

## **Summary Report**

### **On the Activities of the “International German Summer School on Hydrology 2013”**

**Bochum, 22 - 26 July, 2013**

The seventh International German Summer School on Hydrology was held between 22 and 26 July 2013 in the Ruhr University of Bochum, Germany. A total of 20 participants from 12 different countries participated in this course (List of participants and their countries is annexed). Most of the participants come from developing regions like Africa and Asia.

The International German Summer School on Hydrology provides a program of hydrological training courses which vary each year. The focus of the courses lies on applied topics, which are given by German professors and guest professors invited from abroad for an international audience. The courses are held at Ruhr-University of Bochum, Germany, and all courses are given in English language.

The first International German Summer School on Hydrology was organized in 2007, and based on the affirmative responses and very encouraging feedbacks from participants of the subsequent years, the 2013 courses were offered for competitively selected applicants.

It has been seen that the number of applicants are dramatically increasing year by year and participants are selected in a very competitive manner. Among the selection criteria, a brief statement of motivation that centres the demand of the specific course for current and future career or research development, relevance of the course to the applicant's present career or research activities, and Qualification and duty of applicants are given greater weight.

Most of the lecturers of the International German Summer School on Hydrology are staff members of the Ruhr-University Bochum (Faculty of Geosciences and Faculty of Civil Engineering).

The lectures included theoretical as well as practical lessons, which are held in lecture halls and excursions out the field. The field activities, and therefore locations, differ year by year depending on the type of the courses under discussion.

‘Urban Hydrogeology’ was chosen to be the focus of IGSH 2013. The lectures were covering the following topics:

- **Factors influencing groundwater in urban areas**
- **Groundwater monitoring**
- **Hydrochemistry of groundwater in urban areas**
- **Geogenic arsenic and uranium in sediments and groundwater**
- **Organic trace elements in urban groundwater**
- **Flow and transport in urban groundwater system**
- **Applications of environmental isotopes and case studies from Senegal, Dakar**
- **Influences of climate change in urban areas**

Participants were also encouraged to discuss on cases and personal experiences with regard to the hydrogeology of urban areas.

The theoretical lectures were accompanied by a field excursion at the Institute of Underground Infrastructure (IKT) in Gelsenkirchen, NRW region of Germany. Participants had the opportunity to observe, appreciate and discuss on technical and technological developments on research based production of tunnels and pipes in the institute. The excursion was organized in collaboration with IKT and Faculty of Civil and Environmental Engineering.

Besides the scientific program, which covered most of the days from early morning until late in the evening (08:30 – 05:30) the participants were offered social and cultural programs. It included joint evening events in downtown and the Ruhrgebiet, a guided tour to the city of Bochum and Cologne that gives opportunity to learn and appreciate some aspects of the German culture and the surrounding landscapes.

During the course a cooperative and very friendly environment dominated, which allowed the participants to get close contact to each other and with the professors. This still opens a good opportunity to establish scientific and social networks which will continue after the course.

At the end of the course, participants were given a questionnaire (Questionnaire is annexed) to comment on different aspects of the course and reveal their satisfaction on the content of the course, the professors and on the overall organization of the program (Statistical evaluation of questionnaire are annexed)

**Lecturers, field-work directors and field assistants:**

Prof. Dr. Stefan Wohnlich

Ruhr University of Bochum, Applied Geology, Hydrogeologist

Jun.-Prof. Dr. Andreas Englert

Ruhr University of Bochum, Applied Geology, Groundwater Modeller

PD Dr. habil. Steffen Bender

Climate Service Center, Natural Resources Department, Science officer,  
Hamburg

Dipl.-Geol. Christian Skark

Institute of water research, Environmental Technique, Hydrologist, Dortmund

Dr. Seynabou Cisse Faye

University Cheikh Anta Diop (UCAD), Dakar Fann, Senegal

Dr. Andre Banning

Ruhr University of Bochum, Applied Geology, Hydrochemist

**Annexes:**

1. Course program
2. List of Participants
3. Statistics of Participants
4. Participants' comment collection sheet (Open questionnaire)
5. Statistical evaluation of Questionnaire
6. Photos

