

Classes

ThreatMatrixForecast

Abstract class to allow combination of both API and AWIPS endpoints and manage the threat matrix data structure This class shouldn't be instantiated directly.

APIForecast \Leftarrow *ThreatMatrixForecast*

API version of a ThreatMatrixForecast. Give it a lat/lon via the constructor, and call the init method to instantiate.

AWIPSForecast \Leftarrow *ThreatMatrixForecast*

AWIPS version of a ThreatMatrixForecast. This class converts a gfe forecast built via the Create_Threat_Matrix smart tool into the common threat matrix forecast data structure

ThreatMatrixForecast

Abstract class to allow combination of both API and AWIPS endpoints and manage the threat matrix data structure This class shouldn't be instantiated directly.

Kind: global abstract class

Properties

Name	Type	Description
this._threatMatrixDataset	Object	The threat matrix dataset. Other datasets can be populated by extending this class to fit into this format
this._weatherElementConfig	Object	The config file that controls weather elements. Currently hosted in wxElementConfig.js. This file needs to be included in the html before this one.
this._unitConversions	Object	Default unit conversions that should be used when loading a threat matrix
this._validCombinationTypes	Array. <String>	An array of different possible weather element data combination types available. ['min','max','range','concat','add']

- *ThreatMatrixForecast*
 - *.weatherElements* \Rightarrow Array
 - *.getValidStartTimeISOString()* \Rightarrow String
 - *.getValidEndTimeISOString()* \Rightarrow String
 - *.getForecastData()* \Rightarrow Object
 - *.getFullDataset()* \Rightarrow Object
 - *.getValidWeatherElements()* \Rightarrow Array
 - *.changeCombination(wxElement, combinationType)*
 - *.convertTemp(toUnit)*
 - *.convertWind(toUnit)*
 - *.convertPrecip(toUnit)*
 - *.convertDistance(toUnit)*
 - *.convertDirection(toUnit)*

- [.getLocation\(\)](#) ⇒ *Object*

threatMatrixForecast.weatherElements ⇒ Array

Shortcut to get our weather elements easier.

Kind: instance property of [ThreatMatrixForecast](#)

Returns: Array - - An array of weather element keys. Keys can be used as a wxelements filter in getForecastData()

threatMatrixForecast.getValidStartTimeISOString() ⇒ String

Shortcut to get the earliest time that the data is valid for. Note that this is different than validTimes which is an 8601 duration.

Kind: instance method of [ThreatMatrixForecast](#)

Returns: String - - ISO String of the starting time of the dataset.

threatMatrixForecast.getValidEndTimeISOString() ⇒ String

Shortcut to get the latest time that the data is valid for. Note that this is different than validTimes which is an 8601 duration.

Kind: instance method of [ThreatMatrixForecast](#)

Returns: String - - ISO String of the starting time of the dataset.

threatMatrixForecast.getForecastData() ⇒ Object

Generates the weather element forecast data based on a set of filters.

Kind: instance method of [ThreatMatrixForecast](#)

Returns: Object - - Threat matrix data structure formatted weather

Param	Type	Description
filters.start	Date	The time to begin the forecast data. Defaults to current time if not set
filters.end	Date	Time to end the forecast data. Defaults to 8 days in the future if not set
filters.periodicity	Integer	Number of hours between each valid time returned. Defaults to 24 hours if not set
filters.wxelements	Array	Weather element keys to include in the filtered list. Defaults to all weather elements if not set

threatMatrixForecast.getFullDataset() ⇒ Object

Shortcut to quickly query the entire data structure. Mainly used for debugging purposes.

Kind: instance method of [ThreatMatrixForecast](#)

Returns: Object - - Entire threat matrix data structure

threatMatrixForecast.getValidWeatherElements() ⇒ Array

A list of all valid weather element keys The key is deemed "valid" if data values are available in the data structure)

Kind: instance method of [ThreatMatrixForecast](#)

Returns: Array - - Valid weather element data keys

threatMatrixForecast.changeCombination(wxElement, combinationType)

Changes the combination property for a weather element. This will allow the data structure output to customize how to combine values over long time periods For example, in the winter, combining temperature by using a minimum would be more preferable than in the summer when you would combine it by maximum.

