

# Regional reanalysis & wind atlas for Italy

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IEA Wind TEM# 111  
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# Who we are

## OWNERSHIP

Single owner: GSE - publicly owned company - Ministry of Economy

## GOVERNANCE

Supervised by MASE,  
Owned by GSE,  
Directed by ARERA.

## MISSION

System focused R&D dedicated to the integrated energy system financed by public funds.



## DOMAIN OF ACTIVITIES

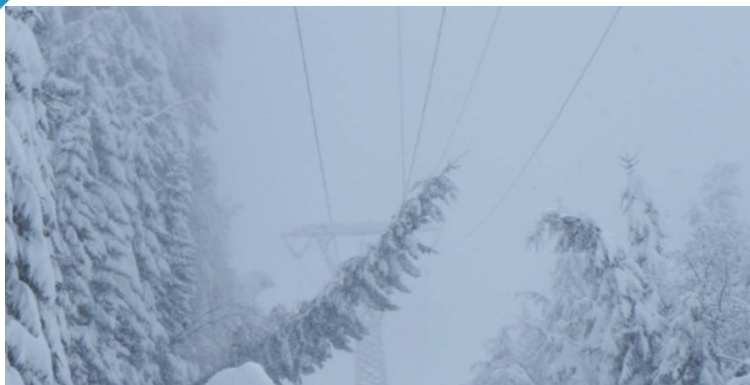
Research of public interest in the electro-energy / environmental sector.

## APPROACH

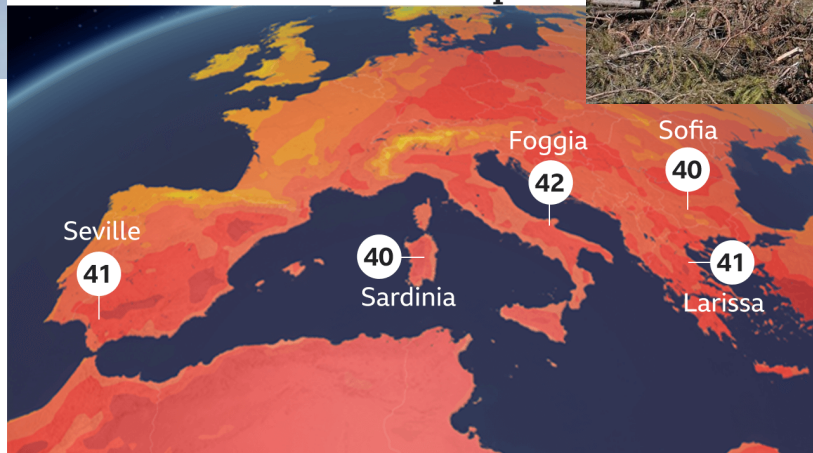
System approach experimental applications enhancing multidisciplinary skills.

## RESOURCES

About 380 people - 2/3 graduates, 80% researchers; head office Milan.

