

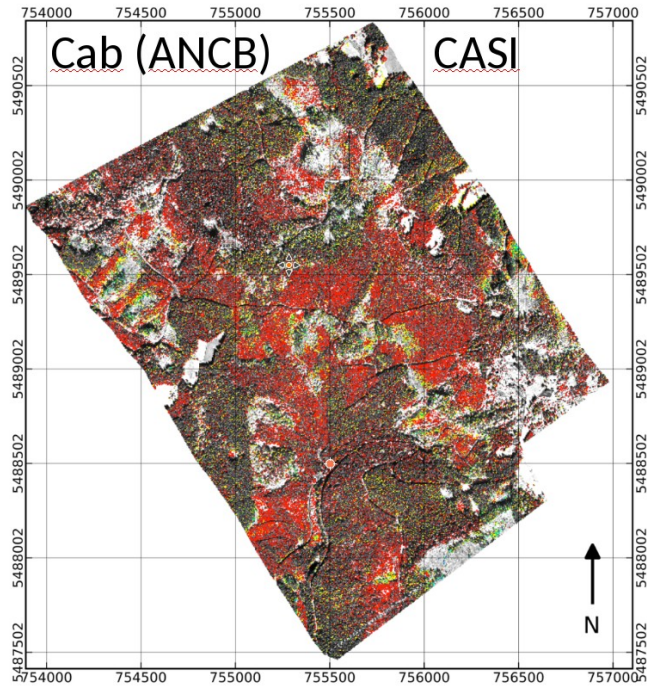
# **Vegetation cover change and carbon storage on mining dumps estimated from airborne hyperspectral and LiDAR data**

**Pikl M., Zemek F.**  
**Global Change Research Institute CAS – Czechglobe**  
**[pikl.m@czechglobe.cz](mailto:pikl.m@czechglobe.cz)**

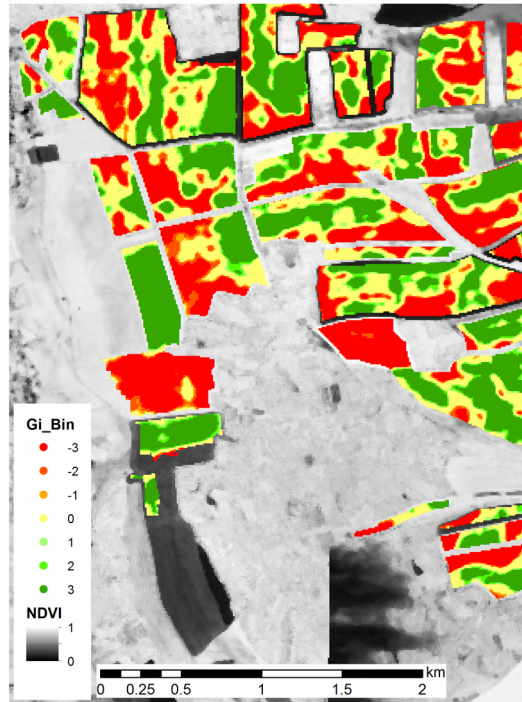


# Czechglobe RS dep.

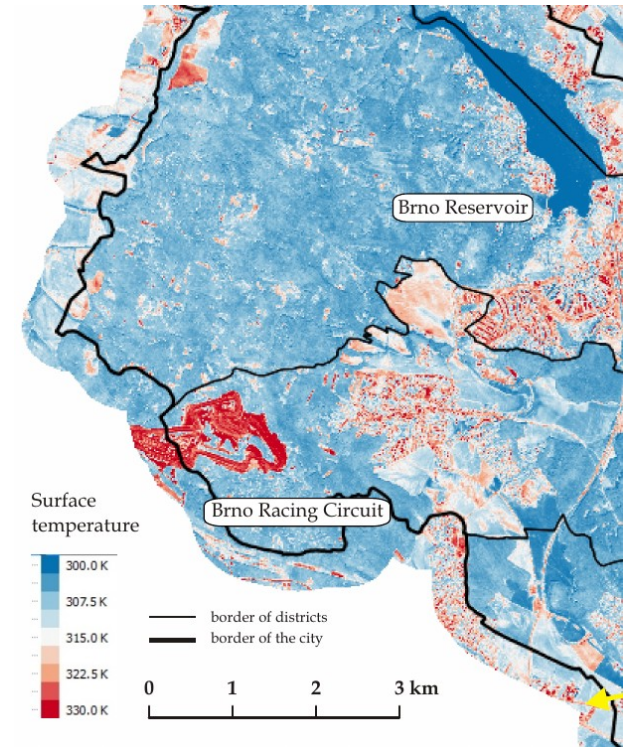
## Forest



## Agriculture



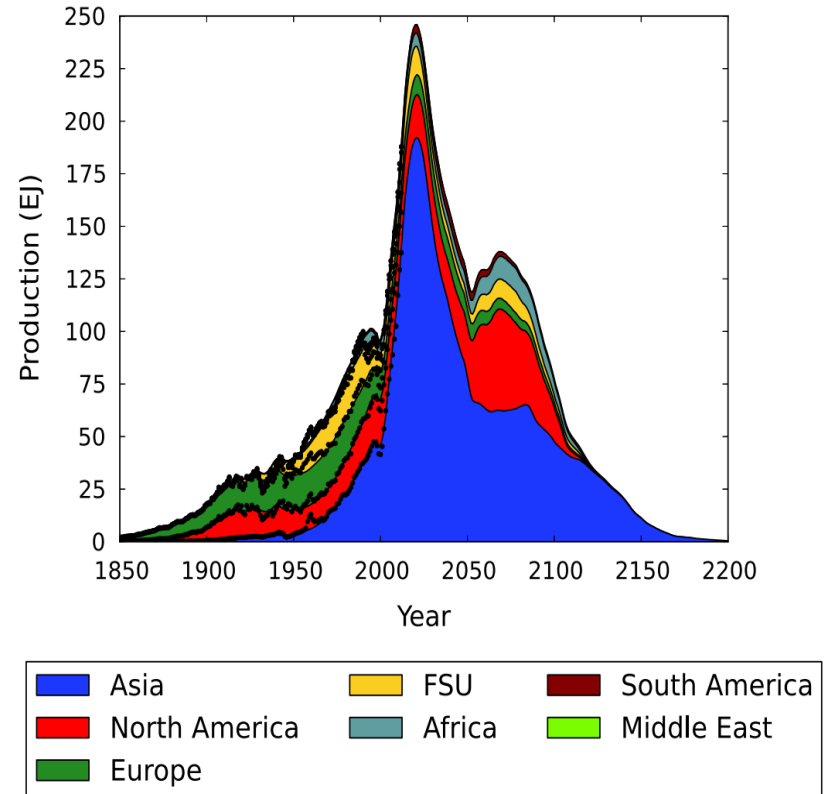
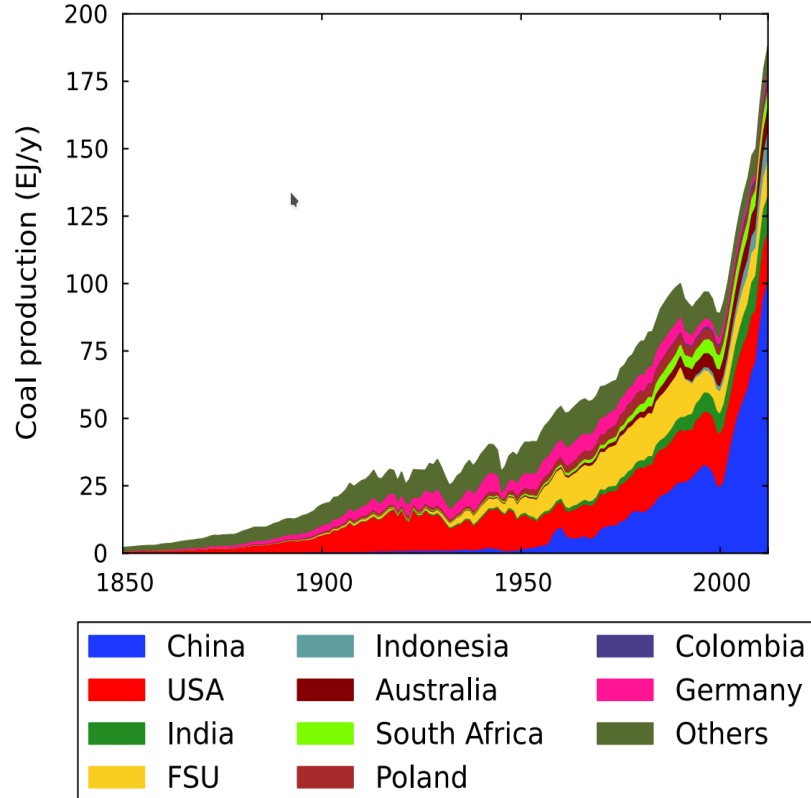
## Urban



