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NHC Tropical Cyclone Status JSON File Reference

Background

For the 2019 hurricane season, NHC plans to introduce a new experimental product that will provide the latest status information about active Tropical Cyclones in the versatile JavaScript Object Notation (JSON) format. The goal in creating this product is to repackage the information presently provided in NHC's 10 (5 for Eastern Pacific, 5 for Atlantic) distinct RSS/XML files into a single file using a well-defined format that can be easily and reliably parsed by automated scripts. The JSON file will include metadata about all active storms (e.g. storm basin, name, number/identifier, latest advisory number, etc.) as well as links to GIS-compatible files that can be downloaded and processed separately.

This format was defined through a collaborative effort between NHC and the nowCOAST team relying on years of experience ingesting NHC advisory data into an operational GIS system.

Overview

The JSON file will have a static (unchanging) file name and will be hosted on the NHC website, where it will be updated frequently. It is expected that the information contained in the file represents the latest available information; however, its content should be managed to ensure that it does not reference data files (e.g. 5-day shapefiles, storm surge zip archives, etc.) which are not yet available for download from the website. This is important because automated systems will rely on the JSON file to determine whether or not the associated data have been updated, and will use that information to download and process the referenced data as soon as possible.

Format

The JSON file format will have the following characteristics:

- The file will use UTF-8 encoding.
- All property names will use the "camelCase" naming convention.
- The JSON will define a single root-level object containing a single attribute, called "activeStorms", that will define an array of individual "storm information" objects. If there are no active storms, the value of this property will be an empty array.
  - For example, when there are no active storms, the JSON file will look like this:
    - `{"activeStorms": []}`
- All date/time values will be encoded using ISO8601-formatted strings in UTC.
  - For example, September 9, 2017 15:00:00 UTC will be encoded as: `"2017-09-09T15:00:00.000Z"`
- Most values in the file will be encoded as strings, including advisory numbers.
  - For example, an advisory number of 42 will be encoded as the string `"042"`.
- For the initial version, only values for only the following properties will be encoded as true numeric values (i.e., not enclosed with quotes), and will use the indicated units (though this list may change in the future):
  - `pressure` (millibars), `latitude_numeric` (decimal degrees), `longitude_numeric` (decimal degrees), `movementDir` (decimal degrees from true north), and `movementSpeed` (miles per hour).
- The lack of value for a certain property will be indicated by the use of the keyword `null`.
  - For example, if a storm has no associated Storm Surge Watches/Warnings, the definition will indicate `"stormSurgeWatchWarningGIS": null`

An example of the JSON format is given below, along with inline comments providing further description. Comments are indicated by two slashes and colored in red (e.g. // comment), however, please note that the JSON format does not actually permit comments, so the official files will not contain these notes. It is also important to note that the official files are not guaranteed to contain the indentation (as shown below) to make the format more human-readable. In fact, it is likely that the official files will not contain any extra whitespace, in order to keep the file sizes as small as possible.

```
{
    "activeStorms": [
        { // Begin definition of first storm
            "id": "al112017", // Storm identifier will always be 8 characters (e.g. "al062019")
            "binNumber": "AT1", // Can begin with either "EP" or "AT" and numbered 1-5
            "name": "Irma", // Storm Name
            "classification": "HU", // Storm Classification abbreviation; one of the following:
                                    //   TD - Tropical Depression
                                    //   STD - Subtropical Depression
                                    //   TS - Tropical Storm
                                    //   HU - Hurricane
                                    //   STS - Subtropical Storm
                                    //   PTC - Post-tropical Cyclone / Remnants
                                    //   TY - Typhoon (we don't use this currently)
                                    //   PC - Potential Tropical Cyclone
            "intensity": 125, // Present storm intensity (knots)
            "pressure": 941, // Present storm mean sea level pressure (millibars)
            "latitude": "22.9N",  // Present storm center latitude (string)
            "longitude": "79.9W", // Present storm center longitude (string)
            "latitude_numeric": 22.9, // Present storm center latitude (decimal degrees)
            "longitude_numeric": -79.9, // Present storm center longitude (decimal degrees)
            "movementDir": 280, // Present storm movement direction (decimal degrees from North)
            "movementSpeed": 9, // Present storm movement speed (miles per hour)
            "lastUpdate": "2017-09-09T16:00:00.000Z", // The time at which this storm status summary is
                                                      // valid. Storm summary information may be updated
                                                      // more frequently than new advisories are issued.
