

SCERIN-7 Meeting, Novi Sad, June 24-27, 2019

Country: Czech Republic

Institution: Charles University in Prague

Representing Researcher/s: **Jana Albrechtova, Lucie Kupkova, Petya Campbell**

Current Research Objectives:

Remote sensing

- use of EO and spectral leaf properties for evaluation of plant /tree physiological status

- study of vegetation phenology

Project/Program Title	Activity type (paper, talk, project etc.)	Timeframe (past, current, future)	Role (lead, instructor, collaborator)	Sponsor(s) (name, country)
NASA Project „Prototyping MuSLI Canopy Chlorophyll Content for Assessment of Vegetation Function and Productivity” 17-LCLUC17-0013	project	2018-2021	PI: Petya Campbell, Co-I: J. Albrechtova, Members: L. Kupkova, et al CzechGlobe	NASA
GA CR project (17-05743S) <i>New spectral insight into biogeochemistry of small forested watersheds</i>	project	2017-2019	PI: L. Homolová Czech Globe Co-Is: -Z. Lhotakova, CU - V. Kopačková, -Czech Geological Survey	Ministry of Education, Youth and Sports, Czech Rep.

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NPUI LO1417 <i>O4: Plant interactions with their biotic and abiotic environment. From micro scale to macro scale</i>	project	2016-2019	WP Leader: Jana Albrechtova, Members: L. Kupkova, et al.	Ministry of Education, Youth and Sports, Czech Rep.
Ministry of Education, Youth and Sports of the Czech Republic: Programme INTER-EXCELLENCE Ecosystem function based on EO of vegetation quantitative parameters tundra grasses, floodplain forest tree species, beech and spruce forests	Project University of Maryland Baltimore County - Dr. Petya Campbell University of Virginia - Prof. Howard E. Epstein	2019-2022	PI: J. Albrechtova Co-PI P. Lukes Czech Globe Co-Is: -Z. Lhotakova, L. Kupkova, M. Potuckova, L. Cervena CU	Ministry of Education, Youth and Sports, Czech Rep.

1. GEOMON GACR 17-05743S – Norway spruce (2017)

New spectral insight into biogeochemistry of small forested watersheds

Project of the Grant Agency of the CR 17-05743S (2017-2019)

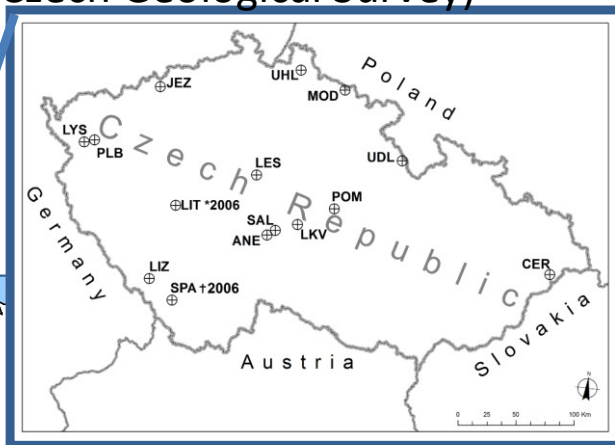
Co-PI: Dr. Lhotáková (Charles University)

PI: Dr. Dr. Homolová (Global Change Research Institute CAS)

Co-PI: Dr. Kopačková (Czech Geological Survey)

Název	Area (ha)	Nadmořská výška	Podloží	Půdy	Porost (věk)
ANE	26	522	Paragneiss	Cambisols, Stagnic Cambisols, Stagnosols	41-60
CER	191	808	Sandstone, Claystone, Slope deposits	Entic Podzols, Distric Cambisols	41-60
JEZ	256	760	Orthogneiss	Cambisols, Skeletic Cambisols	61-80
LES	476	773	Granite, Greywacke Slope deposits	Cambisols, Stagnic Cambisols	41-60
LIT	773			Cambisols, Cambisols	61-80
LIZ	90	943	Paragneiss	Cambisols, Dystric Cambisols	61-100
LKV	70	599	Granite	Cambisols	41-80
LYS	26	880	Granite	Albic Podzol, Entic Podzols, Humic Gleysols	41-60
MOD	281	1285	Phyllite, Mica schist	Albic Podzol, Entic Podzols, Dystric Cambisols	101-120
PLB	27	755	Serpentinite	Magnesian Cambisols, Stagnic-Magnesian Cambisols, Magnesian Gleysols	61-100
POM	62	613	Paragneiss, Orthogneiss, Slope deposits	Cambisols, Gleysols	61-80
SAL	203	641	Paragneiss	Cambisols, Stagnic Cambisols	61-80
SPA	61	824	Granulite	Entic Podzols, Humic Gleysols	61-80
UDL	36	917	Gneiss	Entic Podzols	21-40
UHL	178	817	Granite, Granodiorite	Entic Podzols, Distric Cambisols	21-40

