Advances in Heterog	eneous Con	nputing for Wate	r Resources						
Conveners: Andre Br	odtkorb, SIN	ITEF, and Wen-M	ei Hwu, Universit	y of Illinois					
room: Technology									
Wednesday, June 20	, AM-1								
9:40	André R. E	Brodtkorb	Reporting	Performand	e in the Th	ird Age of GPU Compu	ting - How t	o optimize,	verify and
10:00	Marc De la	a Asunción	Multi-GPU	Simulation	of Tsunam	is Generated by Subma	arine Landsl	lides	
10:20	Martin Lill	eeng Sætra	Shallow W	ater Simula	tions on Sp	arse Grids			
AM-2									
11:00	Mario Aco	sta	Heterogen	eous Parall	el Impleme	ntation of a Semi-Impl	icit 3D Hydr	odynamic N	Nodel
11:20	Markus G	eveler	Advanced,	hardware-	oriented Sh	allow Water simulation	s based on	the Lattice-	Boltzmann
11:40	Jiansong V	Vu Simulating dam-break flow through idealized city layouts with GPU-based S							
12:00									

Advances in	n Nonlinear and Linear S	olvers for Water Resor	urces Applications
Conveners:	Carol Woodward, Lawre	nce Livermore Nationa	l Laboratory, and Mario Putti, University of Padua
Room: Tech	nnology		
Tuesday, Ju	ne 19, AM-1		
9:40	Walker		Anderson Acceleration: Algorithms and Implementations
10:00	Woodward		Anderson Acceleration of Modified Picard Iteration for Variably Saturated Flow
10:20	White		A scalable nonlinear solver for modeling coupled hydromechanical processes i
AM-2			
11:00	Bergamaschi	(Mario Putti to prese	Low rank acceleration of symmetric/nonsymmetric preconditionersfor the nonlin
11:20	Ferronato	(Castelleto to presen	t) Block FSAI Performance with Graph Partitioning in Large Size Subsurface Pro
11:40	Thum		The Algebraic Multigrid Method (AMG) for the Acceleration of Advanced Groun
12:00	Nguyen		Adaptive Accuracy Control of Nonlinear Newton-Krylov Methods for Multiscale
PM-1			
2:20	Mills		Solver strategies to ameliorate barriers to scalable performance for subsurface
2:40	Ababou		Numerical Analyses of Nonlinear (Semi)Discrete Richards Equation for Finite D
3:00	Hannoun		Simulating Non-Dilute Transport in Porous Media Using a TCAT-Based Model
PM-2			
3:40	Jenkins		Mass Conserving Schemes for Saturated Groundwater Flow
4:00	Saibaba		Dimensionality reduction in the Geostatistical approach for Hydraulic Tomogra
4:20	Miglio		LEVEL SET IMMERSED BOUNDARY METHOD FOR THESOLUTION OF SH
4:40	Sandve		Mass conservative domain decomposition for fractured porous media
5:00	Aricò	(Tucciarelli to presen	t) A novel procedure for the solution of heterogeneous anisotropic transportproble

Conveners: Bret	t Sanders, UC Irvir	ne, and Paul Bates	, Bristol Univer	sity					
Featured Speake	ers: Guy Schumanı	n, University of Br	istol; Ryota Tsu	ıbaki, Hiroshima University					
Room: Quad									
Monday, June 1	8, PM-1								
2:10	Guy Schum	ann (Invited)	Assessing	forecast skill of a large sca	le 2D inundation r	nodel of the Lo	ower Zamb	ezi River	with multip
2.20									
2:30	Jochen Schi	ubert	Building tr	eatments for urban flood in	ındation models a	nd implication	s for predic		
2:30		ubert Ata		eatments for urban flood ind neme for shallow water equ		· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	tive skill a	and modeli
						· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	tive skill a	and modeli
2:50	Riadh		A WAF sch		ations with source	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	tive skill a	and modeli
2:50 PM-2	Riadh	Ata aki (Invited)	A WAF sch	neme for shallow water equ	ations with source	e terms and po	ollutant trai	tive skill a	and modeli unstructu
2:50 PM-2 3:30	Riadh A	Ata aki (Invited)	A WAF sch Structure of	neme for shallow water equ bof inundation flow over com	ations with source lolex topography payment: Advancir	e terms and po	ollutant trai	tive skill ansport on	and modeli unstructu
2:50 PM-2 3:30 3:50	Riadh Ryota Tsuba Timu Gallie	Ata aki (Invited) en tinakar	A WAF sch Structure of Flood Pred GIS-Based	neme for shallow water equ by inundation flow over com diction in an Urbanized Emb	ations with source plex topography eayment: Advancir for Integrated Two	e terms and po	ve skill of un	tive skill ansport on the standard flood lysis and the standard flood lysi	and modeli unstructu