# Topic – carbon storage

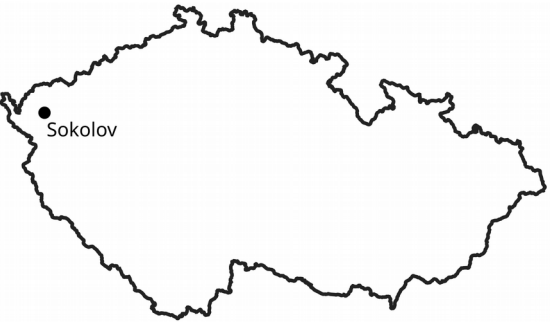
- Land cover change – woody biomass
- Aboveground biomass
- Soil organic carbon

# Coal production



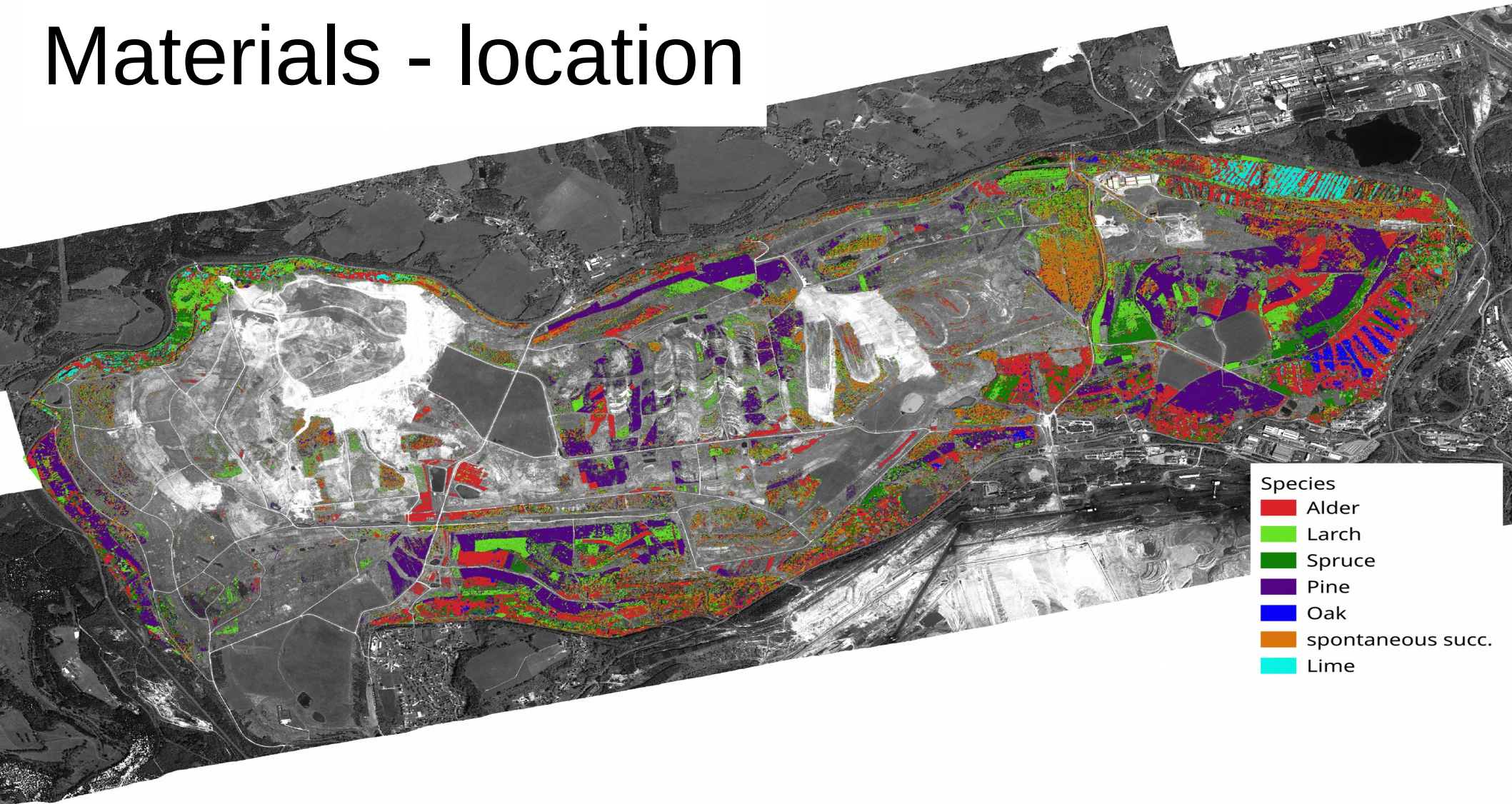


# Materials - location





# Materials - location

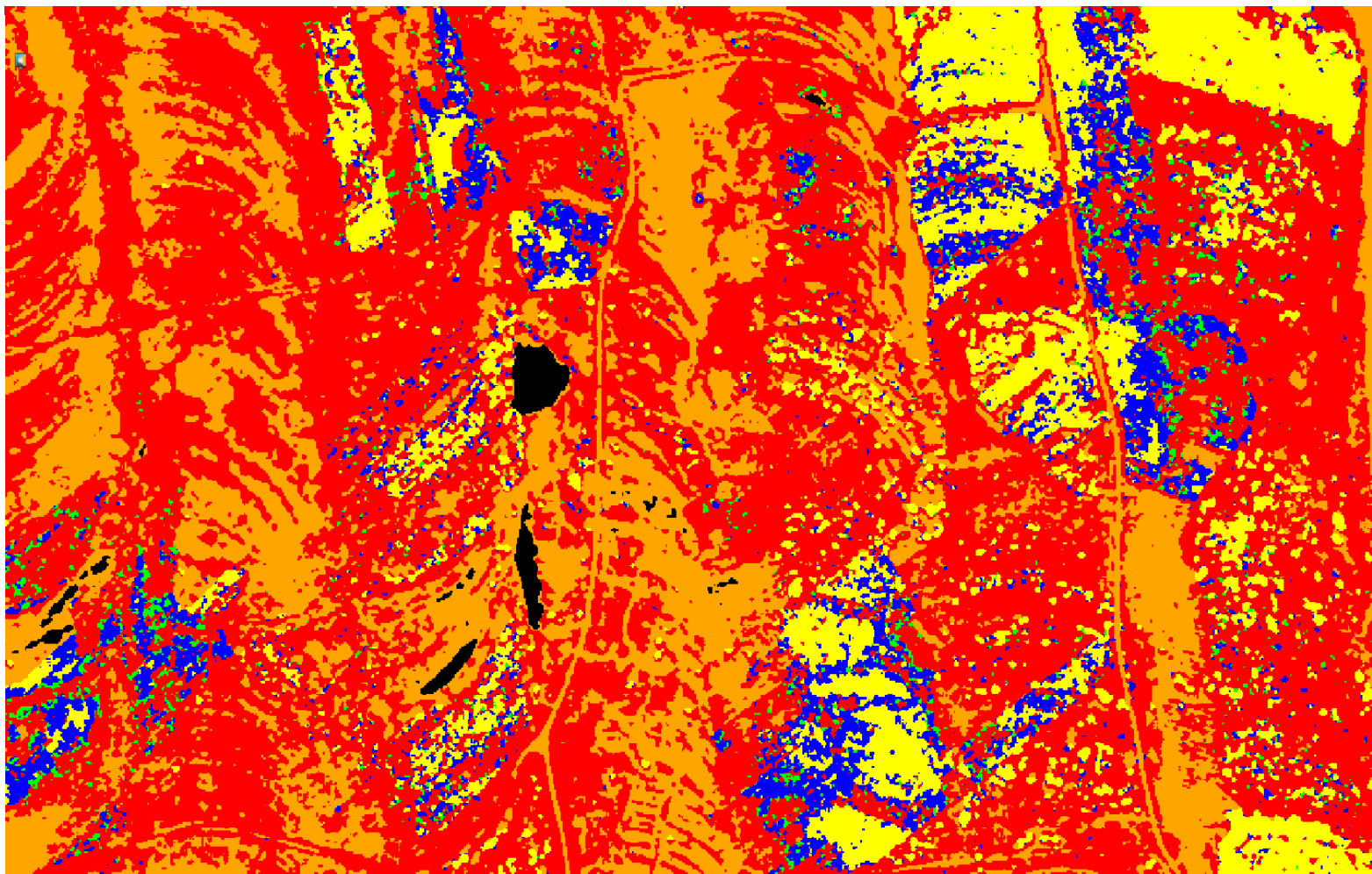
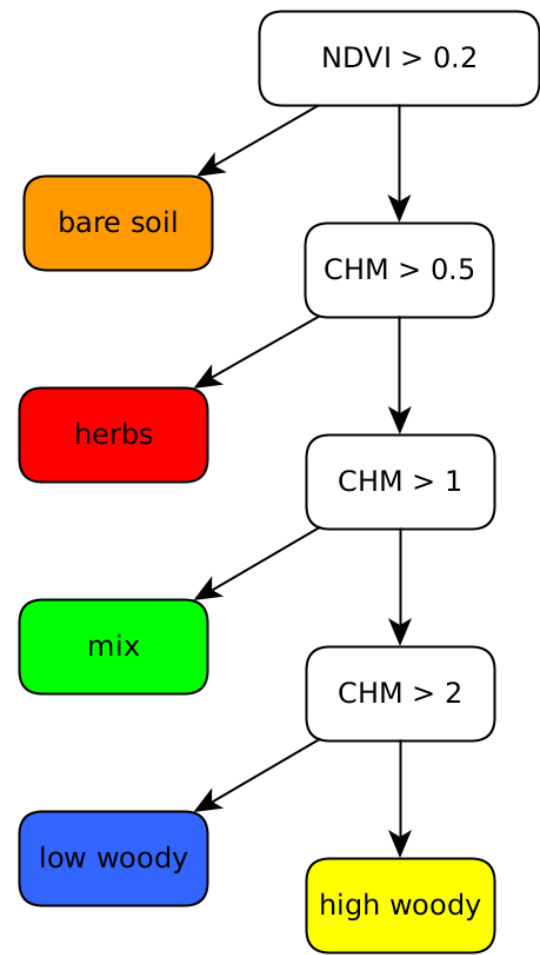


# Materials - data

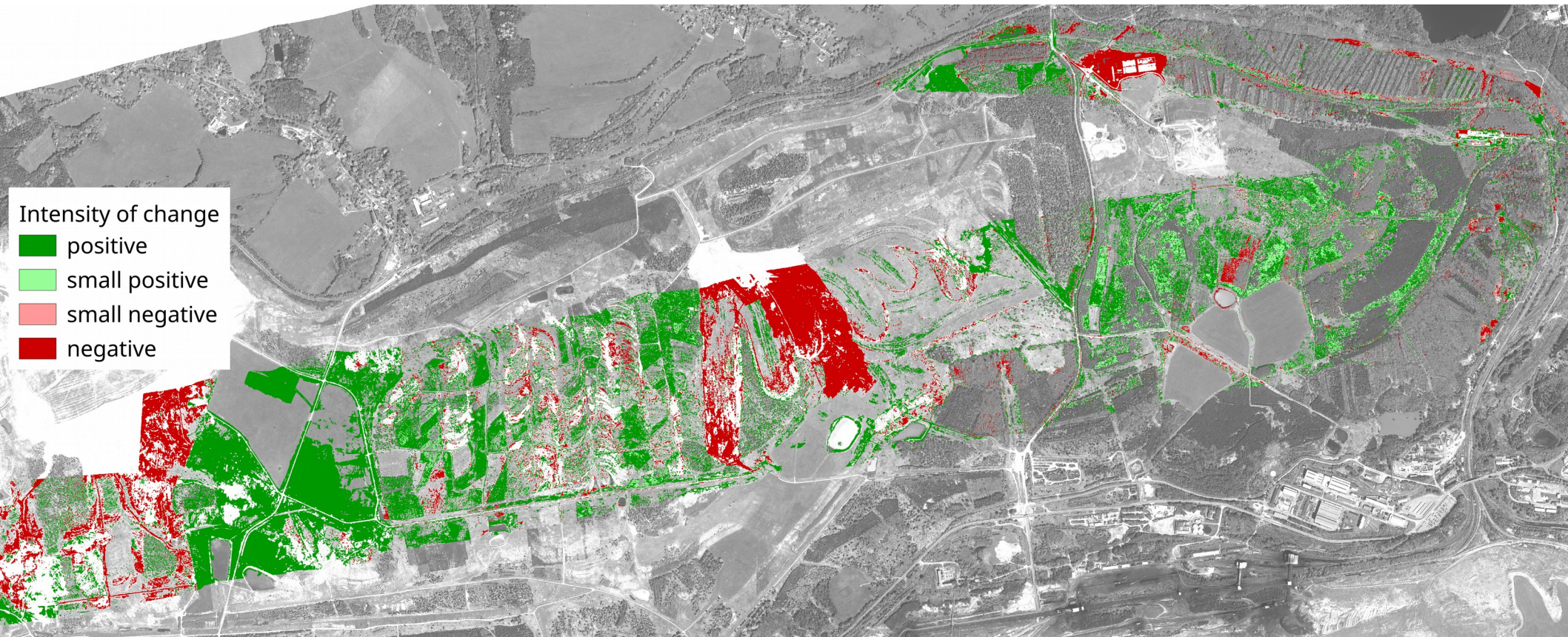
	<b>AISA Eagle (2009)</b>	<b>CASI 1500 (2017)</b>
Spatial resolution (m)	0.4	0.5
Spectral range (nm)	400 – 990	375 – 1047
Spectral resolution (nm)	9	14
	<b>Leica ALS50-II (2010)</b>	<b>Riegl LMS-Q780i (2017)</b>
Flight altitude (m)	1000	1000
Footprint diameter (m)	0.25	0.25
Max. No of returns per pulse	3	7
Point density – bare soil (pt m <sup>-2</sup> )	1	15.6
Point density – forest (pt m <sup>-2</sup> )	2.9	32.1



