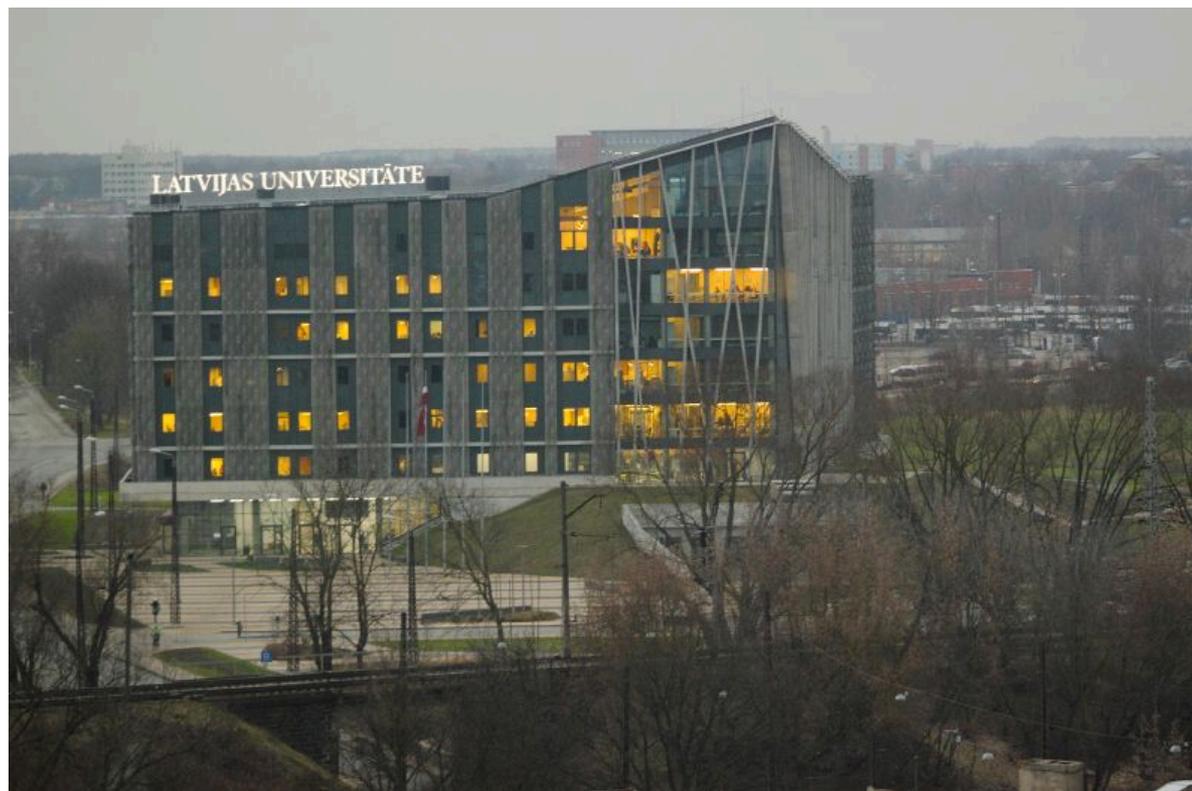


Peat research at the University of Latvia



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*17th Baltic Peat Producers Forum
Riga, September 2017*

