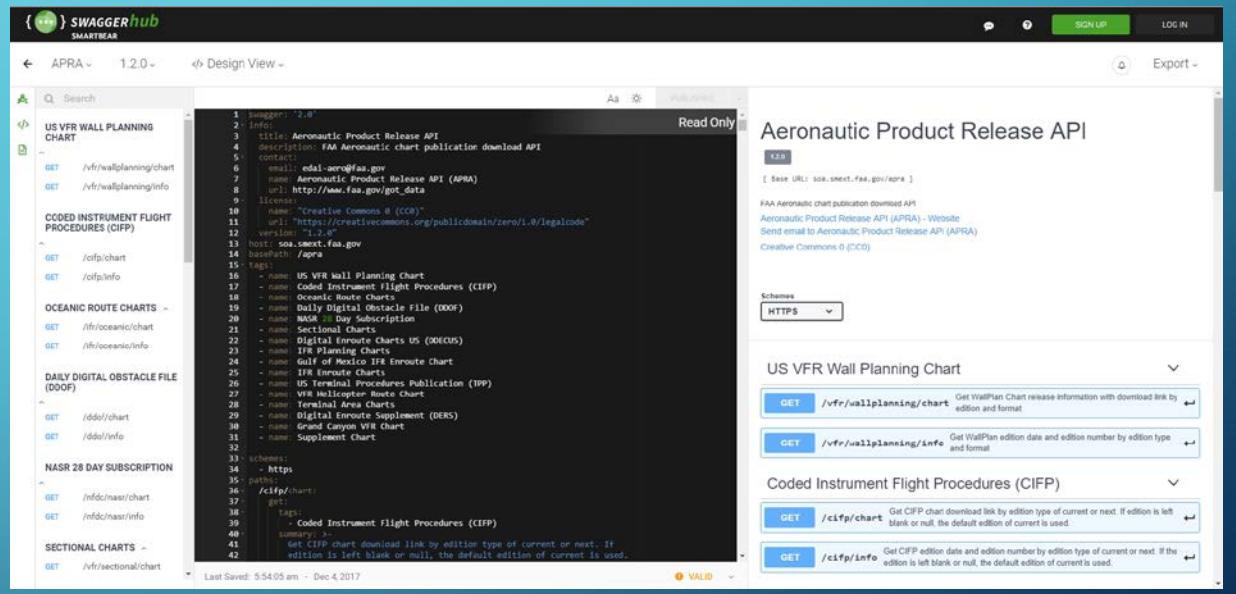
You can order hard copies from FAA-approved Print Providers.

Dates of Latest Editions (DOLEs)

Collapse all

Chart Products

Name	Coverage Area	Download Product	Web Services for the Developer Community	
			Product API	Data API
IFR Charts				
Area Charts				
Digital Enroute Charts (DEC) complete set				
Hawaii/Pacific				
IFR Enroute High Alt				
Alaska				
Caribbean				
Conterminous US				
IFR Enroute Low Alt				
Alaska				