# Land cover change

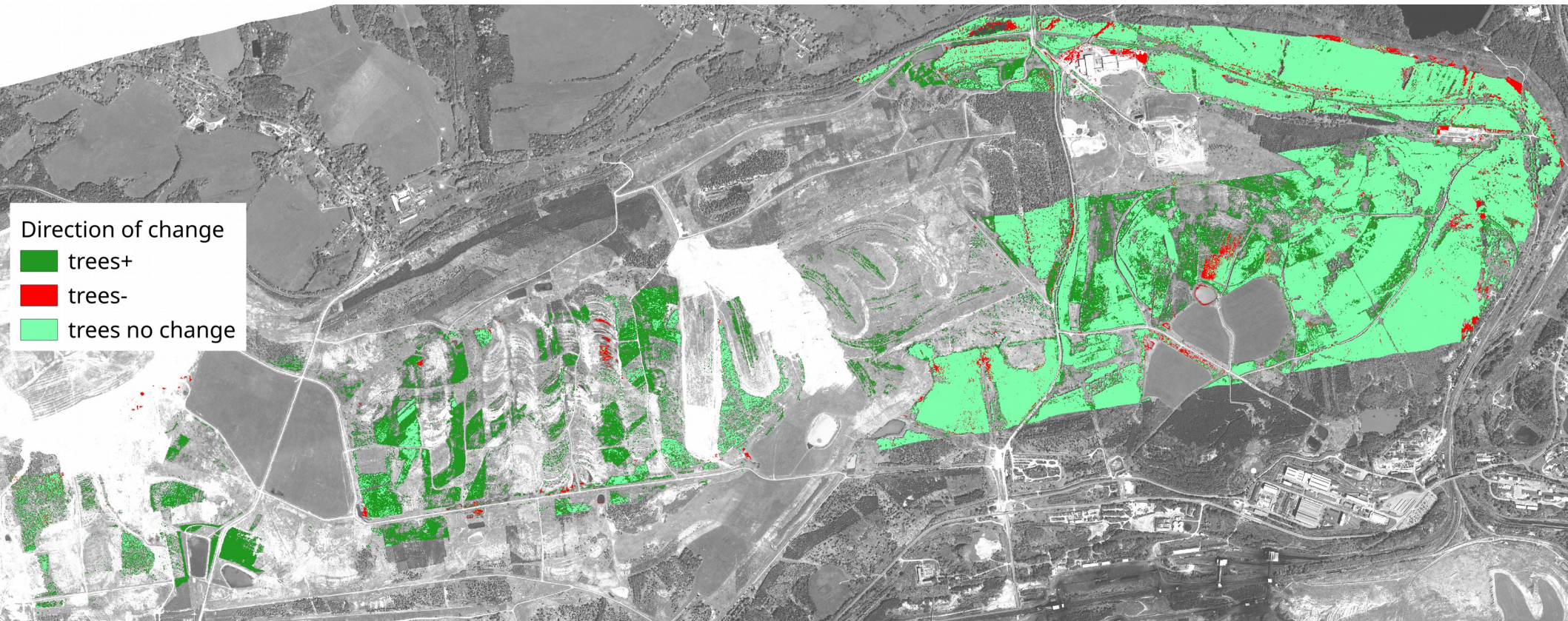


# Land cover change - intensity



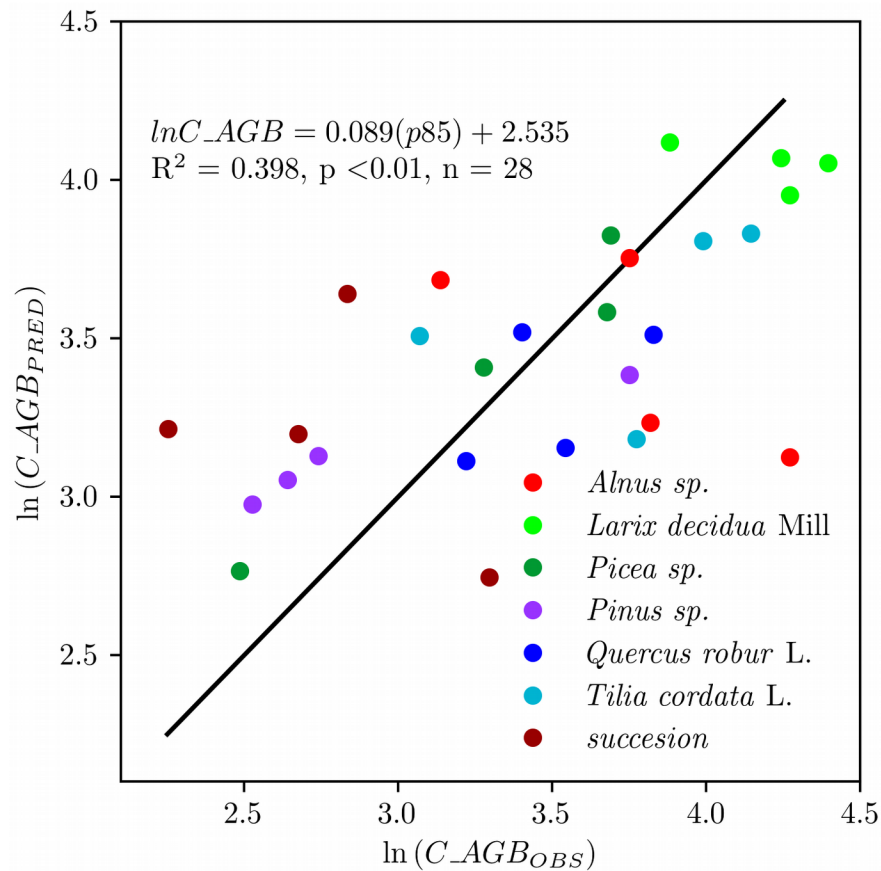
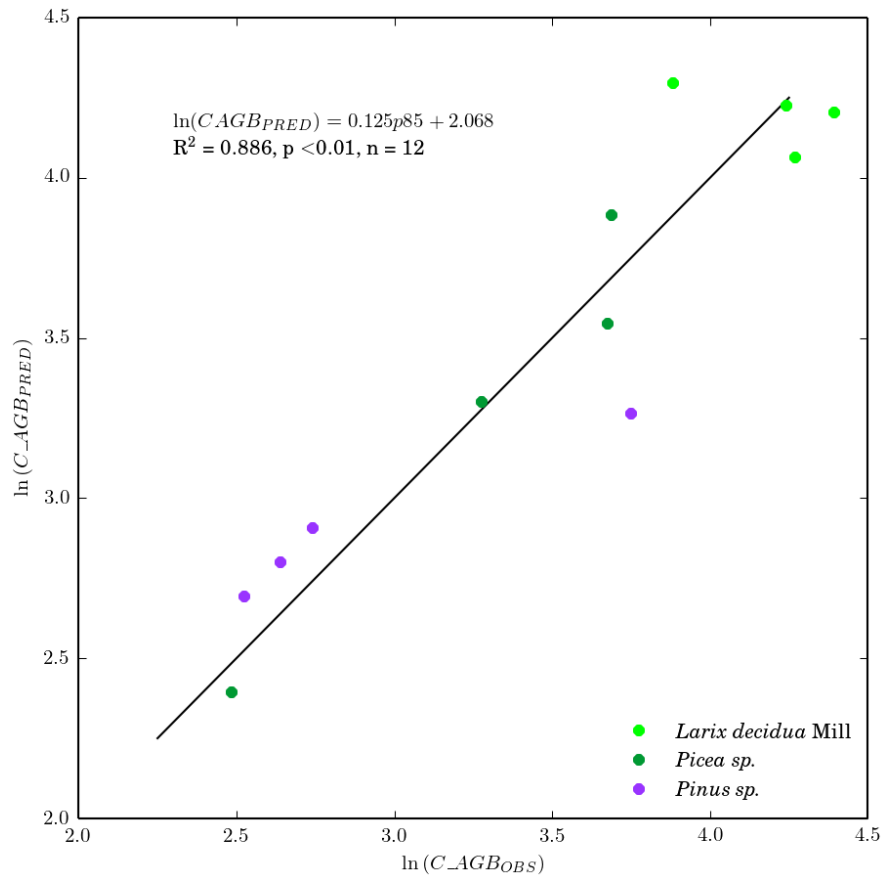


