BUFR Overview

What is BUFR?

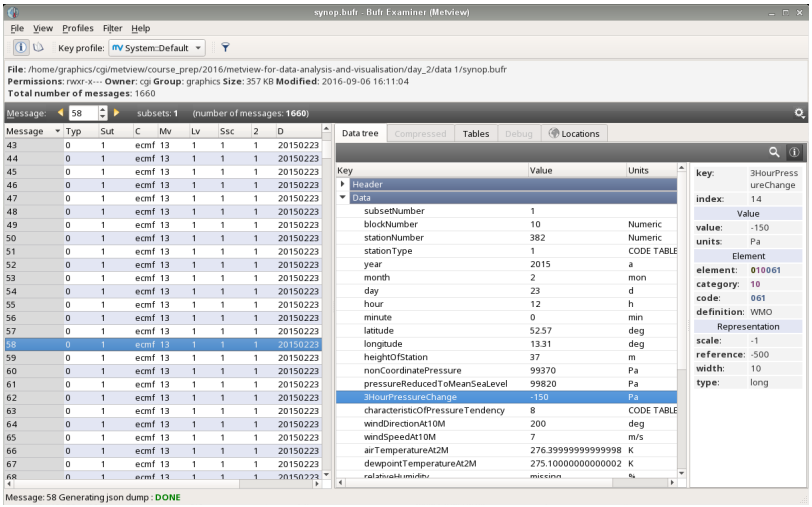
BUFR (Binary Universal Form for Representation of meteorological data) is a binary data format maintained by WMO. The Metview BUFR interface is based on ecCodes and can handle both BUFR edition 3 and edition 4 seamlessly.

The BUFR icon

BUFR files are represented by this icon in the user interface:

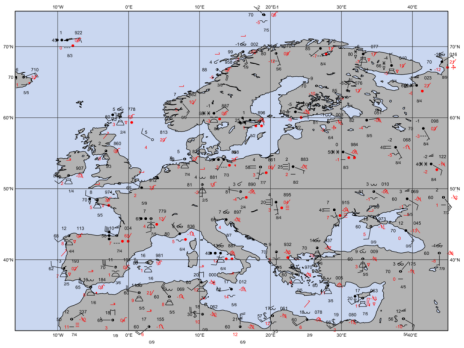
Examining BUFR contents

The contents of a BUFR file can be inspected with the **BUFR Examiner**, which can be started up from the user interface (right-click **examine** on the icon).



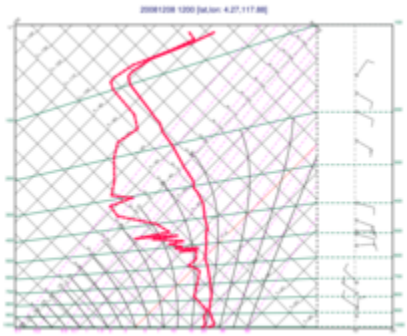
Visualisation on maps

Some conventional BUFR observations types (such as SYNOP and TEMP) can be directly visualised by Metview on a map view. In the user interface just right-click **visualise** on the icon to get a plot with the default settings. These plots can be further customised with the Observation Plotting icon.



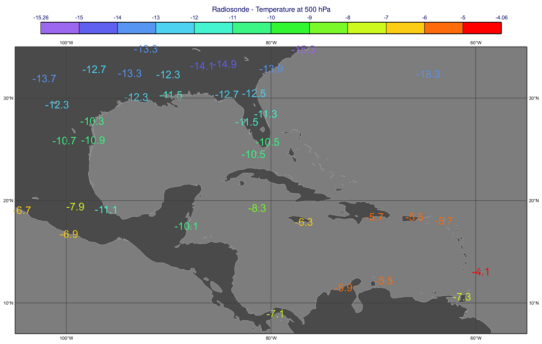
Visualisation on thermodynamic diagrams

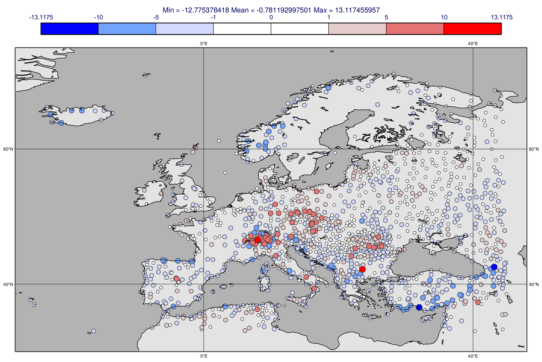
The Thermo Data icon can extract thermodynamic profiles from BUFR, which can then be visualised in a tephigram, skew-t or emagram using the Thermo View.



Filtering

Metview comes with its own filter to extract BUFR data into Geopoints or CSV, which can then be easily plotted and are very well suited for data processing. The filter is implemented by the Observation Filter and Bufr Picker icons, the latter one is being able to extract multiple values per message. The Observation Filter's output can also be a new BUFR file (only containing the messages matching the filter).





Retrieval from MARS

If Metview has been configured with access to ECMWF's MARS archive, BUFR data can be retrieved via the Mars Retrieval icon. At ECMWF, MARS access is set up on all computer systems, while outside ECMWF the **MARS Web API** could be used in Metview (see the setup instructions here).

Script language support

Metview provides full support for BUFR from its Macro and Python interfaces.

The list of available **functions** for BUFR can be found on the Observations Functions and Thermodynamic Functions pages.

Tutorials
Using BUFR in Metview (part of the Tutorials) ECMWF New Users Metview Tutorial

Functions
Observations Functions Thermodynamic Functions

Other resources
Metview FAQ Gallery Jupyter Notebooks