

Global Change Research Centre Academy of Sciences, Czech Republic

CARBON FORESTRY

A possible tool of global change mitigation? New type of the forest ecosystem service?

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SPECIFIC FEATURES OF FOREST TREES

Dominant role of the tree significantly differs the forest ecosystem in comparison to other ecosystems type on the planet Earth. It is determined by the two important aspects:

- woody plant represents a significant spatial element
- woody plant is very often the long-term living organism

The forest ecosystems study must reflected the multi-layer view: ✓ **temporal view-** processes in the forest ecosystems are significantly temporally determined (within-cell physiological processes, seasonal growth dynamic, forest stand develop-ment)

✓ **spatial view** – the forest is significant spatial structure with the apparent communication to its external environment (aero- dynamic resistance).

SPECIFIC FEATURES OF FOREST TREES

LONGEVITY of trees IS RESPONSIBLE for

the specific role of forest ecosystems – the function of the *long-term integrator* of the local environmental conditions

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BY THE ASSIMILATORY

ACTIVITY OF PRIMARY

PRODUCENTS

Ústav výzkumu globální změny AV ČR, v.v.i.

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Ústav výzkumu globální změny AV ČR, v.v.i.

These proceses are VERY MASSIVE, thus it is possible to idntify it as the PHOTOSYNTHETIC CO₂ PUMP!!!!





TREES, SHRUBS, ALGAE AND CYANOBACTEIA COULD BE REGARDED AS

A HUDGE AND PERMANENT BIOLOGICAL PUMPS (megatons of carbon) OF ATMOSPHERIC CO₂, WHICH IS STORED IN BIOMASS AND SOIL



Forest Carbon gains and losses







Ústav výzkumu globální změny AV ČR, v.v.i.

NEP (kg C ha⁻¹) jednotlivých typů ekosystémů v České republice





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Carbon Stocks : Terrestrial Vegetation



Carbon Stocks : Soil Organic Matter

Total : 1580 Gt C



Annual amount of respiratory released carbon in different ecosystems types



Annual amount of captured carbon in different ecosystems types







ULTIMATIVE CONDITONS OF CARBON FORESTRY MANAGEMENT

To MINIMISE carbon losses

To MAXIMISE carbon gain