ChangeHabitats 2
Newsletter April 2011

News from the European Natura 2000 front
International IAPP cooperation

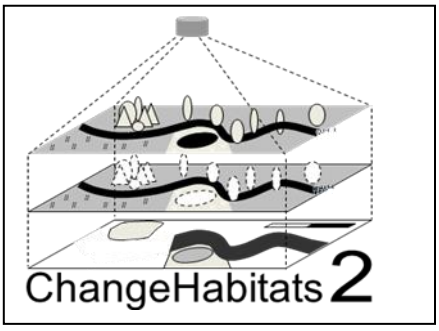
ChangeHabitats 2

Network for Habitat Modelling and Monitoring by Airborne-supported Field work – an innovative and effective process in implementation of the Habitat Directive.

The aim of ChangeHabitats 2 is the initiation of a long lasting intersectoral and international network between industry and academia in the field of environmental monitoring. Its aim is to develop operable, time and cost effective procedures, and (software) solutions for monitoring habitats using modern innovative airborne data acquisition techniques. Within the project two complementary innovative data acquisition methods, which are currently becoming established in the market, will be concentrated on: airborne laser scanning and airborne hyperspectral imagery. These methods will be evaluated and their potential for manual and automatic derivation of habitat parameters – an unsolved problem so far – will be investigated for selected sites. Added value of the developed methods beyond habitat mapping will be explored, e.g. for river basin management.

These aims will be achieved by tight integration of data producers, data processors, and end users, building the network both from industry and academia. The project will support EU´s NATURA 2000 directive, which prescribes repeated monitoring of over 50 million ha of habitat sites in Europe. The complexity and importance of habitat monitoring by airborne techniques will ensure close cooperation within the network beyond the project duration.

Cost savings in an order of up to 3.4 Billion Euros on European level could be achieved by reducing expensive and laborious field work for habitat mapping by automated analysis of airborne sensed data, which is cheaper in acquisition and more homogeneous than subjective perception during the field work. The contributing SMEs will gain economic benefits and clear competitive advantages. For device manufacturers a new market for data acquisition devices will be opened, and for service providers faster and more accurate habitat mapping will result in enlarged project execution capacity, supporting national and regional administrative bodies in their environmental protection duties.



We are happy to announce

That the project ChangeHabitats 2 – an international research cooperation of partners from Germany, Poland, Austria and Hungary – under the coordination of Technische Universität Bergakademie Freiberg, Professor Dr. Hermann Heilmeier (Interdisciplinary Ecological Centre) has won the highly competitive Financial Award in the Seventh Framework Programme, Marie Curie Actions - Industry Academia Partnership and Pathways in 2010. The Kickoff Meeting has taken place 31.1.2011 at Vienna University of Technology.

WHO IS WHO? Consortium Partners

Technical University Mining Academy Freiberg (TU BAF) is the oldest mining university in the world, founded in 1765. Research activities of the Biology/Ecology Unit at the Interdisciplinary Environmental Centre focus on conservation biology, nation-wide animal monitoring, causes of endangerment for selected animal species, sustainability indicators for nature protection, endangered vegetation of artificial pools dating from mining activities and ecosystem succession and restoration in the open-cast mining area in Lusatia (East Saxony, Germany) and Vietnam. **Project Tasks**: Coordination, Habitat Site Selection, Habitat Mapping and Evaluation, Interpretation Keys, Comparison Airborne and Field Work Data, Dissemination of Results

The Institute of Photogrammetry and Remote Sensing (IPF) belongs to the Faculty for Mathematics and Geoinformation. It provides education in photogrammetry, remote sensing and laser scanning. Within ChangeHabitats 2 the IPF is in charge of research concerning the retrieval of Natura 2000 habitat parameters using correlations of airborne laser scanning data and conventional ecological field mapping. **Project Tasks**: Data Quality and Formats, Aerial Data Collection, GIS Maps, Aerial Data Processing, Error Analysis and Data Quality

TUWEUFS: The EU Research Support Unit is the interface between the University and external partners providing assistance for FP6 and FP7 on a partner level, assistance is provided for institutes from research and industry seeking cooperation with Vienna University of Technology. Additionally, EUFS supports project consortia in project administration, legal issues and accounting and acts as local mobility centre within the ERA-MORE Initiative. **Project Tasks**: Contractual and legal matters, Dissemination of Results, Management of contracts, Marie Curie Mobility Issues