            "publicAdvisory": { // Object describing the latest issued public/intermediate advisory
```

```json
        "advNum": "042", // Advisory number. Must be a string containing a three-digit zero-padded
                         // integer followed by an optional letter (e.g. "024A")
        "issuance": "2017-09-09T15:00:00.000Z", // Advisory issuance time
        "url": "https://www.hurricanes.gov/archive/2017/al11/al112017.public.042.shtml"
              // Link to advisory text bulletin
    },
    "forecastAdvisory": { // Object describing the latest issued forecast advisory
        "advNum": "042", // Advisory number. Must be a string containing a three-digit zero-padded
                         // integer.
        "issuance": "2017-09-09T15:00:00.000Z", // Advisory issuance time
        "url": "https://www.hurricanes.gov/archive/2017/al11/al112017.fstadv.042.shtml"
              // Link to advisory text bulletin
    },
    "windSpeedProbabilities": { // Object describing information about the latest published wind
                                // speed probabilities graphics/GIS files
        "advNum": "042", // The public/intermediate advisory number associated with the latest
                         // wind speed probabilities graphics/GIS files
        "issuance": "2017-09-09T15:00:00.000Z", // Wind speed probabilities issuance time
        "url": "https://www.hurricanes.gov/archive/2017/al11/al112017.wndprb.042.shtml"
              // Link to wind speed probabilities graphics webpage
    },
    "forecastDiscussion": { // Object describing latest forecast discussion
        "advNum": "042", // The public/intermediate advisory number associated with the latest
                         // forecast discussion
        "issuance": "2017-09-09T15:00:00.000Z", // Forecast discussion issuance time
        "url": "https://www.hurricanes.gov/archive/2017/al11/al112017.discus.042.shtml"
              // Link to forecast discussion webpage
    },
    "forecastGraphics": { // Object describing latest forecast graphics update
        "advNum": "042", // The public/intermediate advisory number associated with the latest
                         // forecast graphics update
        "issuance":  "2017-09-09T15:00:00.000Z", // Forecast graphics issuance time
        "url": "https://www.hurricanes.gov/graphics_at1.shtml" // Link to forecast graphics webpage
    },
```

```
"forecastTrack": { // Object describing latest 5-day track forecast
    "advNum": "042", // The public/intermediate advisory number associated with the latest
                     // 5-day track forecast
    "issuance": "2017-09-09T15:00:00.000Z", // 5-day forecast issuance time
    "zipFile": "https://www.hurricanes.gov/gis/forecast/archive/al112017_5day_042.zip",
               // Link to ZIP archive containing 5-day forecast track shapefiles
    "kmzFile": "https://www.hurricanes.gov/storm_graphics/api/AL112017_042adv_TRACK.kmz"
               // Link to 5-day forecast track KMZ file
},
"windWatchesWarnings": { // Object describing wind watches/warnings
    "advNum": "042", // The public/intermediate advisory number associated with the
                     // latest wind watches/warnings
    "issuance": "2017-09-09T15:00:00.000Z", // Issuance time
    "zipFile": "https://www.hurricanes.gov/gis/forecast/archive/al112017_5day_042.zip",
               // Link to ZIP archive containing wind watches/warnings shapefiles
               // (should be the same ZIP file as the 5-day forecast track)
    "kmzFile": "https://www.hurricanes.gov/storm_graphics/api/AL112017_042adv_WW.kmz"
               // Link to wind watches/warnings KMZ file
},
"trackCone": { // Object describing latest 5-day cone of uncertainty forecast
    "advNum": "042", // The public/intermediate advisory number associated with the latest
                     // 5-day cone of uncertainty forecast
    "issuance": "2017-09-09T15:00:00.000Z", // Issuance time
    "zipFile": "https://www.hurricanes.gov/gis/forecast/archive/al112017_5day_042.zip",
               // Link to ZIP archive containing cone of uncertainty shapefile
               // (should be the same ZIP file as the 5-day forecast track)
    "kmzFile": "https://www.hurricanes.gov/storm_graphics/api/AL112017_042adv_CONE.kmz"
               // Link to cone of uncertainty KMZ file
},
"initialWindExtent": { // Object describing present storm-force wind extent information
    "advNum": "042", // The public/intermediate advisory number associated with the latest
                     // initial wind extent information
    "issuance": "2017-09-09T15:00:00.000Z", // Issuance time
    "zipFile": "https://www.hurricanes.gov/gis/forecast/archive/al112017_fcst_042.zip",
```

```
