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ECMWF data sets as input for the ATM FLEXPART prepared by a new version of the flex_extract tool

A tool called flex_extract has been developed over many years, partly on behalf of the CTBTO/PTS, to retrieve meteorological data from ECMWF's MARS archive for driving FLEXPART or the WRF model. Its functionality includes the generation and execution of MARS requests, calculation of the vertical winds for FLEXPART, and transformation to a latitude-longitude grid. Additionally, it disaggregates accumulated flux data, such as precipitation, and prepares the final FLEXPART input files. In 2018, several changes occurred with respect to ECMWF data, such as the replacement of grib_api by ecCodes, of emoslib by the new interpolation library MARS-MIR, and also in the Web API. Furthermore, more data can now be accessed by non-member-state users. The latest reanalysis, ERA5, with many improvements compared to the previous ERA-Interim, is currently available from 1979 on. The diversity of data sets, the possible combinations of MARS request settings and ways of accessing MARS can be confusing for less experienced users. Therefore, an overview of the available ECMWF data sets and the ways how they can be accessed with the latest version of flex_extract is presented.

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