Applying High-P	erformance Computing for Scientif	ic Discovery within Real-World Problems
		aboratory, and Haibing Shao, Helmholtz Center for Environmental Research - UFZ
Room: Technolo	ogy	
Wednesday, Jun	ne 20 PM-1	
2:20	Michael Commer	MPiTOUGH2-EMGeo – A massively parallel data inversion framework for joint hydrogeophysical re
2:40	Vicky Freedman	Simulation of Technetium-99 migration at the Hanford BC Cribs Site Using HPC
3:00	Glenn Hammond	The role of HPC on subsurface simulation of U(VI) transport at the Hanford 300 Area
PM-2		
3:40	Satish Karra	Modeling Enhanced Geothermal Systems using the Massively Parallel Sub-surface Reactive Flow
4:00	Jitu Kumar	Contaminant plume modeling at Oak Ridge Integrated Field Research Challenge site using High P
4:20	Alexis Navarre-Sitchler	Metal Release and Transport in Potential Drinking Water Aquifers Impacted by Stored CO2
4:40	Haibing Shao	High-performance computing techniques applied to the characterization and optimization of a therr
5:00		
Thursday, June 2	21, AM-1	
9:40	Scott Small	An Asynchronous Solver for Differential Equations Arising from River Basin Models
10:00	Velimir (Monty) Vesselinov	Agni: Coupling Model Analysis Tools and High-Performance Subsurface Flow and Transport Simul
10:20	Enrique Vivoni	Real-world Hydrologic Assessment of a Fully-Distributed Hydrological Model in a Parallel Computir

CO2 Sequestrati	on								
Conveners: Rube		nd Holger (Class, Unive	rsity of Stut	tgart				
Featured Speake									
Room: Lincoln									
Monday, June 1	8, PM-1								
2:10	Nordbotte	n (invited)		Novel appr	oaches for	modeling m	igration and	d trapping a	t geologic :
2:30	MacMinn			Gravity cur	rents arres	ted by conv	ective mixir	ng	
2:50	Castelletto)		CO2 Geolo	gical Sequ	estration: a	Numerical	Study in a F	Real Multi-C
PM-2									
3:30	Szulczewsl	(i		Convective	mixing at I	ate times:	simulations	and experir	nents
3:50	Gasda			Effective M	lodels for C	O2 Migratio	n in Geolog	gical Systen	ns With Var
4:10	Martinez			Coupled M	ultiphase F	low and Ge	omechanic	s for Analys	is of Capro
4:30	Tao			Estimating	Wellbore P	Permeability	of Potentia	I CO2 Leak	age Pathwa
4:50	Walter			Modeling of	oncepts to	address risl	k of brine in	filtration into	shallow g
Tuesday, June 19	9, AM-1								
9:40	Neuweiler						•	simulation	
10:00	Mehmani					•	•	ecies React	•
10:20	Ravi Ganes	sh		Characteri	zing small-s	cale migrat	ion behavio	or of seques	tered CO2
AM-2									
11:00	Backhaus			Laboratory	Measurem	ents of Larg	ge-Scale Flo	ows in Carb	on Seques
11:20	Fu			Three dime	ensional hig	h-resolutior	n simulation	of convecti	ve mixing
11:40	Elenius				<u> </u>			n trapping ir	
12:00	Riaz	(given by [D. Daniel)	Natural Co	nvection in	Saline Aqui	ifers with He	eterogeneo	us Permeal
PM-1									
2:20	Li			_				in Multipha	
2:40	Javaheri							mobilization	ofCO2 in S
3:00	Zhao			Capillary P	inning of Co	D2 Gravity C	Currents		
PM-2									
3:40	Tchelepi	(given by \	Nang)					regions for	
4:00	Hidalgo							cement of f	
4:20	Karvounis							ement in E0	
4:40	Scotti					•		ured porous	
5:00	Lu							nultiphase a	
5:20	Lomov	(ezzedine	presents?)	Uncertainty	/ Quantifica	tion in Thre	e dimensio	nal Flow, Tr	ansport an
Wednesday, Jun					–	<u> </u>			
9:40	Sykes			-	· · · · · · · · · · · · · · · · · · ·			Sequestration	
10:00	Mehnert						•	in the Basal	
10:20	Wainwrigh	it		Uncertainty	/ Quantifica	ition of the (CO2 Storag	e System fo	r a Hypoth
AM-2	_						p		D
11:00	Bauer			•				a coupled m	•
11:20	Garcia-Cak			-				f multiphase	
11:40	Gonzalez-I	vicolas						kage of CO	
12:00	Sun			A Global S	ampling-Ba	ised Method	d for Integra	ting Physic	s-Specific S