                // Link to ZIP archive containing initial wind extent shapefile
        "kmzFile": "https://www.hurricanes.gov/storm_graphics/api/AL112017_initialradii_042adv.kmz"
                // Link to initial wind extent KMZ file
    },
    "forecastWindRadiiGIS": { // Object describing forecast wind radii information
        "advNum": "042", // The forecast advisory number associated with the latest forecast wind
                    // radii information
        "issuance": "2017-09-09T15:00:00.000Z", // Issuance time
        "zipFile": "https://www.hurricanes.gov/gis/forecast/archive/al112017_fcst_042.zip",
                // Link to ZIP archive containing forecast wind radii shapefile
                // (should be the same ZIP file as the initial wind extent)
        "kmzFile": "https://www.hurricanes.gov/storm_graphics/api/AL112017_forecastradii_042adv.kmz"
                // Link to ZIP archive containing initial wind extent shapefile
    },
    "bestTrackGIS": { // Object describing best track GIS file information
                    // Note that best track information is not associated with a particular
                    // forecast or public/intermediate advisory
        "zipFile": "https://www.hurricanes.gov/gis/best_track/al112017_best_track.zip",
                // Link to ZIP archive containing best track point/line/swath shapefiles
        "kmzFile": "https://www.hurricanes.gov/gis/best_track/al112017_best_track.kmz"
    },
    "earliestArrivalTimeTSWindsGIS": { // Object describing "earliest time-of-arrival" information
        "advNum": "042", // The public/intermediate advisory number associated with the latest
                    // "earliest time-of-arrival" information
        "issuance": "2017-09-09T15:00:00.000Z", // Issuance time
        "kmzFile":
"https://www.hurricanes.gov/storm_graphics/api/AL112017_042adv_earliest_reasonable_toa_34.kmz"
                // Link to the latest "earliest time-of-arrival" KMZ file
    },
    "mostLikelyTimeTSWindsGIS": { // Object describing "most likely time-of-arrival" information
        "advNum": "042", // The public/intermediate advisory number associated with the latest
                    // "most likely time-of-arrival" information
        "issuance": "2017-09-09T15:00:00.000Z", // Issuance time
```

```
                    "kmzFile":
"https://www.hurricanes.gov/storm_graphics/api/AL112017_042adv_most_likely_toa_34.kmz"
                            // Link to the latest "most likely time-of-arrival" KMZ file
                },
            "windSpeedProbabilitiesGIS": { // Object describing wind speed probabilities GIS files
                "issuance": "2017-09-09T12:00:00.000Z", // Issuance time
                "zipFile5km": "https://www.hurricanes.gov/gis/forecast/archive/2017090912_wsp_120hr5km.zip",
                        // Link to the latest 5km wind speed probabilities GIS file ZIP archive
                "zipFile0p5deg":
"https://www.hurricanes.gov/gis/forecast/archive/2017090912_wsp_120hrhalfDeg.zip",
                            // Link to the latest 0.5 deg wind speed probabilities GIS file ZIP archive
                "kmzFile34kt":
"https://www.hurricanes.gov/gis/forecast/archive/2017090912_wsp34knt120hr_5km.kmz",
                            // Link to the latest 34-knot wind speed probabilities GIS file ZIP archive
                "kmzFile50kt":
"https://www.hurricanes.gov/gis/forecast/archive/2017090912_wsp50knt120hr_5km.kmz",
                            // Link to the latest 50-knot wind speed probabilities GIS file ZIP archive
                "kmzFile64kt":
"https://www.hurricanes.gov/gis/forecast/archive/2017090912_wsp64knt120hr_5km.kmz"
                            // Link to the latest 64-knot wind speed probabilities GIS file ZIP archive
            },
            "stormSurgeWatchWarningGIS": { // Object describing storm surge watch/warning GIS file
                "advNum": "042", // The public/intermediate advisory number associated with the latest
                                // storm surge watches/warnings
                "issuance": "2017-09-09T15:00:00.000Z", // Issuance time
                "kmlFile": "https://www.hurricanes.gov/storm_graphics/api/AL112017_WatchWarningSS_042adv.kml"
                        // Link to the latest storm surge watches/warnings KML file
            },
            "potentialStormSurgeFloodingGIS": {
                "advNum": "041", // The forecast advisory number associated with the latest Potential Storm
                                // Surge Flooding Map. This product is usually delayed by 60-90 minutes
                                // after a full forecast advisory update, so it often references the
                                // previous advisory until the new inundation files are available.