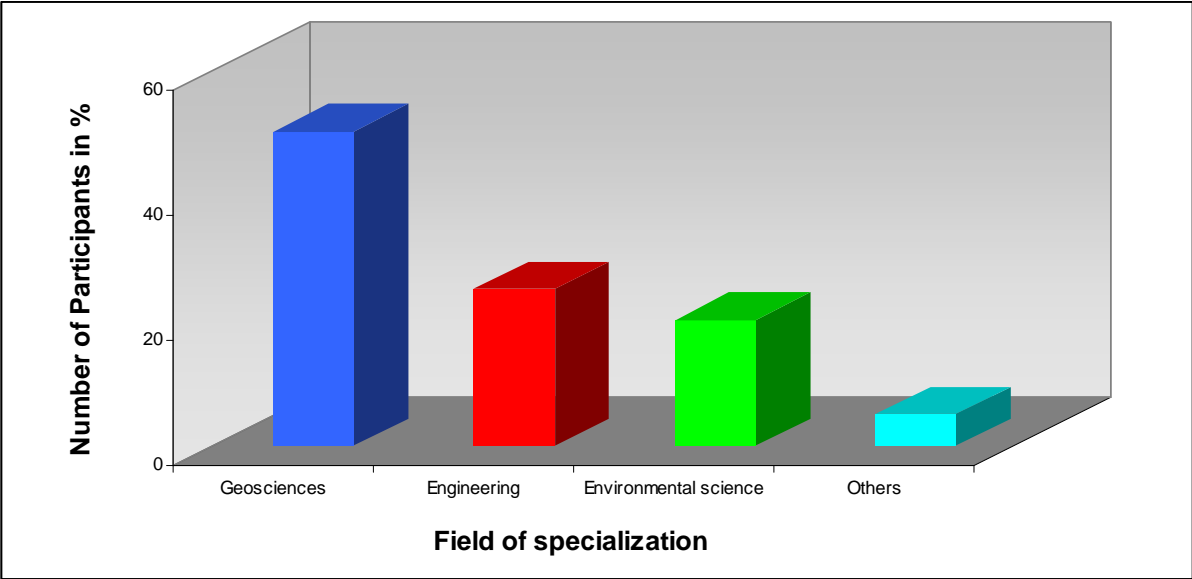
## Annex-1 Course program - IGSB 2013 Urban Hydrogeology

Date	Time	Activity	Duty
		Arrival of Participants	
Sunday 21 July 2013	05:30 - 09:00	City Tour and Welcome Dinner Party	Prof. Dr. Stefan Wohnlich
Monday 22 July 2013	09:00 – 10:30	Introduction of Participants and their current projects	
	11:00 - 12:30	Introduction to Groundwater	Prof. Dr. Stefan Wohnlich
	01:30 – 03:00	Factors Influencing Groundwater in Urban Areas	Prof. Dr. Stefan Wohnlich
	03:30 - 05:00	Groundwater Monitoring	Prof. Dr. Stefan Wohnlich
Tuesday 23 July 2013	08:30 – 12:15	Organic Trace Elements in Urban Groundwater	Dipl.-Geol. Christian Skark
	01:30 – 05:00	Hydrochemistry of Groundwater in Urban Areas	Dr. Andre Banning
	05:15 - 10:30	<b>Visit to Cologne</b>	Dr. Andreas Englert
Wednesday 24 July 2013	08:30 – 05:00	Flow and Transport in Urban Groundwater Systems	Jun.-Prof. Dr. Andreas Englert
	05:30 – 08:00	<b>Shopping at Ruhr Park, Bochum</b>	
Thursday 25 July 2013	08:30 – 11:30	Water management, isotope applications, case studies: Senegal	Dr. Seynabou Cisse
	01:30 - 06:30	Excursion: Water Management in the Ruhr-Metropolitan Area: Emscher Project, Phoenixsee-Project Dortmund	Prof. Dr. Stefan Wohnlich/ Dr. Ing. Christian Jolk
Friday 26 July 2013	08:30 – 04:00	Influence of Climate Change on Groundwater in Urban Areas	PD Dr. habil. Steffen Bender
	04:30 - 07:30	<b>Evaluation of Course contents and organizations by participants Award of certificate Departure party at the hydraulic laboratory of GMG, RUB</b>	Prof. Stefan Wohnlich and all other Staffs of Hydrogeology Department
Saturday 27 July 2013	06:00A – 06:00P	Departure of participants	