FAA ADDS

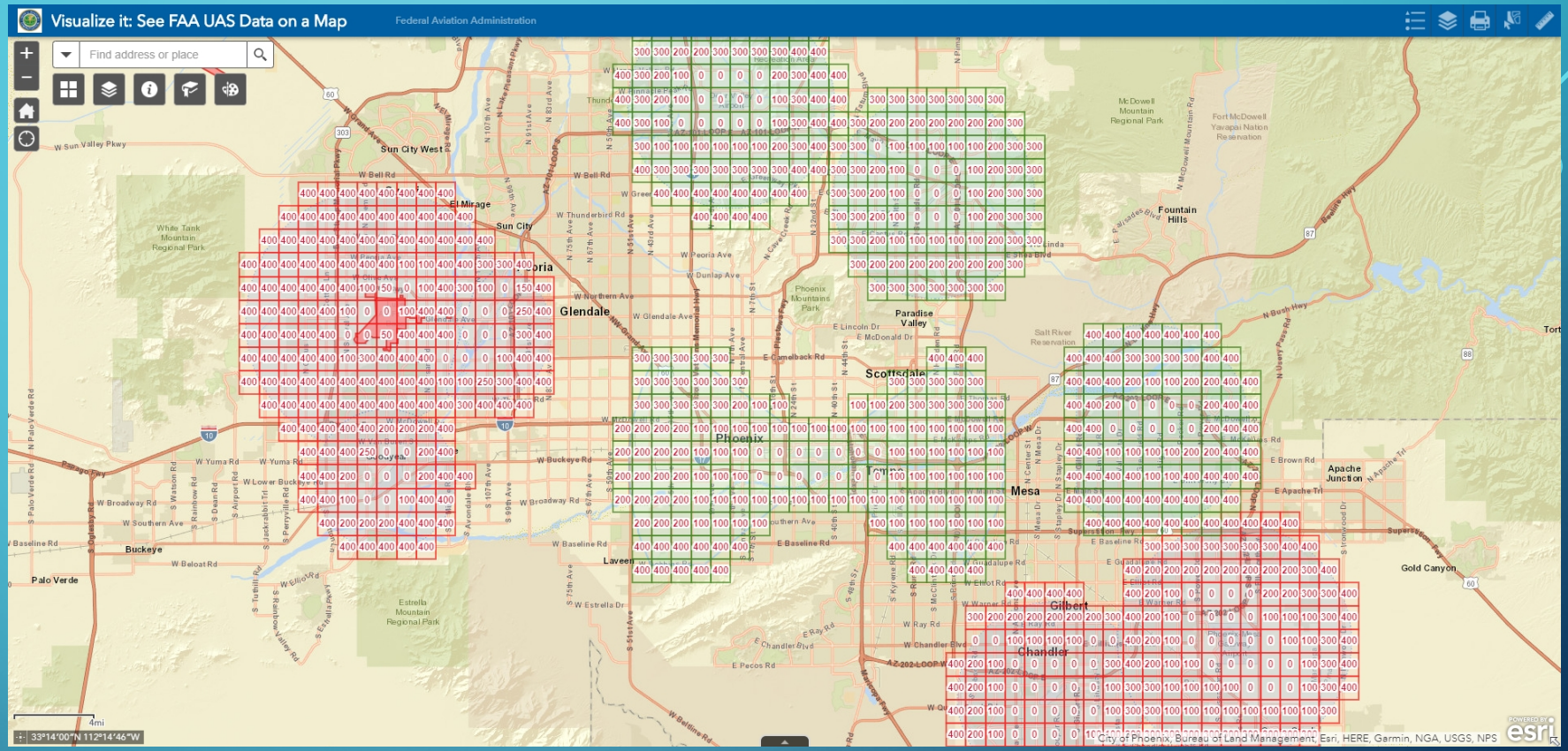
Mostly 56 Day Product Visualization

Airspace information in some cases is real time, or near real time

DOF (no DDOF)

No Declared Distances

FAA UAS ADDS



Data products specifically for UAS operations

Some Airspace information is real time, or near real time

FAA NESG (FAA SWIM)

Data Products Available via SWIM

Provided below is a list of SWIM Producers and the SOA Services and data products that are made available via the NAS Enterprise Messaging System (NEMS). **Send an email request to data-to-industry@faa.gov to get started with the process of getting access to SWIM Data.**

Product Availability

List of SWIM Producers and the SOA Services and data products that are made available via the NAS Enterprise Messaging System (NEMS).

Learn more about how to Get Connected to SWIM Data or view the External Consumer Brief

Producer	Description	NSRR Business Service Name	Availability
AIM FNS	Provides Notice to Airmen (NOTAMs)	• FNS NOTAM Distribution	via NESG: Now Available R&D: Now Available FNTB: Now Available
AIM SAA	Provides Airport reference and configuration data, including: definitions and schedule information for Special Activity Airspace (SAA), Temporary Flight Restriction (TFR), procedure (RNAV/RNP) data, and obstacles.	• Get Static SAA • Put Static SAA • SAA Operational Schedule • SAA Schedule Notification • Static SAA Update Notification	via NESG: Summer 2014 R&D: Summer 2014 FNTB: Now Available
AIM Modernization Segment 2	AIMM Segment 2 (S2) will modernize the ingestion, integration, management, and distribution of aeronautical information (AI) by establishing the Aeronautical Common Services (ACS) and a one-stop-shop (OSS) customer portal. ACS and OSS will streamline dissemination	To Be Determined	via NESG: Not Yet Available R&D: Not Yet Available FNTB: Not Yet Available