                "issuance": "2017-09-09T09:00:00.000Z", // Issuance time
```

```
            "zipFile": "https://www.hurricanes.gov/gis/inundation/forecasts/AL1117_41_inundation.zip",
                        // Link to the ZIP archive containing the Potential Storm Surge Flooding Map
                        // GeoTIFF without intertidal mask applied, along with map boundary and levee
                        // areas polygon shapefiles, if any.
            "zipFileTidalMask":
"https://www.hurricanes.gov/gis/inundation/forecasts/AL1117_41_tidalmask.zip"
                                // Link to the ZIP archive containing the Potential Storm Surge Flooding
                                // Map GeoTIFF with intertidal mask applied, along with map boundary and
                                // levee areas polygon shapefiles, if any.
        }
    },
    { // Begin definition of second storm
        "id": "al122017",
        "binNumber": "AT2",
        "name": "Jose",
        "classification": "HU",
        "intensity": 145,
        "pressure": 945,
        "latitude": "18.3N",
        "longitude": "61.3W",
        "latitude_numeric": 18.3,
        "longitude_numeric": -61.3,
        "movementDir": 305,
        "movementSpeed": 13,
        "lastUpdate": "2017-09-09T15:00:00.000Z",
        "publicAdvisory": {
            "advNum": "017",
            "issuance": "2017-09-09T15:00:00.000Z",
            "url": "https://www.hurricanes.gov/archive/2017/al12/al122017.public.017.shtml" //Realtime:
https://www.hurricanes.gov/text/MIATCPAT2.shtml
        },
        "forecastAdvisory": {
            "advNum": "017",
            "issuance": "2017-09-09T15:00:00.000Z",
```

```
            "url": "https://www.hurricanes.gov/archive/2017/al12/al122017.fstadv.017.shtml" //Realtime:
https://www.hurricanes.gov/text/MIATCMAT2.shtml
        },
        "windSpeedProbabilities": {
            "advNum": "017",
            "issuance": "2017-09-09T15:00:00.000Z",
            "url": "https://www.hurricanes.gov/archive/2017/al12/al122017.wndprb.017.shtml" //Realtime:
https://www.hurricanes.gov/text/MIAPWSAT2.shtml
        },
        "forecastDiscussion": {
            "advNum": "017",
            "issuance": "2017-09-09T15:00:00.000Z",
            "url": "https://www.hurricanes.gov/archive/2017/al12/al122017.discus.017.shtml" //Realtime:
https://www.hurricanes.gov/text/MIATCDAT2.shtml
        },
        "forecastGraphics": {
            "advNum": "017",
            "issuance":  "2017-09-09T15:00:00.000Z",
            "url": "https://www.hurricanes.gov/graphics_at2.shtml"
        },
        "forecastTrack": {
            "advNum": "017",
            "issuance": "2017-09-09T15:00:00.000Z",
            "zipFile": "https://www.hurricanes.gov/gis/forecast/archive/al122017_5day_017.zip",
                        "kmzFile":
"https://www.hurricanes.gov/storm_graphics/api/AL122017_017adv_TRACK.kmz"
        },
        "windWatchesWarnings": {
            "advNum": "017",
            "issuance": "2017-09-09T15:00:00.000Z",
            "zipFile": "https://www.hurricanes.gov/gis/forecast/archive/al122017_5day_017.zip",
                        "kmzFile":
"https://www.hurricanes.gov/storm_graphics/api/AL122017_017adv_WW.kmz"
        },
```

```
        "trackCone": {
            "advNum": "017",
            "issuance": "2017-09-09T15:00:00.000Z",
            "zipFile": "https://www.hurricanes.gov/gis/forecast/archive/al122017_5day_017.zip",
                    "kmzFile":
"https://www.hurricanes.gov/storm_graphics/api/AL122017_017adv_CONE.kmz"
        },
