

Rewrite the past with carbon 14

A new measurement system to correct carbon 14 dating, one of the main dating methods also adopted on the Shroud and Otzi mummy

by FABIO MARZANO

The curve has 13 thousand points. Each corresponds more or less to a date that starts today and goes up to about 50 thousand years ago. Some stages mark epochal events such as the [eruption of the Santorini volcano](#) , the extinction of the Neanderthals and that night of Saint Stephen of 993 after Christ, when in many skies of Europe you could admire a rare phenomenon in our latitudes such as the aurora borealis. In a few days a new measurement system will be published to correct the carbon 14 dating, one of the main methods to reconstruct the past of the Planet with which the Shroud and the [Ötzi mummy](#) were also examined.

Carbon 14, the key to precise dating

It is called the calibration curve and it is used to convert the results of dating exams on all organic finds into days of the calendar, from archaeological fragments to pollen trapped in glaciers. A sort of time machine that collects data from the natural archives recorded in the growth rings of millenary trees, geological sediments and corals.



Environment -- [In Calabria the oldest pine in Europe. "Italus is not alone: with him other millenary witnesses of our history"](#) by FABIO MARZANO

An empirical investigation of very ancient organisms that allowed to further improve the resolution of the calculation and which also includes Italus, the [loricate pine over 1200 years](#) discovered a few years ago in the Pollino National Park in Calabria.



The laboratories of the center of applied physics, dating and diagnostics

The curve of time

"To know exactly the age of a sample, for example, it is necessary to do the dating exam and then translate the result into a calendar year with this calibration curve that takes into account the natural variations of the carbon content ^{14}C in the atmosphere - explains **Gianluca Quarta**, professor of applied physics at the University of Salento who participated in the diagnostic investigations on Italus - The curve indicates how much the concentration of this element has changed over the centuries and millennia, among other things, due to the effect of solar activity and the Earth's magnetic field".



A Cedad expert at work - Share

The northern lights of 993 AD

The excursions of the content of this element into the air can be very rapid. Like that of 993 AD. By studying some samples of [Italus](#), the researchers from Salento showed that in the spring of that year an anomalous event occurred, a solar storm of rare intensity that caused the amount of radiocarbon absorbed by all trees to surge. A phenomenon so powerful as to trigger, immediately after Christmas, a Northern Lights in the skies of all Central Europe.



Science -- [The tree rings are synchronized worldwide](#)

A new calibration

The curve was developed by an international research group, called Intcal20, and will be published in the reference scientific journal *Radiocarbon* in the next weeks. "With this new calibration tool it will be easier to place the exact chronology of some epochal events such as the spread of Homo Sapiens in Europe and the disappearance of the Neanderthals or the end of the last ice age, which will probably move a little more behind what is estimated today. - continues Quarta, professor at the Cedad (Center for Applied Physics, Dating and Diagnostics) of the Apulian University - The new calibration curve confirms a data much discussed by the scientific community as the eruption of the volcano of Santorini, a catastrophe which put an end to the Minoan civilization and which is now located between the 17th and the first half of the 16th century BC."

Traces in nature

To build this measure of time, the growth rings of other millennial trees such as bristled pine trees (*Pinus aristata*) in the United States and oaks in the woods of Ireland and Germany were also examined. Some of the oldest traces of carbon 14 are then found in the sediments of Lake Suigetsu in Japan, in the caves of Hulu in China and in the deep corals of the Barbados islands and the Gulf of Cariaco in Venezuela.