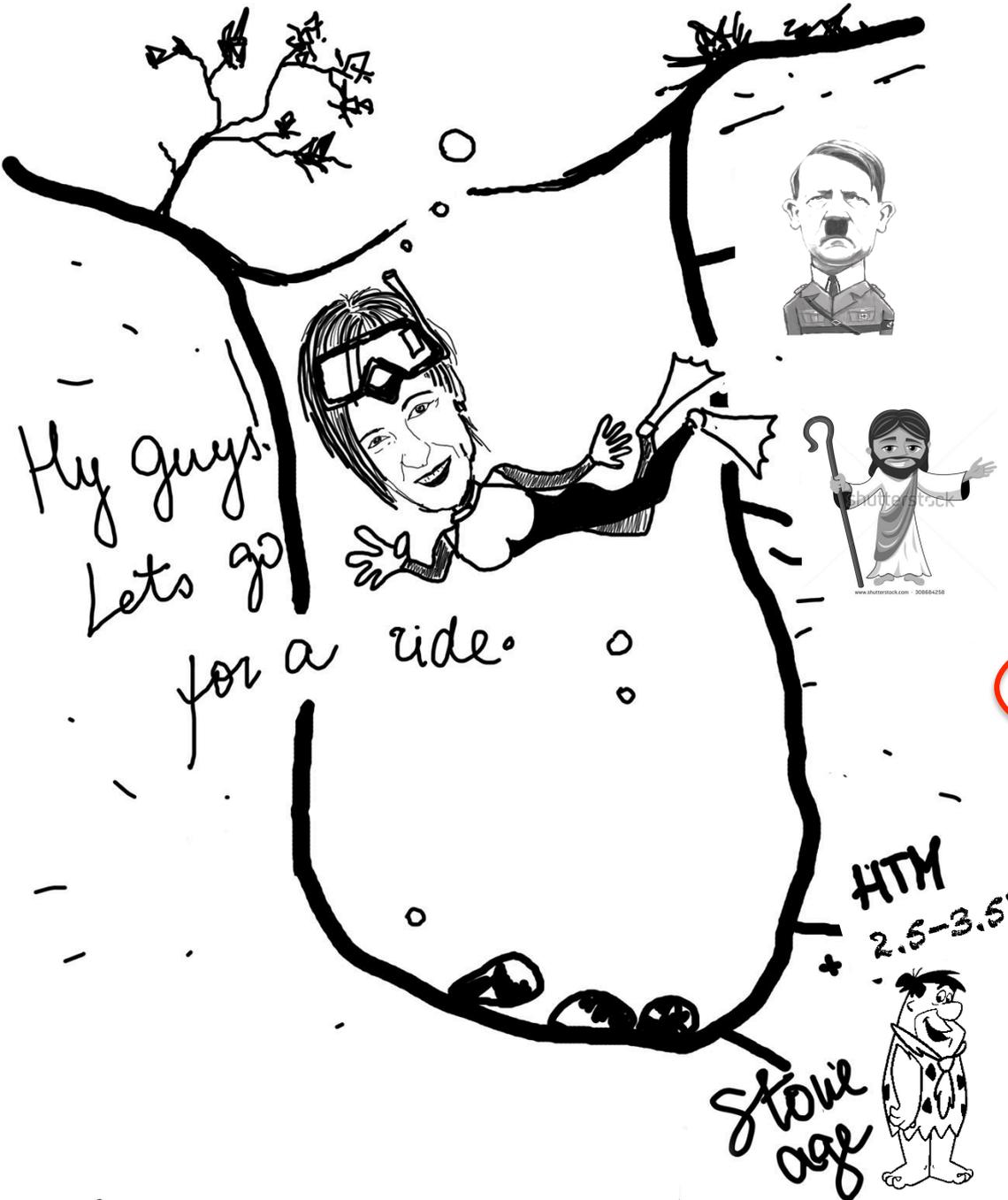
Recent major projects

- Variable fuel gasification for municipal solid waste recovery <http://srfgas.lu.lv/index.php/lv/22-2/>
- Genus *Vaccinium* berry (cranberry) processing using "green" technologies and innovative, pharmacologically characterized biopharmaceutical products <http://www.lu.lv/berriespro/>
- Integration of Best Management Practices (BMPs) of sustainable Phosphorus (P) usage for closing the P cycle in Baltic countries (InPhos)
- VillageWaters Project - Research about Wastewater Treatment Systems <https://villagewaters.eu/>

Other directions of research and activity

- Use of natural resources: bioeconomy (clay, peat, sapropel and others)
- Development of new, innovative materials (sorbents, insulation materials)
- Studies of natural environment,
- Climate change and local impacts
- Adaptation to climate change

And now...



