

The Predictive Services Group (PSG), in collaboration with the USDA Forest Service Remote Sensing Applications Center (RSAC), hosts a series of geospatial data services accessible to users via the web. The geospatial data contained in these services consist of several selected layers critical for daily Predictive Services analysis and decision support applications. These key geospatial layers are known collectively as the Predictive Services “Core Data Layers”.

The Core Data Layers are compiled from several agency sources and processed on a daily basis by RSAC. The series of vector and raster Core Data Layers characterize current and forecasted fuels, weather conditions, fire potential and current fire intelligence. These data layers are available to users via one of the following several options depending on the user’s needs and objectives.

- 1) The Predictive Services web map application: An interactive, web-based map viewer that displays all of the Predictive Services Core Data Layers and reference base layers (political boundaries, hydrology, etc.). Users may pan/zoom, display desired layers, query data, etc. The application requires no GIS software and little or no GIS technical skills.
- 2) ArcGIS Server map service in an ArcMap or ArcGIS Explorer client: Predictive Services Core Data Layers are available as ArcGIS Server map services via the Predictive Services Geospatial Portal website. ArcMap can readily ingest ArcGIS Server map services as a geospatial data source. A connection in ArcMap to the Core Data Layer map services is easily established by connecting via a “GIS Server” using the appropriate connection string.

The Core Data Layer map services can be integrated with other sources of geospatial data in the same ArcMap data frame. ArcGIS Server map services are based on an ArcMap mxd compiled by RSAC and hosted via ArcGIS Server for access by ArcMap clients and the Predictive Services web map application. Consequently, used in ArcMap, a map service only allows for simple viewing (layer symbology cannot be changed) and basic functionality (layer transparency, etc.). In addition to ArcMap, the Predictive Services Core Data Layer map services are also accessible via ArcGIS Explorer (a virtual globe application similar to Google Earth).

- 3) Web Feature Service (WFS) in an ArcMap client: A WFS provides access to vector-based (points, lines, polygons, etc.) Predictive Services Core Data Layers. The Predictive Services WFS is readily accessible by ArcMap using the published connection string. Layers accessible via the WFS can be manipulated by users like any other dataset (query, change symbology, use in models/scripts, etc.) in ArcMap.
- 4) Web Coverage Service (WCS) in an ArcMap client: A WCS provides access to continuous and thematic, raster-based Predictive Services Core Data Layers. A limited number of Core Data Layers are provided in raster format. These layers are readily accessible via the Predictive Services WCS by ArcMap using the published connection string. Layers accessible via the WCS can also be manipulated by users in ArcMap.

Technical directions on how to access the Core Data Layers using the above options are provided in instruction documentation on the Predictive Services Geospatial Portal. Connection strings to map services and WFSs/WCSs are also provided in the directions. Additionally, the following tables illustrate the data layers currently available in the Predictive Services Core Data Layer map services and associated WFSs/WCSs. Descriptions of data sources, data type, update frequency, scale/resolution, etc. are also included.

Layer	Source	Data Type	Update Frequency	Update Time	Spatial Extent				Scale/Resolution	Native Projection & Coordinate System	Map Service Name
					CONUS	AK	HI	PR			
Wind Speed (7 day forecast)	NWS-NDFD	Vector (Polygon)	Twice daily	5AM/PM (MT)	Yes	Yes	Yes	Yes	5KM (CONUS), 6KM (Alaska), 2.5KM (Hawaii), 1.25KM (PR)	Vector data - DD	Weather--THW
Wind Direction (7 day forecast)	NWS-NDFD	Vector (Point)	Twice daily	5AM/PM (MT)	Yes	Yes	Yes	Yes	5KM (CONUS), 6KM (Alaska), 2.5KM (Hawaii), 1.25KM (PR)	Vector data - DD	
Relative Humidity (7 day forecast)	NWS-NDFD	Vector (Polygon)	Twice daily	5AM/PM (MT)	Yes	No	Yes	Yes	5KM (CONUS), 6KM (Alaska), 2.5KM (Hawaii), 1.25KM (PR)	Vector data - DD	
Max Temperature (7 day forecast)	NWS-NDFD	Vector (Polygon)	Twice daily	5AM/PM (MT)	Yes	Yes	Yes	Yes	5KM (CONUS), 6KM (Alaska), 2.5KM (Hawaii), 1.25KM (PR)	Vector data - DD	
Daily Observed Precipitation (AHPS)	NWS	Raster	Once daily	11AM (MT)	Yes	No	No	Yes	4KM	DD	Obs_Precip
Daily Observed Precipitation (WIMS/WFAS)	Fire Lab	Vector (Polygon)	Once daily	7PM (MT)	Yes	No	No	No	10KM	Albers Equal Area	
NDFD Fire Danger (ERC, Fuel Model G, 7 day forecast)	Fire Lab	Vector (Polygon)	Once daily	6AM (MT)	Yes	No	No	No	5KM	Lambert	Fire_Danger
Observed 100hr/1,000 hr Dead Fuel Moisture	WFAS	Vector (Polygon)	Once daily	6AM (MT)	Yes	No	No	No	10KM	Albers Equal Area	Fuel_Moisture
Lightning	BLM-WFMI	Vector (Point)	Every 2 hours	Even hours	Yes	No	No	No	+/- 500m	DD	Lightning
Lightning Strike/AHPS Obs Precip Analysis	RSAC	Vector (Point)	Once daily	6AM (MT)	Yes	No	No	No	1:2,000,000	DD	
Lightning Strike Summaries by PSA	RSAC	Vector (Polygon)	Every 2 hours	Even hours	Yes	No	No	Yes	1:2,000,000	DD	
7 Day Sig Fire Forecast by PSA	NPSG	Vector (Polygon)	Hourly	7AM to 2PM (MT)	Yes	Yes	No	Yes	1:2,000,000	DD	7_Day_Sig_Fire_Forecast

Current Large Incidents	NIFC-NICC	Vector (Point)	Hourly	4AM to 10AM (MT)	Yes	Yes	Yes	Yes	1:24,000	DD	Current_Large_Incidents
Current Fire Wx Zones; Watches/Warnings	NWS	Vector (Polygon)	Hourly	Every hour	Yes	Yes	Yes	Yes	1:2,000,000	DD	Fire_Watches_Warnings

Figure 1 – Descriptor table of Core Data Layer map services available via the Predictive Services Geospatial Portal

Layer	Source	Scale/Resolution	Native Projection & Coordinate System	Notes	Map Service Name
State Boundaries	Arc Data	1:100,000	DD		Reference_Base-- (CONUS, Alaska, Hawaii, Puerto_Rico)
Canada Boundaries	GeoGratis	1:1,000,000	DD		
Mexico Boundaries	Arc Data	1:400,000	DD		
Shaded Relief	Arc Data	1KM	DD		
Hydrology (Lakes)	USGS	1:2,000,000	DD		
PSAs	NPSG	1:2,000,000	DD		Reference_PSA-keyRAWS-GACC
Geographic Areas	NIFC-NICC	?	DD		
Key RAWS	NPSG	1:24,000	DD		
Landsat/NAIP Imagery	RSAC	1m to 30m	Varies	Provided by RSAC Image Server	--

Figure 2 - Descriptor table of reference data layer map services available via the Predictive Services Geospatial Portal.