## Annex-2 List of Participants

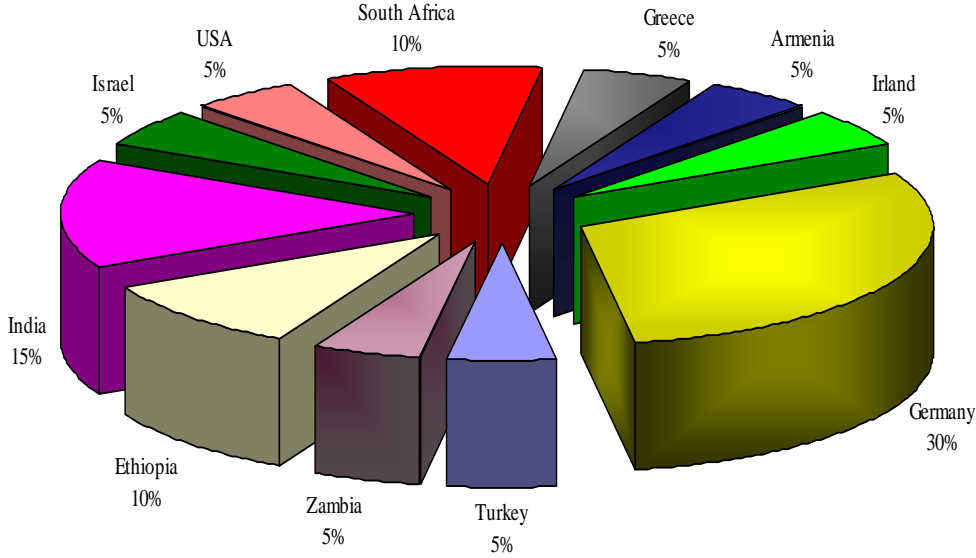
No.	Family Name	First Name	Title	Sex	Country
1	Zeyrek	Caner	Dr.	M	Turkey
2	Museteka	Levy	Mr.	M	Zambia
3	Kumar	Navneet	Mr.	M	Ethiopia
4	Tiwari	Jaya	Dr.	F	India
5	Neeman	Neetzin	Mrs.	F	India
6	Zavareh	Sahar	Mrs.	F	Israel
7	Koulouris	Konstantinos	Mr.	M	USA
8	Margaryan	Liana	Mrs.	F	South Africa
9	Blake	Sarah	Mrs.	F	South Africa
10	Nigate	Fenta	Mr.	M	Greece
11	Nemaxwi	Phathutshedzo	Mrs.	F	Armenia
12	Marubini	Selaelo	Mrs.	F	Irland
13	Vinjarapu	Satrugna	Mr.	M	India
14	Wilke	Sascha	Mr.	M	RUB, Germany
15	Schultz	Melanie	Mrs.	F	RUB, Germany
16	Agachanjan	Bella	Mrs.	F	RUB, Germany
17	Groth	Sven	Mr.	M	RUB, Germany
18	Traore	Mohamed	Mr.	M	RUB, Germany
19	Alhamed	Mohammad	Mr.	M	RUB, Germany
20	Aychluhim	Damtew	Mr.	M	Ethiopia