Scientific story will be about:

a) World War II impact on GHG emissions

b) Secrets of bog pools

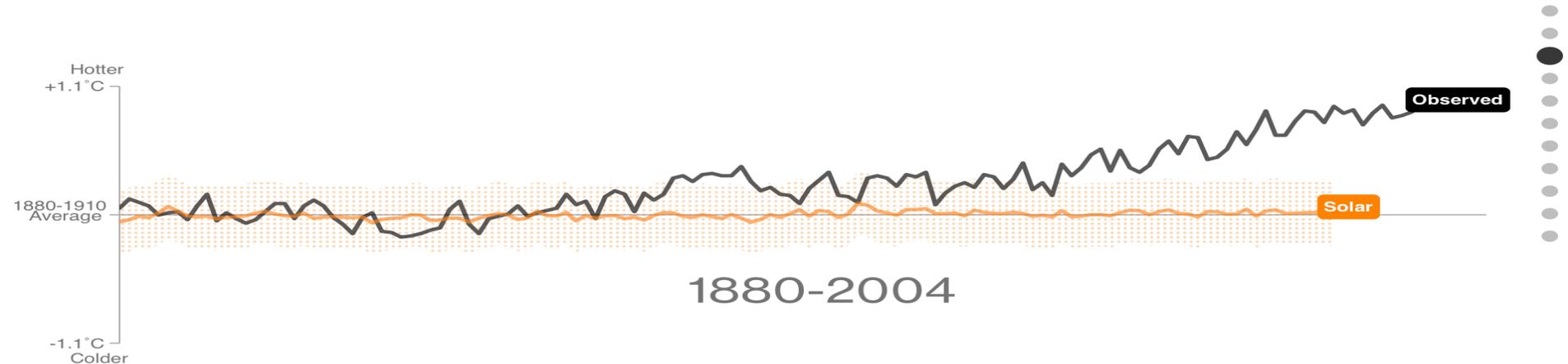
c) Holocene Thermal Maximum

Holocene Thermal Maximum

- Before 4000 – 8000 years
- the reconstructed summer temperature in Eastern Baltic was 2.5–3.5 degrees higher than the modern reconstructed value.
- Reason – increase in solar activity, no human impact
- Facts from [Heikkila and Seppa, 2010](#) and [Ozola, 2013](#)
- [Interesting NASA facts](#)

Is It the Sun?

The sun's temperature varies over decades and centuries. These changes have had little effect on the Earth's overall climate.



Oh my God,
I killed thousands



Scientific story will be about:

a) Susann's secrets

b) Testate amoebae

c) Those Susann's 1000 ideas
killed by IPS board



Testate amoebae

Tiny, single-celled organisms that live in a range of wetlands and soils, including in the bogs

A typical testate amoeba is about 1/20th of a millimetre long

In the bog 50 – 75 different species can be found.

Different testate amoebae prefer to live in different habitats on the bog surface, wetter or drier spots.

Living Testate amoebae can be found on bog surface, but shells they can be preserved for many thousands of years.



