Vienna, 5 April 2018

Long-overlooked permafrost accelerates climate change – geoscientists invite the people of Vienna to have their say in discussions

The tug of war between demand for natural resources and the need to preserve them has never been more pressing than it is today. Now, new findings on melting permafrost have led to even more heated debate on climate change. In the period to 2100, this melting will release 15% more carbon into the atmosphere, mainly in the form of carbon dioxide (CO_2) and methane, which has a global warming potential (GWP) 28 times higher than CO_2. This year, for the first time, European geoscientists will invite residents of the Austrian capital to take part in discussions on climate change as part of their conference.

“We see this as a sort of health check-up for our world, and we will be doing everything we can to find solutions that will enable us all to live together on the planet in the long term,” said Jonathan Bamber, president of the European Geosciences Union (EGU). The challenges are enormous, because the conflict between demand for resources and the need to preserve them is now greater than at any other time in history. Geoscientists from various countries and a full range of disciplines will meet at the Austria Center Vienna from 8-13 April in order to develop joint solutions.

Long-overlooked permafrost speeding up climate change

One of the topics of discussion at the conference is climate change – and, coupled with this, permafrost, a factor that has long been underestimated. “Permafrost is a widespread phenomenon. It covers a quarter of the northern hemisphere’s land surface. We use the term permafrost to refer to subsoil that remains frozen for at least two years in a row,” explained Austrian climate researcher Annett Bartsch. “Permafrost is not only found in far-flung regions such as the Antarctic, Alaska and Canada; it is also a feature of the high mountains of the Austrian Alps, at 2,500m or more above sea level,” Bartsch added. About 2.5% of Austria’s surface area is frozen all year round, and deep-lying, seasonal ground frost is found on a further 1.5%, principally in high mountain regions in Tyrol and Salzburg. A total of 23 skiing regions, 31 reservoirs and 42 Alpine skiing chalets in this country are located in or very close to permafrost regions.

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Rockfalls and subsidence becoming more frequent in the Alps

Permafrost becomes a problem when it thaws. In the Alps this has triggered an increase in rockfalls and ground subsidence. This poses a threat to the safety of infrastructure such as hiking trails, summit stations, cable cars, mountain chalets and avalanche barriers, and results in higher maintenance costs. Reservoirs used in hydropower generation, as well as dams are also affected.

Greenhouse gases such as carbon dioxide and methane driving climate change

Besides these regional impacts, melting permafrost also has a significant effect on climate change – in many areas, permafrost traps carbon, and when the permafrost thaws, carbon is released into the atmosphere in the form of carbon dioxide and methane. There are currently between 760 and 830 gigatonnes of carbon in the atmosphere, and melting permafrost could add another 120 gigatonnes by the year 2100. This would raise the global average temperature by 0.2-0.3° Celsius – in addition to the average warming of 2°Celsius already predicted. Methane released from melting permafrost has a GWP 28 times higher than that of carbon dioxide.

Revision of climate models essential

“Unfortunately, current climate models do not take the effects of permafrost into account at all, or only do so to an insufficient degree,” commented Annett Bartsch. With this in mind, the European Space Agency (ESA) is in the process of launching a project (being part of their climate change initiative) aimed at mapping permafrost zones worldwide. Models of changes in global permafrost over the past 30 years will be produced on the basis of satellite data, which it is hoped will pave the way for more precise predictions using existing climate models.

Geoscientists invite people of Vienna to take part in discussions

“Initiating dialogue with everyone is very important to us,” Jonathan Bamber said. So this year, as part of its annual conference, the EGU will for the first time give the people of Vienna the chance to attend a public lecture, which will take place on 12 April at the Naturhistorisches Museum Vienna. “The core topic is the ways in which we can work together to tackle the most urgent issues related to climate change. We also want to give people an insight into developments in geosciences, as well as geoscientific developments in the fields of planetary and space science, so that we can build a bridge between the scientists at the Austria Center Vienna and the city’s population,” the conference president explained.

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Details and registration

Thursday 12 April, 7p.m.

at the Naturhistorisches Museum Vienna

http://www.nhm-wien.ac.at/veranstaltungsprogramm?tid=1512158127749&detail_mp=yes

To register for the free lecture, send an e-mail to egu@nhm-wien.ac.at.

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