

# Background

In the past, our emphasis has been making our products and services visible to users through [The National Map Viewer](#). This viewer integrated both map service visualization, GIS functions and product download capabilities into a single HTML-based web interface.

The focus now has shifted to provide more robust basic web services that expose the necessary information about our products and services to enable developers to build their own solutions to satisfy a wider range of use cases.

We are now building our own clients around this API to fully exercise and mature the service. Our [Services List](#), [Dataset List](#), and mobile optimized [TNM Download Client](#) leverage the information provided by the [TNMAccess API](#).

The TNMAccess API is accessible from: <http://apps.nationalmap.gov/tnmaccess/>

The API distinguishes four major entities:

- [Products](#) represent the individual pre-staged downloadable products available to users.
- [Datasets](#) organize products by recognizable themes and collections of data. A single product may be tagged as belonging to one or more Datasets.
- [Notifications](#) deliver information about new features and data available to users as well as upcoming maintenance windows.
- [Services](#) are primarily Web Map Services for visualization and secondarily Data Services for direct access to data. Visualization services currently provide Preview and Availability/Index map services. Data services include OGC WFS services for vector datasets and OGC WCS services for only select raster datasets.

## Querying Products

The primary query method used to obtain product results is:

<https://tnmaccess.nationalmap.gov/api/v1/products?>

With no additional parameters, this query will return 10,000 of the almost 4 million pre-staged products currently available through The National Map.

The following table summarizes the parameters available to limit the results:

Parameter	Values	Description
bbox	minx, miny, maxx, maxy	geographic longitude/latitude values expressed in decimal degrees in a commadelimited list.
polygon	[x,y x,y x,y x,y x,y]	Polygon, longitude/latitude values expressed in decimal degrees in a space-delimited list.
datasets	See: <a href="#">Datasets (Optional)</a>	comma-delimited list of valid dataset tag names (sbDatasetTag)
prodFormats	See: <a href="#">Product Formats (Optional)</a>	comma-delimited list of dataset-specific formats
prodExtents	See: <a href="#">Product Extents (Optional)</a>	comma-delimited list of dataset-specific extents
q	free text	text input which can be used to filter by product titles and text descriptions.
dateType	dateCreated   lastUpdated   Publication	type of date to search by.
start	YYYY-MM-DD	start date
end	YYYY-MM-DD	end date (required if start date is provided)
offset	integer	offset into paginated results - default=0
max	integer	number of results returned
outputFormat	JSON   CSV	default=JSON
polyType	state   huc2   huc4   huc8	Well Known Polygon Type. Use this parameter to deliver data by state or HUC (hydrologic unit codes defined by the Watershed Boundary Dataset/WBD)
polyCode	state FIPS code or huc number	Well Known Polygon Code. This value needs to coordinate with the polyType parameter.
extentQuery	integer	A polygon code in the science base system, typically from an uploaded shapefile
callback		

Product Query Results are returned by default in JSON as an Object containing an Array of product items similar to the following:

```
{
  total: 3844565,
  messages:
  [
    "Retrieved 50 item(s) (1 through 50)"
  ],
  errors: [],
  items:
  [
    {
      title: "USGS Lidar Point Cloud (LPC) MD_Statewide_2004_002830 2014-09-16 LAS", sourceId:
      "5426c75ce4b0bb3382a4999e", sourceName: "ScienceBase", sourceOriginId: "6276533",
      sourceOriginName: "gda", metaUrl:
      "https://www.sciencebase.gov/catalog/item/5426c75ce4b0bb3382a4999e", publicationDate: "2014-09-
      16", lastUpdated: "2014-09-27", dateCreated: "2014-09-27", sizeInBytes: 20095409, extent:
      "Varies", format: "LAS", downloadURL:
      "ftp://rockyftp.cr.usgs.gov/vdelivery/Datasets/Staged/NED/LPC/projects/MD_Statewide_2004/las
      /tiled/MD_Statewide_2004_002830.zip", previewGraphicURL:
      "ftp://rockyftp.cr.usgs.gov/vdelivery/Datasets/Staged/NED/LPC/browse/MD_Statewide_2004_00
      2830.jpg",
      urls:
      {
        downloadURL:
        "ftp://rockyftp.cr.usgs.gov/vdelivery/Datasets/Staged/NED/LPC/projects/MD_Statewide
        _2004/las/tiled/MD_Statewide_2004_002830.zip",
        previewGraphicURL:
        "ftp://rockyftp.cr.usgs.gov/vdelivery/Datasets/Staged/NED/LPC/browse/MD_Statewide_
        2004_002830.jpg", metaURL: "https://www.sciencebase.gov/catalog/item/5426c75ce4b0bb3382a4999e"
      },
      datasets:
      [
        "Lidar Point Cloud (LPC)"
      ],
      boundingBox:
      {
        minX: -76.9427916, maxX: -
        76.9221304, minY: 38.3909305,
        maxY: 38.4017888
      },
      bestFitIndex: 0,
      prettyFileSize: "19.16 MB"
    },
    ... repeated for each product item ...
  ]
}
```