- AIMM v2 is delayed
- New External Access to NESG is temporarily stalled until Q2 2019

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UPDATE ON US OBSTACLE DATA

OAS, TPSS AND OTHER OBSTACLE DATABASES

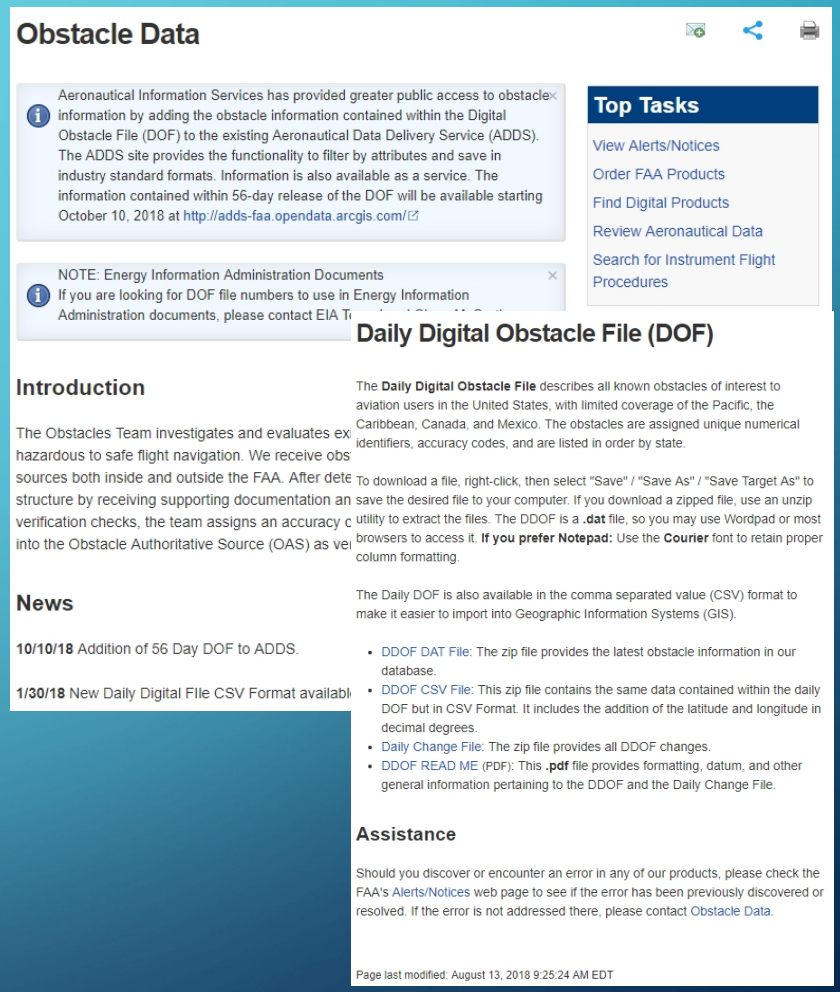
FUNDAMENTAL FAA OBSTACLE DATABASE OAS

Obstacle Authoritative Source (OAS)

- Maintained by the FAA ATO/MSS
- Team Makes Updates via Obstacle Repository System (ORS)
- Repository of all known obstructions
- Responsible for some of the FAA obstacle data products (DOF, DDOF)

DOF and DDOF Access

- https://www.faa.gov/air_traffic/flight_info/aeronav/digital_products/dailydof/
- https://www.faa.gov/air_traffic/flight_info/aeronav/digital_products/dof/
- API access is available



OAS INSIGHTS

OAS contains access to the TPSS/UDDF information but that data is not published in the DDOF today