### Annex-3 Statistics of Participants

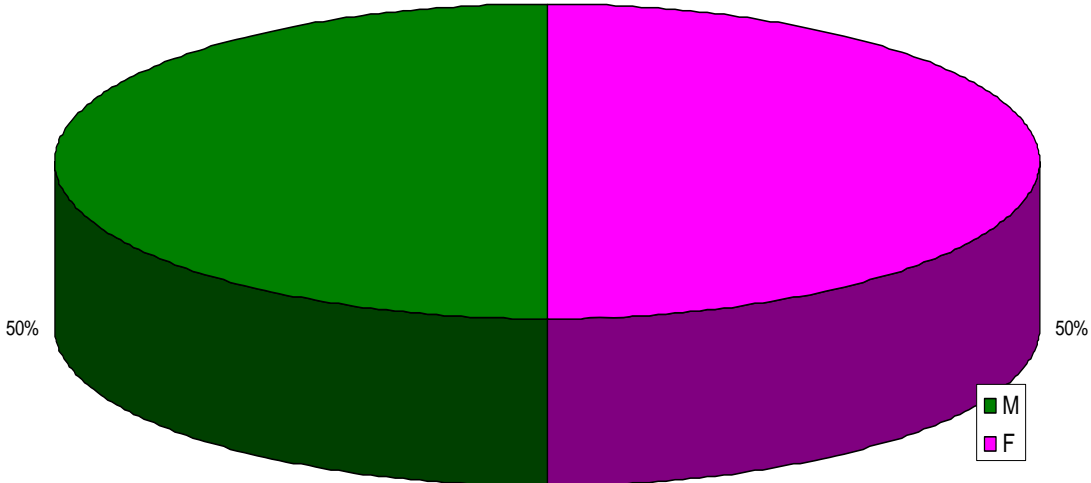


In this grouping, the fields under Geosciences may include hydrogeology, geology, and water sciences, while civil, hydraulic, environmental engineering are grouped under Engineering.

### Country



**Gender Distribution**



## **Selection of participants**

### **Priority applications**

- 1 – Self sponsored applicants (with some relevance of academic background to the course to be given, and submission of complete application documents)
- 2 – Course scholarship applicants (with a relevant background and complete application document)
- 3 – Partial scholarship applicants with relevant background, motivation letter, experience
- 4 – Full scholarship applicants with very relevant background and experience, very strong motivation letter, mainly from Sub-Saharan Africa and Asian countries  
One from each country (no two applicants from the same country is given a full scholarship unless special cases are considered)

### **Excluded applications**

- 1 - Professors and Doctors with over 12 years experience
- 2 - Applicants with over 20 years of experience
- 3 - Applicants older than 50 and younger than 23
- 4 - Applicants with BSc and very limited experience (ex. Less than 3y experience)
- 5 - Applicants with farthest academic and industry background from the course
- 6 - Applicants who participated in the same course in the previous years organized by IGSH
- 7 - Applicants who participated three or more times in the past may not be given a chance to take part in this course
- 8 - Applicants who failed to submit their CV and addresses of their referees (incomplete application) should not be considered
- 9 - No two persons from the same country are allowed to take part in the course unless special conditions govern the situation
- 10 - Full scholarships for applicants from Europe, USA, Brazil and Argentina should not be given unless special condition govern the situation
- 11 - Applicants who failed to meet the application deadline (applications may be considered based on the type of scholarship they are applying for and their academic background)



## Annex-4 Participants' comment collection sheet

Urban Hydrogeology (22 – 26 July 2013)

Questionnaire to be filled by course participants

<b>Your reason(s) of attendance?</b>	
General interest in the topic	
Special professional needs	
Practical application	
Knowledge renewal	
Other	

<b>What is your professional background?</b>	
Engineering (please specify)	
Geosciences (please specify)	
Geography	
Other (Please specify)	

<b>Are your expectations fulfilled by the course with respect to:</b>					
	Fully	Yes	Neutral	No	No idea
Quality of contents					
Compressibility					
Practical applicability					
Time for discussions					
Number of examples and exercises					
Quality of exercises					
Duration of the course					
Quality of the course					

<b>Scientific competence</b>	Very good	Good	Average	No idea
Prof. Dr. S. Wohnlich				
Jun. Prof. Dr. Andreas Englert				
Dr. Andre banning				
Dipl.-Geol. Christian Skark				
Dr. Seynabou Cisse				
Dr. Stefan Bender				

	Yes	Neutral	No
Have you got enough time for questions/discussions?			
Have all questions been satisfactorily discussed?			

<b>Have you been satisfied with the organizations of the course?</b>	Very much	Yes	Neutral	No	No idea
Lecture room					
Equipments in the lecture rooms					
Meals and coffee-break services					
Accommodation					

**How satisfied were you in general with IGSH-2013 course?**

**Very satisfied**

**Very unsatisfied**

**1**

**2**

**3**

**4**

**5**

What other improvements would you like to suggest?

