



# Use of climatic data in design with the Eurocodes

S. Dimova, L. Sousa, A. Athanasopoulou, JRC

*Workshop  
Climate resilience and design codes - factoring in climate projections  
Aligning infrastructure standards with information about the future climate,  
17-18 March 2021*

# JRC scientific network on adaptation of structural design to climate change

❑ In the frame of Administrative Arrangements between DG GROW and JRC

❑ **The Network Experts:**

- Chairmen of basic Subcommittees of CEN/TC250 and PTs on climatic actions
- Experts on climatology and meteorology
- Experts on structural design and economic assessment
- DG CLIMA, DG GROW and the JRC;
- CEN/CENELEC Adaptation to Climate Change Coordination Group

# JRC scientific network on adaptation of structural design to climate change

❑ **Main goal: update and harmonization of the European design maps for climatic actions taking into account the changing climate**

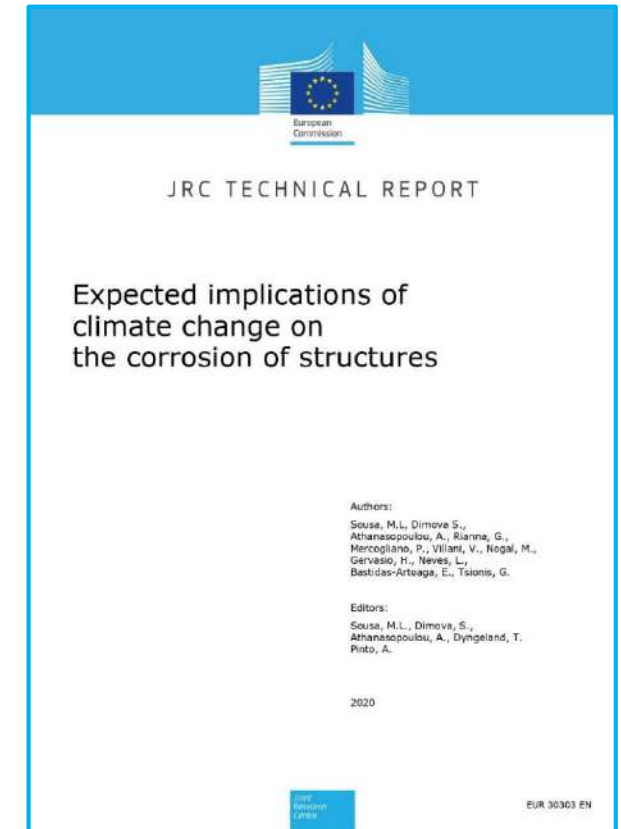
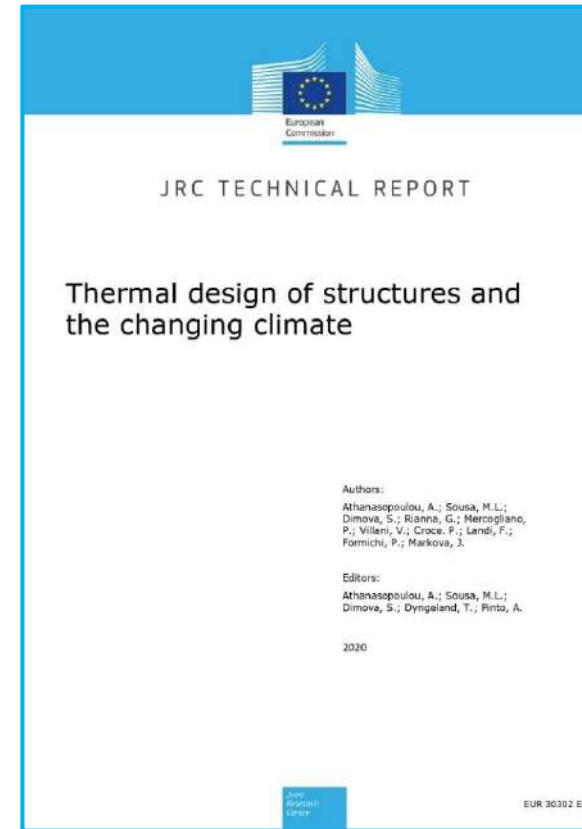
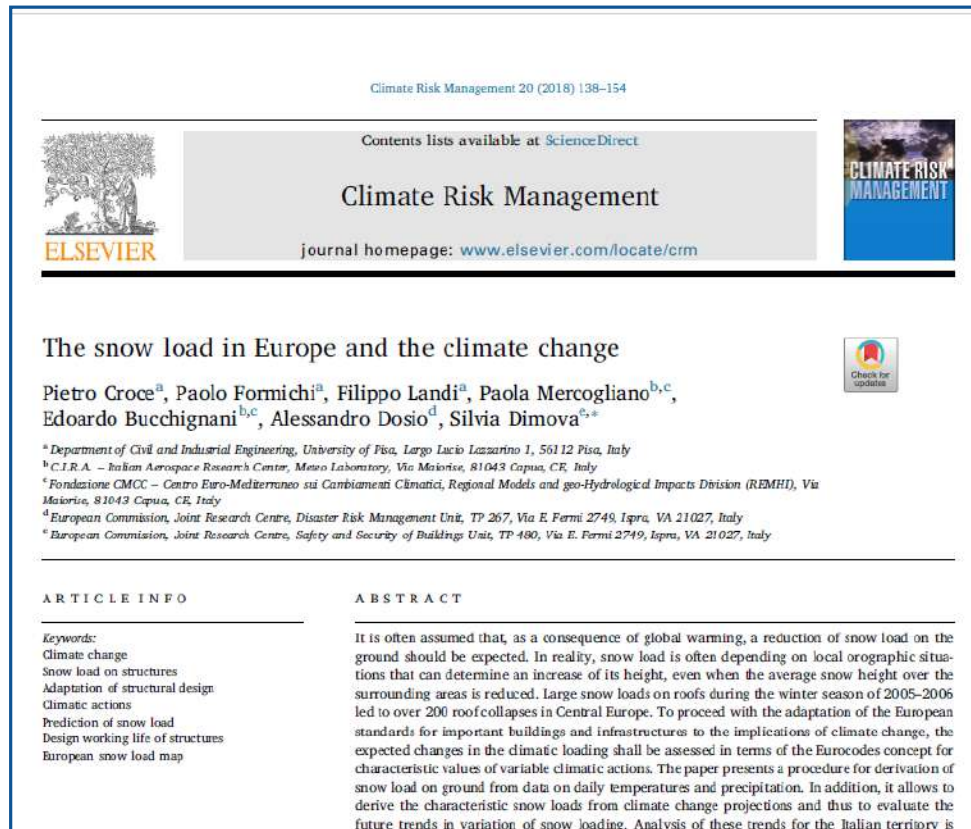
❑ **Activities:**