Computational Ed	cohydrology								
Conveners: Valer	iy Ivanov, Univer	sity of Michigan, and I	nrique Viv	oni, Arizona	State Univ	ersity			
Room: Quad									
Wednesday June	20, AM-2								
11:00	Butts		MIKE SHE-	ECOLAB – a	n integrate	d catchment-sca	le eco-hydrolog	ical modellin	g tool
11:20	He		Modeling	the Effects o	of Fine-scale	e Soil Moisture a	ind Canopy Hete	erogeneities	on Energy ar
11:40	Hwang		Simulating	transient h	ydrologic b	ehaviors during	forest clearcut a	and pine plan	tation with
12:00	Le		Expansion	of bioenerg	y crops: Co	mparison of its i	mpacts on hydr	ologic cycle f	or three site
PM-1									
2:20	Engesgaard	d	Can Subm	erged Plants	in the Litto	oral Zone of Gro	undwater-Domi	nated Lakes	act as Hydra
2:40	Kim		Hydraulic	resistance to	o overland	flow on vegetate	ed hillslopes wit	h mobile bed	
3:00	Howington		Simulation	of the Ther	mal and Hy	draulic Behavio	r of an Individua	al Tree within	a Forest
PM-2									
3:40	MacKay		A dynamic	plant water	r and carbo	n balance mode	I for testing tree	mortality m	echanisms u
4:00	Srinivasan		Resilience	Induced Sul	b-Optimal C	Carbon Allocation	n In Plants		
4:20	Matheny		Mechanist	ic linking of	stomata co	nductance to so	oil moisture usin	g a tree level	l hydrodynai
4:40	Fatichi		The "non-	effect" of gr	assland ma	nagement on lo	cal and watersh	ed ecohydro	logy
5:00	Istanbulluo	glu (Flores Cervantes)	Modeling	the Role of S	Solar Radiat	tion on Landscap	e Ecogeomorph	nic Developm	ent

Coupled Atmosph	nere-Surface-Subs	urface Mode	els	
Conveners: Reed I	Maxwell, Colorado	School of M	Aines, and Stefan Kollet, Bonn University	
Room: Alma Mate	or .			
NOOM. Alma Wate	ei ei			
Monday, June 18,	, PM-1			
2:10	Reed	Maxwell	High-resolution, Continental-scale simulations with an integrated hydrologic model.	
2:30	Morten Andr	e Larsen	The effect of two-way dynamical coupling in a climate-hydrological model setup	
2:50	John	Williams	Applying Land surface – Atmosphere Interactions to Improving Wind Energy Foreca	sting S
PM-2				
3:30	Jehan	Rihani	Subsurface-Landsurface-Atmospheric Feedbacks under a Range of Climate Condition	ons
3:50	Jean-Pierre	Vergnes	Regional and global off-line evaluation of the ISBA-TRIP groundwater scheme	
4:10	Daniel	Caviedes-V	/oullième Numerical simulation of groundwater-surface interactions by external coupling of the	∍ 3D R
4:30	Koen	Verbist	Influence of soil texture on the first-order exchange coefficient coupling for simulating	g surfa
4:50	Iryna	Rybak	Coupling Concepts for Multiphase Porous Medium and Free Flow Systems	

Data-driven Approac	hes for Wat	er Resourc	es Forecasti	ing and Kno	owledge Di	scovery				
Conveners: David Hill	, Rutgers Un	niversity, an	d Ken Reckl	how, Duke	University 8	& RTI Intern	ational			
Room: Humanities										
Wednesday, June 20	, AM-1									
9:40	Yang, Ci				Modeling S	Stream Flov	v Extremes under non	-time statio	nary conditi	ions
10:00	Cardiff, Mi	chael			Oscillatory	Hydraulic 7	Tomography			
10:20	Valyrakis, I	Manousos			Compariso	n of machi	ne learning technique	s for predict	ion of entra	inment of s
AM-2										
11:00	Schreuder				Challenges	in modelin	g impacts of water rig	hts on ephe	meral strea	ims
11:20	Mansour, 0	Ganji	(Asghari w	ill present)	Integrated	Machine L	earning Techniques in	Streamflow	Forecasting	g
11:40	Liu, Ganmi	ng			A Data Dri	ven approa	ch for understanding o	dynamics of	regional wa	ater resourc
12:00	Hill, David				Bayesian F	usion for H	igh-resolution rainfall	mapping		

