

# US Pacific Basin Imagery Update

April 2022

USDA-FPAC-BC-GEO Branch

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# Background

- **USDA-FPAC-BC-GEO Branch's goal is to provide high quality geospatial data for all regions of the United States and affiliated territories.**
- **USDA has collaborated with imagery acquisitions with other Federal Agencies (USGS, NOAA etc...) via NDOP since the early 1980's.**
- **USDA provided additional funding to allow publishing of the internal ImageServer Service to the general public (Hawaii and US Pacific Basin GIS Community).**

## New Imagery Services

- **Maxar-DG provided USDA-FPAC a new version of high-resolution satellite imagery Called Vivid Basemap that has more recent imagery and easier to process by USDA.**
- **Maxar-DG creates updates approximately every 1-2 years for Vivid Basemap Services.**
- **USDA has created a new ImageServer Services for the following:**
  - **Hawaiian Islands**
  - **Guam**
    - **2020**
    - **2022 (New Version, Summer, 2022)**
  - **Commonwealth of the Northern Mariana Islands**
  - **American Samoa**
  - **Palau**
  - **Federated States of Micronesia**
  - **Marshall Islands (Summer, 2022)**



### Imagery Specifications

- **.5 meter/50 cm Resolution**
- **Four Bands (Natural Color, Color Infrared)**
- **Accuracy CE 90 <5-meter**
- **Image Currency ~ 75% is two years or less**



Sign in Feedback | Help

Search by location or address

Area of Interest Filters

Area Name	Selected	Coverage	
AOI 1	2/2	10%	
Product	Publish date	Resolution	
<input checked="" type="checkbox"/> Vivid 2.0	2020-09-25	0.50m	
<input checked="" type="checkbox"/> Vivid 2.0	2020-09-17	0.50m	