        "initialWindExtent": {
            "advNum": "017",
            "issuance": "2017-09-09T15:00:00.000Z",
            "zipFile": "https://www.hurricanes.gov/gis/forecast/archive/al122017_fcst_017.zip",
                    "kmzFile":
"https://www.hurricanes.gov/storm_graphics/api/AL122017_initialradii_017adv.kmz"
        },
        "forecastWindRadiiGIS": {
            "advNum": "017",
            "issuance": "2017-09-09T15:00:00.000Z",
            "zipFile": "https://www.hurricanes.gov/gis/forecast/archive/al122017_fcst_017.zip",
                    "kmzFile":
"https://www.hurricanes.gov/storm_graphics/api/AL122017_forecastradii_017adv.kmz"
        },
        "bestTrackGIS": {
            "zipFile": "https://www.hurricanes.gov/gis/best_track/al122017_best_track.zip",
            "kmzFile": "https://www.hurricanes.gov/gis/best_track/al122017_best_track.kmz"
        },
        "earliestArrivalTimeTSWindsGIS": {
            "advNum": "017",
            "issuance": "2017-09-09T15:00:00.000Z",
            "kmzFile":
"https://www.hurricanes.gov/storm_graphics/api/AL122017_017adv_earliest_reasonable_toa_34.kmz"
        },
        "mostLikelyTimeTSWindsGIS": {
            "advNum": "017",
            "issuance": "2017-09-09T15:00:00.000Z",
```

```
                    "kmzFile":
"https://www.hurricanes.gov/storm_graphics/api/AL122017_017adv_most_likely_toa_34.kmz"
                },
                "windSpeedProbabilitiesGIS": {
                    "issuance": "2017-09-09T12:00:00.000Z",
                    "zipFile5km": "https://www.hurricanes.gov/gis/forecast/archive/2017090912_wsp_120hr5km.zip",
                    "zipFile0p5deg":
"https://www.hurricanes.gov/gis/forecast/archive/2017090912_wsp_120hrhalfDeg.zip",
                    "kmzFile34kt":
"https://www.hurricanes.gov/gis/forecast/archive/2017090912_wsp34knt120hr_5km.kmz",
                    "kmzFile50kt":
"https://www.hurricanes.gov/gis/forecast/archive/2017090912_wsp50knt120hr_5km.kmz",
                    "kmzFile64kt":
"https://www.hurricanes.gov/gis/forecast/archive/2017090912_wsp64knt120hr_5km.kmz"
                },
                "stormSurgeWatchWarningGIS": null, // No SSWW for this storm, so `null` keyword is used
                "potentialStormSurgeFloodingGIS": null // No PSSF Map for this storm, so `null` keyword is used
        },
        { // Begin definition of third storm
            "id": "al132017",
            "binNumber": "AT3",
            "name": "Katia",
            "classification": "PTC",
            "intensity": 35,
            "pressure": 1004,
            "latitude": "20.0N",
            "longitude": "97.9W",
            "latitude_numeric": 20.0,
            "longitude_numeric": -97.9,
            "movementDir": 240,
            "movementSpeed": 5,
            "lastUpdate": "2017-09-09T15:00:00.000Z",
            "publicAdvisory": {
                "advNum": "016",
```

```
            "issuance": "2017-09-09T15:00:00.000Z",
            "url": "https://www.hurricanes.gov/archive/2017/al13/al132017.public.016.shtml" //Realtime:
https://www.hurricanes.gov/text/MIATCPAT3.shtml
        },
        "forecastAdvisory": {
            "advNum": "016",
            "issuance": "2017-09-09T15:00:00.000Z",
            "url": "https://www.hurricanes.gov/archive/2017/al13/al132017.fstadv.016.shtml" //Realtime:
https://www.hurricanes.gov/text/MIATCMAT3.shtml
        },
        "windSpeedProbabilities": {
            "advNum": "016",
            "issuance": "2017-09-09T15:00:00.000Z",
            "url": "https://www.hurricanes.gov/archive/2017/al13/al132017.wndprb.016.shtml" //Realtime:
https://www.hurricanes.gov/text/MIAPWSAT3.shtml
        },
        "forecastDiscussion": {
            "advNum": "016",
            "issuance": "2017-09-09T15:00:00.000Z",
            "url": "https://www.hurricanes.gov/archive/2017/al13/al132017.discus.016.shtml" //Realtime:
https://www.hurricanes.gov/text/MIATCDAT3.shtml
        },
        "forecastGraphics": {
            "advNum": "016",
            "issuance":  "2017-09-09T15:00:00.000Z",
            "url": "https://www.hurricanes.gov/graphics_at3.shtml"
        },
        "forecastTrack": {
            "advNum": "016",
            "issuance": "2017-09-09T15:00:00.000Z",
            "zipFile": "https://www.hurricanes.gov/gis/forecast/archive/al132017_5day_016.zip",
                        "kmzFile":
"https://www.hurricanes.gov/storm_graphics/api/AL132017_016adv_TRACK.kmz"
        },
```

```
        "windWatchesWarnings": null, // No Wind W/Ws for this storm, so `null` keyword is used
        "trackCone": {
            "advNum": "016",
            "issuance": "2017-09-09T15:00:00.000Z",
            "zipFile": "https://www.hurricanes.gov/gis/forecast/archive/al132017_5day_016.zip",
                    "kmzFile":
"https://www.hurricanes.gov/storm_graphics/api/AL132017_016adv_CONE.kmz"
        },
        "initialWindExtent": {
            "advNum": "016",
            "issuance": "2017-09-09T15:00:00.000Z",
            "zipFile": "https://www.hurricanes.gov/gis/forecast/archive/al132017_fcst_016.zip",
                    "kmzFile":
"https://www.hurricanes.gov/storm_graphics/api/AL132017_initialradii_016adv.kmz"
        },
        "forecastWindRadiiGIS": {
            "advNum": "016",
            "issuance": "2017-09-09T15:00:00.000Z",
            "zipFile": "https://www.hurricanes.gov/gis/forecast/archive/al132017_fcst_016.zip",
                    "kmzFile":
"https://www.hurricanes.gov/storm_graphics/api/AL132017_forecastradii_016adv.kmz"
        },
        "bestTrackGIS": {
            "zipFile": "https://www.hurricanes.gov/gis/best_track/al132017_best_track.zip",
            "kmzFile": "https://www.hurricanes.gov/gis/best_track/al132017_best_track.kmz"
        },
        "earliestArrivalTimeTSWindsGIS": {
            "advNum": "016",
            "issuance": "2017-09-09T15:00:00.000Z",
            "kmzFile":
"https://www.hurricanes.gov/storm_graphics/api/AL132017_016adv_earliest_reasonable_toa_34.kmz"
        },
        "mostLikelyTimeTSWindsGIS": {
            "advNum": "016",
```

```
            "issuance": "2017-09-09T15:00:00.000Z",
            "kmzFile":
"https://www.hurricanes.gov/storm_graphics/api/AL132017_016adv_most_likely_toa_34.kmz"
          },
        "windSpeedProbabilitiesGIS": {
            "issuance": "2017-09-09T12:00:00.000Z",
            "zipFile5km": "https://www.hurricanes.gov/gis/forecast/archive/2017090912_wsp_120hr5km.zip",
            "zipFile0p5deg":
"https://www.hurricanes.gov/gis/forecast/archive/2017090912_wsp_120hrhalfDeg.zip",
            "kmzFile34kt":
"https://www.hurricanes.gov/gis/forecast/archive/2017090912_wsp34knt120hr_5km.kmz",
            "kmzFile50kt":
"https://www.hurricanes.gov/gis/forecast/archive/2017090912_wsp50knt120hr_5km.kmz",
            "kmzFile64kt":
"https://www.hurricanes.gov/gis/forecast/archive/2017090912_wsp64knt120hr_5km.kmz"
          },
        "stormSurgeWatchWarningGIS": null,  // No SSWW for this storm, so `null` keyword is used
        "potentialStormSurgeFloodingGIS": null // No PSSF Map for this storm, so `null` keyword is used
      }
    ]
}
```