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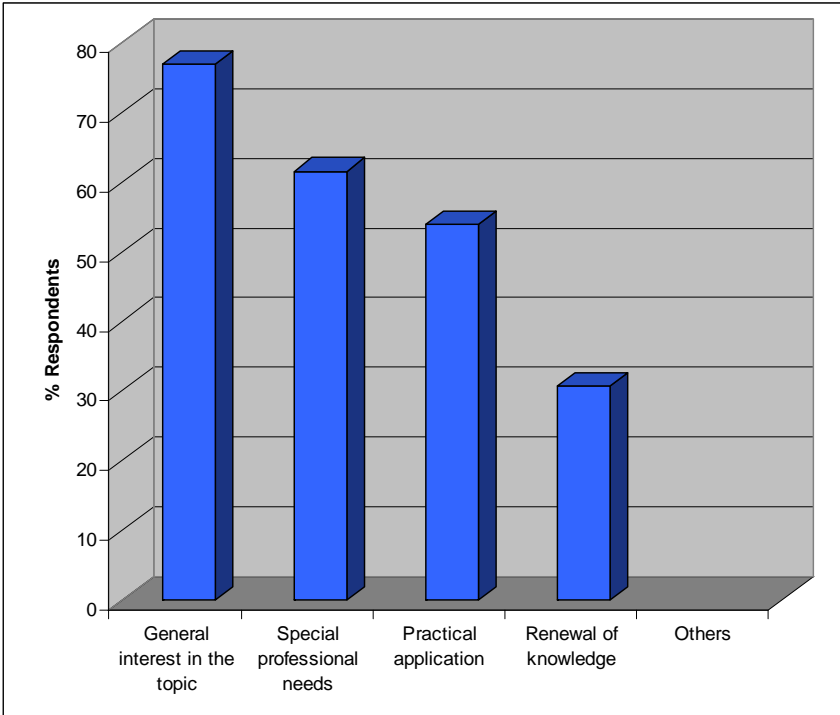
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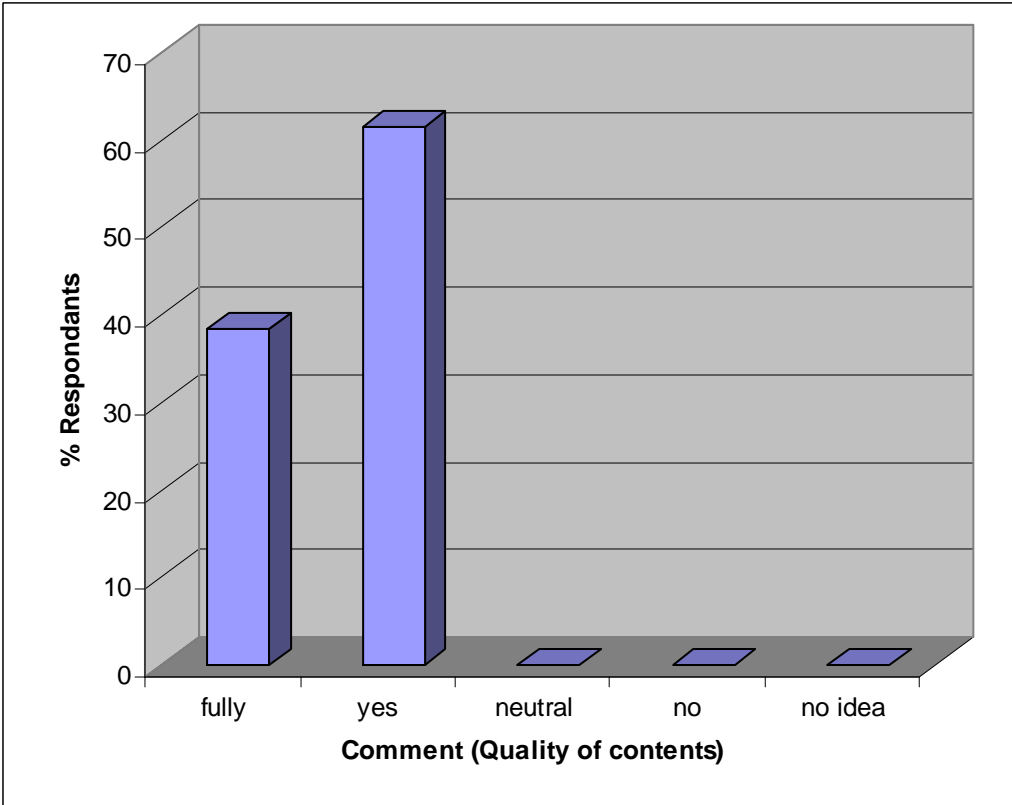
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# Annex-5 Statistical evaluation of Questionnaire

