
Command Reference: WriteTimeSeriesToKml()

Write time series to a KML format file

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The `WriteTimeSeriesToKml()` command writes time series to a Keyhole Markup Language (KML), which is a spatial data format used by Google Earth and web mapping software. At a minimum, the locations associated with the time series can be written as spatial data. In the future, the time series values will be used to color the layer symbols and animate the data. See:

<https://developers.google.com/kml/documentation/topicsinkml>

Spatial data are taken from time series properties and must include columns for longitude and latitude or Well Known Text (WKT) geometry strings. See:

http://en.wikipedia.org/wiki/Well-known_text

Currently only point and polygon data can be processed but in the future support for well-known text for other geometry types will be added. Other features that are envisioned in the future include;

- Providing the option to output the time series using the timestamp and timespan KML features.
- Providing the option to specify style information with a table, for example using the data type to indicate the symbol and icon.

The following dialog is used to edit the command and illustrates the syntax of the command.

The screenshot shows the 'Edit WriteTimeSeriesToKml() Command' dialog box. It has a title bar with a close button. The main area contains instructions: 'Write time series to a KML format file, which can be used for map integration. Longitude, latitude, and elevation are taken from time series properties. In the future, a table will be used to set style information. The working directory is: C:\owf-gitrepos\cdss-app-tstool-test\test\regression\commands\general\WriteTimeSeriesToKml'. Below this are fields for 'TS list' (a dropdown), 'Optional - indicates the time series to process (default=AllTS)', 'TSID (for TSList=AllMatchingTSID):', 'EnsembleID (for TSList=EnsembleID):', and 'KML file to write: Results/Test_WriteTimeSeriesToKml_Year_out.kml' with a 'Browse' button. There are tabs for 'General', 'Point Data', 'Geometry Data', 'KML Inserts', 'Marker Styles', and 'Time Series Data'. The 'General' tab is active, showing 'Name: Test Layer' and 'Description: Test time series.' with optional labels. At the bottom, the 'Command:' field shows the full command syntax. At the very bottom are 'Add Working Directory', 'Cancel', and 'OK' buttons.

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WriteTimeSeriesToKml

WriteTimeSeriesToKml() Command Editor

The following figure illustrates the command syntax for point data specified with time series properties.

General | Point Data | Geometry Data | KML Inserts | Marker Styles | Time Series Data

If the time series are associated with a point layer, then spatial information can be specified from time series properties. Otherwise, specify geometry data using parameters in the Geometry Data tab.

Longitude property: Longitude Required - time series property containing longitude.

Latitude property: Latitude Required - time series property containing latitude.

Elevation property: Elevation Optional - time series property containing elevation (default=0).

WriteTimeSeriesToKml_Point

WriteTimeSeriesToKml() Command Editor for Point Data Parameters

The following figure illustrates the command syntax for layers specified with a WKT geometry property.

General | Point Data | Geometry Data | KML Inserts | Marker Styles | Time Series Data

KML files allow for many properties to be specified to configure the data. The GeometryInsert command parameter value will be inserted within the <Point>, <Polygon>, etc. data element. Refer to the KML reference for information (<https://developers.google.com/kml/documentation/kmlreference>).

Geometry insert:

WriteTimeSeriesToKml_Geometry

WriteTimeSeriesToKml() Command Editor for WKT Geometry Data Parameters

The following figure illustrates the command syntax for KML inserts. This allows KML elements to be inserted in the KML file.

General | Point Data | Geometry Data | KML Inserts | Marker Styles | Time Series Data

KML files allow for many properties to be specified to configure the data. The GeometryInsert command parameter value will be inserted within the <Point>, <Polygon>, etc. data element. Refer to the KML reference for information (<https://developers.google.com/kml/documentation/kmlreference>).

Geometry insert:

WriteTimeSeriesToKml_KmlInsert

WriteTimeSeriesToKml() Command Editor for KML Insert Parameters

The following figure illustrates the command syntax for marker style parameters.

General | Point Data | Geometry Data | KML Inserts | **Marker Styles** | Time Series Data

Marker styles control how map layer features are symbolized (colors, etc.) and interact (mouse-over highlight, etc.).
 Marker style definitions can be defined by inserting XML text or specifying a file to insert.
 The URL to a style map is then specified for the layer (currently all features in the layer will have the same style).
 In the future features will be enabled to lookup the marker style from time series values or statistic).

Placemark name: -- Select Specifier -- => Optional - use %L for location, \${ts:property}, etc.

Placemark description: -- Select Specifier -- => Optional - use %L for location, \${ts:property}, etc.

Style insert:

Style file to insert: Data/KML-Style.xml

StyleUrl: #exampleStyleMap Optional - style URL for marker (default=pushpin, etc.).