# Land cover change - woody biomass

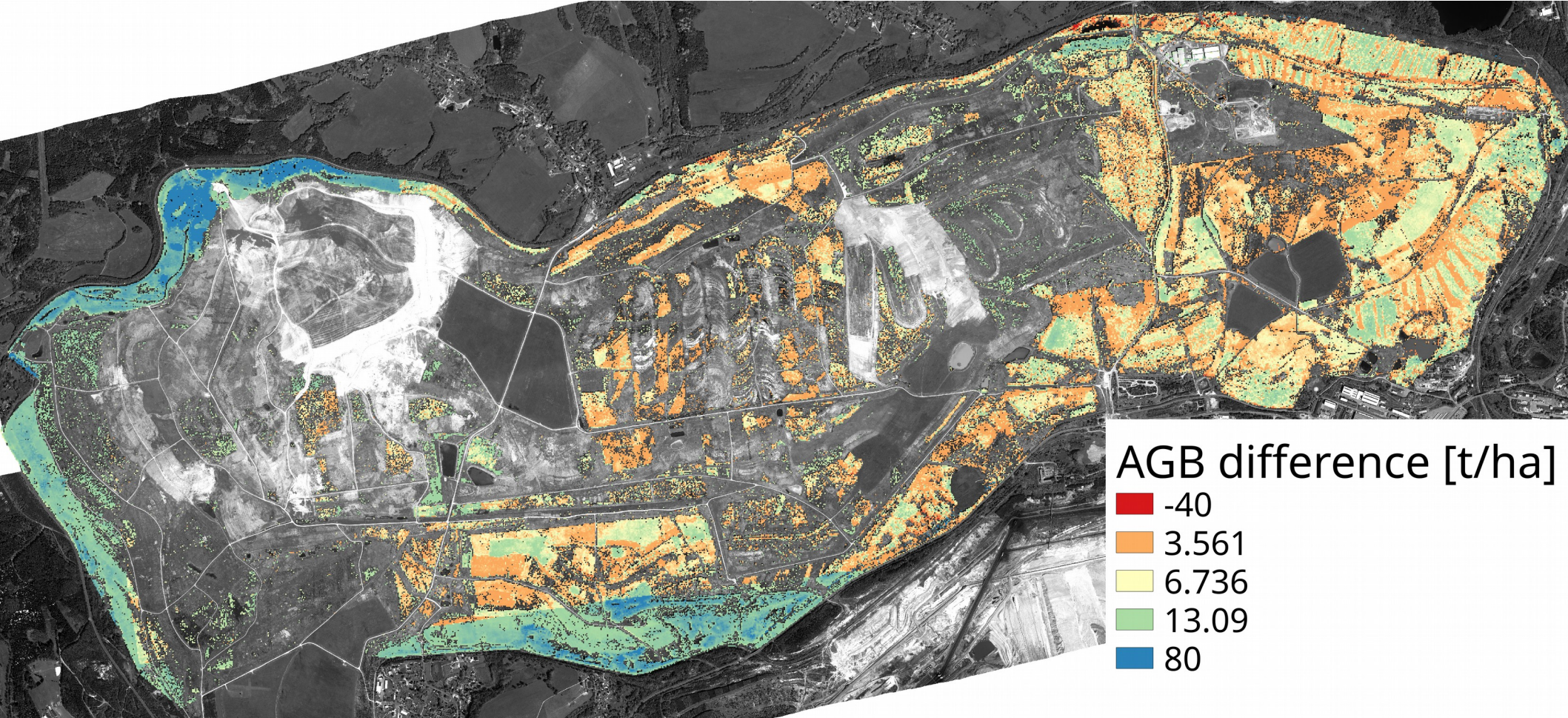




# Aboveground biomass

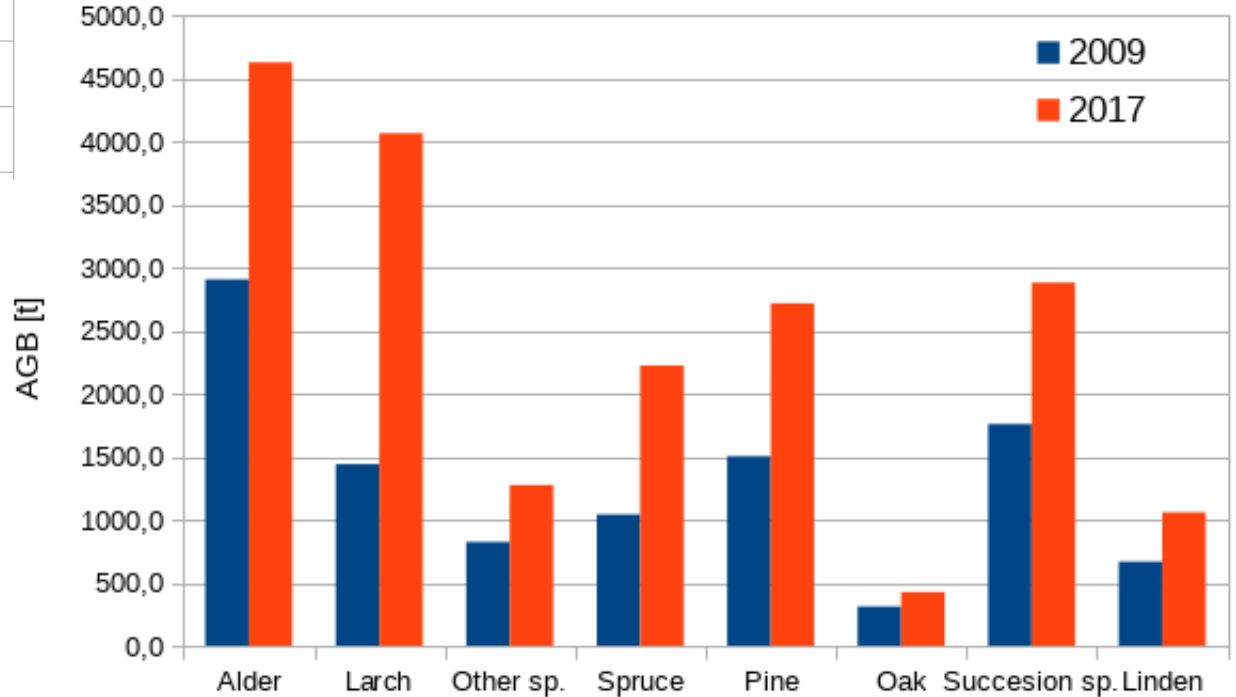
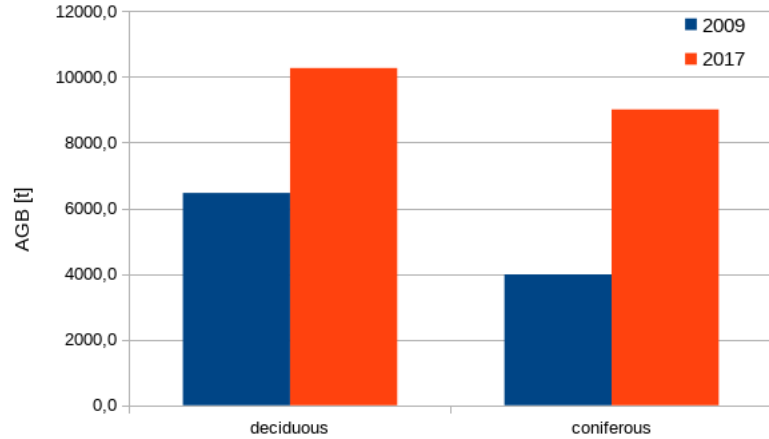