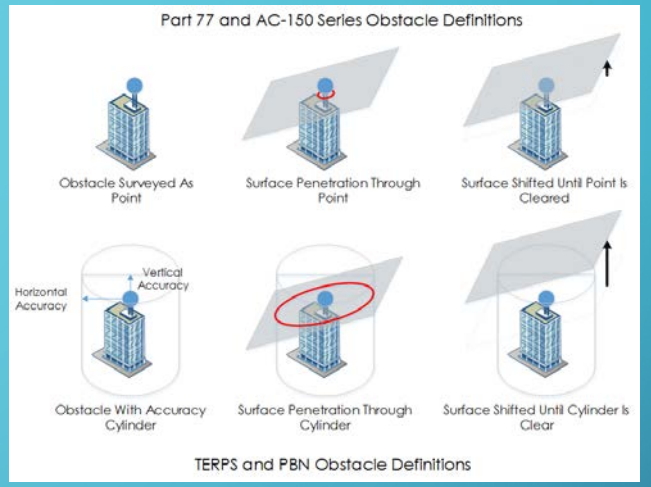
The database is essentially AIXM compliant, but the UI is not

- Only point obstacles with cylindrical accuracy can be defined
- Future update to user interface for obstacle input would be required to "create" linear and polygon obstacles

Its expanding to include new obstacles related to METs

A significant chunk of work performed by the Obstacle Team is dedicated to responding to accuracy requests from flight procedures teams

DOF/DDOF contains man-made "obstructions" that were previously identified on older UDDF files



MET Tower From NREL (https://www.nrel.gov/wind/facilities-research.html)

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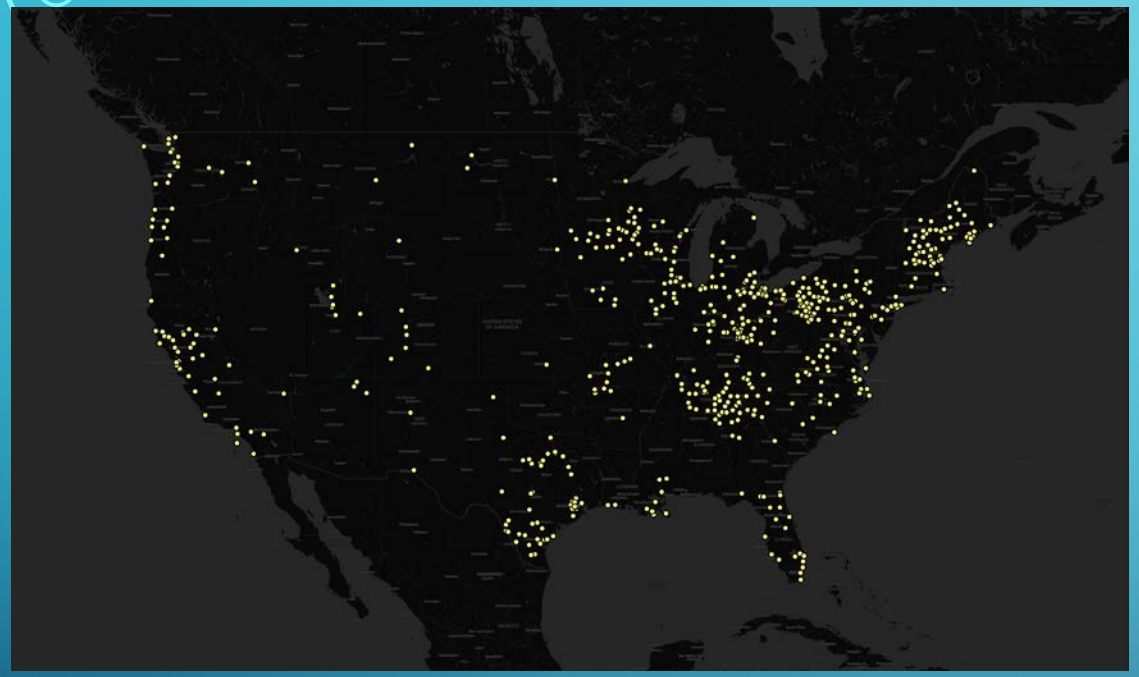
OAS INSIGHTS



Map of Airports With Active 3rd Party Procedures

Not every OE/AAA submitted makes it into OAS

- Large airports only publish obstructions in a 20,000ft radius and/or those that would penetrate the Adverse Assumption Obstacle Heights
- Small airports have obstructions in a 10,000ft radius and/or those that would penetrate the Adverse Assumption Obstacle Heights
- Limitations were initially imposed, in part, due to overzealous solar panel installations

