



Processing Data from the National Weather Service API in R

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National Weather Service API

https://www.weather.gov/documentation/services-web-api

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NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

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Severe Weather/Heavy Rain in the Southeast, Tropical Depression Three off Florida/Southeast Coast and Building Heat and Monsoon in the West

A strong cold front will progress into the southeast today w/ the threat for severe thunderstorms and flash flooding. Meanwhile, Tropical Depression Three remains off the east coast of Florida and is expected to remain offshore of the Southeast through Wednesday. Out West, monsoonal moisture will produce a marginal threat for flash flooding in the Four Corners region, while heat gradually builds. [Read More >](#)

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API Web Service

[Weather.gov](#) > [Documentation](#) > API Web Service

Documentation
National Headquarters

ServicesTechnical Bulletins

OverviewFAQKnown IssuesSpecification

Overview

The National Weather Service (NWS) API allows developers access to critical forecasts, alerts, and observations, along with other weather data. The API was designed with a cache-friendly approach that expires content based upon the information life cycle. The API is based upon of [JSON-LD](#) to promote machine data discovery.

Content Negotiation

The API uses the request headers to modify the response returned. See the FAQ tab for more information. Example of parameters include:

- Request new features
- Format the response

Authentication

A User Agent is required to identify your application. This string can be anything, and the more unique to your application the less likely it will be affected by a security event. If you include contact information (website or email), we can contact you if your string is associated to a security event. This will be replaced with an API key in the future.

Endpoints

The API is located at: <https://api.weather.gov>

Formats

Endpoints typically have a GeoJSON default format, given the inclusion of geometry data. Additional formats may be requested

API Specification Tab

GET	/gridpoints/{wfo}/{x},{y}
GET	/gridpoints/{wfo}/{x},{y}/forecast
GET	/gridpoints/{wfo}/{x},{y}/forecast/hourly
GET	/gridpoints/{wfo}/{x},{y}/stations
GET	/icons/{set}/{timeOfDay}/{first}/{second}
GET	/icons
GET	/thumbnails/satellite/{area}
GET	/stations/{stationId}/observations
GET	/stations/{stationId}/observations/latest
GET	/stations/{stationId}/observations/current
GET	/stations/{stationId}/observations/{time}
GET	/stations
GET	/stations/radar
GET	/stations/radar/{stationId}
GET	/stations/{stationId}
GET	/offices/{officeId}
GET	/offices/{officeId}/headlines/{headlineId}
GET	/offices/{officeId}/headlines
GET	/points/{point}
GET	/points/{point}/stations
GET	/points/{point}/forecast

API Data Organization

- * `/points/latitude,longitude`
- * Returns metadata for forecast-related data


```

{id": "https://api.weather.gov/points/28,-82",
"type": "Feature",
"geometry": {
  "type": "Point",
  "coordinates": [-82, 28]
},
"properties": {
  "@id": "https://api.weather.gov/points/28,-82",
  "@type": "wx:Point",
  "cwa": "TBW",
  "forecastOffice": "https://api.weather.gov/offices/TBW",
  "gridX": 88,
  "gridY": 100,
  "forecast": "https://api.weather.gov/gridpoints/TBW/88,100/forecast",
  "forecastHourly": "https://api.weather.gov/gridpoints/TBW/88,100/forecast/hourly",
  "forecastGridData": "https://api.weather.gov/gridpoints/TBW/88,100",
  "observationStations": "https://api.weather.gov/gridpoints/TBW/88,100/stations",
  "relativeLocation": {
    "type": "Feature",
    "geometry": {
      "type": "Point",
      "coordinates": [-81.98121199999999, 27.958507000000001]
    },
    "properties": {
      "city": "Medulla",
      "state": "FL",
      "distance": {
        "value": 4969.0194004415871,
        "unitCode": "unit:m"
      },
      "bearing": {
        "value": 338,
        "unitCode": "unit:degrees_true"
      }
    }
  },
  "forecastZone": "https://api.weather.gov/zones/forecast/FLZ052",
  "county": "https://api.weather.gov/zones/county/FLC105",
  "fireWeatherZone": "https://api.weather.gov/zones/fire/FLZ052",
  "timeZone": "America/New_York",
  "radarStation": "KTBW"
}