Kind: instance method of [ThreatMatrixForecast](#)

Todo

☐ - Add this to demo

Param	Type	Description
wxElement	*	Weather element type to change. Possible values can be found via <code>getValidWeatherElements()</code>
combinationType	*	Type of combination to set. Possible values are in <code>_validCombinationTypes</code>

threatMatrixForecast.convertTemp(toUnit)

Convert temperature values in data to the specified wmo unit.

Kind: instance method of [ThreatMatrixForecast](#)

Param	Type	Default	Description
toUnit	String	degF	wmo unit type to convert to. Possible values : 'degF','degC','K'

threatMatrixForecast.convertWind(toUnit)

Convert wind values in data to the specified wmo unit.

Kind: instance method of [ThreatMatrixForecast](#)

Param	Type	Default	Description
toUnit	String	mi_h-1	wmo unit type to convert to. Possible values : 'km_h-1','kt','mi_h-1','m_s-1'

threatMatrixForecast.convertPrecip(toUnit)

Convert precipitation values in data to the specified wmo unit.

Kind: instance method of [ThreatMatrixForecast](#)

Param	Type	Default	Description
toUnit	String	in	wmo unit type to convert to. Possible values : 'mm','in']

threatMatrixForecast.convertDistance(toUnit)

Convert distance values in data to the specified wmo unit.

Kind: instance method of [ThreatMatrixForecast](#)

Param	Type	Default	Description
toUnit	String	ft	wmo unit type to convert to. Possible values : 'm','mi','km','ft'

threatMatrixForecast.convertDirection(toUnit)

Convert direction values in data to the specified wmo unit.

Kind: instance method of [ThreatMatrixForecast](#)

Param	Type	Default	Description
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Param	Type	Default	Description
toUnit	String	cardinal	wmo unit type to convert to. Possible values : 'degree_(angle)';'cardinal'

threatMatrixForecast.getLocation() ⇒ Object

A shortcut to get the threat matrix data structure location information direction.

Kind: instance method of [ThreatMatrixForecast](#)

Returns: Object - - Location portion of threat matrix data strucutre

APIForecast ⇐ [ThreatMatrixForecast](#)

API version of a ThreatMatrixForecast. Give it a lat/lon via the constructor, and call the init method to instantiate.

Kind: global class

Extends: [ThreatMatrixForecast](#)

Properties

Name	Type	Description
this._baseUrl	String	Base URL of the weather.gov API
this._pointMetadataUrl	String	Metadata URL endpoint for the weather.gov API
this._rawForecastUrl	String	Raw forecast URL endpoint for the weather.gov API
this._requestRetryLimit	Integer	Number of times to retry a query to the API before failing. This helps us overcome the known issues with the API's 500 errors.
this._requestRetryTimeout	Integer	The delay between retry queries to the API in ms.
this._pointMetadata	Object	The results from the metadata query
this._rawForecast	Object	The results from the raw forecast query

- [APIForecast](#) ⇐ [ThreatMatrixForecast](#)
 - [new APIForecast\(lat, lon\)](#)
 - [.weatherElements](#) ⇒ Array
 - [.init\(callback, ...args\)](#)
 - [.queryPointMetadata\(\)](#)
 - [.queryRawForecast\(\)](#)
 - [.buildLocationNameFromPointMetadata\(meters, degrees, city, state, threshold\)](#) ⇒ String
 - [.retryFetch\(url, options, wait, numTries\)](#) ⇒ Object
 - [.getValidStartTimelSOString\(\)](#) ⇒ String
 - [.getValidEndTimelSOString\(\)](#) ⇒ String
 - [.getForecastData\(\)](#) ⇒ Object
 - [.getFullDataset\(\)](#) ⇒ Object
 - [.getValidWeatherElements\(\)](#) ⇒ Array
 - [.changeCombination\(wxElement, combinationType\)](#)
 - [.convertTemp\(toUnit\)](#)
 - [.convertWind\(toUnit\)](#)

- [.convertPrecip\(toUnit\)](#)
- [.convertDistance\(toUnit\)](#)
- [.convertDirection\(toUnit\)](#)
- [.getLocation\(\)](#) ⇒ Object

new APIForecast(lat, lon)

Param	Type	Description
lat	Float	Latitude to query from API
lon	Float	Longitude to query from API

apiForecast.weatherElements ⇒ Array

Shortcut to get our weather elements easier.

