*Methods and Dependencies*

1. alerts(state)
2. grid(lat,lon)
   1. example: <https://api.weather.gov/points/39.7456,-97.0892>
   2. output: JSON: get office, gridX, gridY to use with forecast. can be acquired via grid(lat,lon) JSON Data under properties
3. forecast(office,gridX,gridY)
   1. Dependencies:
      1. This method has a dependency on grid(lat,lon) data to return office, gridX,gridY parameters
         1. office, gridX, gridY can be acquired via grid(lat,lon) JSON Data under properties
         2. example call to get office, gridX, gridY: <https://api.weather.gov/points/39.7456,-97.0892>
         3. refer to example JSON output later in document
4. geoforward(location)
   1. location defined as {city, state}
   2. example: <https://www.mapquestapi.com/geocoding/v1/address?key=JcW96p74AcCbAYHzdZGM5SSnXOXPwDLA&inFormat=kvp&outFormat=json&location=Denver%2C+CO&thumbMaps=false>
5. georeverse(lat,lon)
6. get\_observation\_stations(url)
   1. url example:
7. tide\_forecast(stationID, days\_out)
8. get\_us\_state\_abbrev(state)
   1. takes state full name and returns state abbreviation
9. getpoints(lat,lon)
   1. takes lat,lon, creates url, requests returns JSON Data
   2. method returns JSON text
   3. example url: https://api.weather.gov/points/39.7456,-97.0892
10. get\_user\_location()
    1. Method which uses user’s Home IP to approximate current user location (lat lon). Note that this method is not always accurate. Uses:
       1. Python: socket lib, request lib, os lib
       2. Ip2geotools -> geoloc\_cmd = 'ip2geotools ' + public\_ip + ' -d dbipcity -f json'
       3. Ip2geotools returns JSON which can be parsed to acquire state, latitude, longitude
       4. Method returns: hostname, localip, public\_ip, state, state\_abrev, geo\_dict, lat, lon, latlon
11. openfile(filename)
    1. Opens file and reads content. Returns file content
12. txt2jsonobj(json\_string)
    1. return JSON object to use to parse JSON data and assign to variable(s)
13. write2file(filename, attrib, content): # attrib is w or a. w overwrites, a appends
    1. Write selected content to file including subdirectories

JSON Output Examples:

1. Method: grid(lat,lon)

Call: https://api.weather.gov/points/39.7456,-97.0892

{

* **@context**:

[

* + "<https://geojson.org/geojson-ld/geojson-context.jsonld>",
  + {
    - **@version**: "1.1",
    - **wx**: "[https://api.weather.gov/ontology#](https://api.weather.gov/ontology)",
    - **s**: "<https://schema.org/>",
    - **geo**: "[http://www.opengis.net/ont/geosparql#](http://www.opengis.net/ont/geosparql)",
    - **unit**: "<http://codes.wmo.int/common/unit/>",
    - **@vocab**: "[https://api.weather.gov/ontology#](https://api.weather.gov/ontology)",
    - **geometry**:

{

* + - * **@id**: "s:GeoCoordinates",
      * **@type**: "geo:wktLiteral"

},

* + - **city**: "s:addressLocality",
    - **state**: "s:addressRegion",
    - **distance**:

{

* + - * **@id**: "s:Distance",
      * **@type**: "s:QuantitativeValue"

},

* + - **bearing**:

{

* + - * **@type**: "s:QuantitativeValue"

},

* + - **value**:

{

* + - * **@id**: "s:value"

},

* + - **unitCode**:

{

* + - * **@id**: "s:unitCode",
      * **@type**: "@id"

},

* + - **forecastOffice**:

{

* + - * **@type**: "@id"

},

* + - **forecastGridData**:

{

* + - * **@type**: "@id"

},

* + - **publicZone**:

{

* + - * **@type**: "@id"

},

* + - **county**:

{

* + - * **@type**: "@id"

}

* + }

],

* **id**: "<https://api.weather.gov/points/39.7456,-97.0892>",
* **type**: "Feature",
* **geometry**:

{

* + **type**: "Point",
  + **coordinates**:

[

* + - -97.0892,
    - 39.7456

]

},

* **properties**:

{

* + **@id**: "<https://api.weather.gov/points/39.7456,-97.0892>",
  + **@type**: "wx:Point",
  + **cwa**: "TOP",
  + **forecastOffice**: "<https://api.weather.gov/offices/TOP>",
  + **gridId**: "TOP",
  + **gridX**: 31,
  + **gridY**: 80,
  + **forecast**: "<https://api.weather.gov/gridpoints/TOP/31,80/forecast>",
  + **forecastHourly**: "<https://api.weather.gov/gridpoints/TOP/31,80/forecast/hourly>",
  + **forecastGridData**: "<https://api.weather.gov/gridpoints/TOP/31,80>",
  + **observationStations**: "<https://api.weather.gov/gridpoints/TOP/31,80/stations>",
  + **relativeLocation**:

{

* + - **type**: "Feature",
    - **geometry**:

{

* + - * **type**: "Point",
      * **coordinates**:

[

* + - * + -97.086661,
        + 39.679376

]

},

* + - **properties**:

{

* + - * **city**: "Linn",
      * **state**: "KS",
      * **distance**:

{

* + - * + **value**: 7366.9851976444,
        + **unitCode**: "unit:m"

},

* + - * **bearing**:

{

* + - * + **value**: 358,
        + **unitCode**: "unit:degrees\_true"