General Session										
Session Chair: Pravee	n Kumar, U	niversity of Illino	ois							
Room: Humanities										
Tuesday, June 19, PN	1-1									
2:20	Tiangang	Cui		Parameter	Estimation	and Uncert	ainty Quantification of	Multiphase	Subsurface	Flow Mode
2:40	Corey	Winton		Analysis of	f Accuracy i	n Formatior	of Reduced Order Mo	odel		
3:00	Christian	Frias		Numerical	flow field ch	naracterizati	ion of the ripple-dune a	amalgamati	on process	
PM-2										
3:40	Ali	Zidane		Analytical-	numerical s	olutions for	density dependent flow	w in a free t	flow media	
4:00	Gabriele	Manoli		Two-phase	simulation	of a variabl	e rate infiltration expe	riment		
4:20	Natalie	Schröder		Effect of ro	ot water an	d solute up	take on solute transpo	rt in soils: a	3D simulati	ion study
4:40	Marco	Massabo		Fugacity-b	ased model	ing of conta	aminant transport duri	ng floods		
5:00	Gorti	Kasi Viswanadi	1	ASSESSM	IENT OF LA	ND USE L	AND COVER CHANG	ES IN MIDE	DLE GODA	ARI (G-5)
5:20	Gunnar	Nützmann		Advection	in bioirrigat	ed muddy s	ediments – can it be re	elevant? A ı	model study	

High-Dimension	al Computational Mo	deling of Rivers and Streams					
Conveners: Ma	arcelo Garcia, Unive	sity of Illinois, and Xioafeng	Liu, University of Texa	as-San Ant	onio		
Room: Quad							
Tuesday, June 1	9, AM-1						
PM-1							
2:20	Hutoff	Modelling Hydro- and I	Morphodynamic Respo	onses of Riv	ver Training Structures		
2:40	Liu	Simulation of Flow Fie	ld around and inside P	orous Scou	r Protection with Physi	ical and Re	alistic Partic
3:00	Tavakoli	Investigation of Paralle	el Scalability and Spee	dup for Cor	nputation of Stream Flo	ow River N	etworks Mad
PM-2							
3:40	Jiang	Numerical Investigation	n of Density Current or	ver Rough a	and Uneven Bottom		
4:00	Tokyay	Lock-exchange gravity	currents with small vo	lume of rel	ease propagating over	bottom-mo	unted obsta
4:20	Dordevic	Application of 3D nume	erical models in conflu	ence hydro	dynamics modelling		
4:40	Martin	A History of Hydraulic	Modeling at the Water	ways Expe	riment Station		
5:00	Sinha	Three Dimensional Hy	drodynamic Modeling	of the Chic	ago River: Comparative	Study bet	ween EFDC

Honoring the Caree	er and Contributions of Unive	rsity of Illinois Alumnus, George Pinder
Convener: Mike Cel	ia, Princeton University	
Room: Illinois Ballro	oom	
Monday, June 18		
10:20-10:45	Rien van Genuchten	Attempts at describing nonequilibrium vadose zone flow and transport processes at the fi
10:45-11:10	Linda Abriola	Coupled Hydrologic and Geophysical Inversion for Characterization of Nonaqueous Phase
11:10-11:35	David Ahlfeld	Groundwater Management Models: Balancing Model Sophistication with Practical Applica
11:35-noon	William Gray	George F. Pinder ??!!