Kind: instance property of [APIForecast](#)

Overrides: [weatherElements](#)

Returns: Array - - An array of weather element keys. Keys can be used as a wxelements filter in getForecastData()

apiForecast.init(callback, ...args)

Populate data structure by combining data from both API endpoints into the threat matrix data structure. This function must be called after instantiating the object.

Kind: instance method of [APIForecast](#)

Param	Type	Description
callback	function	function to call after query has completed and initialization completed
...args	any	arguments to pass to the callback function.

apiForecast.queryPointMetadata()

Queries the point metadata url from the API and assigns it to the private _pointMetadata property.

Kind: instance method of [APIForecast](#)

apiForecast.queryRawForecast()

Queries the raw forecast url from the API and assigns it to the private _rawForecast property.

Kind: instance method of [APIForecast](#)

apiForecast.buildLocationNameFromPointMetadata(meters, degrees, city, state, threshold) ⇒ String

The API doesn't really return a useful location, this will build one based on a few properties.

Kind: instance method of [APIForecast](#)

Returns: String - - Human readable location representation of the given properties.

Param	Type	Default	Description
meters	Integer		Distance in meters from nearest city
degrees	Integer		Direction in degrees from nearest city

Param	Type	Default	Description
city	String		Nearest city
state	String		Nearest city's state
threshold	Integer	5000	Distance threshold in meters which when exceeded will include the "5 miles ESE of" text in the result

apiForecast.retryFetch(url, options, wait, numTries) ⇒ Object

Utility function to retry fetches multiple times if the query fails the first time.

Kind: instance method of [APIForecast](#)

Returns: Object - - Results of promise if it returns a successful query

Param	Type	Description
url	String	Url to fetch
options	Object	Fetch options
wait	Integer	Number of seconds before retrying query
numTries	Integer	Number of tries before ultimately failing query and throwing an error

apiForecast.getValidStartTimeISOString() ⇒ String

Shortcut to get the earliest time that the data is valid for. Note that this is different than validTimes which is an 8601 duration.

Kind: instance method of [APIForecast](#)

Overrides: [getValidStartTimeISOString](#)

Returns: String - - ISO String of the starting time of the dataset.

apiForecast.getValidEndTimeISOString() ⇒ String

Shortcut to get the latest time that the data is valid for. Note that this is different than validTimes which is an 8601 duration.

Kind: instance method of [APIForecast](#)

Overrides: [getValidEndTimeISOString](#)

Returns: String - - ISO String of the starting time of the dataset.

apiForecast.getForecastData() ⇒ Object

Generates the weather element forecast data based on a set of filters.

Kind: instance method of [APIForecast](#)

Overrides: [getForecastData](#)

Returns: Object - - Threat matrix data structure formatted weather

Param	Type	Description
filters.start	Date	The time to begin the forecast data. Defaults to current time if not set
filters.end	Date	Time to end the forecast data. Defaults to 8 days in the future if not set
filters.periodicity	Integer	Number of hours between each valid time returned. Defaults to 24 hours if not set
filters.wxelements	Array	Weather element keys to include in the filtered list. Defaults to all weather elements if not set

apiForecast.getFullDataset() ⇒ Object

Shortcut to quickly query the entire data structure. Mainly used for debugging purposes.

Kind: instance method of [APIForecast](#)

Overrides: [getFullDataset](#)

Returns: Object - - Entire threat matrix data structure

apiForecast.getValidWeatherElements() ⇒ Array

A list of all valid weather element keys The key is deemed "valid" if data values are available in the data structure)

Kind: instance method of [APIForecast](#)

Overrides: [getValidWeatherElements](#)

Returns: Array - - Valid weather element data keys

apiForecast.changeCombination(wxElement, combinationType)

Changes the combination property for a weather element. This will allow the data structure output to customize how to combine values over long time periods For example, in the winter, combining temperature by using a minimum would be more preferable than in the summer when you would combine it by maximum.