**I. Pilot projects on definition of design maps in changing climate for:**

- Snow load
- Annual minimum and maximum temperatures
- Basic wind velocity (forthcoming)

**II. Effects of changing climate on the corrosion of structures.**

# JRC scientific network on adaptation of structural design to climate change



# Need of design maps for climatic actions

- ❑ Users of the Eurocodes apply **the maps for climatic actions specified in the National Annexes**
- ❑ Recent **JRC report** on the state of harmonized use of the Eurocodes concludes:
  - the **national maps** for snow load, wind and temperature **present dissimilar layouts** and reveal **discontinuities** at countries borderlines;
  - *thus, difficult to harmonise the use of the Eurocodes in the EU MS.*
- ❑ **Development of maps** of climatic actions for the Eurocodes **is not planned** neither under Mandate M/515, nor under Mandate M/526.



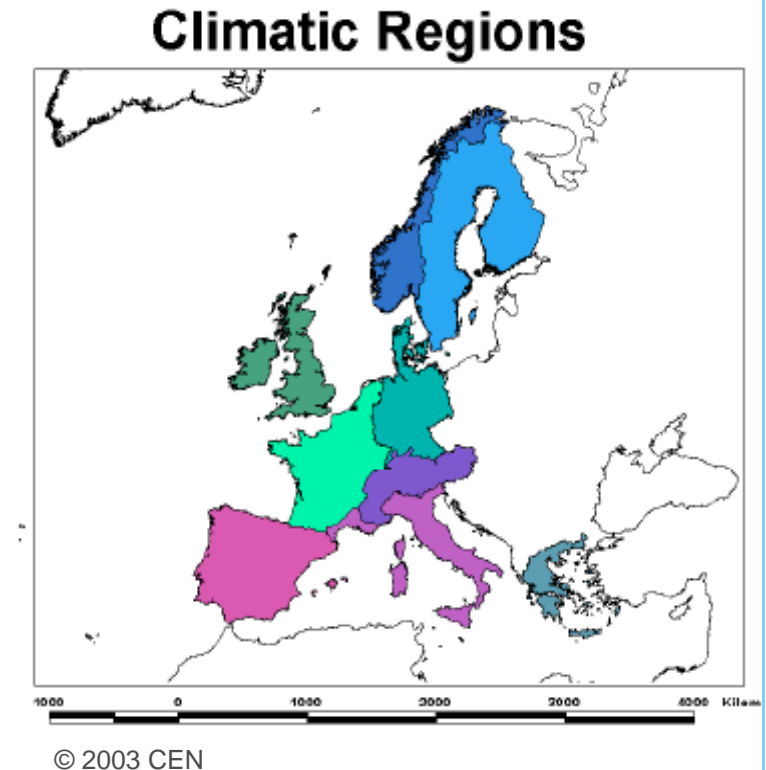
# Need of European design maps for climatic actions

## ❑ Development of European maps for definition of snow, wind and thermal loading:

- will **help National Competent Authorities** to redraft their national in a harmonised way by using the best available knowledge,
- will contribute to the reduction of inconsistencies at borders between neighbouring countries (**harmonization!**).

## ❑ These maps can be published/referred to in informative annexes in the respective **2G Eurocodes Parts**, as is currently the case of the European snow load map, Annex C to EN 1991-1-3.

Figure C.1. European Climatic regions



# Use of future climate (CC projections) in design maps

- ✓ **Methodologies available** for snow and thermal loading
- ✓ **Considerable uncertainty** in estimating climatic loading from CC projections
- ✓ Recommendation of 2G Eurocodes PT on CC for “**rolling adaptation**” by **updating often** (in 10-15 years) the maps basing **on observed data**
- ✓ CC projections can be used for **predicting future trends in loading** and other important effects, e.g. corrosion
- ✓ Country-specific **choices of the magnitude of the climate impacts** will be allowed in the 2G Eurocodes **for countries aiming stronger climate resilience**
- ✓ These choices may be **based on the predicted future trends in loading**

# Key question

## How should the information on the design climatic loading become available in order to be used?

- ? **Location**: **Climate-ADAPT platform** (to be presented by H-M Füssel), Climate Data Store in Copernicus Climate Change Service, dedicated Platform for the Eurocodes, ...
- ? **Format**: provide values, increments/anomalies between future and present data, ...; "computational" format of data - NETCDF format (MATLAB, ARCGIS), or Excel, ....
- ? **Accessibility**: PDF maps in the National Annexes, interactive web platform where data is constantly updated considering the signal given by climate change: presentation on maps, possibility to search for geolocation, ...
- ? **Actuality**: timespan of update (e.g. following the update in climate projection versions, ...), issuing system certificate for the day of downloading data, ...
- ? **Training needs** ...



# Thank you for your attention!



Photo by Markus Spiske from Pexels  
<https://www.pexels.com/photo/city-people-street-sign-2990613/>

# Keep in touch



**EU Science Hub:** <https://ec.europa.eu/jrc>



**@EU\_ScienceHub**



**EU Science Hub – Joint Research Centre**



**EU Science, Research and Innovation**



**EU Science Hub**