Hybrid Multiscal	e Models in Sub	surface Flo	w and Trans	port					
Tim Scheibe, Pac	ific Northwest N	lational Lab	oratory, Qinj	jun Kang, Lo	os Alamos National La	boratory, Ma	tthew T. Ba	lhoff, Unive	rsity of Texas
Featured Speake	rs: Ilenia Battiat	o, Clemson	University, a	ind Tim Sch	eibe, Pacific Northwes	st National La	boratory		
Room: Quad									
Tuesday, June 19	9, AM-1								
9:40	Battiato (Invited)	Hybrid mo	dels of read	tive transport in poro	us media			
10:00	Coon		Coupling la	attice Boltzr	mann and continuum	equations for	the solutio	n of multiso	ale flow and reactive
10:20	Carle		A Triple-Po	rosity Dual	-Permeability Model f	or Assessme	nt of Radior	uclide Tran	sport in Transient Va
AM-2									
11:00	Scheibe	(invited)	MAP: An A	nalysis Plat	form for Multiscale Hy	ydrogeologic	Modeling w	ith Emphas	is on Hybrid Multisc
11:20	Alyaev		Multiscale	simulation	of non-Darcy flows				
11:40	Sheng		Multi-scale	simulation	study: integrated cou	upling of a ste	ady-state t	wo-phase d	ynamic pore-scale m
12:00	Balhoff		Multiscale	simulation	via direct substitution	of pore-scal	e models fo	r Darcy-scal	e grids near wells

Linking Observation	and Prediction: Frameworks for	Data Assimilation, Uncertainty Analysis and Valuing Information
Patrick Reed, Penn St	ate University, and Ming Pan, Pri	nceton University
Room: Alma Mater		
Tuesday, June 19, Al	И-1	
9:40	Ming Ye	Multimodel Bayesian Analysis of Data-Worth: Theory and Applications
10:00	Patrick Reed	Save Now, Pay Later? Multi-Period Many Objective Groundwater Monitoring Design Give
10:20	Matteo Camporese	Assessment of local hydraulic parameters by EnKF data assimilation in real aquifers: a ca
AM-2		
11:00	Gabriele Manoli	Improving Groundwater Modeling by Coupled HydroGeophysical Data Assimilation
11:20	Domenico Bau	Data Assimilation of Land Subsidence Measurements for the Estimation of Reservoir Geo
11:40	Yonas Demissie	Inverse Modeling for Estimating Parameters of Groundwater Models with Uncertain Forcir
12:00	Nicholas Dudley Ward	Some inverse problems for groundwater
PM-1		
2:20	Noura Fajraoui	Identifiability of the soil hydraulic parameters fromdrainage experiments
2:40	Jaideep Ray	Bayesian estimation of multiscale structures in a binary medium from sparse observations
3:00	Hongkyu Yoon	Data worth and optimal sampling analyses to reduce model prediction uncertainty for group
PM-2		
3:40	Daniel Tartakovsky (presented I	by Linearized Functional Minimization for Inverse Modeling
4:00	Franz Konecny	Sequential Monte Carlo Methods for the Calibration of Stochastic Rainfall-Runoff Models
4:20	Abdelhaleem Khader	Integrated Groundwater Quality Monitoring Network DesignCase Study: Eocene Aquifer, F
4:40	Mary Hill	Enhanced transparency and refutability in modeling environmental systems
5:00	Nikolaos Fytilis	Bayesian characterization of the uncertainty associated with geomorphic, habitat and water
5:20	Kumar Mahinthakumar	A parallel Markov chain Monte Carlo method for probabilistic characterization of pollutar

Mixing and Reaction	s across Sca	les in Porous Medi	а								
Conveners: Marco De	entz, Institut	e of Environmenal	Assessment a	nd Water Re	search (IDA	EA), Spanish Nationa	l Research Co	ouncil (CSIC), Barcelona		
Room: Alma Mater											
Wednesday June 20,	AM-1										
9:40	Marco Der	ntz	Mixing an	d Reaction i	n Heteroge	neous Media					
10:00	Daniel Mo	Innis	Modelling	of Non-Fick	ian Transpo	ort in Laboratory Sand	d Columns: T	he Role of	Solute Hete		
10:20	Roesanna	Neupauer	Comparis	on of Chaot	c Flows for	Plume Spreading in .	Aquifers				
AM-2											
11:00	Olaf Cirpka	3	Transvers	se Mixing in	Heterogene	ous Aquifers					
11:20	Pietro De A	Anna	Upscaling	of transport	in correlate	ed non Gaussian velo	city fields:co	nsequence	s for modeli		
11:40	Diogo Bol	ster	Anomalou	ıs Transport	as a Driver	for Incomplete Mixin	g and Anoma	alous React	ions		
12:00	Birendea .	Jha	A reduced	d-order mod	el of fluid m	ixing in strongly heter	rogeneous po	rous media	a		
PM-1											
2:20	Tanguy Le	Borgne	Persisten	Persistence of incomplete mixing in heterogeneous porous media							
2:40	Erica Sirila	ı	Evaluating	Evaluating effective reaction rates of kinetically driven solutes in large-scale, statistically							
3:00	N. Suciu	(Knabner will pre	sent) Global	nt) Global Random Walk Solutions to PDF Evolution Equations							
PM-2											
3:40	Daniel Les	ter	Lagrangia	Lagrangian Chaos and Mixing in Porous Media							
4:00	Ricky Villa	rreal	Quantifyir	Quantifying Mixing and Subsequent Reactions Across a Heterogeneous Porous Interface							
4:20	Kalyana Na	akshatrala	A novel co	omputationa	l framework	for bimolecular diffu	sive-reactive	systems			
4:40	Valentina	Prigiobbe	Anomalou	Anomalous transport of strontium in reactive porous media							
5:00											
Room: Alma Mater											
Thursday June 21, Al	W-1										
9:40	Jiang Jiang	uo	The Prun	The Pruned-enriched Method for Simulations of Continuous Time Random Walks							
10:00	Peter Kang	3	Macrosco	pic Modeling	g of Anoma	ous Transport on He	terogeneous	Lattice Net	works		
10:20	Gabriele C	hiogna				in heterogeneous an					