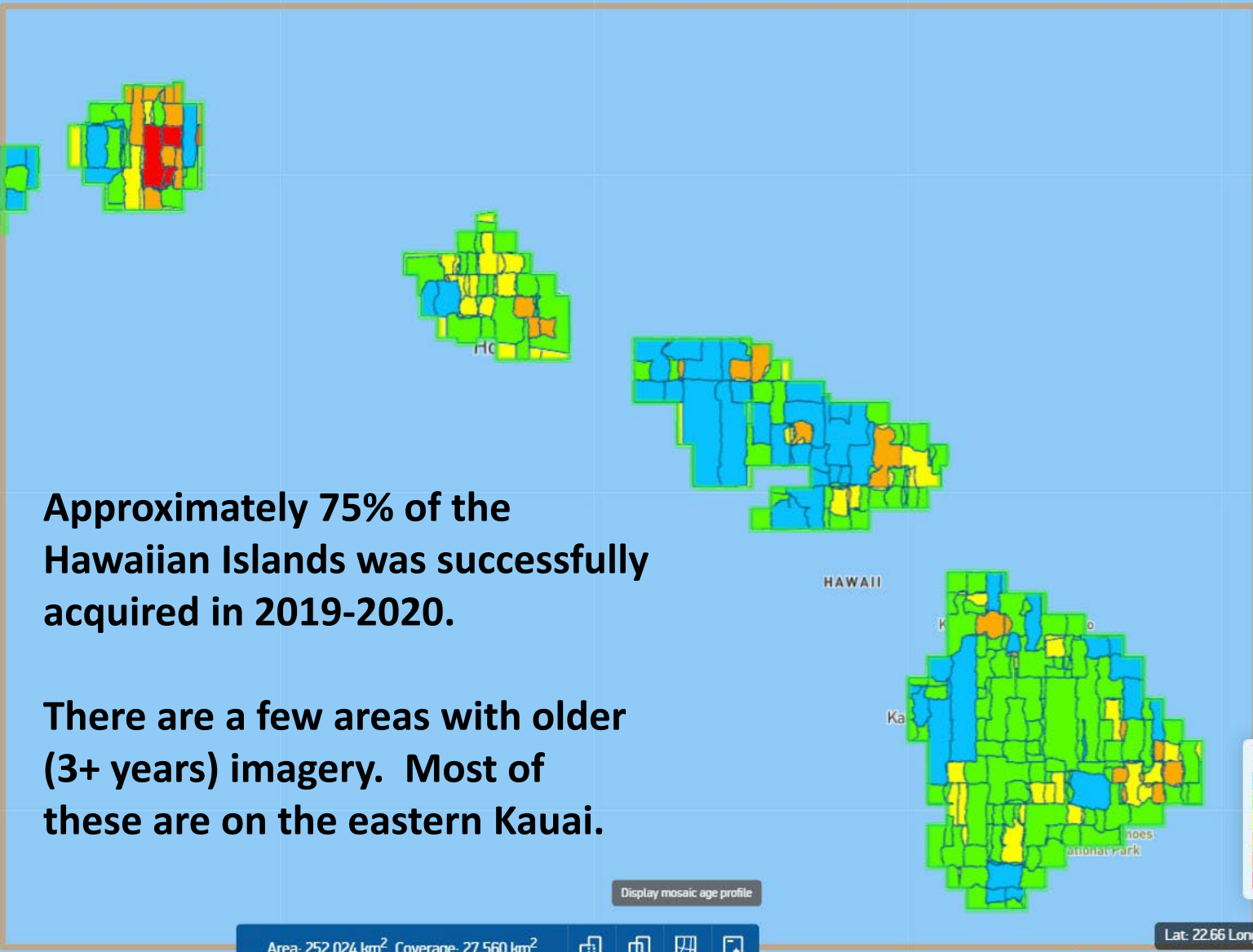
+  
-

<

Actions ^

**Approximately 75% of the Hawaiian Islands was successfully acquired in 2019-2020.**

**There are a few areas with older (3+ years) imagery. Most of these are on the eastern Kauai.**



**Image Collection Year**

- 2020
- 2019
- 2018
- 2017
- 2016
- < 2016

Area: 252,024 km<sup>2</sup>, Coverage: 27,560 km<sup>2</sup>

Lat: 22.66 Long: -160.58  
50 km  
30 mi

Terms of use | Mapbox | OpenStreetMap | Leaflet | Powered by | Esri

# How to use new imagery service?

- Use the link below in ArcMap/ArcPro as a “GIS Server”
- Compatible with QGIS
- Use the online viewer

<https://nrcsgeoservices.sc.egov.usda.gov/arcgis/rest/services>

Select “ortho\_imagery”

← → ↻ 🏠 [nrcsgeoservices.sc.egov.usda.gov/arcgis/rest/services](https://nrcsgeoservices.sc.egov.usda.gov/arcgis/rest/services)

🌐 FPACNow - FPACN... 🌐 USDA-GEO Branch 📍 Voyager - Navigo 🌐 SeaSketch - B

## ArcGIS REST Services Directory

[Home](#) > [services](#)

[JSON](#) | [SOAP](#)

**Folder: /**

**Current Version:** 10.81

**View Footprints In:** [ArcGIS Online Map Viewer](#)

**Folders:**

- [easements](#)
- [GlobalSoilMap\\_v01\\_STATSGO2](#)
- [GlobalSoilMap\\_v05](#)
- [government\\_units](#)
- [land\\_use\\_land\\_cover](#)
- [ortho\\_imagery](#)
- [soils](#)
- [Utilities](#)

**Services:**

*None*

**Supported Interfaces:** [REST](#) [SOAP](#) [Sitemap](#) [Geo Sitemap](#)

# How to use new imagery service?

Use the link below in ArcMap/ArcPro as a “GIS Server”

A screenshot of the ArcGIS REST Services Directory homepage. The browser address bar shows the URL: nrcsgeoservices.sc.egov.usda.gov/arcgis/rest/services. The page title is "ArcGIS REST Services Directory". The breadcrumb navigation is "Home > services". Below the navigation, there are links for "JSON" and "SOAP". The "Folder:" section shows the root directory "/". The "Current Version:" is 10.81. The "View Footprints In:" link points to "ArcGIS Online Map Viewer". The "Folders:" section lists several folders, with "ortho\_imagery" highlighted with a red box. The "Services:" section shows "None". At the bottom, "Supported Interfaces:" includes REST, SOAP, Sitemap, and Geo Sitemap.

