



To store the energy from the sun, plants take up carbon from the atmosphere, which then enters the soil once they die.

In the soil the plant material is broken down by micro-organisms. In the process, one part of the carbon returns to the atmosphere as CO_2 , whereas another part is stabilised in the soil. Due to this process, the soil contains three times as much carbon as the atmosphere. The large amount of carbon in the soil means that small changes in decomposition may have large consequences. When climate warming for example increased decomposition so that more CO_2 is released back to the atmosphere, this is likely to change our climate even more.

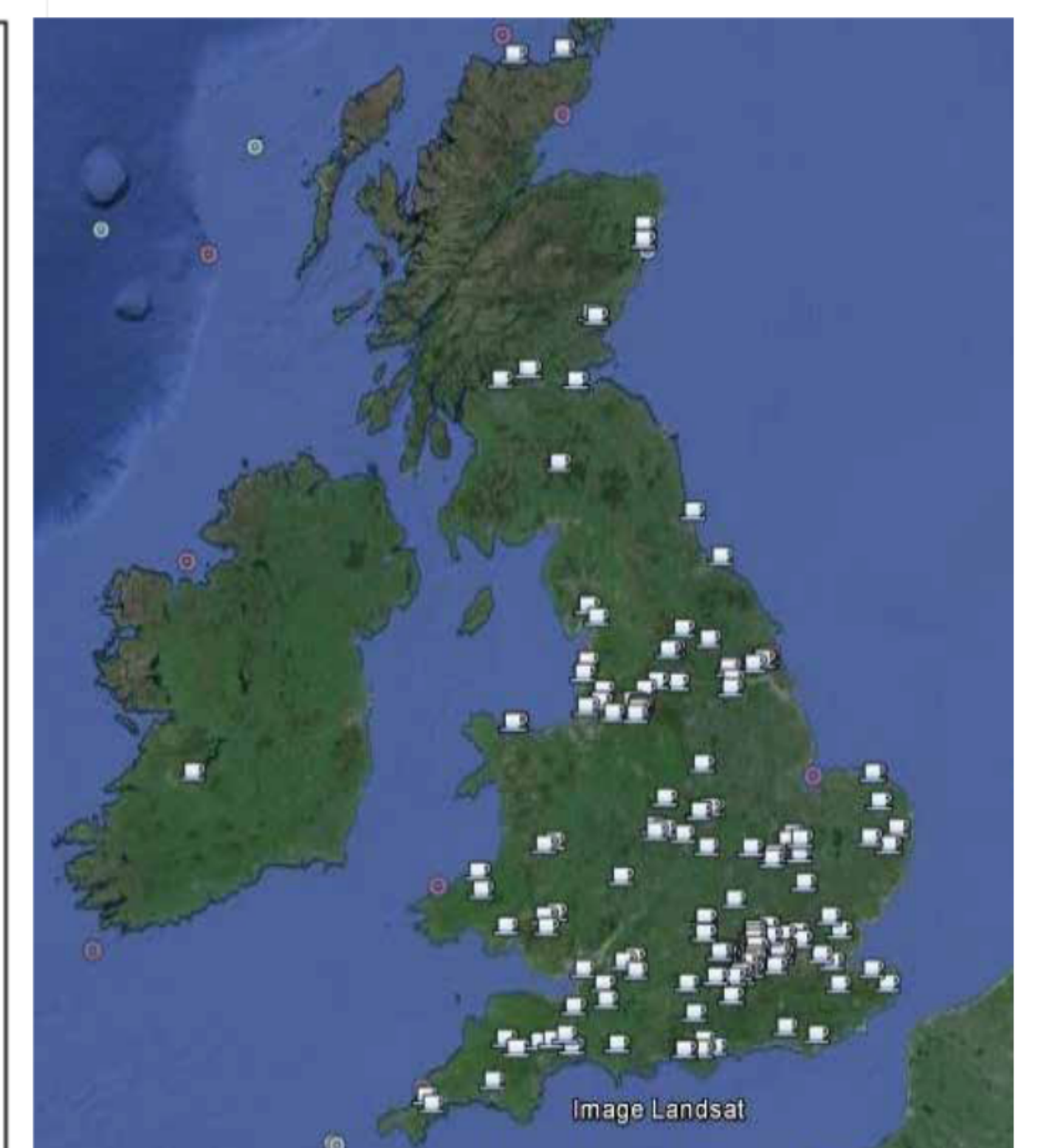
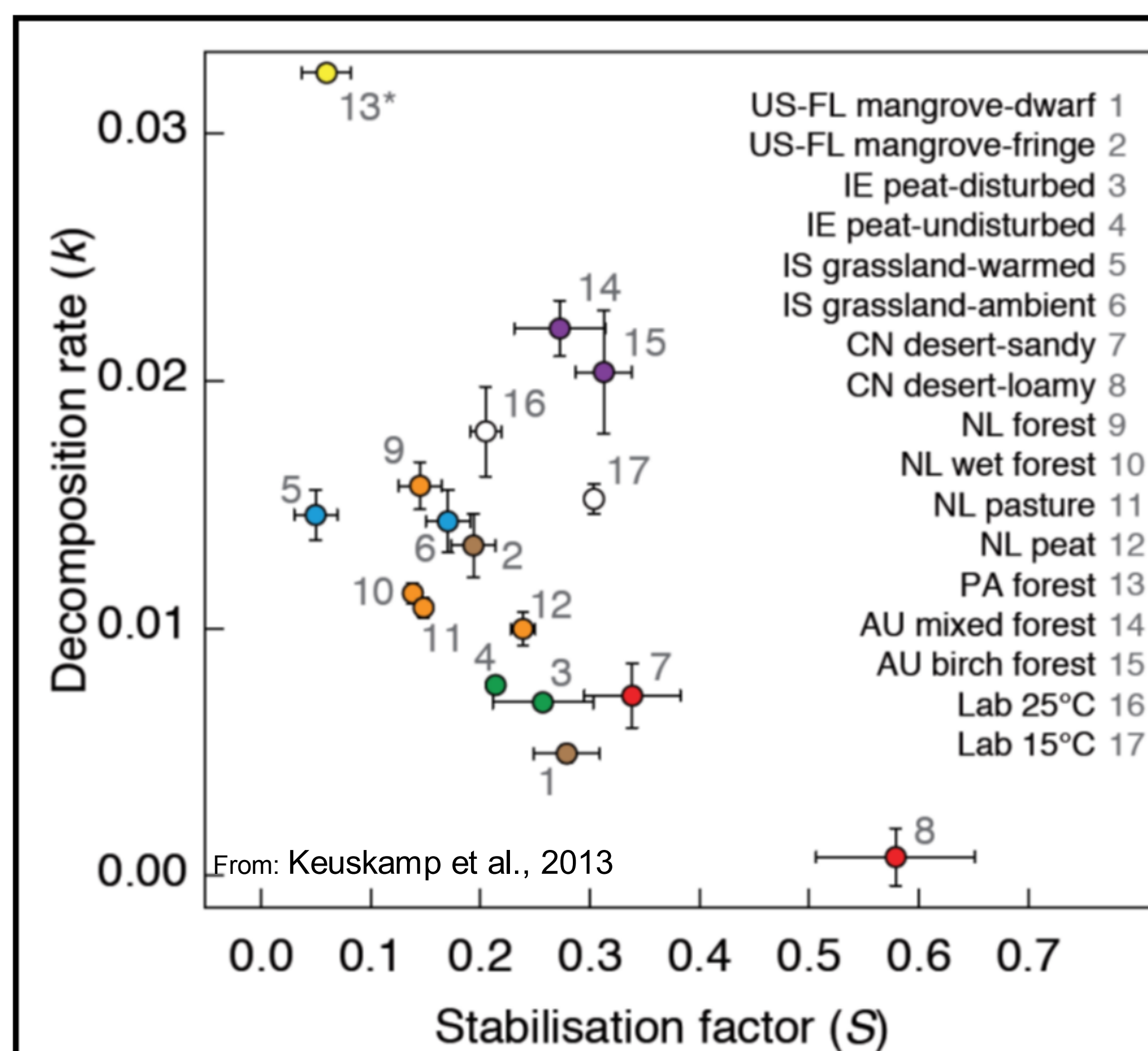
Tea bags can provide valuable data on the faith of carbon in the soil. How? Tea is also plant material with carbon stored in it. By burying tea bags in the soil, one can see how much of this carbon is released to the atmosphere and how much is stabilised by decomposing bacteria and fungi.