Auroop Ganguly	, Northeastern U	niversity, ar	nd Mukesh	Kumar, Duk	e University Property	
Featured Speake	ers: David Pierce	Scrings Inst	itution of C	Ceanogran	y, and Karsten Steinhaeuser, University of Minnesota	
reatured Speake	13. David Fierce,	Scripps mad		recurrograp	y, and raisen steiniacuser, oniversity of ivininesott	
Room: Quad						
Thursday, June 2	21, AM-2					
11:00	Karsten	Steinhaeus	Invited		Exploring Data Mining and Machine Learning Methods for Hydro	logy
11:20	Evan	Kodra			Toward a Bayesian Approach for Quantifying Regional Uncertair	nty in Precipitation Extrem
11:40	Martin	Drews			Coupling the MIKE SHE hydrological modelling tool with the HIR	HAM regional climate mo
12:00	Yanqing	Lian			ntegrated Flow and Water Quality Modeling for Ecosystem Rest	oration in the Lake Calur
PM-1						
2:20	David	Pierce	Invited		Jsing Observations to Better Assess Climate Change Impacts o	n Streamflow in the West
2:40	Debasish	Das			Predictive insights for precipitation extremes under non-stationar	y climate
3:00	Nicolas	Flipo			Current and future assessment of the main aquifer units contribu	tion to the river discharge
PM-2		Hoffman	(present by	/ Jitendra K	Assessment of Ecohydrological Impacts Under Climate Change	Scenarios from CMIP5
PM-2 3:40	Forrest					
	Forrest Charlotte	Thierion	(present by	/ F. Habets)	Estimation of climate change impacts on the coupled surface-sul	bsurface hydrosystem of
			(present by	/ F. Habets)	estimation of climate change impacts on the coupled surface-sulmate of Climate Change on Canadian Surface Water and Grou	
3:40 4:00	Charlotte	Thierion	(present by	/ F. Habets)		ındwater Resources: A C

Multiphase ar	nd Pore-Scale Mo	odeling: Cha	allenges and	d Perspecti	ves						
Malgo Peszy	nska, Oregon S	tate Univer	sity, and V	ahid Joek	ar-Niasar, I	Jtrecht Un	iversity				
Room: Quad											
Wednesday, J	une 20, AM-1										
9:40	Al Valoc	chi (Haihu L	iu presents)	Pore-scale	simulation	s of gas dis	placing liqu	id in a pore	network m	icromodel b
10:00	Joekar-N	Niasar (F. Do	ster preser	nts)	Pore-Netw	ork Analysis	s of Effects	of Trapping	on Hystere	esis in Two-	Phase Flow
10:20	Mark Po	orter			LATTICE-E	BOLTZMAN	IN MODELI	NG OF IM	MISCIBLE D	DISPLACE	MENT EXPE
Room: Humar	aiti a a										
Wednesday, J		C 5.1.			N 4	· . Di	' - I - I - N A I - I	(D(' - L) A /		. "	
2:20	Luis	Cueto-Felg	ueroso								metries: froi
2:40	Alain	Genty							bution mode		•
3:00	Espen	Jettestuen			Simulation	of Capillary	y-Controlled	Displacem	ients in 3D	Rock Image	es by a Vari
PM-2					0 11						
3:40		Peszynska						· · · · · · · · · · · · · · · · · · ·	n at poresca		
4:00	Steven	Mattis				<u>~</u>				<u>~</u>	ated Region
4:20	Anna	Trykozko							th inertia an		-
4:40	Florian	Frank			Numerics of	of Charged	Transport ir	n Porous Me	edia at Pore	and Fields	Scale
5:00	Amanda	Dye			Analysis of	Capillary P	ressure in a	Two-Fluid-	-Phase Poro	us Medium	System
Room: Humar	nities										
Thursday, Jun	e 21, AM-1										
9:40	Andrea	Ferrari			DIRECT S	MULATION	NS OF INTE	RFACE D	YNAMICS: I	LINKING C	APILLARY I
10:00	Masa		(Mehmani	will preser					perties of P		
10:20	Zeyun	Jiang		•							phase flow