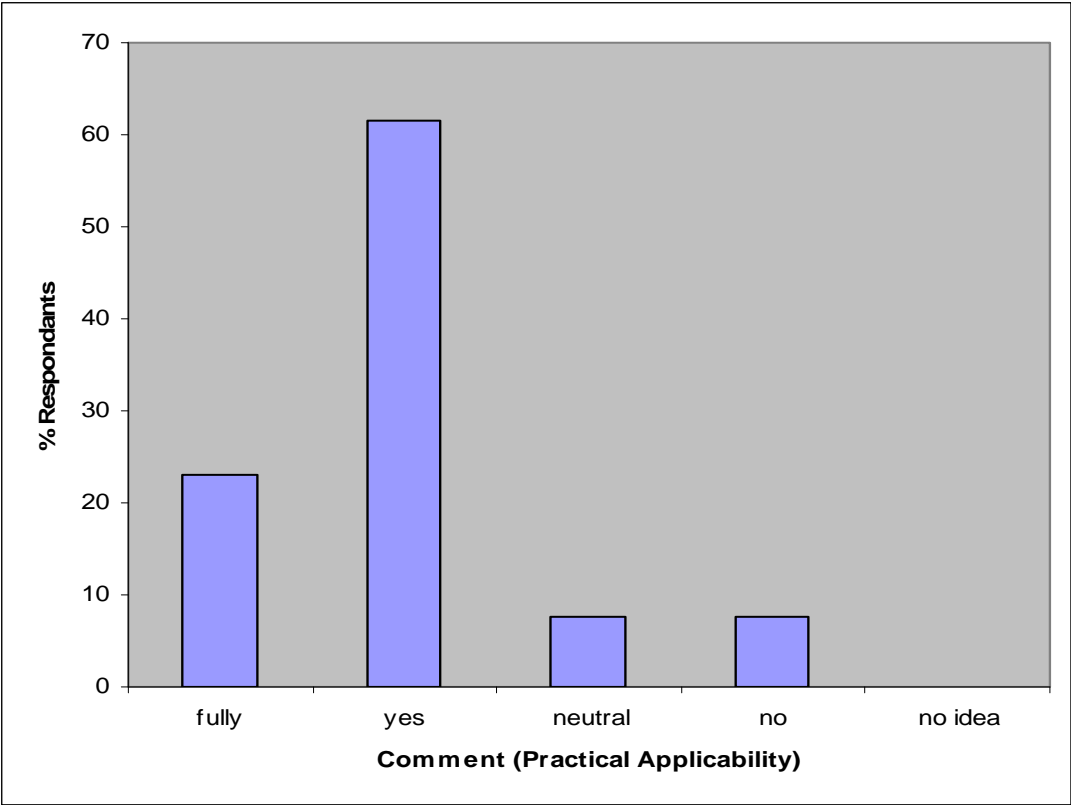
## A - Reason(s) of attendance



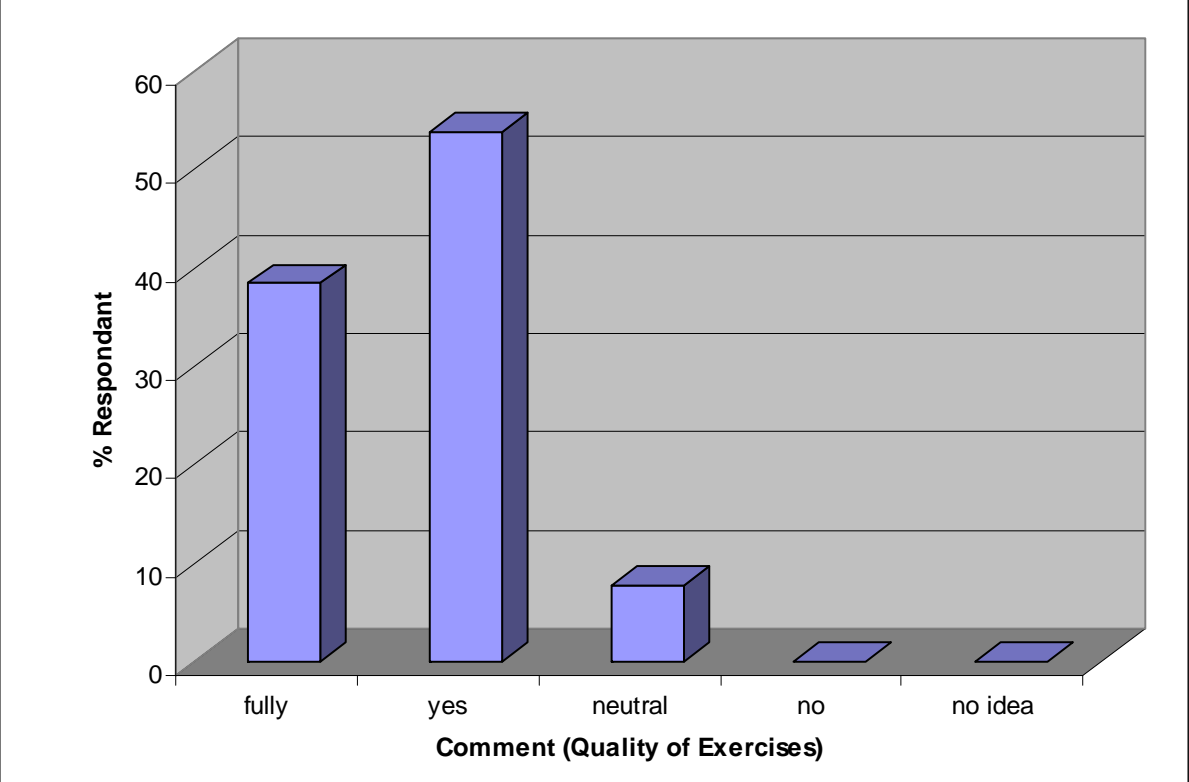
## B – Quality of content of the course