Kind: instance method of [APIForecast](#)

Overrides: [changeCombination](#)

Todo

☐ - Add this to demo

Param	Type	Description
wxElement	*	Weather element type to change. Possible values can be found via getValidWeatherElements()
combinationType	*	Type of combination to set. Possible values are in _validCombinationTypes

apiForecast.convertTemp(toUnit)

Convert temperature values in data to the specified wmo unit.

Kind: instance method of [APIForecast](#)

Overrides: [convertTemp](#)

Param	Type	Default	Description
toUnit	String	degF	wmo unit type to convert to. Possible values : 'degF','degC','K'

apiForecast.convertWind(toUnit)

Convert wind values in data to the specified wmo unit.

Kind: instance method of [APIForecast](#)

Overrides: [convertWind](#)

Param	Type	Default	Description
toUnit	String	mi_h-1	wmo unit type to convert to. Possible values : 'km_h-1','kt','mi_h-1','m_s-1'

apiForecast.convertPrecip(toUnit)

Convert precipitation values in data to the specified wmo unit.

Kind: instance method of [APIForecast](#)

Overrides: [convertPrecip](#)

Param	Type	Default	Description
toUnit	String	in	wmo unit type to convert to. Possible values : 'mm','in']

apiForecast.convertDistance(toUnit)

Convert distance values in data to the specified wmo unit.

Kind: instance method of [APIForecast](#)

Overrides: [convertDistance](#)

Param	Type	Default	Description
toUnit	String	ft	wmo unit type to convert to. Possible values : 'm','mi','km','ft'

apiForecast.convertDirection(toUnit)

Convert direction values in data to the specified wmo unit.

Kind: instance method of [APIForecast](#)

Overrides: [convertDirection](#)

Param	Type	Default	Description
toUnit	String	cardinal	wmo unit type to convert to. Possible values : 'degree_(angle)','cardinal'

apiForecast.getLocation() ⇒ Object

A shortcut to get the threat matrix data structure location information direction.

Kind: instance method of [APIForecast](#)

Overrides: [getLocation](#)

Returns: Object - - Location portion of threat matrix data strucutre

AWIPSPForecast ⇐ ThreatMatrixForecast

AWIPS version of a ThreatMatrixForecast. This class converts a gfe forecast built via the Create_Threat_Matrix smart tool into the common threat matrix forecast data structure

Kind: global class

Extends: [ThreatMatrixForecast](#)

Properties

Name	Type	Description
_gfeForecast	Object	Storage of the gfeForecast given in the constructor

- [AWIPSPForecast ⇐ ThreatMatrixForecast](#)
 - [new AWIPSPForecast\(gfeForecast\)](#)

- [.weatherElements](#) ⇒ Array
- [.init\(callback, ...args\)](#)
- [.getValidStartTimeISOString\(\)](#) ⇒ String
- [.getValidEndTimeISOString\(\)](#) ⇒ String
- [.getForecastData\(\)](#) ⇒ Object
- [.getFullDataset\(\)](#) ⇒ Object
- [.getValidWeatherElements\(\)](#) ⇒ Array
- [.changeCombination\(wxElement, combinationType\)](#)
- [.convertTemp\(toUnit\)](#)
- [.convertWind\(toUnit\)](#)
- [.convertPrecip\(toUnit\)](#)
- [.convertDistance\(toUnit\)](#)
- [.convertDirection\(toUnit\)](#)
- [.getLocation\(\)](#) ⇒ Object

new AWIPSPForecast(gfeForecast)

Param	Type	Description
gfeForecast	Object	A formatted GFE built forecast created by Create_Threat_Matrix.py

awipsForecast.weatherElements ⇒ Array

Shortcut to get our weather elements easier.

Kind: instance property of [AWIPSPForecast](#)

Overrides: [weatherElements](#)

Returns: Array -- An array of weather element keys. Keys can be used as a wxelements filter in getForecastData()

awipsForecast.init(callback, ...args)

Populate data structure by converting a gfe forecast .json file to For consistency with the API forecast which is async, this function must be called after instantiating the object.

Kind: instance method of [AWIPSPForecast](#)

Param	Type	Description
callback	function	function to call after query has completed and initialization completed
...args	any	arguments to pass to the callback function.

awipsForecast.getValidStartTimeISOString() ⇒ String

Shortcut to get the earliest time that the data is valid for. Note that this is different than validTimes which is an 8601 duration.

