



International Course and Field Seminar
Characterization and Engineering of Karst Aquifers
 Trebinje, Bosnia & Herzegovina

Tentative program – 2017:

Day	Time (h)	Topic/Activity	Lecturer	
(1 June)	10 AM -	Arrival, Registration		
	7.30 PM -	Welcoming reception - Hotel VIV		
Day 1 (2 June)	9 – 9.30 AM -	Opening ceremony (HET, GSRS, FMG, NAU)	Z.Stevanović	
	9.30 – 11 AM	Introductory note; Historical development of karstology and karst hydrogeology; Importance of karst and karst distribution worldwide; Geo-heritage sites; Dinaric karst		
	11.15 AM – 12.45	Carbonate and non-carbonate rocks: mineralogy, depositional environments, classifications		D.Milovanović
	2 – 2.45 PM	Chemical factors of karstification; Role of tectonics		D.Milovanović
	3 – 4 PM	Porosity and permeability of karstic rocks; Karstification process and its features: Surface and subsurface karst landforms		Z.Stevanović
	4-5.30 PM	Groundwater circulation in karst: recharge, flow types and directions, discharge		Z.Stevanović
Day 2 (3 June)	9 – 10.45 AM	Methods in karst hydrogeology – an overview; Geology, remote sensing, geophysics, tracing tests, water occurrences inventory	Z.Stevanović	
	10.45 – 11.30 AM	Methods in karst hydrogeology – climate, hydrology, water chemistry, statistics	V. Ristić Vakanjac	
	11.45 AM – 12.45	Methods in karst hydrogeology – geomorphology, speleology, speleo diving, hydrogeology maps, GIS and database	S. Milanović	
	2-3.15 PM	Methods in karst hydrogeology – exploratory drilling, groundwater tapping, hydrogeological properties and field tests	Z.Stevanović	
	3.30-5 PM	Kartchner Caverns, Arizona, USA: Discovery, Development, Management--A Showpiece for Preservation, Public Engagement, Education, and Science	Chuck Graf	
Day 3 (4 June)	9-10.45 AM	Problems related to construction of dams, reservoirs and other structures in karst; Investigation, design, corrective measures, case studies.	P. Milanović	
	10.45-2.30 PM	<i>Half-day field trip</i> to Grančarevo and Gorica dams, and intake for water supply of Trebinje (“Oko” spring)	guided by P. Milanović and other lecturers	
	3.30-5 PM	Presentation on the HE system Trebišnjica; <i>DVD movie “Trebišnjica”</i> . Other case studies, Discussion	P. Milanović	
Day 4	8.30 AM -	<i>One-day field trip and seminar</i> (classical karst	guided by P.	

(5June)		features, phenomena, engineering structures): Popovo polje – Trebišnjica sinking river - Vjetrenica cave –spring Vrelo Bregave – Dabarsko polje – Fatničko polje (estavelle Obod) – Nevesinje – visit of tunnel construction HE Dabar in karstic rocks - Bilečko Lake (submerged source of Trebišnjica River) – Trebinje	Milanović and other lecturers
Day 5 (6June)	9.00 – 10.45 AM	Characterization of karst aquifers; Groundwater budget; Specific regime of karstic groundwater (quantity, quality); Safe yield; Aquifer control and sustainability	Z. Stevanović
	11.00 - 12.45	Modeling of karst aquifer – Springs hydrograph analysis and stochastic models	V. Ristić Vakanjac
	2- 2.45 PM	<i>Junior expert class:</i> Karst aquifer vulnerability; Anthropogenic impact and hazards; Karst Disturbance Index	B. Petrovic
	3.00 – 3.45 PM	<i>Junior expert class:</i> Quality dynamics at karst-springs. A challenge for drinking water supplies. Isotopic methods in karst, GW ageing	Lj Vasić
	3.45 – 4.30 PM	<i>Junior expert class:</i> Groundwater management and transboundary aquifers in karst: problems and solutions	V. Marinović
	4.30 – 5.15	<i>Protecting the nature: “Forgotten species”</i> (movie by S. Milanovic)	
Day 6 (7June)	9-10.45	Water resources cycle in karst; Surface-groundwater interaction; Feasibility studies and engineering design; Environmental impact assessment; <i>Case studies</i>	O. Bonacci
	11-12.00 AM	<i>Case study:</i> Leakage from reservoirs, specific research methods and remedial measures	S. Milanović
	12-12.45	Modeling of karst aquifers – conceptualization for numeric models, software, GIS Modeling	S. Milanović
	2- 3.00 PM	Transboundary aquifers in karst: problems, solutions and experiences	N. Kukurić
	3.15-4.45 PM	Spring hydrology: catchment delineation, inventory, assess, manage springs ecosystems	A. Springer
	4.45 – 6.00 PM	<i>Work and demonstration in the field:</i> Springs inventory (visit of Lušac spring)	A. Springer
	6 – 6.15 PM	Concluding remarks	Z. Stevanović
Day 7 (8 June)	9.30 – 12.30 AM	Exam: Written test and verbal discussion	Z. Stevanović, A. Springer, V. Ristić Vakanjac S. Milanović
	5.30 PM	Results of the exam, Certificates, Closing ceremony	
	6.00 PM -	Farewell party: Local winery; Dinner in national restaurant	