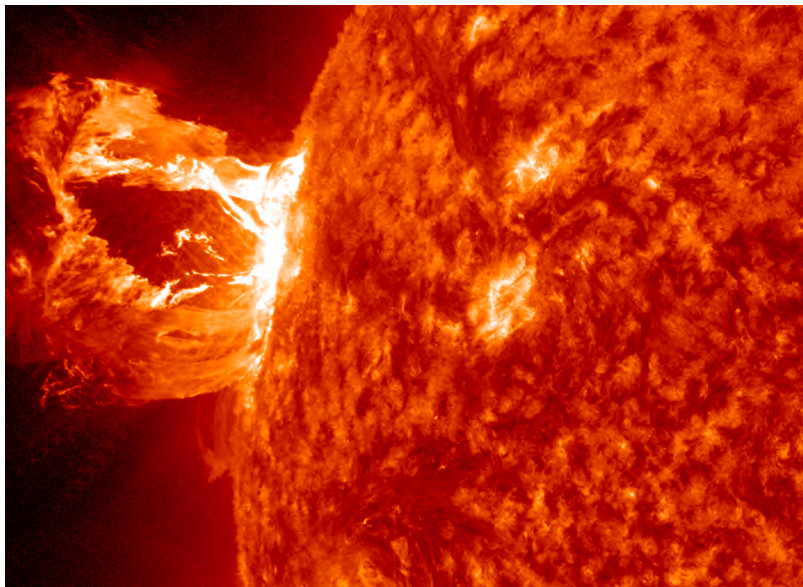


ÖAW

ÖSTERREICHISCHE
AKADEMIE DER
WISSENSCHAFTEN

THURSDAY, NOVEMBER 14, 2024
5.00 P.M.
OEAW, THEATERSAAL
SONNENFELSGASSE 19
1010 VIENNA



GEOK GUEST LECTURE

CAN RADIOCARBON IN TREE RINGS TELL US WHAT IS HAPPENING ON THE SUN?



Timothy Jull is Professor Emeritus of Geosciences and Physics at the University of Arizona, where he has worked since 1981. He obtained his bachelor's degree from the University of British Columbia (Canada) in 1972 and a doctoral degree from the University of Bristol (UK) in 1976 in chemistry. He is an expert in radiocarbon dating and applications of other radionuclides using accelerator mass spectrometry. He has published over 440 refereed publications in many applications from archaeology and heritage studies to meteorites and planetary science. He is the editor of the scientific journal "Radiocarbon" since 1999 and also the editor of Meteoritics and Planetary Science, another journal, since 2003.

CAN RADIOCARBON IN TREE RINGS TELL US WHAT IS HAPPENING ON THE SUN?

We live next to a large star, the Sun, which is not an unchanging source of energy with regular cycles of activity, but which also has occasional bursts of radiation that can arrive at the Earth. Solar flares are intense bursts of radiation from the Sun, where charged particles are ejected and can affect the Earth, and which are particularly common during solar maximum. These flares increase the flux of cosmic rays to the Earth and can cause changes in the ionization of the atmosphere as well as geomagnetic effects.

However, these are small events compared to some very large events recorded by radiocarbon (carbon-14) in tree-ring records. There are historical reports of intense events associated with solar activity; for example, a historical event recorded in 1859 called the "Carrington event" that caused massive disruption to telegraph communications and polar lights to be observed as far south as Cuba and Panama. Large changes in the radiocarbon concentration in tree rings have been linked to solar flare events in the past.

The best documented is the 774-775 AD "Miyake" event, recorded in over 34 different locations around the world, in both the northern and southern hemispheres.

Ancient chronicles from European and Asian civilizations describe strange atmospheric phenomena in the past as well as about this time. In addition to atmospheric and irradiation effects, these "spikes" in the radiocarbon record can also act as precise markers of time that can allow some archaeological questions to be resolved to a precision of about one year, where a tree-ring record in wood covers one of these excursions.

PROGRAM

17:00 WELCOME

Christian Köberl | Chair, Commission for Geosciences, OeAW;
Department of Lithospheric Research, University of Vienna

17:15 LECTURE

Timothy Jull | University of Arizona
Can radiocarbon in tree rings tell us what is happening on the Sun?

17:45 DISCUSSION

18:00 DRINKS RECEPTION

ORGANIZER

Commission for Geosciences (GEOK)
Austrian Academy of Sciences (OeAW)

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REGISTRATION

Registration is suggested (to provide you with additional information per E-mail):
<https://www.oeaw.ac.at/geok/detail/event/can-radiocarbon-in-tree-rings-tell-us-what-is-happening-on-the-sun>
The Event will be held in English.

INFORMATION

Note that photographs may be taken throughout the event. These may be used by the organizing institution in publications, online and in social media. Please contact the event staff if you have any concerns or if you wish to be exempted from this activity.

Title photo: Solar flare of 16 April 2012. NASA