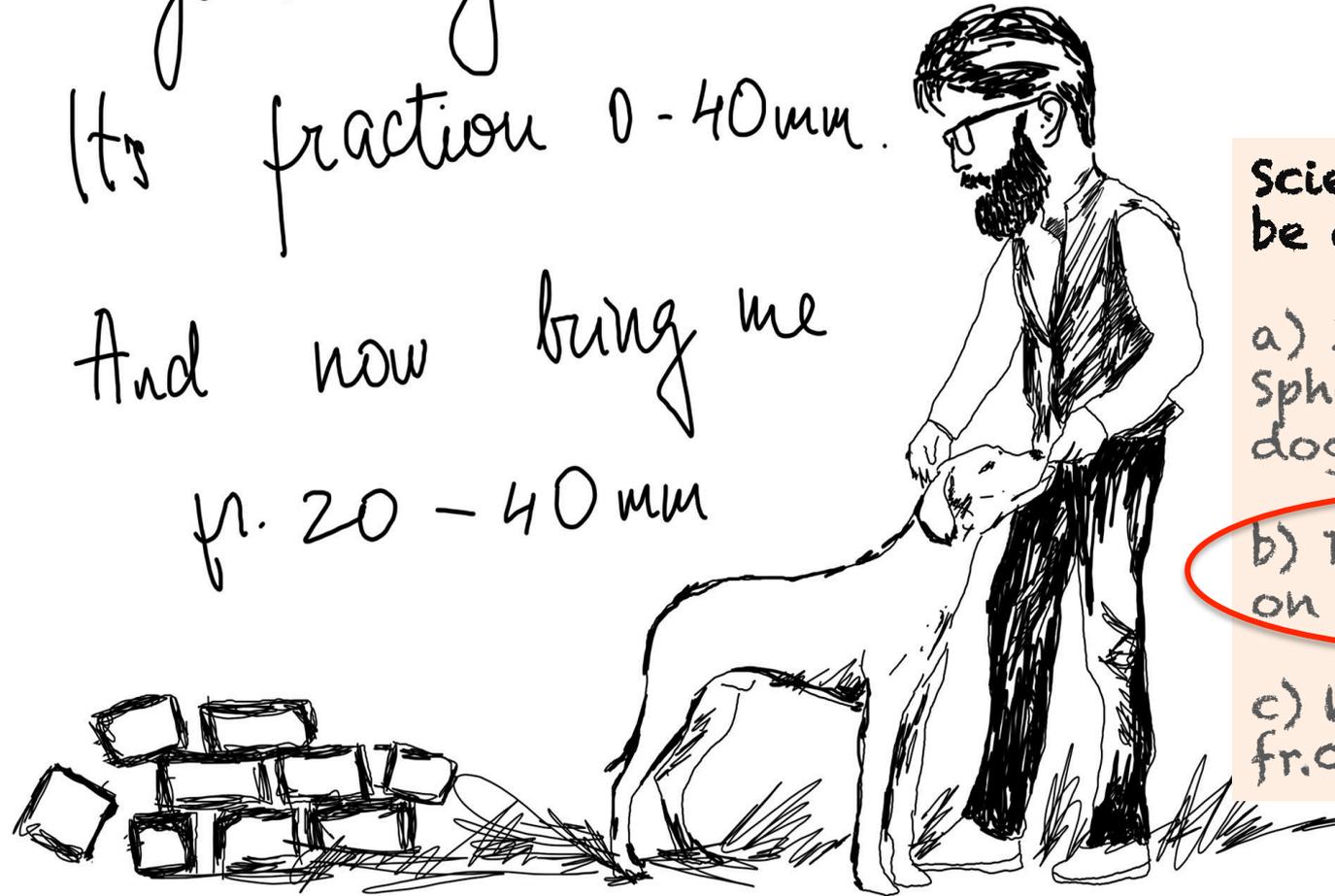
Testate amoebae from Teici study, indicate that the deepest water table level (15–16 cm below the surface) prevailed from 1996/1999 up to the present time.

Good boy Kenzo!

Its fraction 0-40mm.

And now bring me

fr. 20-40mm



Scientific story will be about:

a) Impact of Sphagnum peat on dogs health

b) Drainage impact on bog vegetation

c) Water uptake of fr. 0-40 mm

Drainage impact on bog vegetation

From the article: Drivers of peat accumulation rate in a raised bog: impact of drainage, climate, and local vegetation composition

Teici-1



Teici-2



Drainage impact on bog vegetation

- In **Teici-1** the natural phase was characterised by domination of *Sphagnum balticum*, *Sphagnum cuspidatum*, *Sphagnum majus* and *Sphagnum capillifolium*.
- After the strong drainage phase 1960–1999 *Sphagnum* species still dominated the vegetation although *Sphagnum cuspidatum* and *Sphagnum majus* disappeared indicating of decrease of open waters.

At the same time near



At the same time near

- *Sphagnum balticum*, *Sphagnum magellanicum* and *Sphagnum majus* were the dominant peat-forming species in the upper part of Teici-2 under conditions of both strong drainage and restored water level.
- The composition of the vegetation indicates the occurrence of dry periods even after rewetting. *Sphagnum balticum*, *Sphagnum capillifolium* and *Sphagnum magellanicum* are the main peat-forming species at present.

I cant
believe

It is so

BIG!