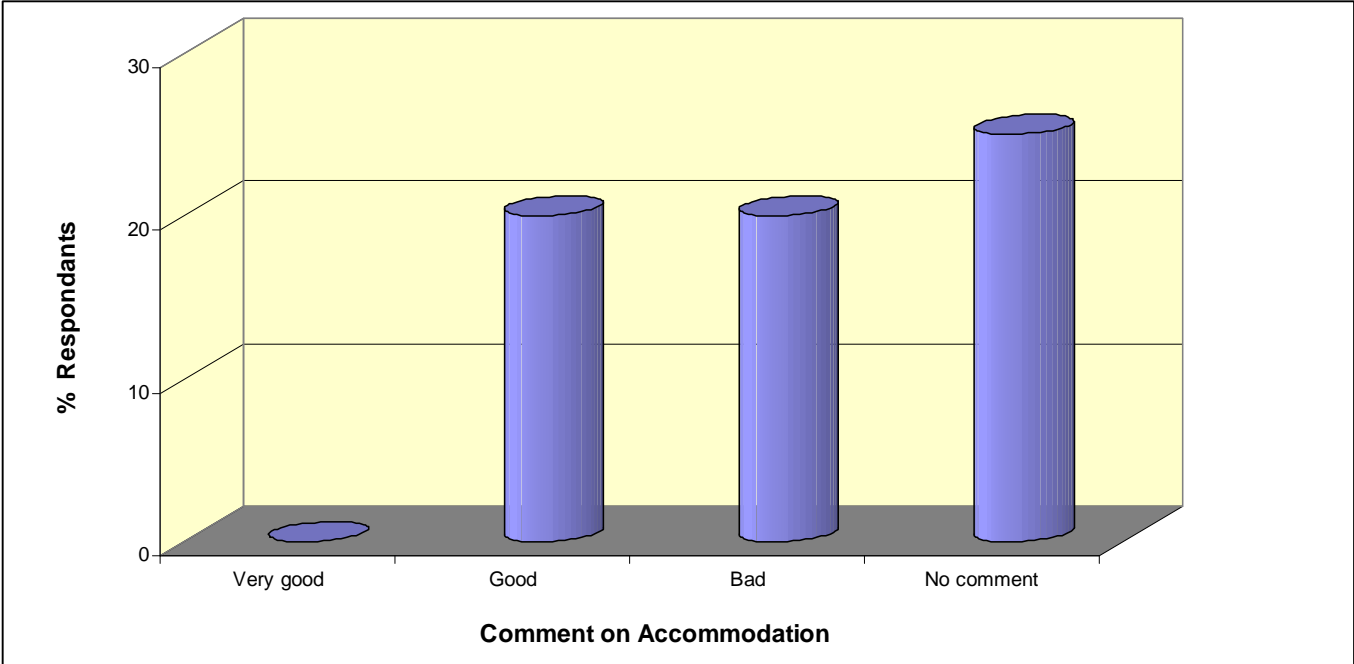
### C – Practical Applicability



### D – Quality of Exercises



E – Comments on Accommodation (Hotel and Hostel)