```

Summary forecast

Hourly forecast

Hourly very detailed
forecast

Radar stations used in
generating forecast

<https://api.weather.gov/gridpoints/TBW/65,98/forecast>

Lat/Lon of forecast

```
"type": "Feature",  
"geometry": {  
  "type": "GeometryCollection",  
  "geometries": [{  
    "type": "Point",  
    "coordinates": [-82.58446689999995, 27.99387051]  
  }, {
```

```
    "type": "Polygon",  
    "coordinates": [  
      [  
        [-82.59614999999994, 28.00627181,        [-82.59851009999999, 27.983554099999999],  
        [-82.57278619999996, 27.981468199999998],  
        [-82.57042099999996, 28.004185499999998],  
        [-82.59614999999994, 28.00627181]  
      ]  
    ]  
  }  
]
```

```
},  
]
```

Forecast area
bounding box

<https://api.weather.gov/gridpoints/TBW/65,98/forecast>

```
"properties": {
  "updated": "2019-07-23T12:43:59+00:00",
  "units": "us",
  "forecastGenerator": "BaselineForecastGenerator",
  "generatedAt": "2019-07-23T15:30:13+00:00",
  "updateTime": "2019-07-23T12:43:59+00:00",
  "validTimes": "2019-07-23T06:00:00+00:00/P7DT19H",
  "elevation": {
    "value": 21335999999999999,
    "unitCode": "unit:m"
  }
}
```

Forecast metadata

Forecast Periods

The diagram illustrates forecast periods on a grid background. A blue arrow points from right to left, indicating the progression of time. Two forecast periods are shown as JSON objects:

Forecast Period 1 (Today):

- number: 1,
- name: "Today",
- startTime: "2019-07-23T11:00:00-04:00",
- endTime: "2019-07-23T18:00:00-04:00",
- isDaytime: true,
- temperature: 88,
- temperatureUnit: "F",
- temperatureTrend: null,
- windSpeed: "6 to 9 mph",
- windDirection: "SSW",
- icon: "https://api.weather.gov/icons/land/day/tsra_hi,40?size=medium",
- shortForecast: "Scattered Showers And Thunderstorms",
- detailedForecast: "Scattered showers and thunderstorms. Partly sunny, with a high near 88. South southwest wind 6 to 9 mph. Chance of precipitation is 40%. New rainfall amounts less than a tenth of an inch possible."

Forecast Period 2 (Tonight):

- number: 2,
- name: "Tonight",
- startTime: "2019-07-23T18:00:00-04:00",
- endTime: "2019-07-24T06:00:00-04:00",
- isDaytime: false,
- temperature: 76,
- temperatureUnit: "F",
- temperatureTrend: null,
- windSpeed: "6 to 9 mph",
- windDirection: "SW",
- icon: "https://api.weather.gov/icons/land/night/tsra_hi,30/tsra_hi,50?size=medium",
- shortForecast: "Scattered Showers And Thunderstorms",
- detailedForecast: "Scattered showers and thunderstorms. Partly cloudy, with a low around 76. Southwest wind 6 to 9 mph. Chance of precipitation is 50%. New rainfall amounts less than a tenth of an inch possible."

<https://api.weather.gov/gridpoints/TBW/65,98/forecast/hourly>

```
"properties": {  
  "updated": "2019-07-23T12:43:59+00:00",  
  "units": "us",  
  "forecastGenerator": "HourlyForecastGenerator",  
  "generatedAt": "2019-07-23T15:30:14+00:00",  
  "updateTime": "2019-07-23T12:43:59+00:00",  
  "validTimes": "2019-07-23T06:00:00+00:00/P7DT19H",  
  "elevation": {  
    "value": 2133599999999999999,  
    "unitCode": "unit:m"  
  },  
  "periods": [{  
    "number": 1,  
    "name": "",  
    "startTime": "2019-07-23T11:00:00-04:00",  
    "endTime": "2019-07-23T12:00:00-04:00",  
    "isDaytime": true,  
    "temperature": 85,  
    "temperatureUnit": "F",  
    "temperatureTrend": null,  
    "windSpeed": "6 mph",  
    "windDirection": "S",  
    "icon": "https://api.weather.gov/icons/land/day/tsra_hi,40?size=small",  
    "shortForecast": "Scattered Showers And Thunderstorms",  
    "detailedForecast": ""  
  }, {  
    "number": 2,  
    "name": "",  
    "startTime": "2019-07-23T12:00:00-04:00",  
    "endTime": "2019-07-23T13:00:00-04:00",  
    "isDaytime": true,  
    "temperature": 85,  
    "temperatureUnit": "F",  
    "temperatureTrend": null,  
    "windSpeed": "7 mph",  
    "windDirection": "S",  
    "icon": "https://api.weather.gov/icons/land/day/tsra_hi,40?size=small",  
    "shortForecast": "Scattered Showers And Thunderstorms",  
    "detailedForecast": ""  
  },  
}
```