Conveners: Clint Da	wson, University of Texa	and Casey Dietrich, University of Texas							
Room: Alma Mater									
Thursday, June 21,	AM-2								
11:00	Pierre Lermusiaux	Non-Gaussian Data Assimilation with Stochastic Boussinesq Equations for Coastal Ocean Dynamics							
11:20	Sultan Ahmed	MODELING LAKE MICHIGAN HYDRODYNAMICS: A PARALLEL WAY							
11:40	Ling Zhu	NUMERICAL MODELING OF NONLINEAR WATER WAVES WITH SIGMA COORDINATE AND LAY							
12:00	Aaron Donahue	A Boussinesq Scaling Approach to Solving Near Shore Phase Resolving Nonlinear Waves							
PM-1									
2:20	Clint Dawson								
2:40	Matt Malej	Computationally Efficient Numerical Model for the Evolution of Directional Ocean Surface Waves							
3:00	K. Asghari	Smoothed Particle Hydrodynamics Modeling of Wave Energy Dissipation							
PM-2									
3:40	Randall Kolar	Aspects of a Hydrologic/Hydrodynamic Coupled Model System with Application to Coastal Inundation							
4:00	Joseph Zhang	A fully coupled unstructured-grid model for wind wave-current interaction in large-scale applications							
4:20	S. Gopalakrishnan	Development of a Coastal Inundation Model using a Triangular Discontinuous Galerkin Method							
4:40	Chris Massey	ERDC's Coastal Storm Modeling System: Systems Integration							
5:00	Casey Dietrich	Surface Trajectories of Oil Transport along the Northern Coastline of the Gulf of Mexico							

Optimizat	ion and Un	certainty A	nalysis of Water R	Resources fi	rom a Systems Perspective						
					na Gray, Sandia National Laborator	ry					
Featured S	Speakers: Ja	mes Craig,	University of Wat	erloo, and L	aura Condon, U.S. Bureau of Recl	amation					
Room: Hu	manities										
Monday, J	lune 18, PM	 -1									
2:10)	James	Craig (invited)	A framewo	ork for evaluating the net impact o	f algorithm	decisions o	n hydrolog	ical model o	output: Nun	nerical and
2:30)	Abhishek	Singh	An Integra	ted Systems Model for Performan	ce Assessm	ent of a Lov	v-Level Rad	lioactive Wa	ste Disposa	al Site
2:50)	John	Tauxe	System-Lev	vel Modeling to Support Decision	Making witl	h Uncertain	ty in Radiol	ogical Perfo	rmance Ass	sessment
PM-2											
3:30)	Souheil	Ezzedine	Systems-Ba	ased Model for Subsurface Aquife	r Recharge	and Irrigation	n Manage	ment under	Conditions	of Uncerta
3:50)	Niels	Schütze	Stochastic	optimization of irrigation systems	under wate	er resource	constraints	from plot t	o regional s	cale using (
4:10)	Matthew	Parno	Joint exper	rimental design and robust optimi	zation in wa	ater resourc	es			
4:30)	Aswin	Kannan	The Benefi	it of Deeper Analysis in Simulation	-based Gro	undwater O	ptimization	Problems		
4:50)										
Tuesday, J	│ lune 19, AN	 -2									
11:00)	Laura	Condon (invited)	Incorporat	Incorporating water management into a physically-based hydrologic model						
11:20)	Kairong	Lin	Flood Feat	ure Identification and Clustering i	n Wujiang R	River, South	China			
11:40)	Arturo	Leon	Towards th	ne intelligent control of river flood	ing. Harmo	nizing long-	term objec	tives (e.g., i	rrigation, hy	/dropower)
12:00)	Andrea	Zimmer	Hydraulic I	Modeling and Optimization for Rea	al-Time Con	nbined Sew	er Overflov	v Decision S	upport	