# Example Product Queries

Find all the NED 1 arc-second products in ArcGrid format and 1 x 1 extent within a one degree bounding box or point:

[https://tnmaccess.nationalmap.gov/api/v1/products?datasets=National%20Elevation%20Dataset%20\(NED\)%201%20arc-second&&bbox=-144,4,-45,61&prodFormats=ArcGrid&prodExtents=1%20x%201%20degree](https://tnmaccess.nationalmap.gov/api/v1/products?datasets=National%20Elevation%20Dataset%20(NED)%201%20arc-second&&bbox=-144,4,-45,61&prodFormats=ArcGrid&prodExtents=1%20x%201%20degree)

Obtain a CSV output of the previous query:

[https://tnmaccess.nationalmap.gov/api/v1/products?datasets=National%20Elevation%20Dataset%20\(NED\)%201%20arc-second&&bbox=-144,4,-45,61&prodFormats=ArcGrid&prodExtents=1%20x%201%20degree&outputFormat=csv](https://tnmaccess.nationalmap.gov/api/v1/products?datasets=National%20Elevation%20Dataset%20(NED)%201%20arc-second&&bbox=-144,4,-45,61&prodFormats=ArcGrid&prodExtents=1%20x%201%20degree&outputFormat=csv)

Find all the US Topo Maps Published in August 2015:

<https://tnmaccess.nationalmap.gov/api/v1/products?datasets=US+Topo&dateType=Publication&start=2015-08-01&end=2015-08-31>

Find all the NED 1/3 arc-second products in IMG format that intersect HUC4 = 1018 using version=2 and max = 40 products:

[https://tnmaccess.nationalmap.gov/api/v1/products?datasets=National%20Elevation%20Dataset%20\(NED\)%201/3%20arc-second&polyCode=1018&polyType=huc4&max=40](https://tnmaccess.nationalmap.gov/api/v1/products?datasets=National%20Elevation%20Dataset%20(NED)%201/3%20arc-second&polyCode=1018&polyType=huc4&max=40)

Find all the NED 1/3 arc-second products in IMG format that intersect a bounding box using version=2 and max = 400 products:

[https://tnmaccess.nationalmap.gov/api/v1/products?bbox=144,4,-45,61&datasets=National+Elevation+Dataset+\(NED\)+1/3+arc-second&prodFormats=IMG&max=400](https://tnmaccess.nationalmap.gov/api/v1/products?bbox=144,4,-45,61&datasets=National+Elevation+Dataset+(NED)+1/3+arc-second&prodFormats=IMG&max=400)

You will get zero results because there are no image formats, remove prodFormats and results are returned:

[https://tnmaccess.nationalmap.gov/api/v1/products?bbox=144,4,-45,61&datasets=National+Elevation+Dataset+\(NED\)+1/3+arc-second&max=400](https://tnmaccess.nationalmap.gov/api/v1/products?bbox=144,4,-45,61&datasets=National+Elevation+Dataset+(NED)+1/3+arc-second&max=400)

# Retrieving a List of Datasets

Because Datasets represent the primary filter of available products the API exposes a queryable list that can be filtered by text, bbox and dataset code.

The primary query method used to obtain dataset results is:

<https://tnmaccess.nationalmap.gov/api/v1/datasets?>

Without additional parameters, this method returns all the available datasets represented in The National Map.

The following table summarizes the parameters available to limit the results:

Parameter	Values	Description
q	free text	text input which can be used to filter by dataset names and keywords associated with the datasets.
callback		

The response to a Datasets query has an ‘extentsFormats’ array that provides specific formats for each extent. The ‘sbDatasetTag’ value returned for each dataset may be used to filter the product query. The query below returns a response similar to the following:

<https://tnmaccess.nationalmap.gov/api/v1/datasets?>

```
[
  {
    title: "Boundaries - National Boundary Dataset",    sbDatasetTag:
    "National Boundary Dataset (NBD)",    id:
    "4f70b219e4b058caae3f8e19",    internalId: "nbd",    isData:
    true,    isAvailabilityLayer: false,    availabilityLayerUrl: "",
    description: "Boundaries data or governmental units represent major civil areas including states, counties, Federal, and
    Native American lands, and incorporated places such as cities and towns. These data are useful for understanding the extent of
    jurisdictional or administrative areas for a wide range of applications, including managing resources, responding to natural
    disasters, or recreational activities such as hiking and backpacking.",    rank: 3,
    refreshCycle: "As Needed",    publicationDate: "",
    metaUrl: "http://nationalmap.gov/boundaries.html",
    dataGovUrl: "http://catalog.data.gov/dataset/da0f0999-7ce3-4c70-8b44-a901ec4e33ee",    infoUrl:
    "https://www.sciencebase.gov/catalog/item/4f70b219e4b058caae3f8e19",    thumbnailUrl:
    "http://thor55.er.usgs.gov/ngtoc/metadata/waf/collections/boundaries_thumbnail.jpg",
    auxUrl: "",
    auxUrlLabel: "",
    formats:
    [
      "FileGDB 10.1",
      "Shapefile"
    ],
    extents:
    [
      "National",
      "State"
    ],
    extentsFormats:
    {
      National:

```

```
[
  "FileGDB 10.1"
],
State:
[
  "FileGDB 10.1",
  "Shapefile"
]
},
tags: { }, NumOfProducts: 117,
AvgSize: 38063593,
TotalSize: 4453440495,
LastCreatedDate: "Jul 18, 2016",
LastPublishedDate: "Aug 17, 2016",
LastUpdatedDate: "Aug 18, 2016"
```

```
},
```

```
... repeated for each dataset ...
```

```
]
```

# Retrieving a List of Notifications

The primary query method used to obtain notification results is:

<https://tnmaccess.nationalmap.gov/api/v1/notifications?>

Without additional parameters, this method returns all the available notifications pertaining to The National Map.

The following table summarizes the parameters available to limit the results:

Parameter	Values	Description
startTime	YYYY-MM-DD	start date of notifications to list - default = today
endTime	YYYY-MM-DD	end date of notifications - default = today

The query below returns a response like the following:

<https://tnmaccess.nationalmap.gov/api/v1/notifications?>

```
[
  {
    "startTime": "2020-12-16 00:00:00",
    "endTime": "2021-02-02 00:00:00",
    "title": "Lidar Data",
    "body": "<p>Latest project areas with lidar data are viewable <a href='\"https://www.usgs.gov/core-science-systems/ngp/3dep/3dep-errata\" target='\"_blank\" rel='\"noopener noreferrer\">here</a>.</p>",
    "id": "1"
  },
  {
    "startTime": "2020-02-01 00:00:00",
    "endTime": "2021-04-01 00:00:00",
    "title": "The National Map - Applications",
    "body": "<p>The National Map's applications are now hosted at <a href='\"https://apps.nationalmap.gov\" target='\"_blank\" rel='\"noopener noreferrer\">apps.nationalmap.gov</a>. To help facilitate this transition, traffic to viewer.nationalmap.gov is automatically redirecting to the new application URLs. We encourage you to update any bookmarks you have for viewer.nationalmap.gov URLs so you can access these applications without relying on the redirects now in place. Please contact the TNM Help Desk at tnm_help@usgs.gov if you have any questions.</p>",
    "id": "2"
  },
  {
    "startTime": "2021-04-01 00:00:00",
    "endTime": "2021-04-01 00:00:00",
    "title": "The National Map - Known Issues",
    "body": "<p>Due to an ongoing inventory system transition, you may experience some DEM products not being available in your search results. We are aware of the issue, and are working to resolve it as quickly as possible.</p>",
    "id": "3"
  }
]
```

# Retrieving a List of Services

The query below returns a response similar to the following:

[https://tnmaccess.nationalmap.gov/api/v1/map\\_services?](https://tnmaccess.nationalmap.gov/api/v1/map_services?)

```
[
  { serviceType:"ArcGIS", displayName:"3DEP Elevation", serviceLink:
    "https://elevation.nationalmap.gov/arcgis/rest/services/3DEPElevation/ImageServer", tiled: false, wmsUrl:
    "https://elevation.nationalmap.gov/arcgis/services/3DEPElevation/ImageServer/WMSServer?request=GetCapabilities&service=WMS", wfsUrl:
    "", spatialRef: "102100 (3857)", minScale: 0.0, maxScale: 0.0, serviceListCategory: "Theme Overlays (NHD, Names, Elevation,
    Transportation\u2026)", rank: 999, refreshCycle: "Irregular", publicationDate: "2018-06-18", thumbnailUrl:
    "https://elevation.nationalmap.gov/arcgis/rest/services/3DEPElevation/ImageServer/info/thumbnail", isDeprecated: false,
    deprecationNotice: ""
  },
  ... repeated for each service ...
]
```