FAA OAS and NGA collaborate on some obstacle information but many obstacles known to NGA and not-published in FAA OAS are related to Military Training Routes or military bases

OAS Does not receive obstacle surveys or validated obstacles from 3rd party IFP efforts

- Only FAA contracted obstacle evaluations will be input into OAS
- Some 3rd party surveyed obstacles can exist in AIRNAV2

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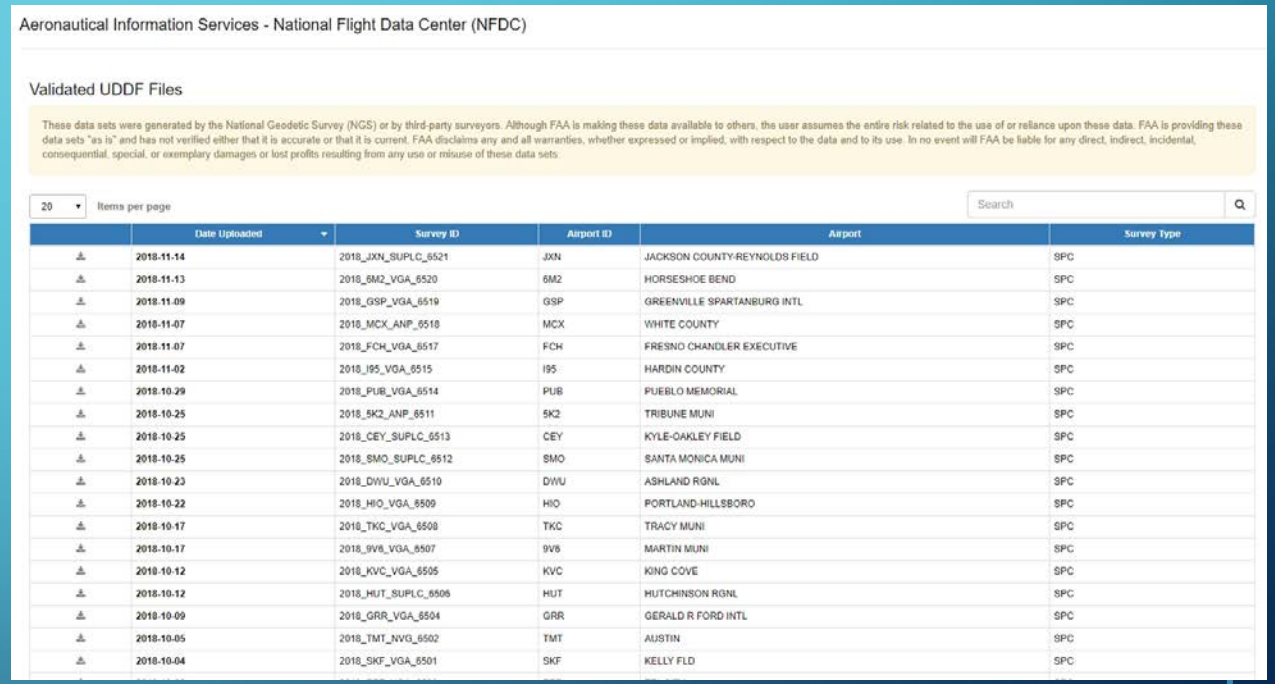
FUNDAMENTAL FAA OBSTACLE DATABASE TPSS

Third Party Surveyor System (TPSS)

- Maintained by the FAA ATO/MSS
- Repository of all AC-150-5300-18B compliant survey files to be consumed either by flight inspection or flight procedures teams
- Also contains pre-5300-18 survey files, but not all
- All files stored in TPSS are in Universal Data Delivery Format (UDDF)



TPSS Access

- https://nfdc.faa.gov/nfdcApps/services/publicData/uddfList.jsp
- No pure API Access (TPSS OBS Are in OAS and AIRNAV)

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TPSS INSIGHTS

Obstacles surveyed according to AC-150-5300-18B standards are not all included in a TPSS/UDDF file