# Aboveground biomass - difference





# Aboveground biomass [t]

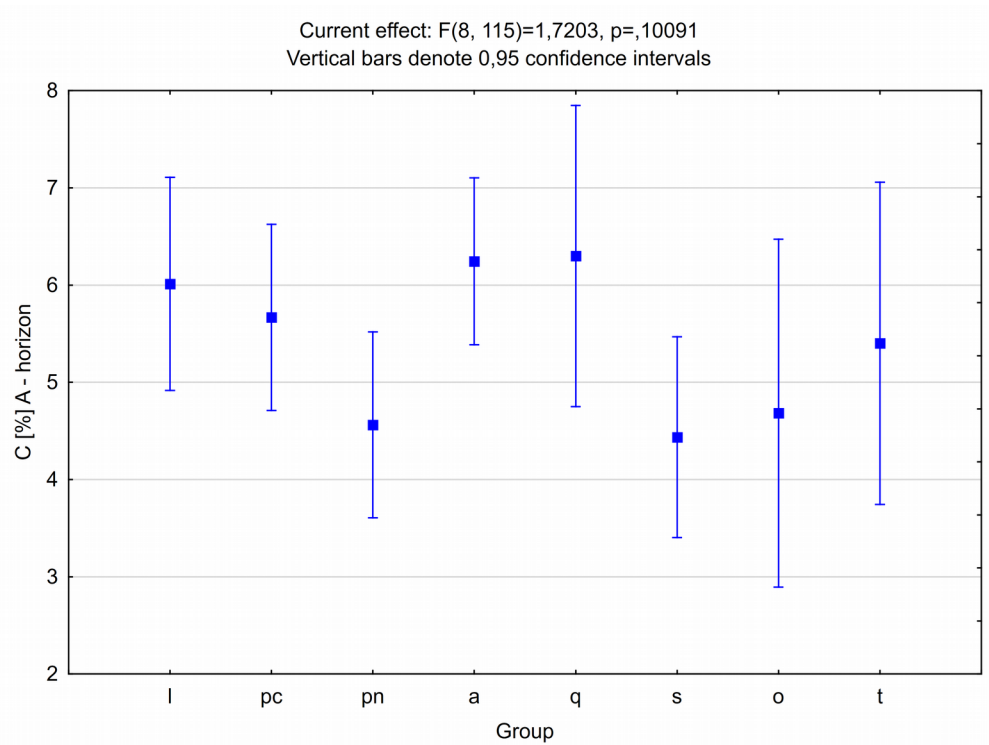
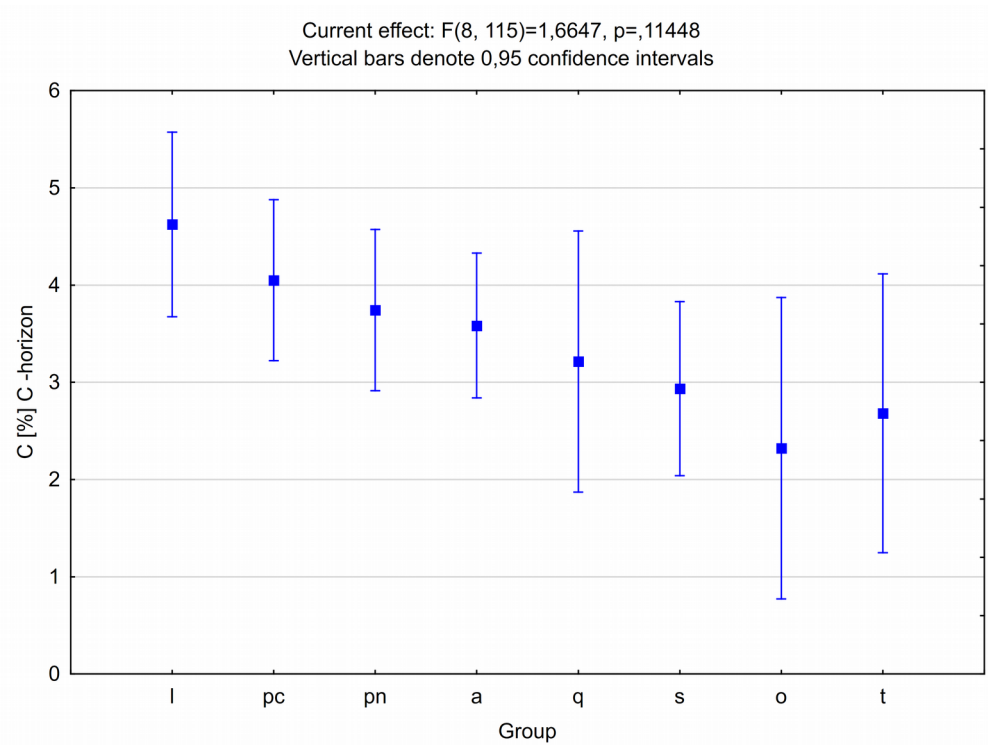