A screenshot of the ArcGIS REST Services Directory page for the "ortho\_imagery" folder. The browser address bar shows the URL: nrcsgeoservices.sc.egov.usda.gov/arcgis/rest/services/ortho\_imagery. The page title is "ArcGIS REST Services Directory" with the breadcrumb "Home > services > ortho\_imagery". Below the navigation, there are links for "JSON" and "SOAP". The "Folder: ortho\_imagery" section shows "Current Version: 10.81" and "View Footprints In: ArcGIS Online Map Viewer". The "Services:" section lists 20 services, including "ortho\_imagery/american\_samoa\_vivid (ImageServer)", "ortho\_imagery/americansamoa\_vivid\_metadata (MapServer)", "ortho\_imagery/cnmi\_vivid\_metadata (MapServer)", "ortho\_imagery/cnmi\_vivid (ImageServer)", "ortho\_imagery/guam\_vivid\_metadata (MapServer)", "ortho\_imagery/guam\_vivid (ImageServer)", "ortho\_imagery/hawaii\_vivid\_metadata (MapServer)", "ortho\_imagery/hawaii\_vivid (ImageServer)", "ortho\_imagery/micronesia2021\_metadata (MapServer)", "ortho\_imagery/micronesia2021 (ImageServer)", "ortho\_imagery/nhap2\_metadata (MapServer)", "ortho\_imagery/nhap2 (ImageServer)", "ortho\_imagery/nhap\_All (ImageServer)", "ortho\_imagery/nhap\_colorbalance (ImageServer)", "ortho\_imagery/nhap\_metadata (MapServer)", "ortho\_imagery/palau\_vivid\_metadata (MapServer)", and "ortho\_imagery/palau\_vivid (ImageServer)". A red arrow points to the first service in the list. At the bottom, "Supported Interfaces:" includes REST, SOAP, Sitemap, and Geo Sitemap.

