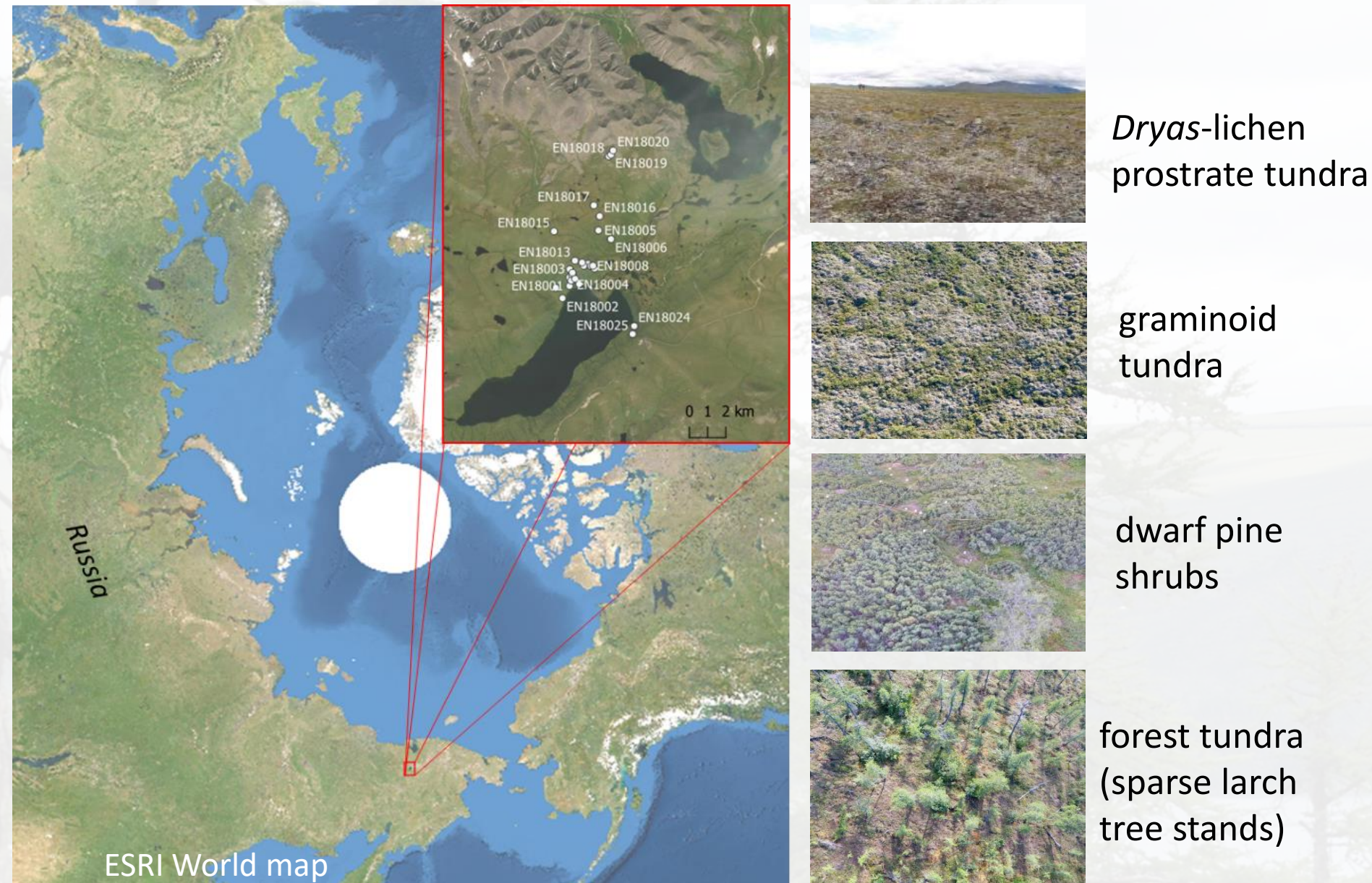


Tree above-ground biomass dynamics in the Northeast Siberian tundra-taiga from nowadays to 3000 CE

Study region – central Chukotka



Materials & methods

LAVESI

individual-based spatially explicit model, simulates larch stand dynamics

Bioclimatic parameters

tree AGB models from the field data

Climate data:

- temperature of July, January,
- annual precipitation)

DEM data:

- elevation,
- slope ,
- Topographical Wetness Index

$$AGB_n = \frac{703.62}{1 + e^{-\frac{H - 579.5}{208.69}}} \text{ (g)},$$

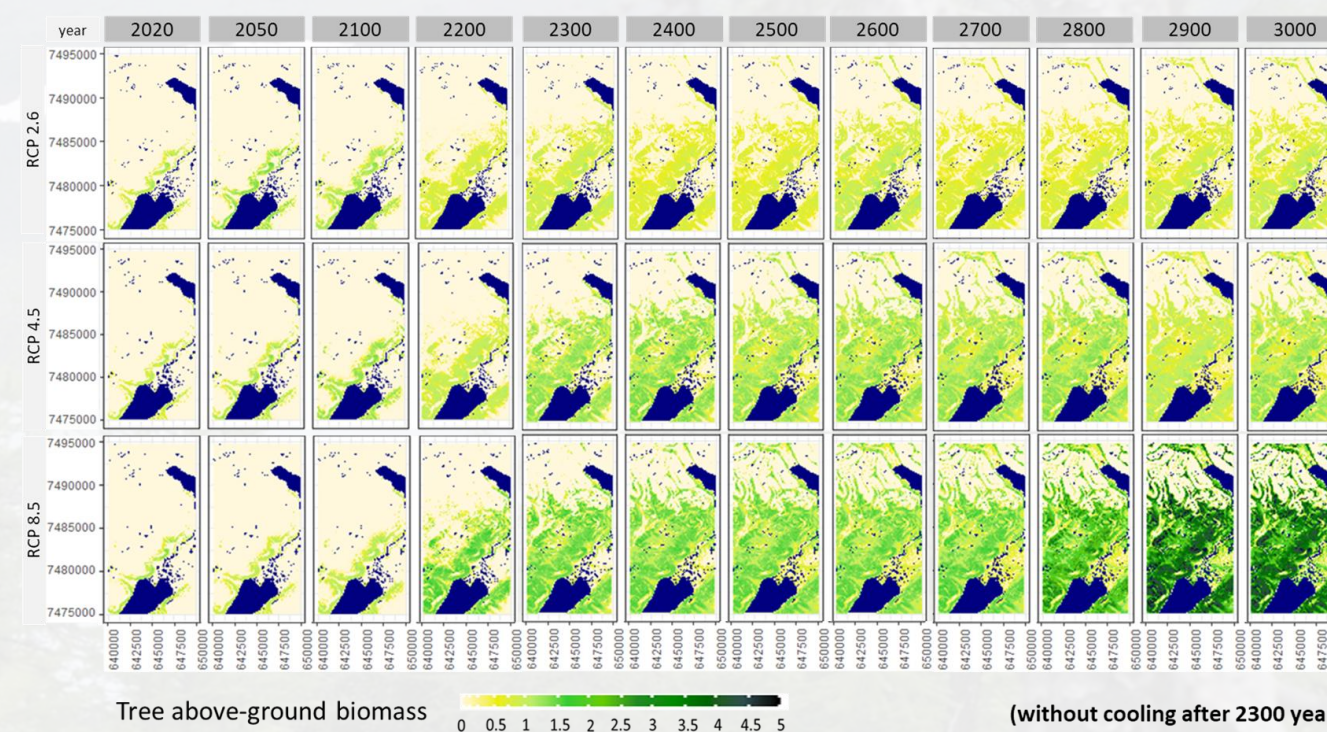
$$AGB_{wl} = \frac{78713.63}{1 + e^{-\frac{H - 793.64}{73.91}}} \text{ (g)}.$$