GEOMON



Responsible persons in MuSLI:
Zuzana Lhotáková, Lucie Homolová,
Jana Albrechtová



4th OSM GLP, April 24-26, 2019 | Bern

1. GEOMON GACR 17-05743S – Norway spruce (2017)

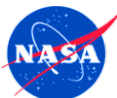
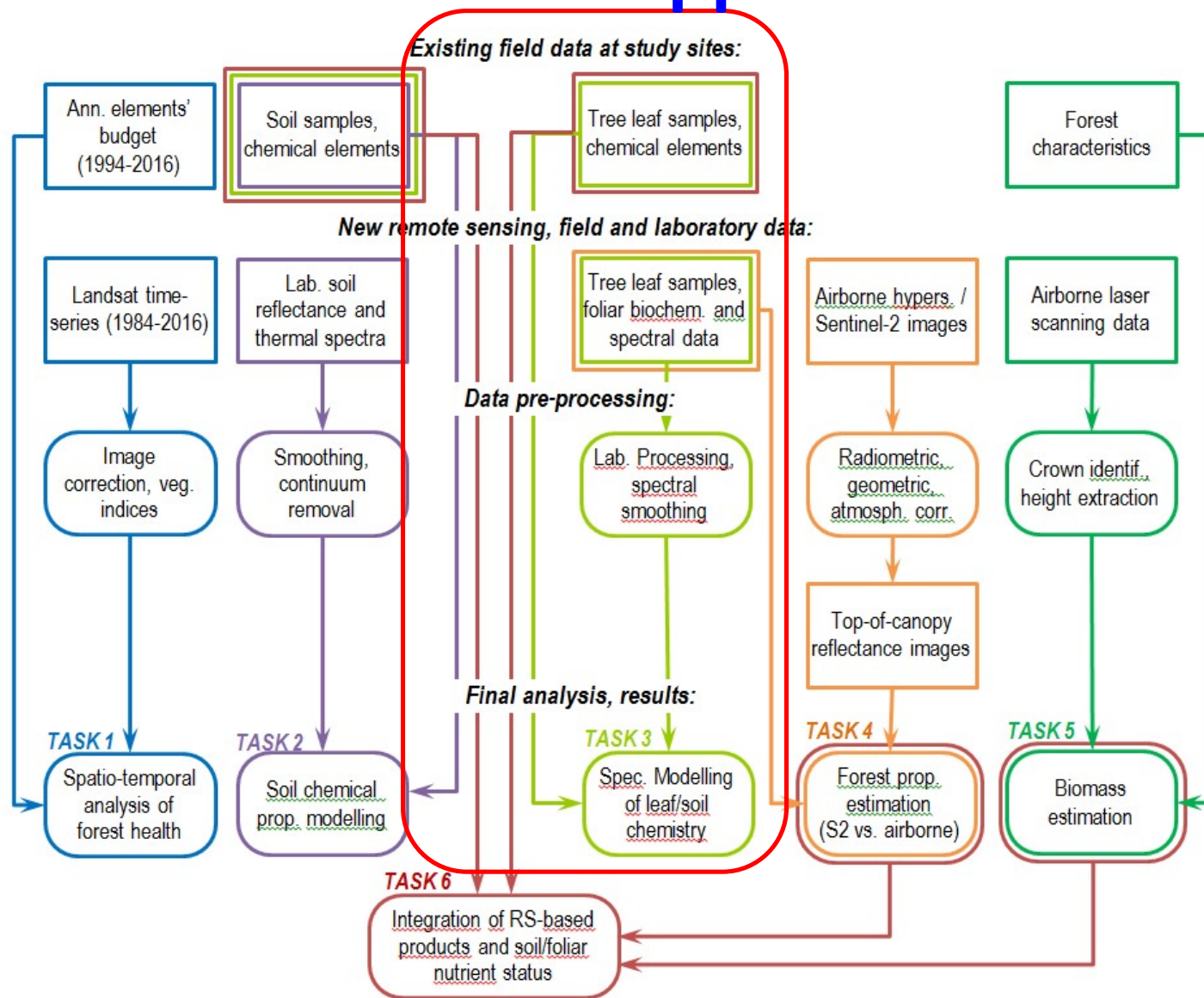
Project Data and Methodology Flowchart