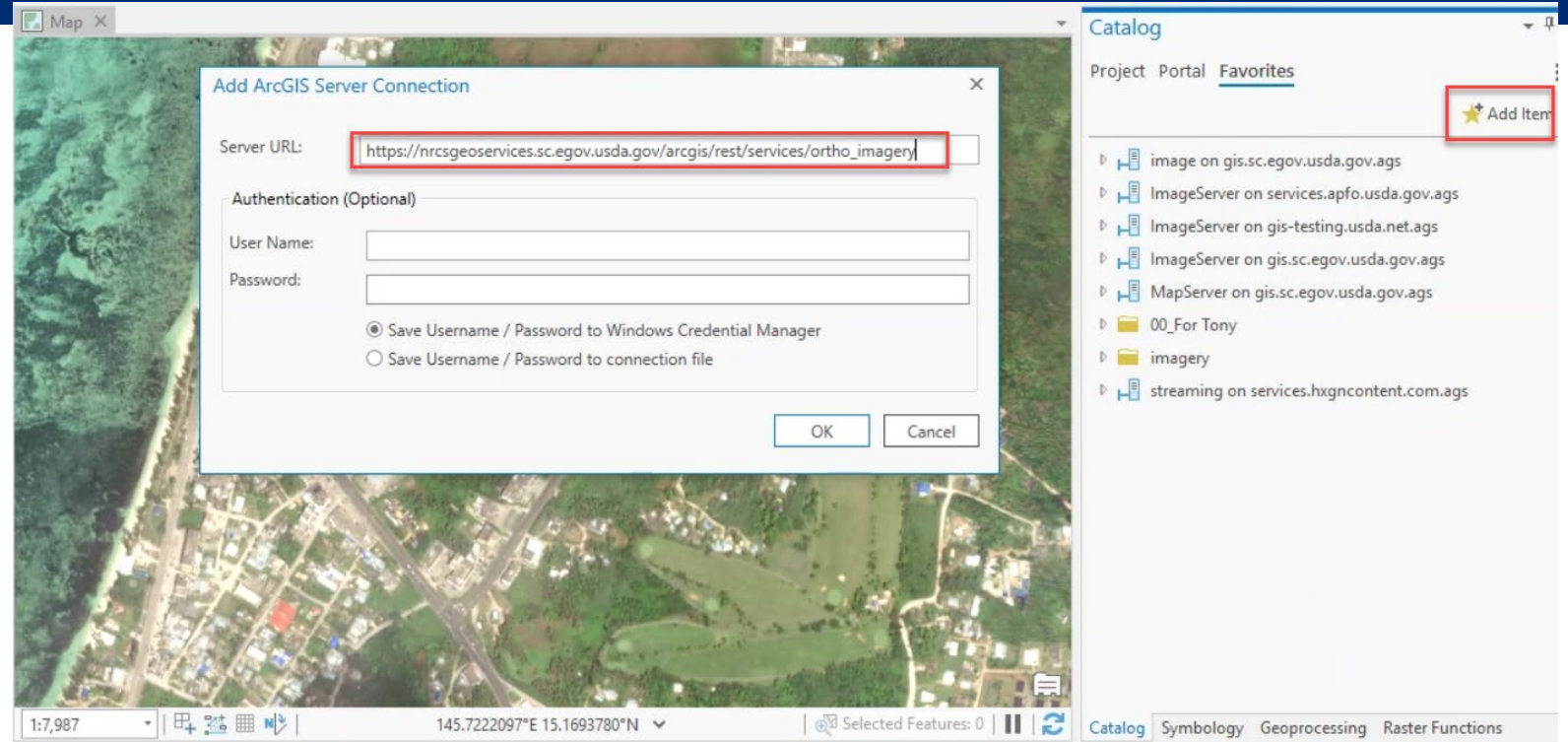
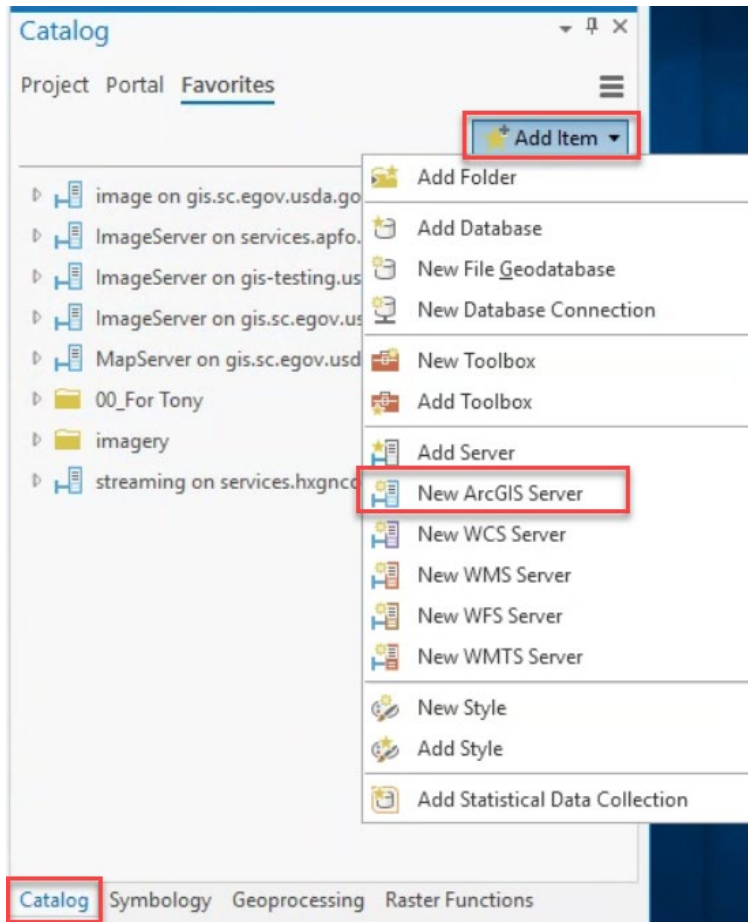
Imagery layers and metadata available to the general public.

Please note that this list changes when we add or update imagery-GIS layers.

Marshall Islands imagery services are expected in early summer, 2022.

<https://nrcsgeoservices.sc.egov.usda.gov/arcgis/rest/services>

Select “ortho\_imagery”



- In ArcMap/ArcPro select the Catalog window, then Add Item – New ArcGIS Server
- Add in the link below in the Server URL.
- User Name and Password should remain blank. Hit Ok and wait for the new Imagery Service.

<https://nrcsgeoservices.sc.egov.usda.gov/arcgis/rest/services>

## Publicly Available Recent High Resolution Orthoimagery Commonwealth of the Northern Mariana Islands

**- Orthoimagery and Metadata are available to the public.**

**- New Web Map Service is based on ESRI ImageServer technology.**

**- It does take a little time to first load the image service. Zooming in and panning speed improves after initially loading the dataset.**

**- Soon American Samoa and Palau will be available at the same link.**

**- Federated States of Micronesia and Marshall Islands are planned for early 2022.**

<https://nrcsgeoservices.sc.egov.usda.gov/arcgis/rest/services>



## Saipan (South), CNMI

The screenshot displays the ArcGIS web application interface for Saipan (South), CNMI. The interface is divided into three main sections: Contents, Map, and Catalog.