WriteTimeSeriesToKml_Styles

WriteTimeSeriesToKml() Command Editor for Marker Style Parameters

The following figure illustrates the command syntax for time series data parameters. In the future this tab will be used to control how time series values are used to animate a KML layer.

General | Point Data | Geometry Data | KML Inserts | Marker Styles | **Time Series Data**

Currently time series data are not output. In the future the KML timestamp feature may be implemented..
 Enter date/times to a precision appropriate for output time series.

Output precision: Optional - digits after decimal (default=4).

Missing value: Optional - value to write for missing data (default=initial missing value).

Output start: Optional - override the global output start (default=write all data).

Output end: Optional - override the global output end (default=write all data).

WriteTimeSeriesToKml_Styles

WriteTimeSeriesToKml() Command Editor for Time Series Data Parameters

The command syntax is as follows:

```
WriteTimeSeriesToKml (Parameter=Value, ...)
```

Command Parameters

Parameter	Description	Default
TsList	<p>Indicates the list of time series to be processed, one of:</p> <ul style="list-style-type: none"> AllMatchingTSID – all time series that match the TSID (single TSID or TSID with wildcards) will be processed. AllTS – all time series before the command. EnsembleID – all time series in the ensemble will be processed. FirstMatchingTSID – the first time series that matches the TSID (single TSID or TSID with wildcards) will be processed. LastMatchingTSID – the last time series that matches the TSID (single TSID or TSID with wildcards) will be processed. 	AllTS

Parameter	Description	Default
	<ul style="list-style-type: none"> SelectedTS – the time series are those selected with the SelectTimeSeries() command. 	
TSID	The time series identifier or alias for the time series to be processed, using the * wildcard character to match multiple time series. Can be specified using \${Property}.	Required if TSList=*TSID.
EnsembleID	The ensemble to be processed, if processing an ensemble. Can be specified using \${Property}.	Required if TSList=EnsembleID.
OutputFile	The KML output file. The path to the file can be absolute or relative to the working directory (command file location). Global properties can be used to specify the filename, using the \${Property} syntax.	None – must be specified.
Name	The name of the layer, corresponding to the <name> KML element. Can be specified using \${Property}.	Blank
Description	The description for the layer, corresponding to the <description> KML element. The text can contain HTML markup. Can be specified using \${Property}.	Blank
Longitude Property	The name of the time series property containing the longitude to use for the KML. Can be specified using \${Property}.	Required unless WKT geometry is specified.
Latitude Property	The name of the time series property containing the latitude to use for the KML. Can be specified using \${Property}.	Required unless WKT geometry is specified.
Elevation Property	The name of the time series property containing the elevation to use for the KML. Can be specified using \${Property}.	Omitted
WKTGeometry Property	The name of the time series property that contains Well Known Text (WKT) geometry strings. Can be specified using \${Property}.	Will use point data properties
GeometryInsert	Text containing KML elements to insert after <Point>, <Polygon> or other elements, used to configure the KML data. Can be specified using \${Property}.	No inserts.
Placemark Name	The placemark name, corresponding to the KML <Placemark><name> element. Specify a literal string or use the % and \${ts:property} specifiers to use time series properties. HTML will be properly handled in the KML.	Time series location ID.
Placemark Description	The placemark description, corresponding to the KML <Placemark><description> element. Specify a literal string or use the % and \${ts:property} specifiers to use time series	Time series description.

Parameter	Description	Default
	properties. HTML will be properly handled in the KML.	
StyleInsert	Text containing <Style> and <StyleMap> element text, which will be inserted in the KML file. Can be specified using <code>\${Property}</code> .	No styles.
StyleFile	Similar to StyleInsert; however, the style information to be inserted is read from the specified file. Can be specified using <code>\${Property}</code> .	
StyleUrl	Specifies the <StyleMap id="myStyleMap"> or <Style id="myStyle"> element to use for each placemark in the layer. For example, specify as #myStyleMap to match a style map included in the KML file with the StyleInsert or StyleFile parameter, where the URL matches the id attribute. Can be specified using <code>\${Property}</code> .	Default KML style.
Precision	The number of digits after the decimal for numerical output. Not currently enabled.	4 (in the future may default based on data type)
Missing Value	The value to write to the file to indicate a missing value in the time series, must be a number or NaN. Not currently enabled.	As initialized when reading the time series or creating a new time series, typically -999, NaN, or another value that is not expected in data.
OutputStart	The date/time for the start of the output, used with KML timestamp. Not currently enabled.	Use the global output period.
OutputEnd	The date/time for the end of the output, used with KML timestamp. Not currently enabled.	Use the global output period.

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