New spectral insight into biogeochemistry of small forested watersheds



Responsible persons in MuSLI:
Zuzana Lhotáková, Lucie Homolová,
Jana Albrechtová

Technical Approach



3. INTER-ACTION: Ecosystem function based on EO of vegetation quantitative parameters tundra grasses, floodplain forest tree species, beech and spruce forests

Czech PI: Prof. RNDr. JANA ALBRECHTOVÁ, Ph.D.

Czech Co-I: Ing. Petr Lukeš, Ph.D., CzechGlobe- Global Change Research Institute, Czech Academy of Sciences, Department of Remote Sensing, Brno, Czech Republic

Project Duration: 1.1. 2019 – 31.12. 2022

Ministry of Education, Youth and Sports of the Czech Republic:

Programme INTER-EXCELLENCE, Sub-Programme INTER_ACTION LTUSA18

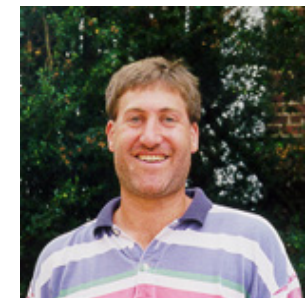
U.S. Partners in the project:

Dr. Petya Campbell: University of Maryland Baltimore County (UMBC)

Joint Center for Earth Systems Technology (JCET),
NASA/Goddard Space Flight Center
Greenbelt, MD 20771 USA

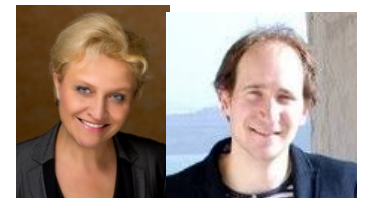
Prof. Howard E. Epstein

University of Virginia, Department of Environmental Sciences,



3. INTER-ACTION: Ecosystem function based on EO of vegetation quantitative parameters tundra grasses, floodplain forest tree species, beech and spruce forests

A complex evaluation of a seasonal dynamics of physiological status, function and productivity of vegetation in different ecosystems using **phenological course of quantitative parameters of vegetation derived from various sources of EO data with different spatial and spectral resolution (novel HLS dataset, satellite data WorldView-2, 3/RapidEye and very high spatial resolution airborne / drone-based hyperspectral images)** and trained and validated based on field and laboratory in-situ (biochemical and biophysical parameters - Cab, water content, LAI).



PI: Jana Albrechtová, Co-I Petr Lukeš



3. INTER-ACTION: Ecosystem function based on EO of vegetation quantitative parameters

tundra grasses, floodplain forest tree species, beech and spruce forests

CZ PROJECT INTER-ACTION:
Assessment of ecosystem function based on Earth observation of vegetation quantitative parameters retrieved from data with high spatial, spectral and temporal

Aim II. RESOLUTION
Analyses of information value of resolution in SPACE, SPECTRA and TIME
 → to increase classification accuracy; Assessment of vegetation physiological status and function

Aim III. CLASSIFICATION
 Species classification in heterogeneous ecosystems based on multitemporal spectral data
 → subpixel classification of selected plant species / communities based on phenological course of foliage optical properties

ECOSYSTEMS
 homogeneous
 heterogeneous

- relict tundra in Krkonoše
- mixed floodplain forest
- mountain beech forest
- mountain spruce forest

Aim I. MODELING
Assessment of vegetation physiological status and function
 → modelling seasonal course of biochemical and structural parameters of vegetation

Aim IV. CALIBRATION
Calibration of selected pocket chlorophyllmeters
 → in field non-destructive assessment of chlorophyll content of large sample sets