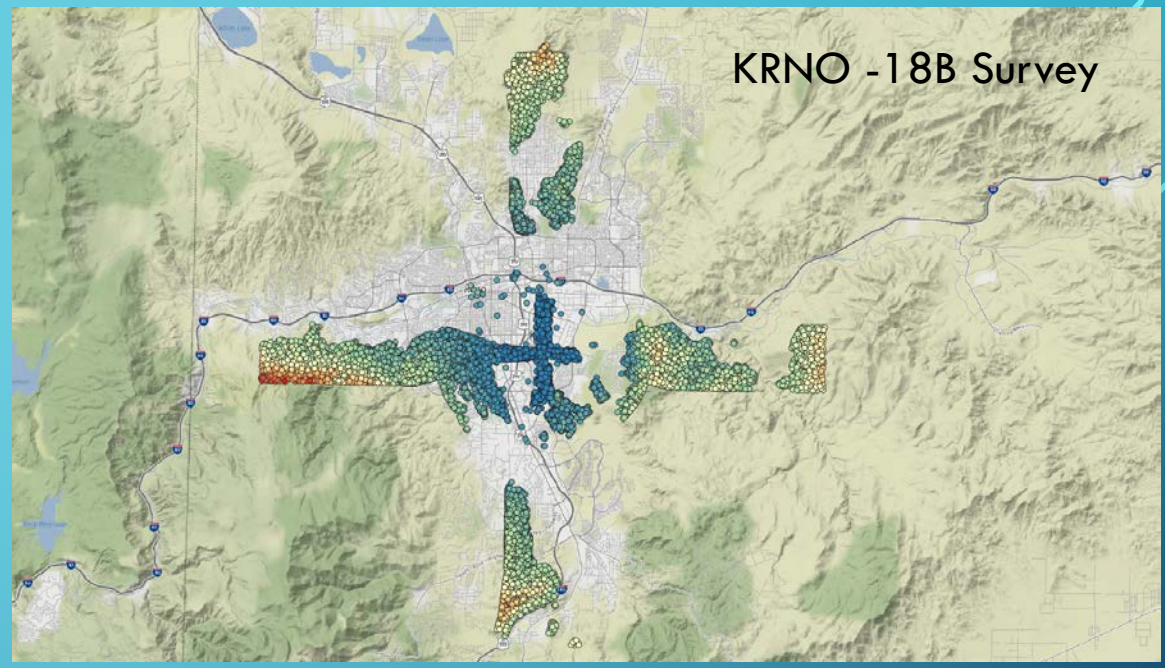
Precise runway profile points are no longer required to be reported in a UDDF

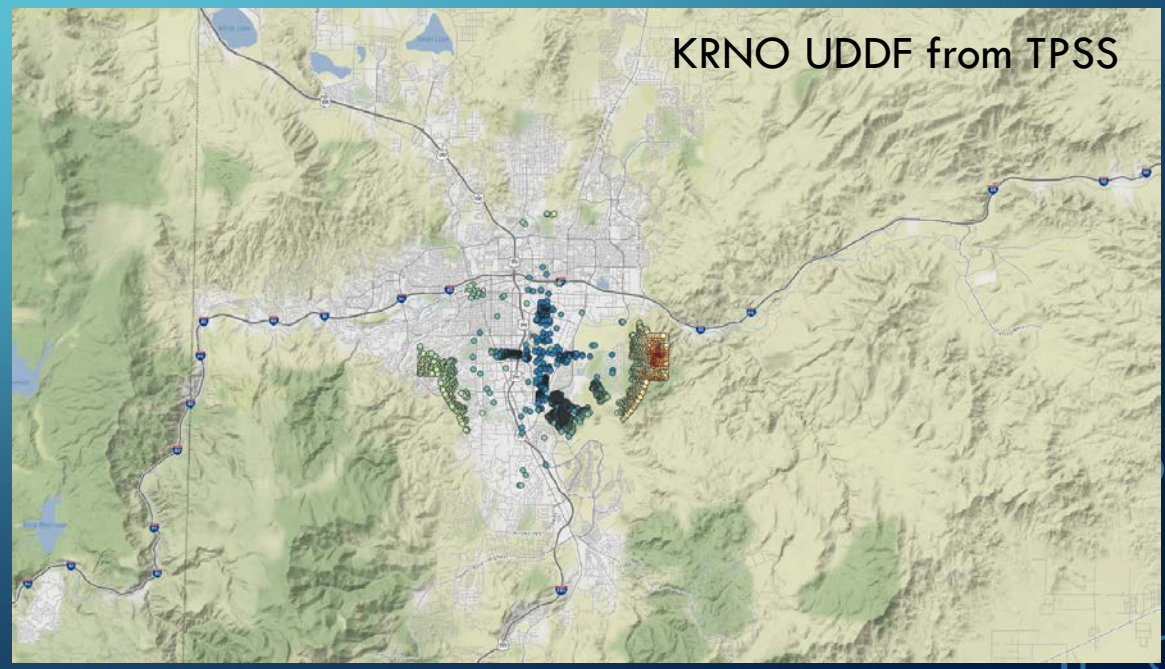
Airport and flight inspection updates to obstacles are not required to be captured in a UDDF "update"