Kind: instance method of [AWIPSPForecast](#)

Overrides: [getValidStartTimeISOString](#)

Returns: String -- ISO String of the starting time of the dataset.

awipsForecast.getValidEndTimeISOString() ⇒ String

Shortcut to get the latest time that the data is valid for. Note that this is different than validTimes which is an 8601 duration.

Kind: instance method of [AWIPSThreatForecast](#)
Overrides: [getValidEndTimeISOString](#)
Returns: String - - ISO String of the starting time of the dataset.

awipsForecast.getForecastData() ⇒ Object

Generates the weather element forecast data based on a set of filters.

Kind: instance method of [AWIPSThreatForecast](#)
Overrides: [getForecastData](#)
Returns: Object - - Threat matrix data structure formatted weather

Param	Type	Description
filters.start	Date	The time to begin the forecast data. Defaults to current time if not set
filters.end	Date	Time to end the forecast data. Defaults to 8 days in the future if not set
filters.periodicity	Integer	Number of hours between each valid time returned. Defaults to 24 hours if not set
filters.wxelements	Array	Weather element keys to include in the filtered list. Defaults to all weather elements if not set

awipsForecast.getFullDataset() ⇒ Object

Shortcut to quickly query the entire data structure. Mainly used for debugging purposes.

Kind: instance method of [AWIPSThreatForecast](#)
Overrides: [getFullDataset](#)
Returns: Object - - Entire threat matrix data structure

awipsForecast.getValidWeatherElements() ⇒ Array

A list of all valid weather element keys The key is deemed "valid" if data values are available in the data structure)

Kind: instance method of [AWIPSThreatForecast](#)
Overrides: [getValidWeatherElements](#)
Returns: Array - - Valid weather element data keys

awipsForecast.changeCombination(wxElement, combinationType)

Changes the combination property for a weather element. This will allow the data structure output to customize how to combine values over long time periods For example, in the winter, combining temperature by using a minimum would be more preferable than in the summer when you would combine it by maximum.

Kind: instance method of [AWIPSThreatForecast](#)
Overrides: [changeCombination](#)
Todo

☐ - Add this to demo

Param	Type	Description
wxElement	*	Weather element type to change. Possible values can be found via getValidWeatherElements()
combinationType	*	Type of combination to set. Possible values are in _validCombinationTypes

awipsForecast.convertTemp(toUnit)

Convert temperature values in data to the specified wmo unit.

Kind: instance method of [AWIPSThreatForecast](#)

Overrides: [convertTemp](#)

Param	Type	Default	Description
toUnit	String	degF	wmo unit type to convert to. Possible values : 'degF','degC','K'

awipsForecast.convertWind(toUnit)

Convert wind values in data to the specified wmo unit.

Kind: instance method of [AWIPSThreatForecast](#)

Overrides: [convertWind](#)

Param	Type	Default	Description
toUnit	String	mi_h-1	wmo unit type to convert to. Possible values : 'km_h-1','kt','mi_h-1','m_s-1'

awipsForecast.convertPrecip(toUnit)

Convert precipitation values in data to the specified wmo unit.

Kind: instance method of [AWIPSThreatForecast](#)

Overrides: [convertPrecip](#)

Param	Type	Default	Description
toUnit	String	in	wmo unit type to convert to. Possible values : 'mm','in']

awipsForecast.convertDistance(toUnit)

Convert distance values in data to the specified wmo unit.

Kind: instance method of [AWIPSThreatForecast](#)

Overrides: [convertDistance](#)

Param	Type	Default	Description
toUnit	String	ft	wmo unit type to convert to. Possible values : 'm','mi','km','ft'

awipsForecast.convertDirection(toUnit)

Convert direction values in data to the specified wmo unit.

Kind: instance method of [AWIPSThreatForecast](#)

Overrides: [convertDirection](#)

Param	Type	Default	Description
toUnit	String	cardinal	wmo unit type to convert to. Possible values : 'degree_(angle)','cardinal'

awipsForecast.getLocation() ⇒ Object

A shortcut to get the threat matrix data structure location information direction.

Kind: instance method of [AWIPSThreatForecast](#)

Overrides: [getLocation](#)

Returns: Object - - Location portion of threat matrix data strucutre