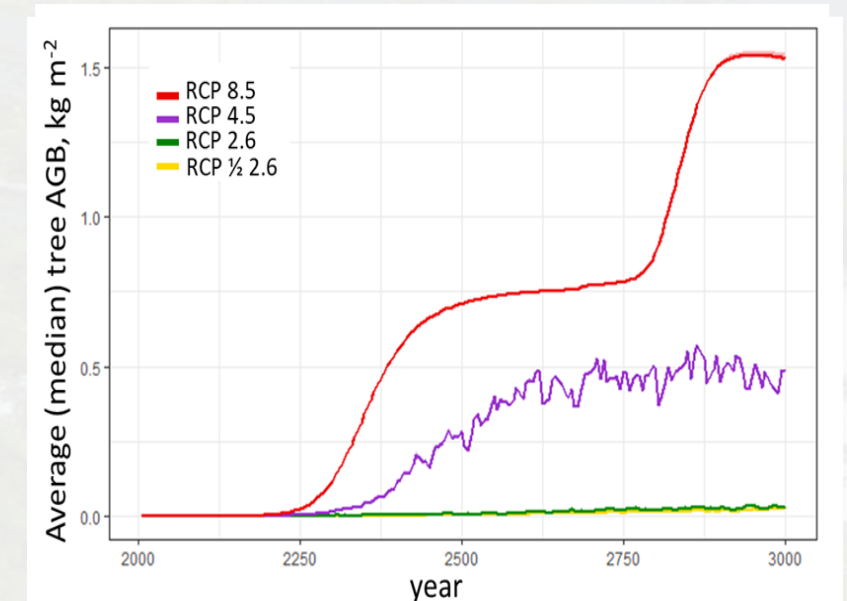
Results

- currently **forested** areas : **0.0005-0.0015 kg m⁻² yr⁻¹** (0.5-1.5 kg m⁻² per 980 years)
- newly colonised** areas : **0.0005** (RCP 2.6, RCP 4.5) and **0.0010-0.0015 kg m⁻² yr⁻¹** (RCP 8.5) larch AGB
- forest advance upslope and northward
- after cooling in 2300 CE – significant forest retreat

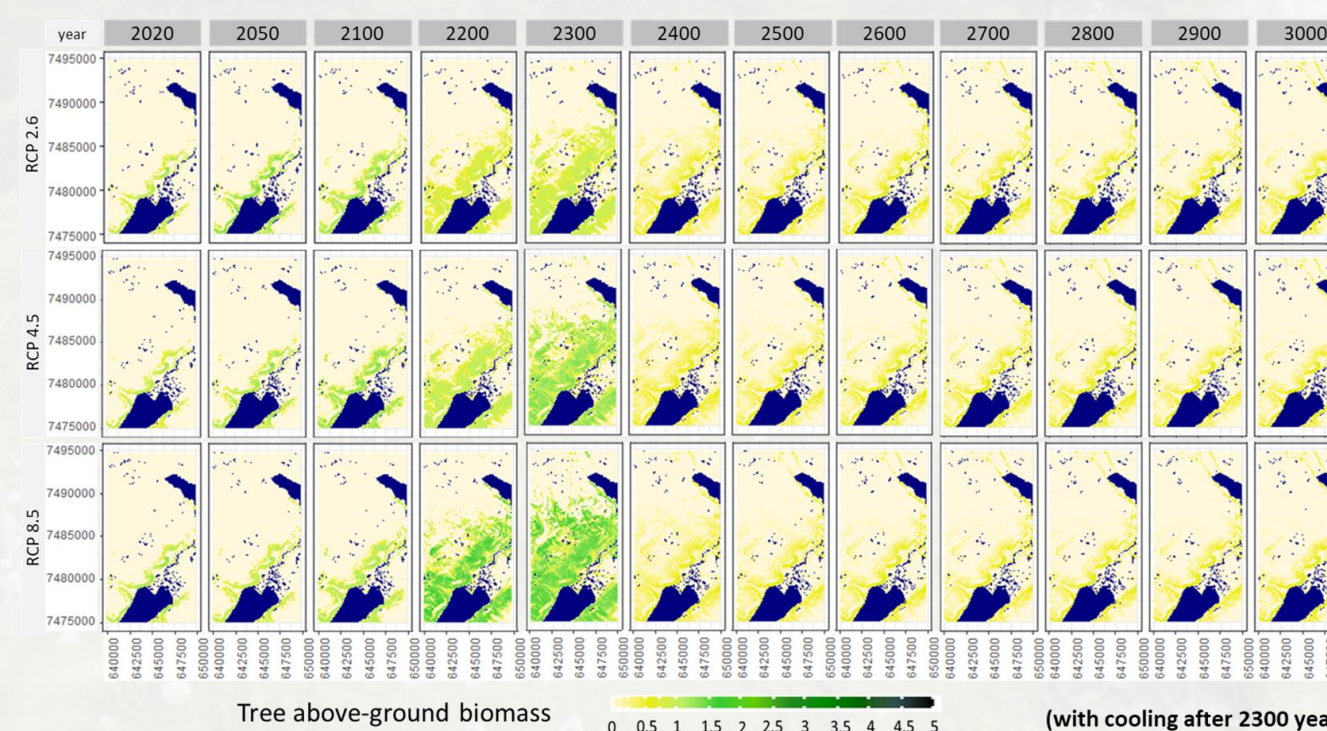
Treeline advance northwards and upslope



Tree above-ground biomass dynamics from 2000 to 3000 CE with no cooling after 2300 CE



Treeline retreat after cooling in 2300 CE



Tree above-ground biomass dynamics from 2000 to 3000 CE with cooling after 2300 CE