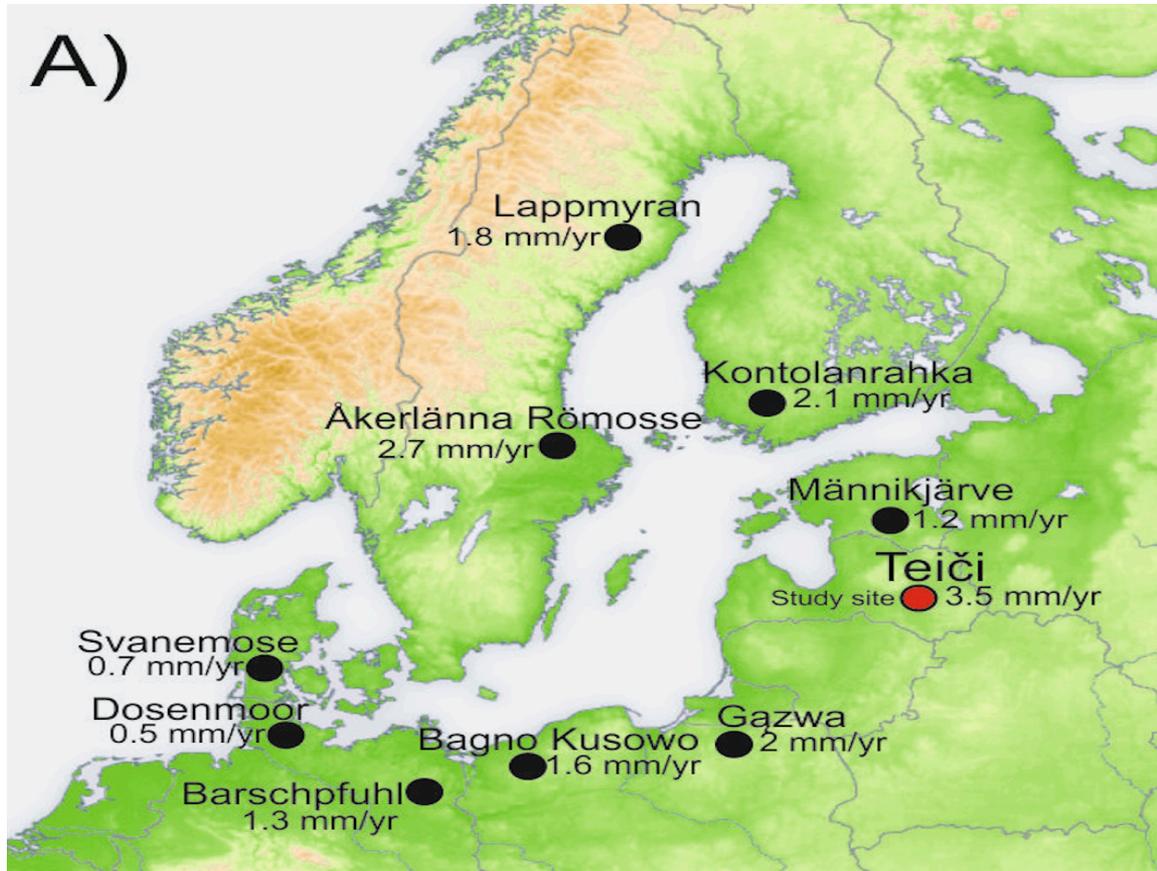
Scientific story will be about:

a) Number of BPPF 2017 participants

b) The length of Erki's foot

c) Peat accumulation rate

Peat accumulation rate



Average last 150 years –
3.5 mm/year

After the drainage – 2 mm/
year



What if we build a greenhouse over the bog?

Scientific story will be about:

- a) Ilzes "after two kids" special diet
- b) Carbon accumulation
- c) Pet role in scientific research



then pump out emitted CO_2 and then pump into sandstones?