- Contents Panel (Left):** Shows the 'Map' layer with 'ortho\_imagery\cnmi\_vivid' selected. Other layers include 'guam\_vv2\_rgb\_20170507\_20180310.img' and 'Topographic'.
- Map Window (Center):** Displays an aerial orthorectified image of Saipan (South), CNMI, showing a coastal area with buildings, roads, and an airport. The map scale is 1:30,468 and the coordinates are 145.7372360°E 15.1188598°N.
- Catalog Panel (Right):** Shows a tree view of the data source. The 'ortho\_imagery' folder is expanded, listing various imagery and metadata items. A red box highlights the 'ortho\_imagery' folder and its contents.

The 'Catalog' panel shows the following structure:

- streaming\_on\_services.hxncontent.com.ags
  - ortho\_imagery on nrcsgeoservices.sc.egov.usda.gov (1).a
    - easements
    - GlobalSoilMap\_v01\_STATSGO2
    - GlobalSoilMap\_v05
    - government\_units
    - land\_use\_land\_cover
    - ortho\_imagery
      - cnmi\_vivid
      - cnmi\_vivid\_metadata
      - guam\_vivid
      - guam\_vivid\_metadata
      - hawaii\_vivid
      - hawaii\_vivid\_metadata
      - nhap\_All
      - nhap\_metadata
    - soils

<https://nrcsgeoservices.sc.egov.usda.gov/arcgis/rest/services>

# ArcMap Sample

**Table Of Contents**

- ortho\_imagery\hawaii\_vivid\_metadata
- ortho\_imagery\hawaii\_vivid

**Layers**

- RGB
  - Red: Band\_3
  - Green: Band\_2
  - Blue: Band\_1

**Layer Properties**

Selection	Fields	Definition Query	Status	Time
General	Source	Key Metadata	Extent	Display
			Symbology	Processing Templates
				Mosaic

Function: Natural Color

Description: Natural Color, Color Infrared (CIR), NDVI Colorized, None

Help: Natural Color: Red: Band 3, Green: Band 2, Blue: Band 1, Stretch type: 6.5 standard deviations

Inputs:	Property	Value
	...	

**Hawaiian Islands ImageServer Service has three layers**

- Natural Color
- Color Infrared
- NDVI (Testing Phase)

**- In both ArcMap or ArcPro, select "ortho\_imagery\hawaii\_vivid" and then layer properties.**

**- You will see a tab for processing templates. Select this and then the Function (Natural Color, Color Infrared (CIR) and NDVI.**

HI\_Vivid\_2021 - Map - ArcGIS Pro

Image Service Layer

Project Map Insert Analysis View Edit Imagery Share Appearance Data

New Report Import Map New Notebook Import Layout Task Connections Add Folder

Bright Map Notes Dark Map Notes Light Map Notes Paired Map Notes Pastel Map Notes

Layer Templates

Contents

Search

Drawing Order

Map

- ortho\_imagery\hawaii\_vivid

RGB

- Red: Band\_3
- Green: Band\_2
- Blue: Band\_1

Topographic



# ArcPro Sample Natural Color

- Complete three types of ImageServer Services
  - Natural Color, Color Infrared/CIR, NDVI

Layer Properties: ortho\_imagery\hawaii\_vivid

General Metadata Source Elevation Selection Display Cache Definition Query Time Range Mosaic Processing Templates

Processing Template: Natural Color

Description: Natural Color

Help: Natural Color: Red: Band 3, Green: Band 2, Blue: Band 1, Stretch type: 6.5 standard deviations

Parameter	Value

OK Cancel

Catalog

- guam
- guam\_cir
- hawaii\_vivid
- marshall\_islands
- micronesia
- nhap\_All
- palau
- CocountAgain
- coshoctrgb\_wgs\_SmallERDImage
- MRFCosh\_clip\_JPCy
- MRFCosh\_clip\_JPCy\_GeoTif
- MRFCosh\_clip\_JPCya

Symbology Geoprocessing Raster Functions

**ArcPro Sample Color Infrared**

- **Complete three types of ImageServer Services**
  - Natural Color, Color Infrared/CIR, NDVI

**ArcPro Sample NDVI**

- Complete three types of ImageServer Services
  - Natural Color, Color Infrared/CIR, NDVI

## Hawaii ImageServer Service Metadata

- Select any polygon to find out what the image acquisition date, satellite sensor etc...
- Over 300 Satellite Scenes were mosaics together.

