Fire danger indices historical data from the Copernicus Emergency Management Service

Important Note

If you utilize the dataset, please acknowledge this service by properly referencing it through citation of the associated papers. This will enhance the visibility of the dataset's usefulness and support its continued availability. Thank you!

- Vitolo, C., Di Giuseppe, F., Barnard, C. *et al.* ERA5-based global meteorological wildfire danger maps. *Sci Data* **7,** 216 (2020). https://doi.org/10.1038/s41597-020-0554-z

This data set provides complete historical reconstruction of meteorological conditions favorable to the start, spread and sustainability of fires. The fire danger metrics provided are part of a vast dataset produced by the Copernicus Emergency Management Service for the European Forest Fire Information System (EFFIS). The European Forest Fire Information System incorporates the fire danger indices for three different models developed in Canada, United States and Australia. In this dataset the fire danger indices are calculated using weather forecast from historical simulations provided by ECMWF ERA5 reanalysis.

ERA5 by combining model data and a vast set of quality controlled observations provides a globally complete and consistent data-set and is regarded as a good proxy for observed atmospheric conditions.

The selected data records in this data set are regularly extended with time as ERA5 forcing data become available. This dataset is produced by ECMWF in its role of the computational centre for fire danger forecast of the CEMS, on behalf of the Joint Research Centre which is the managing entity of the service.

Current version v4.0

Known Issues

- 06/2023 Version 4.1
  - With the release of 4.1, some changes may be required to your api calls due to the change of the format.
  - ZIP is automatic and is no longer a required option for format, using nc will give a zip file when multiple dates are requested
  - Area cropping is added as an option for Version 4.1
  - CDO Users will need to install version 2.30.2 of ECCODES and compile CDO with this version.
- 10/ 2021 Version 4.0
  - Aligned with GEFF4
  - constructed from GRIB files interpolated into netcdf file using MIR. The grid is therefore different from previous versions
  - Changed units to be consistent with SI as per grib specifications
  - corrected bug in FWI Drought Code calculation
- 01/2020 Version 3.1:
  - Small modification of the drying coefficients in the FWI
  - version documented in paper Vitolo et al (2020)
- 09/2019 Version 3.0:
  - Initial release

Documentation

Data set description:

Papers:

- Vitolo, C., Di Giuseppe, F., Barnard, C. *et al.* ERA5-based global meteorological wildfire danger maps. *Sci Data* **7,** 216 (2020). https://doi.org/10.1038/s41597-020-0554-z
- Vitolo, C., Di Giuseppe, F., Krzeminski, B. *et al.* A 1980–2018 global fire danger re-analysis dataset for the Canadian Fire Weather Indices. *Sci Data* **6,** 190032 (2019). https://doi.org/10.1038/sdata.2019.32
- Di Giuseppe, F., Vitolo, C., Krzeminski, B., Barnard, C., Maciel, P., and San-Miguel, J.: Fire Weather Index: the skill provided by the European Centre for Medium-Range Weather Forecasts ensemble prediction system, Nat. Hazards Earth Syst. Sci., 20, 2365–2378, https://doi.org/10.5194/nhess-20-2365-2020, 2020.
- Di Giuseppe, F., Pappenberger, F., Wetterhall, F., Krzeminski, B., Camia, A., Libertá, G., and San Miguel, J. (2016). The Potential Predictability of Fire Danger Provided by Numerical Weather Prediction. *Journal of Applied Meteorology and Climatology* 55, 11, 2469-2491, available from: https://doi.org/10.1175/JAMC-D-15-0297.1

The dataset is produced with the GEFF model