UDDF files can take a long time to come into existence following the data collection and AGIS submission

There are still a few valid UDDF files that live on the NOAA website

- https://www.ngs.noaa.gov/AERO/aero.html





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OTHER IMPORTANT FAA OBSTACLE DATABASES

OE/AAA

- The default accuracy for any obstacle input into OE/AAA is 4D (50ft vertical, 250ft Horizontal)
- The Obstacle Evaluation Group is not looking at OEI surface penetrations or impacts
  - AC-150-5300 OEI surface is currently an "identification" surface and not a "protection" surface

5010

- Controlling obstacles listed for a runway are sometimes the only reference from a VFR airport

AGIS

- Obstacles detected/mitigated by the airport, or State DOT, as part of 20:1, 34:1 updates are stored in AGIS but not frequently pushed into OAS unless a Flight Procedures Team is made aware of the update
- Terrain and runway profile contours are frequently stored with higher fidelity than DEM or DSM, but they are not stored as a raster

FOMS

- Flight inspection obstacles, especially VGSI and IFP, are not well documented and are not currently fed back into OAS

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SAPOE OPPORTUNITY FOR DIRECT FAA INTERFACE

OPPORTUNITY TO INTERFACE WITH FAA OBSTACLE TEAM, AGIS TEAM AND NOTAM TEAM

FAA

FAA Obstacle team has offered to work with SAPOE directly

- Official changes can be requested via FAA Aeronautical Charting Meeting (formerly ACF)
- Opportunity to interface directly with SAPOE independently on a quarterly basis

FAA AGIS team has offered to work with SAPOE via other established working groups (ACI/ACC)

FAA NOTAM team continues to work with SAPOE members through various working groups (ACM, A4A)

SAPOE COMMITTEES CAN:

Learn and Inform Our Members

Improve DDOF Product and Access

Consider requesting access to OAS/AGIS/AIRNAV2

Fast track linear and polygon obstacle definition

Consider moving certain obstacle NOTAMs into OAS/DDOF

Continue to work with NOTAM Team On Digital NOTAMs

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UPDATE ON FAA NOTAM SYSTEM

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SAPOE NEXT STEPS

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NEXT STEPS

1. Form SAPOE Committee(s) to Interface with FAA and Members

   - Primary Committee – Aeronautical Information

   - Subcommittees
     - Aeronautical Information
     - Weather Information
     - Flight Planning and Aircraft Position Information
     - Obstacle and Terrain Information
     - NOTAMs

2. Update SAPOE Website

   - Information/landing pages for subcommittees
   - Feedback Space
   - Database and Product Business Process Diagram
   - Connecting to Aeronautical Data feeds “How To” videos

3. Engage, Share and Communicate

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TOPICS THAT CAN BE COVERED BY SAPOE SUBCOMMITTEES

- USGS Terrain Data*
- State DOT Data
- Airfield Geometry Information/Data*
- Charted Product Data*
- Flight Procedure Data*
- Aircraft Position Data*
- Current and/or Historical Weather Data*
- Imagery*
- Land Use/Land Cover Data*
- Nautical Data*
- Powerline Data
- Military Products

**FAA, NGA, USGS and NOAA Have Data Sources and Feeds for many of these topics*