



DATASET ON WEATHER-RELATED DISASTERS IN AGRICULTURE (WDA) IN ITALY

The database on Weather-related disasters in agriculture (WDA) is a part of the cloud storage which hosts the materials of the [Observatory for agricultural meteorology and climatology](#) of the Research Center for Agriculture and Environment belonging to the Council for Agricultural Research and Economics (CREA). The Observatory website has a specific section devoted to [weather-related risk in agriculture](#).

A specific relational SQL database has been created by data entry from the official decrees of WDA declaration issued over the years by the Italian Ministries of Agriculture, food sovereignty and forests (Masaf) within the “National Solidarity Fund for natural disasters in agriculture” (as reformed in 2004 with the Italian law d.lgs. 102/2004). Further information on legislation and the Ministry decrees are available [here](#).

From this database, managed by CREA for internal research purposes, a **WDA dataset** has been extracted for the period from 2005 (post-reform) to 2021 and here published in text format (csv file).

The WDA dataset aims to make available useful data for weather-related risk assessment and analysis in the Italian agricultural sector.

In Italy, a natural disaster in agriculture is defined as "*an extreme event that have led to certified damages to agricultural production, farms' structures and infrastructures connected to agricultural activities (e.g. rural roads, collective irrigation systems)*". The Italian legislation considers the damage occurred (not the hazard characteristics) as the main criterion for WDA declaration. Therefore, a WDA due to an extreme weather event is defined through the damages occurred, precisely with a threshold of damages of 30 percent of the average gross saleable



production is required to declare the disaster. In addition, damages on farms' structures (stables, greenhouses, sheds, etc.) and infrastructures connected to agricultural activities (mostly collective drainage and irrigation channels, rural roads, etc.) are considered, in terms of restoration costs or the economic value of the structure before the damage. A more general criterion is also the exceptionality of the extreme weather event leading to disaster (not the same in the previous 5 years in the same territory), but each case can be differently evaluated. In a general way, the type of extreme weather events leading to disaster are defined in the Italian [National Plan for Risk management in agriculture](#). The following extreme weather events leading to WDA occurred in the period 2005-2021:

- Drought
- Excess of snow
- Frost
- Hail
- Heat stress
- Heavy rain leading to flood
- Persistent rain
- Tornado
- Strong wind
- Sirocco wind

When an extreme weather event occurs, the administrative Region ([NUTS 2](#)) assesses the related damages in agriculture and submits a technical report to the Masaf asking for declaration of natural disaster. If accepted, a Ministry decree is issued, detailing the type of extreme weather event, the administrative units of the affected area (at level of municipalities or provinces), the period of occurrence and the kind of damages (on production, farms' structures and/or infrastructures).

Data are annotated with standard Discovery metadata ([EN ISO 19115](#) and [EN ISO 19119 INSPIRE standards](#)) and Structural metadata are reported in two additional files.



See also the references for a more in-depth description with some examples of application of WDA data in agrometeorological and risk assessment studies in Italy.

Some studies using the data

- Bellucci GM, Alilla R, De Natale F, Parisse B, Pepe AG, Pontrandolfi A (2024) Evaluation of weather-related hazard in relation to natural disasters in the Abruzzo region. Atti del XXVI Convegno Nazionale di Agrometeorologia "Approcci innovativi a supporto delle produzioni agrarie in un contesto climatico in evoluzione" L'Aquila 5 - 7 Giugno 2024, ISBN 9788854971509, <https://doi.org/10.6092/unibo/amsacta/7718> pp. 21-25
- Parisse B., Pontrandolfi A., Epifani C., Alilla R., De Natale F. (2020). An agrometeorological analysis of weather extremes supporting decisions for the agricultural policies in Italy. *Italian Journal of Agrometeorology* (3): 15-30. <https://doi.org/10.13128/ijam-79>
- Pontrandolfi A., Capitanio F., Pepe A. G. (2016). Vulnerability of agricultural areas to climatic risk and effectiveness of risk management policy scheme in Italy. *Int. J. of Safety and Security Eng.* 6-2 pp. 150-160 doi:10.2495/SAFE-V6-N2-150-160 <https://www.witpress.com/elibrary/sse-volumes/6/2/1159>