University of Debrecen employs 7000 experts with more than 1700 professors and researchers. Modern methods (Remote Sensing, Environmental and GIS modelling) are vital in research on land use and soil utilisation. **Department of Water- and Environmental Management** works on environmental technology, soil and water quality, environmental management (integrated management systems, total quality management), informatics (remote sensing and environmental models), land use. **Project Tasks**: Data Quality and Data Formats, Site Selection, Aerial Data Collection (Hyper spectral Data), Correlations Habitats and Aerial Data and Habitat Modelling

Dr. Rahner, YGGDRASIL
Geology Project Management
Trainings

YGGDRASIL Dr. Rahner: Consulting, Service and Research in Geology, Working on national and cross-boundary projects. Geological surveys, Sanitation and Renaturation of abandoned mining and industrial sites, historical investigations via airborne photos on abandoned industrial sites and on contamination potential. Furthermore, YGGDRASIL is specialised in trainings for professionals, topics comprise Environmental Management, Project Management and Time Management of international and EU-Projects. **Project Tasks**: Project Management, Questionnaires and Data Quality, Cost/Time comparison Dissemination concept

YGGDRASIL Diemer is an engineering group of scientists in the field of geology, biology and landscape planning. It is proliferate in risk assessment with respect to habitat changes due to human activities, using GIS, GPS survey, database transfer and visualisation techniques. The radius of work comprises Germany and the neighbouring countries. **Project Tasks**: Habitat survey by ground field techniques, evaluation of habitat structures

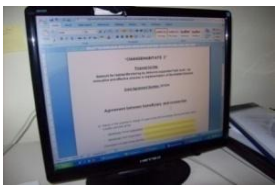
VITUKI was founded in 1952 on the basis of the Hydrologic Institute to perform for the Hungarian Water Management both basic and applied research, as well as studies related to the development, conservation and sound management of water resources of the country. Integrated with the Hungarian Hydrological Service established in 1886 and supported by hydraulic, hydro-machinery, hydro-chemical, hydro-biological and soil mechanical laboratories; equipment, instrumentation and computer facilities, VITUKI has emerged as one of the most complex water-oriented full-service professional organisations in Europe. **Project Tasks**: Aerial Data Collection in Hungary, Digital Height Models, Comparison Aerial to Field Data with Specific Emphasis on Watershed Modelling, Dissemination of Results

ATMOTERM Corporation is an environmental software development and consulting company that provides services to public administration and business. ATMOTERM helps to make important decisions, which are essential for companies and institutions in effective strategic planning and environmental protection. **Project Tasks**: Next-User Specification Requirements, Data Processing, Error Analysis Setup and Update Project Public Website

RIEGL Laser Measurement Systems has nearly 30 years of experience in research, development, and production of laser radar measurement devices and systems. Its staff comprises more than 90 graduated engineers, technicians, and other highly qualified persons. The R&D group consists of 35 technicians. The rest works in production, marketing & sales, training and administration. **Project Tasks**: Next User Specification Requirements and Data Quality, Aerial Data Collection

The consortium Partners from Germany, Poland, Hungary and Austria at the Kickoff Meeting in Vienna 31.1.2011

Team meetings are held on regular bases



Exchange patterns and duty lists are created ad controlled

The PMO has successfully started the work

Getting the most from our research knowledge by reading our quarterly newsletter – for free!