Table Of Contents

Layers

- ortho\_imagery/hawaii\_vivid\_metadata
- hawaii\_vivid\_metadata
- ortho\_imagery\hawaii\_vivid

Identify

Identify from: <Top-most layer>

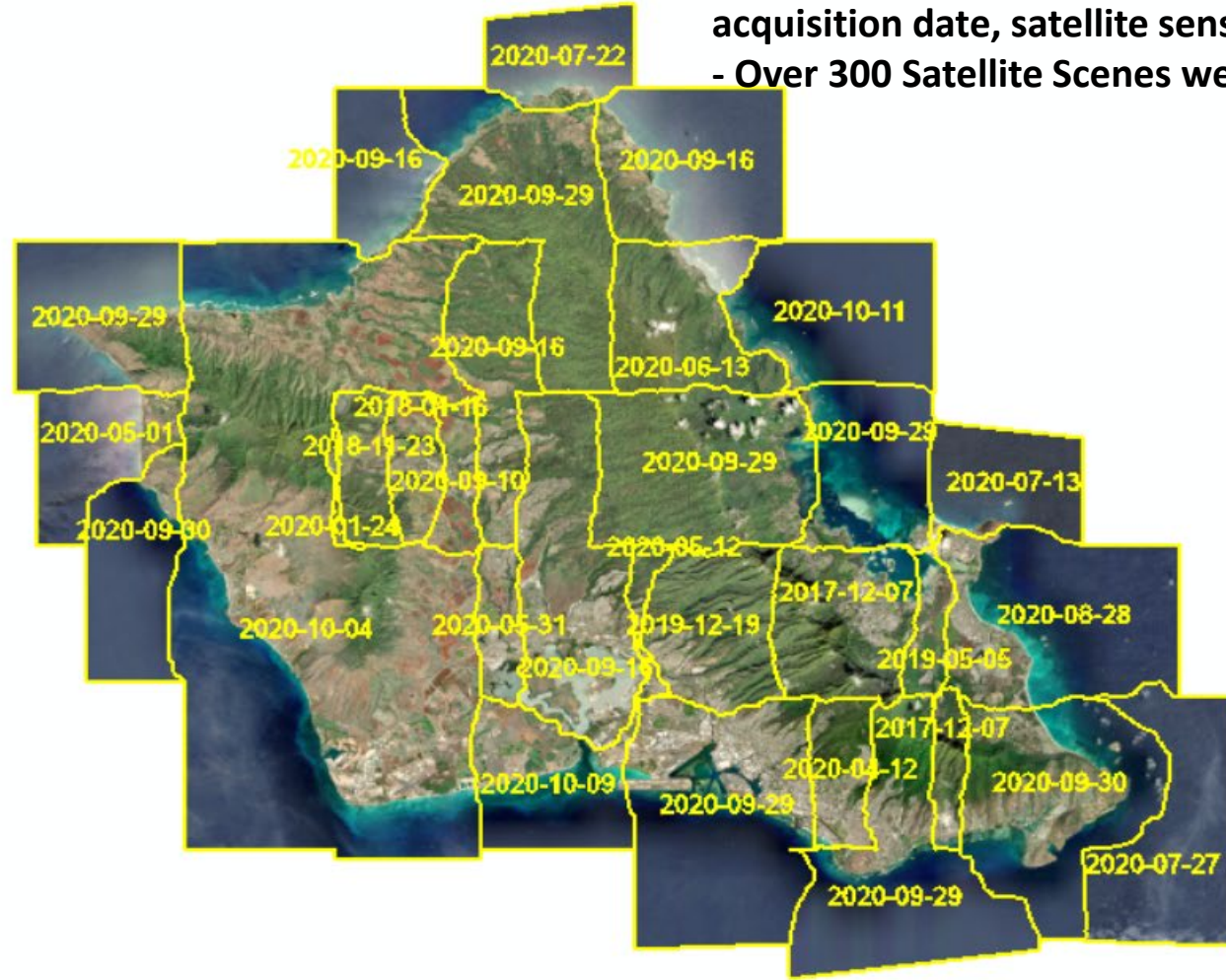
hawaii\_vivid\_metadata

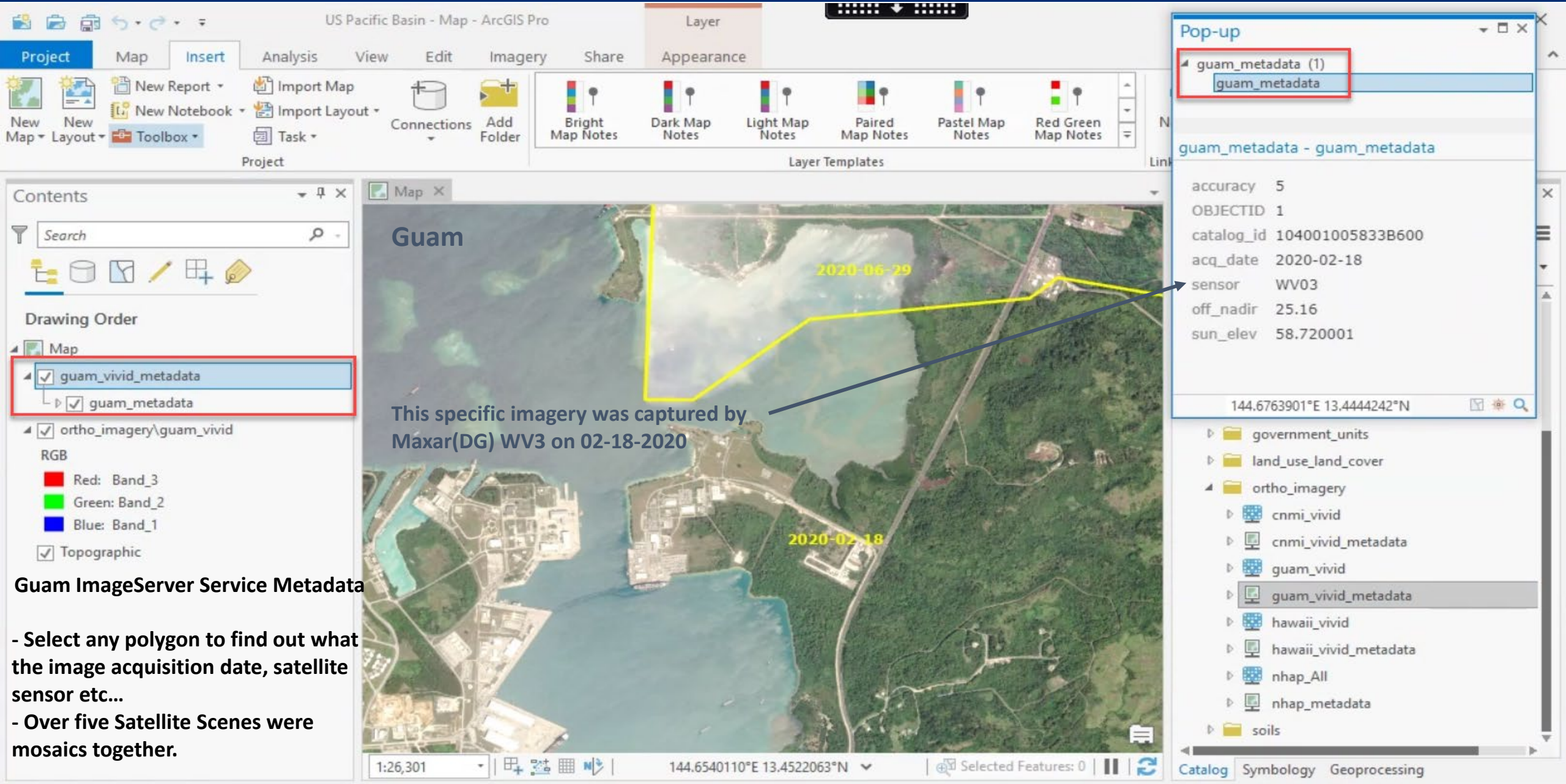
104001006074DB00

Location: -17,574,500.815 2,430,727.983 Meters

Field	Value
OBJECTID	53
catalog_id	104001006074DB00
acq_date	2020-09-29
sensor	WV03
off_nadir	18.71416
sun_elev	61.394398
cloudcover	0
accuracy	5
Shape	Polygon
Shape.STArea()	0.014517
Shape.STLength()	0.544001

Identified 1 feature





Guam

2020-06-29

2020-02-18

This specific imagery was captured by Maxar(DG) WV3 on 02-18-2020

Pop-up

guam\_metadata (1)  
guam\_metadata

guam\_metadata - guam\_metadata

accuracy	5
OBJECTID	1
catalog_id	104001005833B600
acq_date	2020-02-18
sensor	WV03
off_nadir	25.16
sun_elev	58.720001

