

Final report of project AKTION 67P10

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Final Report of the project AKTION 67P10 (2013-2014)

Project coordinator:

Prof. ing. Svatopluk Matula, CSc, Czech University of Life Sciences in Prague, FAFNR, Head of the Dept. of Water Resources

Project partner:

Univ. Prof. Dipl. - Ing. Willibald Loiskandl, BOKU Wien, Head of the Institute IHLW

Additional participants:

Ing. František Doležal, CSc., CULS

Ing. Getu Bekere Mekonnen, CULS

Ing. Joao Morreira Barradas, PhD, CULS

Ing. Andreas Schwen, PhD, BOKU

Dipl. Ing. Ilse Kogelbauer, BOKU

Activities of the Project during 2013 and 2014

The support of this project was oriented to financing the exchange between PhD students and staff of both institutions and relevant units for the scientific co-operation and work, visits and some lectures. Especially positive role of project was to support and encourage PhD and MSc students from both universities to exchange places and to stay in the partners department as a temporary staff. Significant co-operation was established in the field of sharing supervision of Double Degree students of both universities. Attention was also given to finalising common work as the presentations at certain scientific meetings, conferences and congresses. The results were presented as oral presentations, posters and papers in the proceedings and the manuscript of the publication in international scientific journal with an IF was submitted. All the presentations were published with the acknowledgement to the AKTION programme.

Short description of the project activities within 2013-2014:

PhD and MSc students, one of each participating University (G. B. Mekonnen and I. Kogelbauer as PhD), four teachers from the staff (F. Doležal, A. Schwen, W. Loiskandl and S. Matula) and one PostDoc Dr. Barradas of CULS were successfully running the project. One Double Degree MSc student of both universities (K. Madry, specialised on HYPROB), a participant of the well running Double Degree MSc Program NRE/NARMEE was included into the activities of the project. The team was using successfully field, laboratory and other facilities of both universities. The selected experimental fields (CULS in Prague - Suchbátka and BOKU in Gross Enzersdorf) were used for running of the project. These stations are well equipped and have available many soil-physical, hydro-meteorological, and other data including the evaporation measurement, several independent systems for soil water content measurements are installed there, and the measurement of soil water potential could be done as a part of data collecting. Stations are also equipped with lysimeters. To collect and store data of the stations the automatic systems were used. Detailed soil physical, hydro-physical and other properties of the soil profile were available to the PhD students as well as research from the scientific databases of the stations. Some additional survey and measurements were organised and done by both PhD students with some minor help of the teachers from both Universities. The Institute of Hydraulics, and Rural Water Management BOKU and the Dept. of Water Resources FAFNR, CULS are very well equipped for

the laboratory determination of soil hydro-physical properties, have large experience in using field lysimeters and electronic sensors and devices in the field. The laboratory background of both institutions was successfully used also for the practical training of PhD students in certain methods (for example Mr. Mekonnen has got experience how to use HYPROB system in BOKU laboratory with the help of K. Madry. K. madry as the DD student successfully defended his MSc thesis and passed state exam at the CULS).

The main activities of the staff (listed in alphabetic order of names):

Dr. Doležal

- Field station at CULS Prague-Suchdol management
- Visits 2X of BOKU focused on the teaching and excursions in the field related to the activities of the department
- Participating in lecturing, visiting the co-operating dept., field facilities
- Preparing the presentations and posters at the conferences and meetings dedicated to AKTION Project. The teams of authors consists of the staff from both departments.
- Participating in the field trip – scientific excursion to Oststeiermark, Vulkanland organised by BOKU, Austrian Soil Science Society and Austrian Society for Root Research in May 2014.
- Co-operation in the field experimental methods and experience exchange between departments

Prof. Loiskandl

- Managing the Austrian side of the project
- Organising of the visits of staff and stays of the PhD student, including MSc student
- Sharing official supervision of several Double Degree MSc Diploma students of both Universities
- Participating in lecturing, visiting the co-operating dept., field facilities
- Preparing lectures and participating in lecturing in the EU Summer School “Soil and Water 2014”, organised by CULS, Prof. Matula in Turkey
- Preparing publications, participating in the discussions and experience exchange in both dept.
- Visiting the co-operating dept., field facilities
- Preparing, organising, lecturing in the field trip – scientific excursion to Oststeiermark, Vulkanland organised by BOKU, Austrian Soil Science Society and Austrian Society for Root Research in May 2014.
- Preparing the presentations and posters at the conferences and meetings dedicated to AKTION Project, see the publication list

Prof. Matula

- Managing the whole Project and also the Czech side of the project
- Organising of the visits of staff and stays of the PhD student, including MSc student,
- Sharing official supervision of several Double Degree MSc Diploma students of both Universities
- Preparing lectures and participating in lecturing in EU Summer School “ProAlp 2014”, organised by Dr. Andreas Schwen, BOKU,
- Visiting the co-operating dept., field facilities