Subsurface Biog	eochemistry and	Reactive Tra	ansport Modeling					
Conveners: Bren	t Sleep, Universi	ty of Toronto	, and Peter Knabner,	University of Erlangen				
Room: Lincoln								
Thursday June 2	1, AM-1							
9:40	Philip	Binning		The role of microbial h	neterogenei	ty in pesticide degrada	tion in agric	ultural soils
10:00	Ryan	Bailey		Simulating the Reactive	ve Transpor	t of Selenium in a Reg	ionallrrigate	ed Agricultu
10:20	Nanxi	Lv		Insights from Particle	Tracking Al	gorithm on the Effect o	f Motility or	Bacterial T
AM-2								
11:00	Juan	Nogues		Pore Network Model [Developmer	nt to Study Dissolution	and Precipi	tation of Ca
11:20	Adam	Atchley		Using Streamlines for	highly-reso	lved, reactive transpor	t CO2 leaka	age scenario
11:40	Paulo	Herrera		A Multiscale Lagrangia	an Approacl	n for the Numerical Sin	nulation of S	Solute Mixin
12:00	Marc	Hesse		Hyperbolic theory for	heterovalen	t ion-echange		
PM-1								
2:20	Alexander	Prechtel		Identification of biogeo	ochemical d	egradation parameters	of propyle	ne glycol by
2:40	Arash	Massoudieh		Uncertainty Analysis i	n Groundwa	ater Dating with Environ	nmental Tra	acers using
3:00	Shu	Xu		Modeling Isotope Frac	ctionation A	ssociated with Aqueou	s Phase Di	ffusion
PM-2								
3:40	Scott	Hansen		Employing Laguerre F	unction Bas	ses To Extend Analytic	Transport	Solutions to
4:00	Diego	Avesani		CHEMOTAXIS MODE	LLING IN F	IEROGENEOUS POR	OUS MEDI	A USINGSN
4:20	Julie	Chambon		Use of messenger RN	IA to predict	t microbial degradation	kinetics –	developmen
4:40	Oleh	Krehel		Flocculation in the cor	ntext of the	advection-diffusion-rea	ction equat	ion
5:00								

Transform	ing Water Resource N	/lanagemen	t with Oper	n-Source Co	mmunity	/ Tools					
Conveners	: David Moulton, Los	Alamos Natio	onal Labora	tory, and Ia	n Gorton	, Pacific Nortl	nwest Natio	nal Laboratory			
Room: Tec	hnology										
Thursday,	June 21, AM-2										
11:00		Schuchard	t			Akuna – an Open Environment for Advanced Simulation					
11:20	Deb	Agarwal				A Method	ology for M	anagement of F	leterogen	eous Site	Characteri
11:40	John	Moulton				Amanzi: a	Parallel Op	en-Source Flow	and Reac	tive-Trans	sport Simul
12:00	Jean-Rayr	De Dreuzy				H2OLAB: a	numerical	platform for the	e stochast	ic modeli	ng of comp
PM-1											
2:20	Thomas	Kalbacher	(presented	by Zolfagh	ari)	OpenGeoS	ys: An oper	n source project	for nume	erical simi	ulation of T
2:40	Chris	Kees	(presented by M. Farthing)			Parallel Co	mputation	al Methods and	Simulatio	n for Coa	stal and Hy
3:00	Luit Jan	Slooten				Proost, an	Open Sour	ce framework fo	or geohyd	rological	research ar

Advances in Algorith	nms for Three-D	imensional Incompressible Flow		
Bill Layton, Universit	y of Pittsburgh,	and Chris Kees, US Army Engineer Research and Develoment Center		
Wednesday PM-2				
Room: Lincoln				
3:40-4:00	Glimm	Algorithms for the Simulation of Incompressible Turbulent Mixing		_
4:00-4:20	Layton	Modern ideas in turbulence confront legacy codes		
4:20-4:40	Calderer	A Three-Scale Variational Multiscale Method for Incompressible Turbulent Flov	ws in Domains with N	νlον
4:40-5:00	Kees	Higher order methods for turbulent air/water flow interacting with moving struct	tures	
5:00-5:20	Chrispell	An Immersed Boundary Model of Swimming Sheets in a Viscoelastic Fluid		