144.6763901°E 13.4444242°N

Contents

Search

Drawing Order

- Map
  - guam\_vivid\_metadata
    - guam\_metadata
- ortho\_imagery\guam\_vivid
  - RGB
    - Red: Band\_3
    - Green: Band\_2
    - Blue: Band\_1
  - Topographic

### Guam ImageServer Service Metadata

- Select any polygon to find out what the image acquisition date, satellite sensor etc...
- Over five Satellite Scenes were mosaics together.

government\_units

land\_use\_land\_cover

ortho\_imagery

- cnmi\_vivid
- cnmi\_vivid\_metadata
- guam\_vivid
- guam\_vivid\_metadata
- hawaii\_vivid
- hawaii\_vivid\_metadata
- nhap\_All
- nhap\_metadata

soils

Catalog Symbology Geoprocessing

Folder: ortho\_imagery

nrscgeoservices.sc.egov.usda.gov/arcgis/rest/services/ortho\_imagery

ArcGIS REST Services Directory

Home > services > ortho\_imagery

JSON | SOAP

**Folder: ortho\_imagery**

Current Version: 10.71

View Footprints In: [ArcGIS Online Map Viewer](#)

Services:

- [ortho\\_imagery/cnmi\\_vivid\\_metadata](#) (MapServer)
- [ortho\\_imagery/cnmi\\_vivid](#) (ImageServer)
- [ortho\\_imagery/guam\\_vivid\\_metadata](#) (MapServer)
- [ortho\\_imagery/guam\\_vivid](#) (ImageServer)**
- [ortho\\_imagery/hawaii\\_vivid\\_metadata](#) (MapServer)
- [ortho\\_imagery/hawaii\\_vivid](#) (ImageServer)
- [ortho\\_imagery/nhap\\_All](#) (ImageServer)
- [ortho\\_imagery/nhap\\_metadata](#) (MapServer)

(1)

ortho\_imagery/guam\_vivid (ImageServer)

nrscgeoservices.sc.egov.usda.gov/arcgis/rest/services/ortho\_imagery/guam\_vivid/Image...

ArcGIS REST Services Directory

Home > services > ortho\_imagery > guam\_vivid (ImageServer)

JSON | SOAP | WMS

**ortho\_imagery/guam\_vivid (ImageServer)**

View In: [ArcGIS JavaScript](#) **[ArcGIS Online Map Viewer](#)** [ArcGIS Earth](#) [ArcMap](#)

View Footprint In: [ArcGIS Online Map Viewer](#)

Service Description: Description:

This image service provides information about the imagery collected for Guam. Attributes include center x and center y. This is a licensed dataset from Maxar Intelligence.

Purpose: To provide USDA-NRCS, its partners and the public with updated digital orthographic imagery covering Guam.

Creation Date: 20210810

Publication Date: 20210810

Revision Date: 20210810

Refresh Cycle: Updated periodically as new imagery becomes available.

Version: 1.0.0

Change Log: Service Deployed

[Report Service Errors](#)

Name: ortho\_imagery/guam\_vivid

Description: Description:

(2)

<https://nrscgeoservices.sc.egov.usda.gov/arcgis/rest/services>

ortho\_imagery/guam\_vivid

ArcGIS - My Map

arcgis.com/home/webmap/viewer.html?url=https%3A%2F%2Fnrscgeoservices.sc.egov.usda.gov/arcgis/rest/services/ortho\_imagery/guam\_vivid/ImageServer/MapServer/0

ArcGIS My Map

Open in new Map Viewer Modify Map Sign In

Details Basemap

Print Measure Find address or place

Contents

- guam vivid
- Topographic

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(3)

Online  
Map  
Viewer





You can find documentation and videos on how to use the USDA Web Map Services (WMS) at the following link:

<https://nracs.app.box.com/v/gateway/folder/154646807634>

There is information on how to use the WMS in ArcMap, ArcPro, QGIS and AutoCAD.

Search Files and Folders

> US Pacific Basin Islands > #New\_Data\_2022+ > Videos

Name ^	Updated	Size
 USDA_GEO_AutoCAD.mp4	Jan 23, 2022 by Tony Kim...	54.2 MB
 USDA_GEO_ImageService_QGIS.mp4	Jan 23, 2022 by Tony Kim...	25 MB

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**Thank You!**