**Annex-6 Photos**



**Field excursion photos**



**Photos during Lectures**



**Certificate award**

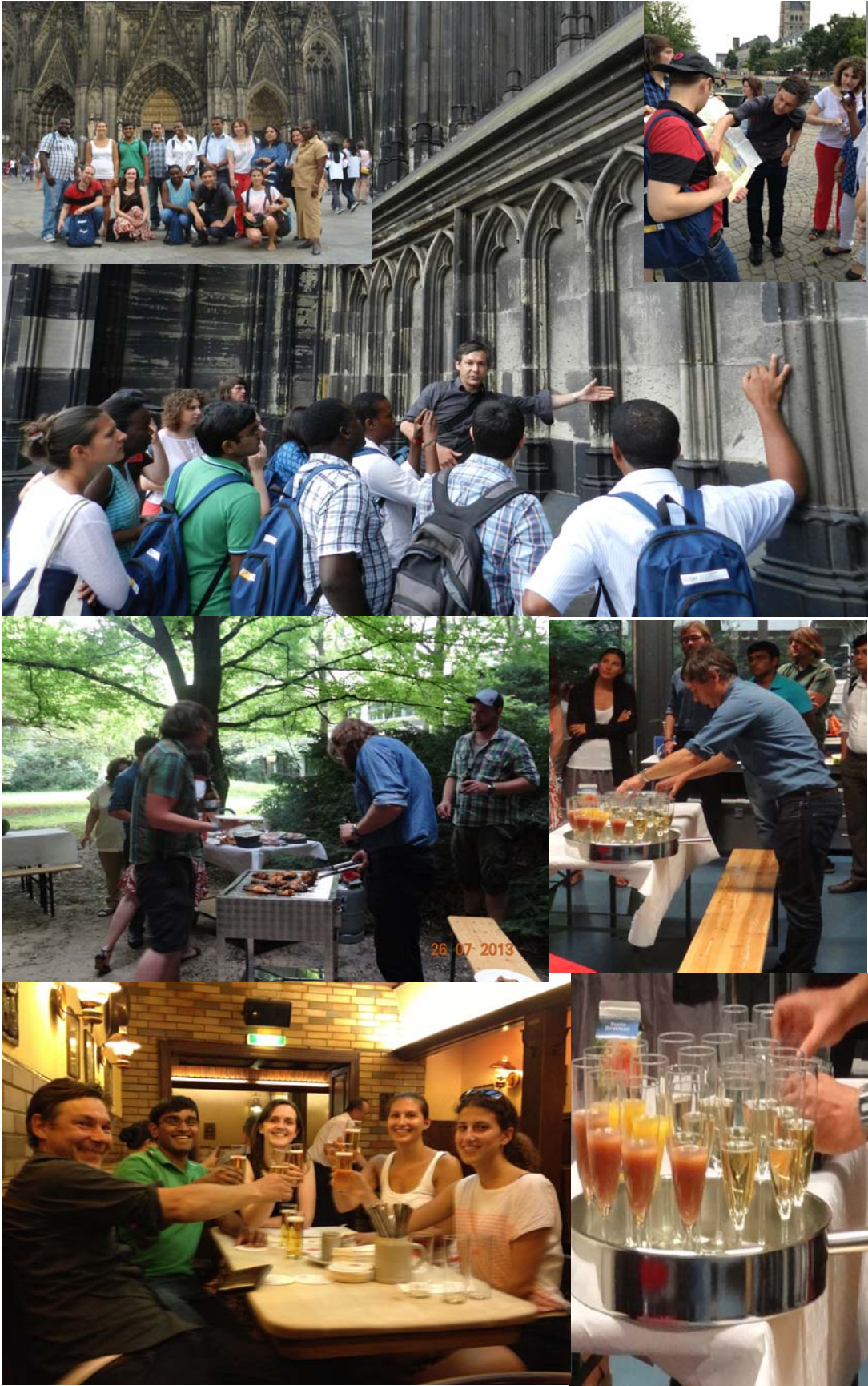




**Visits to hydraulic lab at RUB GMG laboratory**



**Participants at the University canteen (RUB Mensa)**



Social events and city tours