- Preparing publications, participating in the discussions and experience exchange in both dept.
- Preparing the presentations and posters at the conferences and meetings dedicated to AKTION Project, see the publication list.
- Participating in the field trip – scientific excursion to Oststeiermark, Vulkanland organised by BOKU, Austrian Soil Science Society and Austrian Society for Root Research in May 2014.
- Performing co-operation in the laboratory and field methods experience exchange

Dr. Schwen

- Participating in the visits and stays of the staff and PhD student, presenting his work on the open seminar of the Dept. of Water Resources in Prague
- Manager and lecturer in EU Summer School “ProAlp 2014”, organised by BOKU and with the participation of CULS - Prof. Matula.

Dr. Barradas

- Participating in the visits and stays of the staff and PhD student, presenting his work at BOKU, Wien.
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The main activities of the PhD and MSc students:

Ing. Kogelbauer - PhD student

- Participating in the visits and stays of the staff and PhD student, unfortunately due to private reasons she was not able to apply for the one month fellowship, this was not possible to realise
- Participating in the simulation work (HYDRUS 1D, HYDRUS 2D) at both co-operating dept., participating in the field works
- Preparing publications, participating in the discussions and experience exchange in both dept.
- Performing co-operation in the laboratory and field methods experience exchange
- Transferring data, elaborating them and using the facilities of both institutions (BOKU, CULS)

Ing. Mekonnen - PhD student

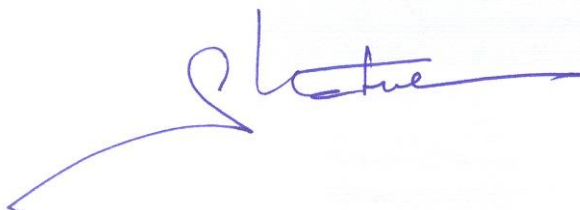
- Participating in the one month exchange stay in BOKU supported by fellowship of Aktion
- Participating in the visits and stays of the staff and PhD student
- Participating in the laboratory measurement techniques (HYPROB) at both co-operating dept., participating in the field works and data evaluation
- Preparing publications, participating in the discussions and experience exchange in both dept.
- Presenting of collective work
- Performing co-operation in the laboratory and field methods experience exchange
- Transferring data, elaborating them and using the facilities of both institutions (BOKU, CULS)

Konrad Madry – MSc student, now Ing./ MSc

- Preparation MSc thesis as a Double Degree student. Successful defence of MSc thesis at CULS, obtaining the MSc degree. Supervisors: Profs. Loiskandl and Matula

Citation of publications related to the project in 2013 - 2014:

1. Matula S., Miháliková, M, Mráz, A., von Unold, G., Chala, A. T., Hrkalová, M., Doležal, F. (2014): Zkušenosti z instalace a provozu malého polního lysimetru SFM UMS. (Experience with installation and performance of a small smart field lysimeter SFM UMS. In Czech.) In: Hydrology of small catchments 2014, Prague, 22-23 April 2014. ÚH AV ČR, Praha, 8 p. and poster.
2. Doležal F., Miháliková, M, Matula, M., Moreira Barradas, J. M., Mekonnen, G. B. (2014): Vliv různých způsobů filtrace signálu na měření hustoty svislého toku vody malým inteligentním lysimetrem SMF UMS (The effect of the signal filtration method on the measurement of vertical water flux density using a small smart lysimeter SMF UMS. In Czech.) In: Hydrology of small catchments 2014, Prague, 22-23 April 2014. ÚH AV ČR, Praha, 8 p.
3. Doležal, F., Vogel, T., Kogelbauer, I., Matula, S., Císlarová, M., Vacek, J., Loiskandl, W. (2014): Preferential percolation through unsaturated soil: uncertainty turned into working tool. In: The grand challenges facing hydrology in the 21st century. Dooge Nash International Symposium, Dublin, 24-25 April 2014, University College Dublin, p. 105-117, ISBN 9781905254835.
4. Doležal, F. Mekonnen, G.B., Matula, S. Miháliková, M., Fisak, J., Chala, A.T., Hrkalová, M., Moreira Barradas, J.M. (2014): Fine resolution soil water fluxes measured with a small Smart Field Lysimeter: The noise removal and further interpretation. Geophysical Research Abstracts 16, EGU2014-10198, 2014. Poster presented at European Geosciences Union General Assembly 2014, Vienna, 27 April – 2 May 2014.



Prague, July 28, 2014

Professor S. Matula
(on behalf of the project team)

Additional material:

The review of the budget of project 67P10 (in Czech)