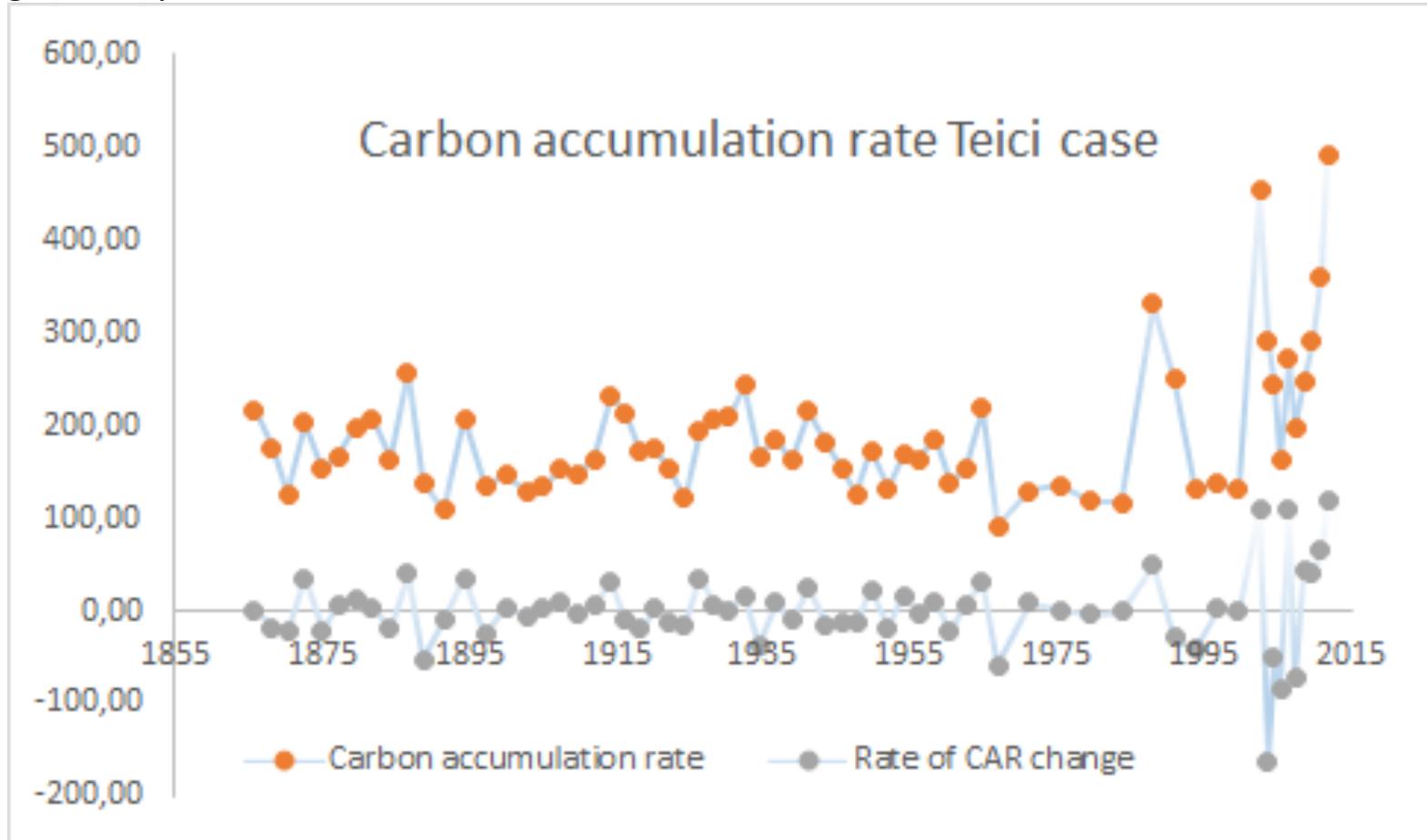
In average during last 150 years 200 g C/1m²/year accumulate

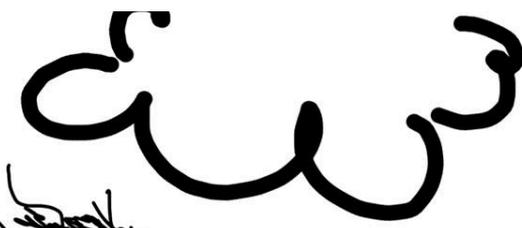
1 ha = 2.2 t C/ha/year

Teicu bog cover 19 587 ha = 43 091 t C/ha/year

For example protected peatlands cover approx. 128 000 ha

- g C/1m²/year





Remember -
the more rain
we have the
more peat is
growing ☺



It's gonna be a bright, bright Sun Shiny day