

# ECCHARTS



With this icon we can recreate the layers of the [ecCharts](#) web-based visualisation system in the Metview environment. The icon retrieves [global forecast fields](#) for a given ecCharts layer from the **MARS** archive then applies the required post-processing steps and visualises the results with one of the pre-defined ecCharts styles.



From script (Macro/Python) this icon can be called as `eccharts( )`.

## Output format

Please note that the output of the icon is not a single GRIB file but a list of the following items in the specified order:

1. the GRIB fields retrieved from MARS
2. a plot title definition (see [Text plotting](#) icon)
3. a contouring definition (see [Contouring](#) icon) using the specified pre-defined style associated with the layer
4. a legend (see [Legend](#) icon) definition

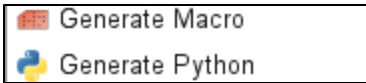
The second item in this list is [optional](#) and only included if **Title** is set to **style\_1** in the EcCharts icon.

## Saving GRIB data

To save a local copy of the retrieved GRIB data use the *Save result* action from the icon context menu.

## Generating script code

The icon is equipped with the *Generate Macro* and *Generate Python* context menu actions.



With these actions the actual retrieval, post-processing and visualisation steps can be saved into the specified script format (the generated script will appear in the current folder).

This is an example showing the Macro code generated for layer *t925*.

```

# Metview Macro

# ***** LICENSE START *****
#
# Copyright 2018 ECMWF. This software is distributed under the terms
# of the Apache License version 2.0. In applying this license, ECMWF does not
# waive the privileges and immunities granted to it by virtue of its status as
# an Intergovernmental Organization or submit itself to any jurisdiction.
#
# ***** LICENSE END *****
#

# Retrieve data from MARS
data = retrieve(
    class : 'od',
    levelist : 925,
    levtype : 'pl',
    param : 'l30.128',
    stream : 'oper',
    type : 'fc',
    date : '20181127',
    time : '0000',
    grid : [1,1],
    step : '24',
    expver : '1')

# Define title
title = mtext(
    text_line_1 : "925 hPa temperature   START: <grib_info key='base-date' format='%d.%m.%Y. %H'
where='shortName=t' /> UTC   STEP:   <grib_info key='step' where='shortName=t' />h   VALID FOR =   <grib_info
key='valid-date' format='%d.%m.%Y. %H' where='shortName=t' /> UTC",
    text_colour : "charcoal")

# Define contouring
cont = mcont(
    contour_automatic_setting : "style_name",
    contour_style_name :      "sh_all_fM52t48i4",
    legend :                  "on")

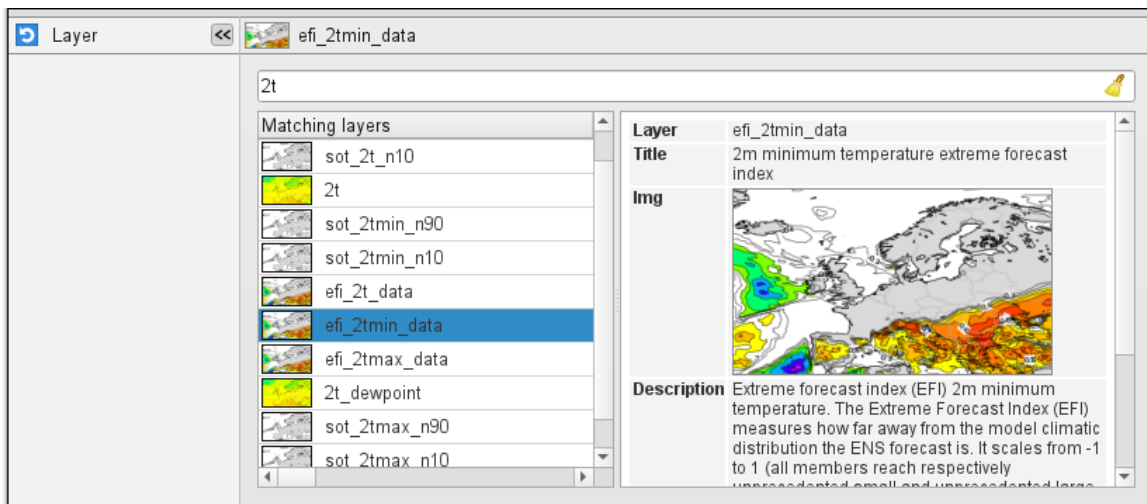
# Define legend
legend = mlegend(
    legend_text_colour : "charcoal")

# Generate plot
plot(data, title, cont, legend)

```

## What layers are available?

A fair number of ecCharts layers are available but several layers are not yet added to the icon. To figure out more about the supported layers use the layer browser in the icon editor as shown below:



## The Eccharts Editor

### Layer

Specifies the name of the ecCharts layer.

### Style

Specifies the contouring style for the selected layer. Each ecCharts layer is associated with a group of predefined styles. When a given layer is selected in **Layer** the icon editor only shows the available styles for that layer and the default style is automatically selected.

### Title

Specifies the type of the title generated for the plot. The possible values are as follows:

- **default**: the standard Metview automatic title will be used and the resulting list will not contain a [Text plotting](#) icon. This is how it looks:

Wednesday 05 February 2020 12 UTC ecmf t+6 VT:Wednesday 05 February 2020 18 UTC 500 hPa Temper:

- **style\_1**: the resulting list will contain a [Text plotting](#) icon defining a title of a different style. This is how it looks:

500 hPa temperature START: 05.02.2020. 12 UTC STEP: 6h VALID FOR: 05.02.2020. 18 UTC

The default option is **default**.



When overlaying an **EcCharts** icon with other **EcCharts** icons or fields always use the **default** option (otherwise the contouring setting could be applied incorrectly to some of the fields).

This option was introduced in Metview 5.8.0.

### Date

Specifies the run date of the forecast. This is the same Date parameter as in the MARS retrieval icon. The date is given in **YYYYMMDD** format. Relative dates are allowed: e.g. -1 means yesterday, 0 means today, etc. The default is -1.

### Time

Specifies the run time of the forecast. This is the same Time parameter as in the MARS retrieval icon. The default is 0.

### Step

Specifies the forecast steps in hours. Here a list of values can be given.

### Grid

Specifies the resolution of the resulting global grid in **dx/dy** format, where dx is the grid increment in West-East direction, while dy is the grid increment in South-North direction (both in units of degrees). The default value is: **1/1**.

## Fail On Data Error

When this parameter is set to **yes** an error in the data retrieval or the post-processing steps will force the icon to fail and a Macro/Python script running the `eccharts( )` function will fail as well. While if it is set to **no** the icon will not fail and the `eccharts` command in Macro/Python will return nil/None. The default value is **yes**.