# Soil organic carbon - sampling

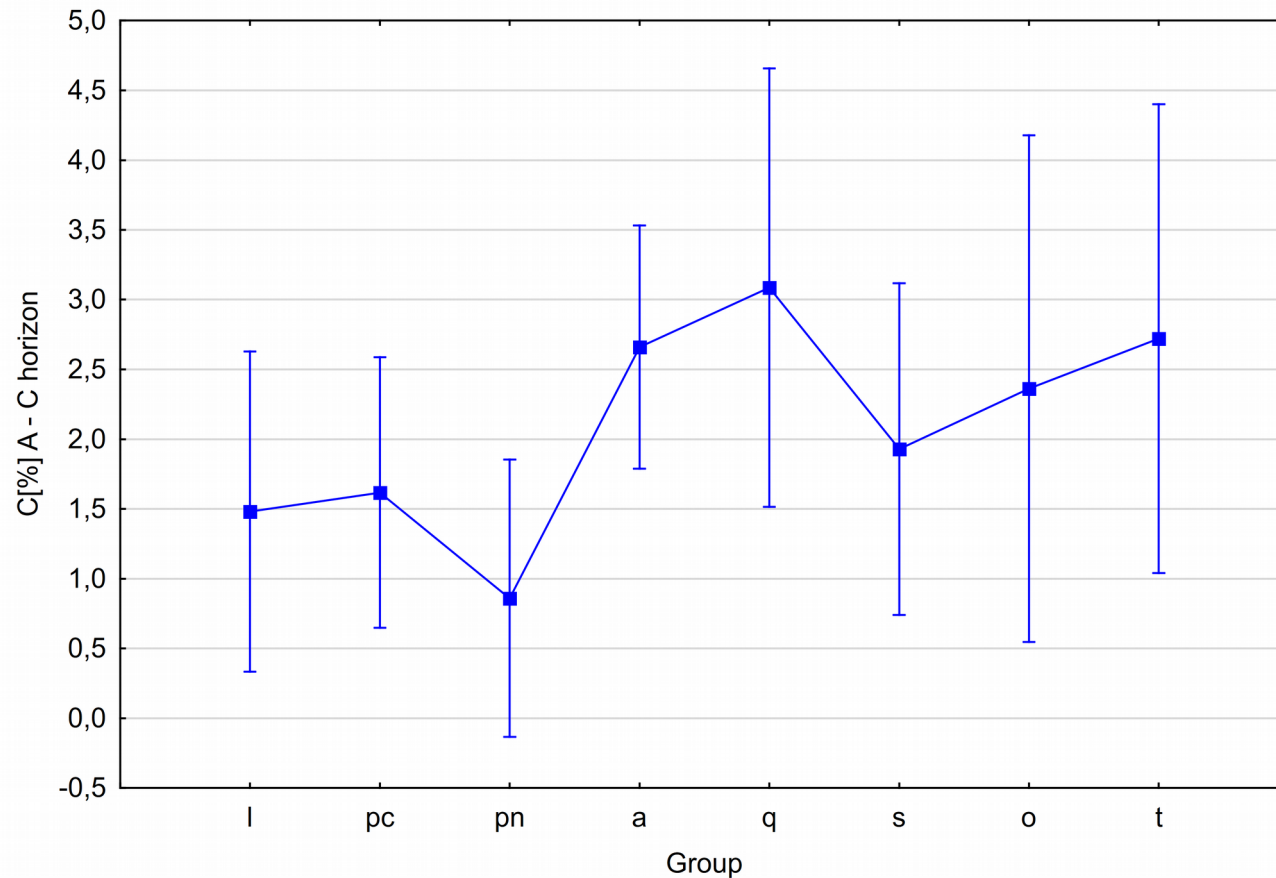


# Soil organic carbon



# Soil organic carbon

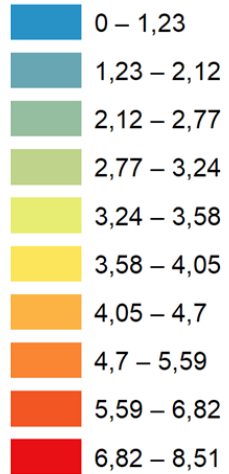
Current effect:  $F(7, 115)=1,6473$ ,  $p=,12978$   
Vertical bars denote 0,95 confidence intervals