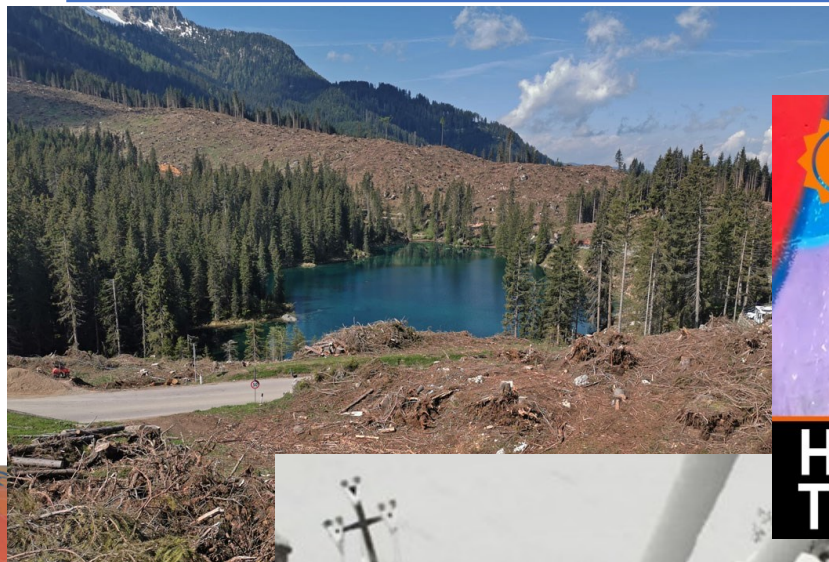


Heatwave in southern Europe



Source: BBC Weather, 13 July 2023

BBC



HEAVY RAIN FLOODS  
TRAIN STATION IN MILAN



Extremes of  
weather events

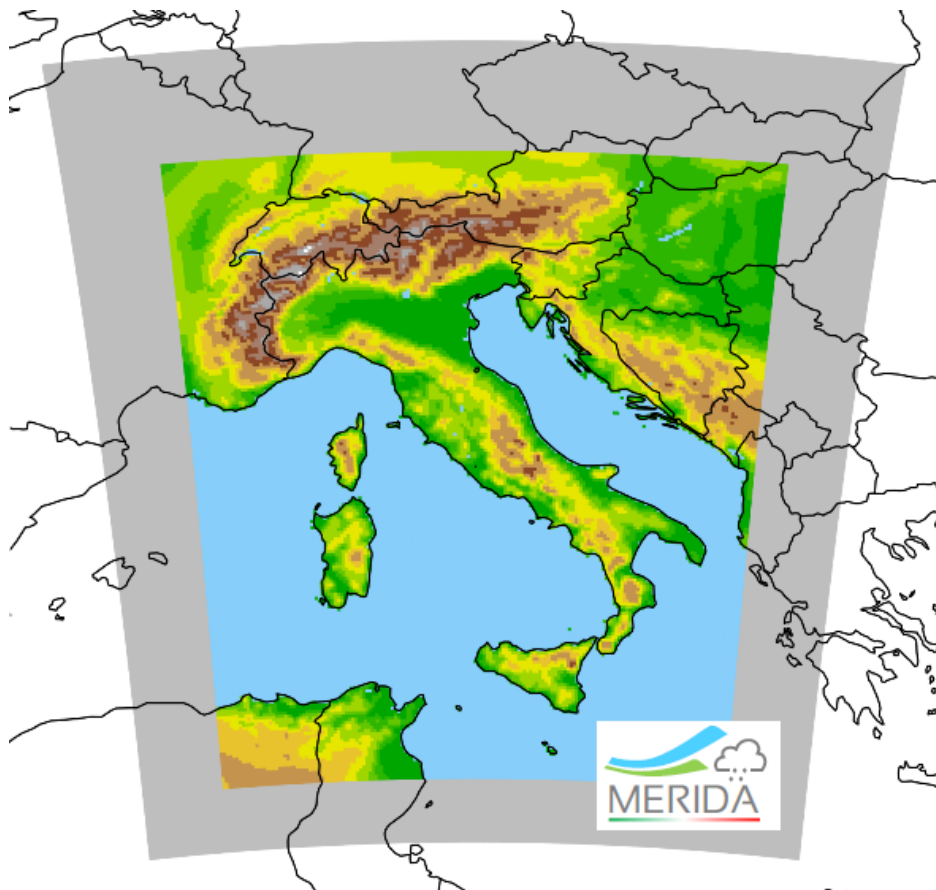
Increase the resilience of the electricity system



Learn more about weather events of recent years:

**weather reanalysis**





2019

- **ME**eteorological **R**eanalysis **I**talian **D**ataset (MERIDA), 7 km, focus on **T2m/prec**

2022

- MERIDA **H**igh-resolution for **R**enewable **E**nergy **S**ources (MERIDA HRES), 4 km, focus on **wind/GHI**

2023

- Atlante **EOL**ico **I**taliano (AEOLIAN), 1.33 km, focus on **wind**

# AEOLIAN

Atlante EOlico ItaliANo



## NCAR

- Joint effort between RSE and the National Center for Atmospheric Research (NCAR), Boulder, CO
- 30 years of data (1990 - 2019)
- Hourly temporal resolution, 1.33 km horizontal resolution
- Coverage of the whole territory and marine areas
- WRF-ARW dynamical downscaling of ECMWF ERA5 + observational nudging (~300 Italian regional stations, 10m wind)
- Weather modeling + statistical post-processing (Analog Ensemble) to reduce computational burden
- Extension after 2019 in progress



Sperati S, Alessandrini S, D'Amico F, et al. A new Wind Atlas to support the expansion of the Italian wind power fleet. *Wind Energy*. 2024; 27(3): 298-316. doi:[10.1002/we.2890](https://doi.org/10.1002/we.2890)



# Thank you for your attention

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