



## CLIMATE CHANGE IMPACT ON CULTURAL HERITAGE

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**ABSTRACT:** The Climate for Culture (CfC) project provides an answer to three key questions:

(1) We know that the outdoor monuments will be affected by the climate change, and we know as well the climate scenarios predicted by models under different emission scenarios. However, what should we expect to happen to museum collections and historic building interiors?

In the general perception, gale winds and heavy rains will likely affect outdoor monuments; museums should substantially be prepared to use more fuel for air conditioning and less for heating. However, nobody has a clear idea about the indoor conservation needs, i.e. if the museum collections will undergo an acceleration of the physical and chemical deterioration processes, if the risk of moulds and insect infestation will be increased or reduced and so on. CfC focuses attention on the conservation needs and opens a new window on the near and far future.

(2) Is it reasonable to calculate and represent the expected indoor changes and the related risks per each material type, per each deterioration mechanism, per each building type, per each location and for the two main emission scenarios?

It is clear that the local variability may be easily represented with thematic maps covering the whole of Europe at high space resolution. The results have been calculated for two emissions scenarios, with simulations made for two future periods and making reference to the recent past, considering 26 types of buildings, ten types of materials, for mechanical, chemical, biological deterioration mechanisms and various types of risk.

(3) Maybe that some changes will induce negative effects, other neutral, some other positive ones. Users, stakeholders and policy makers should be informed. How is it possible to inform in a simple way specialists and non-specialists about a complex matter?

The problem is not to calculate so many maps: the real challenge is the demanding methodology required to produce a map, i.e. to compute the outdoor scenario; to build an outdoor/indoor transfer function to calculate the indoor climate for the selected building type based on indoor/outdoor climate monitoring over years; to derive the damage functions for selected material and calculate decay or risk.

Complex problems require simple answers. This does not mean to reduce the information, but to present it in a simplified form, considering only one variable, or only one aspect, at a time. Thematic maps over Europe are our typical output.