Forecast metadata



Forecast
Periods



<https://api.weather.gov/gridpoints/TBW/65,98/forecast/hourly>

```
"properties": {  
  "updated": "2019-07-23T12:43:59+00:00",  
  "units": "us",  
  "forecastGenerator": "HourlyForecastGenerator",  
  "generatedAt": "2019-07-23T15:30:14+00:00",  
  "updateTime": "2019-07-23T12:43:59+00:00",  
  "validTimes": "2019-07-23T06:00:00+00:00/P7DT19H",  
  "elevation": {  
    "value": 2133599999999999999,  
    "unitCode": "unit:m"  
  },  
},  
"periods": [{  
  "number": 1,  
  "name": "",  
  "startTime": "2019-07-23T11:00:00-04:00",  
  "endTime": "2019-07-23T12:00:00-04:00",  
  "isDaytime": true,  
  "temperature": 85,  
  "temperatureUnit": "F",  
  "temperatureTrend": null,  
  "windSpeed": "6 mph",  
  "windDirection": "S",  
  "icon": "https://api.weather.gov/icons/land/day/tsra_hi,40?size=small",  
  "shortForecast": "Scattered Showers And Thunderstorms",  
  "detailedForecast": ""  
}, {  
  "number": 2,  
  "name": "",  
  "startTime": "2019-07-23T12:00:00-04:00",  
  "endTime": "2019-07-23T13:00:00-04:00",  
  "isDaytime": true,  
  "temperature": 85,  
  "temperatureUnit": "F",  
  "temperatureTrend": null,  
  "windSpeed": "7 mph",  
  "windDirection": "S",  
  "icon": "https://api.weather.gov/icons/land/day/tsra_hi,40?size=small",  
  "shortForecast": "Scattered Showers And Thunderstorms",  
  "detailedForecast": ""  
},
```

Forecast metadata



Forecast
Periods



"https://api.weather.gov/gridpoints/TBW/65,98"

```
"properties": {
  "@id": "https://api.weather.gov/gridpoints/TBW/65,98",
  "@type": "wx:Gridpoint",
  "updateTime": "2019-07-23T19:44:06+00:00",
  "validTimes": "2019-07-23T13:00:00+00:00/P7DT12H",
  "elevation": {
    "value": 2.1335999999999999,
    "unitCode": "unit:m"
  },
},
"forecastOffice": "https://api.weather.gov/offices/TBW",
"gridId": "TBW",
"gridX": "65",
"gridY": "98",
"temperature": {
  "sourceUnit": "F",
  "uom": "unit:degC",
  "values": [{
    "validTime": "2019-07-23T13:00:00+00:00/PT1H",
    "value": 27.222222222222285
  }, {
    "validTime": "2019-07-23T14:00:00+00:00/PT1H",
    "value": 28.333333333333371
  }, {
    "validTime": "2019-07-23T15:00:00+00:00/PT7H",
    "value": 29.4444444444444514
  }, {
    "validTime": "2019-07-23T22:00:00+00:00/PT1H",
    "value": 28.888888888888971
  }, {
    "validTime": "2019-07-23T23:00:00+00:00/PT1H",
    "value": 27.777777777777828
  }, {
    "validTime": "2019-07-24T00:00:00+00:00/PT1H",
    "value": 27.222222222222285
  }
],
},
```

Forecast metadata

Forecast
Periods

"validTime": "2019-07-23T13:00:00+00:00/PT1H"

Code

Resources

- * Leaflet - <https://rstudio.github.io/leaflet/>
- * National Weather Service - <https://forecast-v3.weather.gov/documentation>
- * R httr - <https://cran.r-project.org/web/packages/httr/index.html>