}

}

},

* + **forecastZone**: "<https://api.weather.gov/zones/forecast/KSZ009>",
  + **county**: "<https://api.weather.gov/zones/county/KSC201>",
  + **fireWeatherZone**: "<https://api.weather.gov/zones/fire/KSZ009>",
  + **timeZone**: "America/Chicago",
  + **radarStation**: "KTWX"

}

}

1. Method: geoforward()
   1. Example:
   2. **{**"info": **{**"statuscode": **0**,"copyright": **{**"text": "© 2021 MapQuest, Inc.","imageUrl": "<http://api.mqcdn.com/res/mqlogo.gif>","imageAltText": "© 2021 MapQuest, Inc."**}**,"messages": **[]}**,"options": **{**"maxResults": **-1**,"thumbMaps": **false**,"ignoreLatLngInput": **false}**,"results": **[{**"providedLocation": **{**"location": "Denver, CO"**}**,"locations": **[{**"street": "","adminArea6": "","adminArea6Type": "Neighborhood","adminArea5": "Denver","adminArea5Type": "City","adminArea4": "Denver County","adminArea4Type": "County","adminArea3": "CO","adminArea3Type": "State","adminArea1": "US","adminArea1Type": "Country","postalCode": "","geocodeQualityCode": "A5XAX","geocodeQuality": "CITY","dragPoint": **false**,"sideOfStreet": "N","linkId": "282041090","unknownInput": "","type": "s","latLng": **{**"lat": **39.738453**,"lng": **-104.984853}**,"displayLatLng": **{**"lat": **39.738453**,"lng": **-104.984853}}**,**{**"street": "","adminArea6": "","adminArea6Type": "Neighborhood","adminArea5": "","adminArea5Type": "City","adminArea4": "Denver County","adminArea4Type": "County","adminArea3": "CO","adminArea3Type": "State","adminArea1": "US","adminArea1Type": "Country","postalCode": "","geocodeQualityCode": "A4XAX","geocodeQuality": "COUNTY","dragPoint": **false**,"sideOfStreet": "N","linkId": "282932003","unknownInput": "","type": "s","latLng": **{**"lat": **39.738453**,"lng": **-104.984853}**,"displayLatLng": **{**"lat": **39.738453**,"lng": **-104.984853}}]}]}**
2. Method: Getpoints(lat,lon)

{

* **@context**:

[

* + "<https://geojson.org/geojson-ld/geojson-context.jsonld>",
  + {
    - **@version**: "1.1",
    - **wx**: "[https://api.weather.gov/ontology#](https://api.weather.gov/ontology)",
    - **s**: "<https://schema.org/>",
    - **geo**: "[http://www.opengis.net/ont/geosparql#](http://www.opengis.net/ont/geosparql)",
    - **unit**: "<http://codes.wmo.int/common/unit/>",
    - **@vocab**: "[https://api.weather.gov/ontology#](https://api.weather.gov/ontology)",
    - **geometry**:

{

* + - * **@id**: "s:GeoCoordinates",
      * **@type**: "geo:wktLiteral"

},

* + - **city**: "s:addressLocality",
    - **state**: "s:addressRegion",
    - **distance**:

{

* + - * **@id**: "s:Distance",
      * **@type**: "s:QuantitativeValue"

},

* + - **bearing**:

{

* + - * **@type**: "s:QuantitativeValue"

},

* + - **value**:

{

* + - * **@id**: "s:value"

},

* + - **unitCode**:

{

* + - * **@id**: "s:unitCode",
      * **@type**: "@id"

},

* + - **forecastOffice**:

{

* + - * **@type**: "@id"

},

* + - **forecastGridData**:

{

* + - * **@type**: "@id"

},

* + - **publicZone**:

{

* + - * **@type**: "@id"

},

* + - **county**:

{

* + - * **@type**: "@id"

}

* + }

],

* **id**: "<https://api.weather.gov/points/39.7456,-97.0892>",
* **type**: "Feature",
* **geometry**:

{

* + **type**: "Point",
  + **coordinates**:

[

* + - -97.0892,
    - 39.7456

]

},

* **properties**:

{

* + **@id**: "<https://api.weather.gov/points/39.7456,-97.0892>",
  + **@type**: "wx:Point",
  + **cwa**: "TOP",
  + **forecastOffice**: "<https://api.weather.gov/offices/TOP>",
  + **gridId**: "TOP",
  + **gridX**: 31,
  + **gridY**: 80,
  + **forecast**: "<https://api.weather.gov/gridpoints/TOP/31,80/forecast>",
  + **forecastHourly**: "<https://api.weather.gov/gridpoints/TOP/31,80/forecast/hourly>",
  + **forecastGridData**: "<https://api.weather.gov/gridpoints/TOP/31,80>",
  + **observationStations**: "<https://api.weather.gov/gridpoints/TOP/31,80/stations>",
  + **relativeLocation**:

{

* + - **type**: "Feature",
    - **geometry**:

{

* + - * **type**: "Point",
      * **coordinates**:

[

* + - * + -97.086661,
        + 39.679376

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* + - **properties**:

{

* + - * **city**: "Linn",
      * **state**: "KS",
      * **distance**:

{

* + - * + **value**: 7366.9851976444,
        + **unitCode**: "unit:m"

},

* + - * **bearing**:

{

* + - * + **value**: 358,
        + **unitCode**: "unit:degrees\_true"

}

}

},

* + **forecastZone**: "<https://api.weather.gov/zones/forecast/KSZ009>",
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  + **fireWeatherZone**: "<https://api.weather.gov/zones/fire/KSZ009>",
  + **timeZone**: "America/Chicago",
  + **radarStation**: "KTWX"

}

}