The Tea Bag Index (TBI) was designed to require few resources and minimal prior knowledge, while still fitting in the scientific framework. This makes it possible to collect globally distributed data in a combined effort of professional and citizen scientists.

To increase the reach of the method with the different focal groups, we use a mixture of scientific and non-scientific communication. After publication of the method in a high-impact journal, we focused on being present on social media, educational websites, and scientific conferences.

By distributing the method over a number of projects with each a specific focus but a similar goal, we hope to be able to maximise synergy while maintaining the specific needs of each group of participants. For scientists, data agreements facilitates the use of TBI as a standard for decomposition. Educational projects provide ideas for experiments to help teachers incorporate TBI in their lesson plans to illustrate biological principles. For citizen scientists, accessible information may help in becoming aware of soil processes, their significance, and the long term effects of the way we treat our soils.



TBI UK/Sarah Duddigan

The Tea Bag Index (TBI) consists of two parameters describing decomposition (k) and stabilisation (S). By measuring weight loss of green tea and rooibos tea that have been buried in the soil for three months, we can calculate these using a single measurement in time. With the help of citizen science networks and collaboration with research institutes, schools, and NGOs we are gathering these data with increasing spread and resolution. When sufficient data is collected, we will create a global map of carbon decomposition and stabilisation, which could be used to improve climate models, or help making management decisions in agriculture.