GANTT Exchange

Time interval		Years	Year 1											Year 2											Year 3											Year 4				Total monthguests seconded per partner	
		Months	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.	25.	26.	27.	28.	29.	30.	31.	32.	33.	34.	35.	36.	37.	38.	39.	40.-48.		
from Partner	Fellow	Name																																								
TU-BAF	MER	TU-BAF-ER																			to VITUKI																						10	Secondment
	MER	TU-BAF-RA																															to VITUKI									
	MER	TU-BAF-HH	to YGG-1																		to VITUKI								to RIEGL				to VITUKI		to RIEGL				to YGG-1			
TUW-IPF	ESR	TUW-WM			to YGG-2												to YGG-2																								19	
	ESR	TUW-LE																		to VITUKI																						
	MER	TUW-BS			to ATMO				to VITUKI																																	
	MER	TUW-GM																		to VITUKI																						
	MER	TUW-CR																									to RIEGL															
	MER	TUW-NP					to YGG-2														to YGG-2																					
	MER	TUW-SH					to YGG-1																										to YGG-1									
UODEB	ESR	UOD-TF							to ATMO																								to ATMO									
	ESR	UOD-GH																		to YGG-2																						12	
	MER	UOD-JT					to VITUKI													to YGG-2						to VITUKI																
YGG	ESR	YGG1-AG						to TUW-HPF																				to UODEB														34	
	MER	YGG1-SK							to UODEB												to TUW-HPF														to UODEB							
	ER	YGG2-PW															to UODEB																									
	ER	YGG2-RS			to TU-BAF			to TU-BAF		to TU-BAF												to TU-BAF								to TUW-HPF											
	MER	YGG2-SD							to TU-BAF													to TU-BAF													to UODEB						
RIEGL	ESR	RIEGL-GG																										to TUW-HPF													6	
	ESR	RIEGL-PA														to TU-BAF																										
	ER	RIEGL-AS																		to UODEB																						
ATMO	MER	ATMO-KK			to TU-BAF					to TUW-HPF																																9	
	ER	ATMO-NN													to TUW-HPF																											
	MER	ATMO-KK																										to UODEB														
VITUKI	MER	VIT-PB			to TU-BAF												to TUW-HPF												to TU-BAF													21	
	MER	VIT-CL			to TU-BAF												to TUW-HPF												to TU-BAF													
	MER	VIT-JF							to UODEB								to TU-BAF																		to UODEB							
	MER	VIT-JM																				to TUW-HPF																			
TOTAL MONTHS SECONDMENT																																								111	
TOTAL GUESTS in institutions and months																																								Total guestmonths hosted per partner	Hosting
TU-BAF			0	0	2	4	1	0	1	1	1	1	0	0	0	1	1	1	1	0	0	0	2	2	1	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	24	
TUW-IPF			0	0	0	0	0	0	1	1	1	1	1	0	1	1	2	2	0	0	1	1	2	1	0	0	0	2	2	1	1	1	1	1	1	1	0	0	0	0	28	
UODEB			0	0	0	0	0	0	0	1	2	1	0	0	0	0	1	1	0	1	1	0	0	0	0	0	0	0	2	2	0	0	0	0	1	2	2	1	0	0	18	
YGG-1			0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	4	
YGG-2			0	0	0	1	1	0	1	0	0	0	0	0	0	1	1	0	0	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	
RIEGL			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	1	0	0	0	0	0	4	
ATMO			0	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	6	
VITUKI			0	0	0	0	1	2	1	1	0	0	0	0	0	0	0	0	1	2	1	2	1	0	0	0	1	1	0	0	0	0	0	0	2	1	0	0	0	0	17	
TOTAL MONTHS HOSTING			0	1	2	6	3	1	6	6	6	3	1	0	1	2	4	5	3	2	6	6	5	3	1	0	2	6	7	3	1	1	2	5	4	3	3	1	0	1	0	0	111	

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THE HEART OF THE PROJECT:

GANTT EXCHANGE DIAGRAM

The Gantt Exchange Diagram has been adapted from the classical Gantt Diagram visualising work packages as bars and putting them in logical or temporal order. By Gantt chart techniques, risks in project design and future bottle necks can be found and measures can be taken proactively.

The specifics of the "Gantt Exchange Diagram" visualize the exchange patterns of seconded staff from the point of view of host and home organization alike. Adding the time line enables the planners to calculate bottle necks in the host organizations and avoiding jams or gaps in the overall exchange pattern. Colours show the exchanging institutions and their staff. Totals in hosting and seconding months are directly allocated to the institutions, and individual researchers.

From the Gantt Exchange Diagram, financial contributions to the individual researchers can be calculated at one glance, adaption in exchange pattern can be made very quickly.

Hyperspectral remote sensing

Recent advances in remote sensing and geographic information has led the way for the development of hyperspectral sensors. Hyperspectral remote sensing, also known as imaging spectroscopy, is a relatively new technology that is currently being investigated by researchers and scientists with regard to the detection and identification of minerals, terrestial vegetation, and man-made materials and backgrounds.
Imaging spectroscopy has been used in the laboratory by physicists and chemists for over 100 years for identification of materials and their composition. Spectroscopy can be used to detect individual absorption features due to specific chemical bonds in a solid, liquid, or gas. Recently, with advancing technology, imaging spectroscopy has begun to focus on the Earth.

The concept of hyperspectral remote sensing began in the mid-80's and to this point has been used most widely by geologists for the mapping of minerals.
Actual detection of materials is dependent on the spectral coverage, spectral resolution, and signal-to-noise of the spectrometer, the abundance of the material and the strength of absorption features for that material in the wavelength region measured. Hyperspectral remote sensing combines imaging and spectroscopy in a single system which often includes large data sets and requires new processing methods. Hyperspectral data sets are generally composed of about 100 to 200 spectral bands of relatively narrow bandwidths (5-10 nm), whereas multispectral data sets are usually composed of about 5 to 10 bands of relatively large bandwidths (70-400 nm).
Hyperspectral imagery is typically collected (and represented) as a data cube with spatial information collected in the X-Y plane, and spectral information represented in the Z-direction.

MARIE CURIE ACTIONS

ChangeHabitats