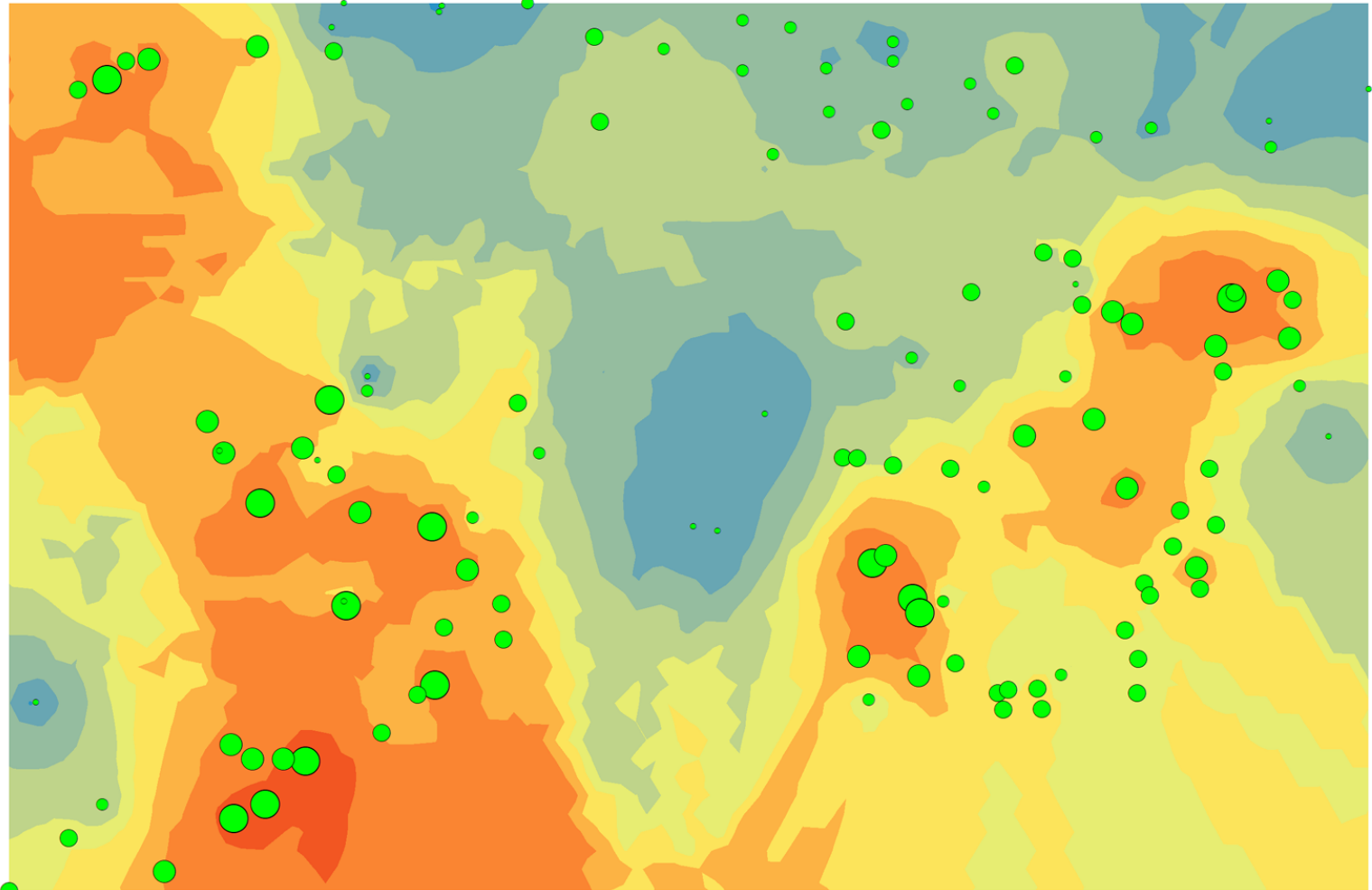
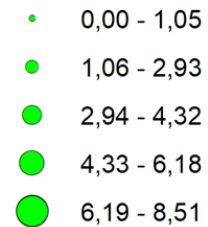


# Soil organic carbon – C horizon

**Carbon [%]  
C horizon**

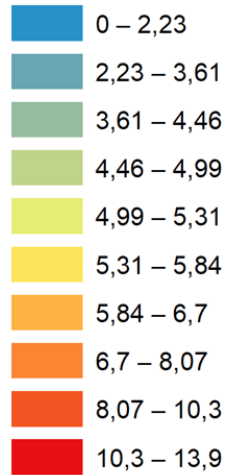


**Samples**

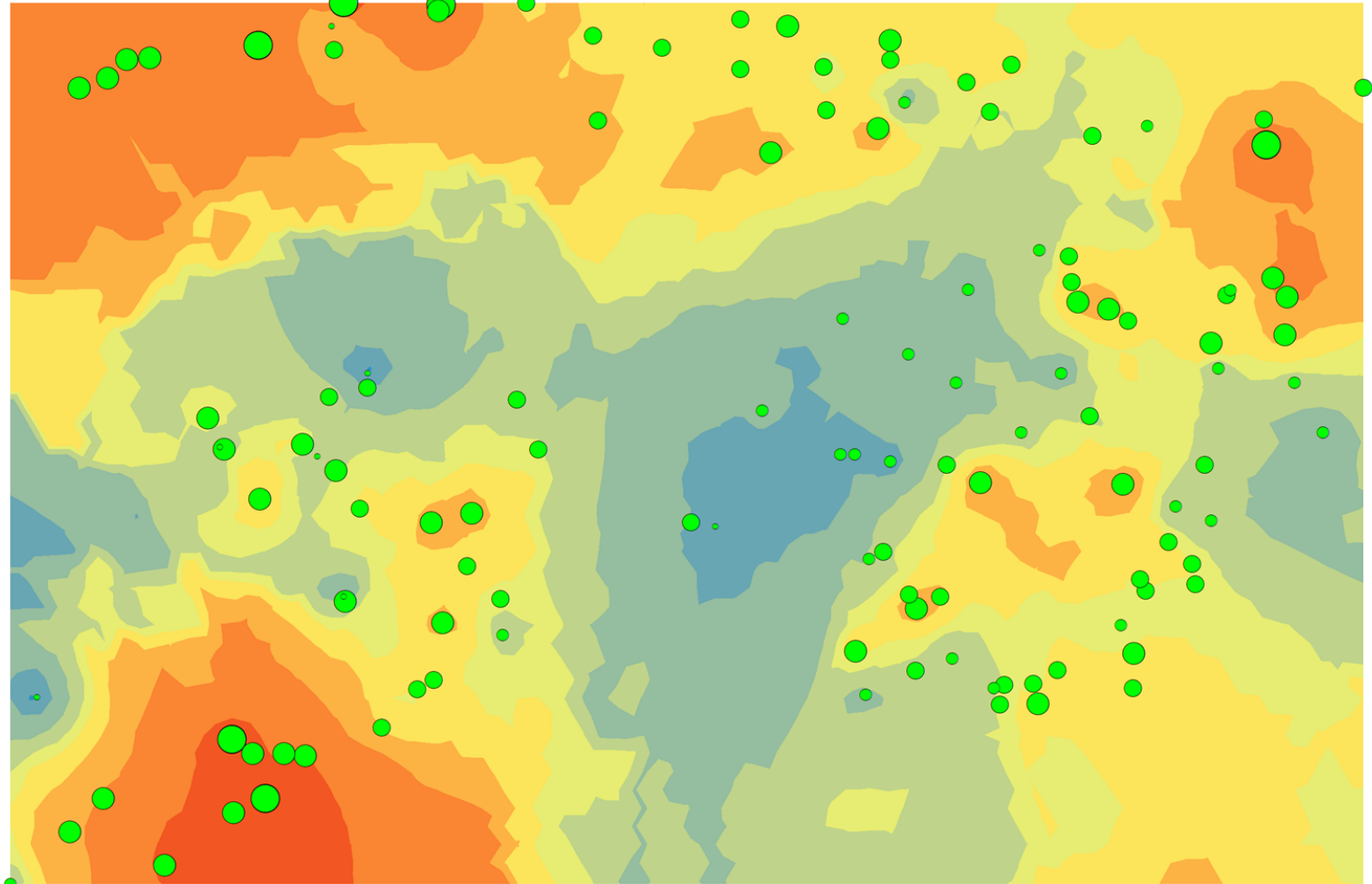
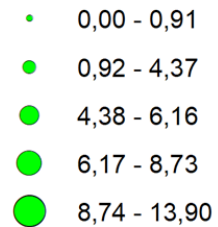


# Soil organic carbon – A horizon

Carbon [%]  
A horizon



Samples



# Conclusions

- LC change - more than one category
- Weaker AGB relationship of deciduous sp.
- Higher AGB increase of coniferous species
- Larch – highest increase of AGB
- Low (not significant) differences in increase of soil carbon content



Thank you for attention

Miroslav Píkl, [pikl.m@czechglobe.cz](mailto:pikl.m@czechglobe.cz)