

KIRKHAM CONFERENCE 2022 PROGRAM

Meet and Greet, and Registration: Nombolo Conference Centre Foyer

Sunday 28 August (18:00 - 20:00)

Everyone

Session 1: Opening session

Monday 29 August (08:00 - 10:40) Nombolo Conference Centre

Chair: MARY-BETH KIRKHAM

Time	Presentation Title	Presenter
08:00 - 08:10	Opening and Welcome	LORENTZ; CLOTHIER
08:10 - 08:50 (Keynote)	Securing the nation's water supply and livelihoods through sustainable soil management: A South African narrative	LIPHADZI
08:50 - 09:10	The Soil Science Society of America	CHAPMAN
09:10 - 09:40	The 2022 Don and Betty Kirkham Soil Physics Award Presentation: Linking soil structure and	VOGEL
09:40 - 10:00	Variably saturated flow into and through fractured rock: physical experiments and	DIPPENAAR
10:00 - 10:20	Vertical anisotropy and hydromechanical properties of the unsaturated saprolite in the complex intermediate vadose zone	SWART
10:20 - 10:40	Discussion	ALL
10:40 - 11:00	Discussion/Tea/Posters (Conference Centre Foyer)	

Session 2: Physical properties of soils

Monday 29 August (11:00 - 14:00) Nombolo Conference Centre

Chair: NAFTALI LAZAROVITCH

Time	Presentation Title	Presenter
11:00 - 11:20	The unexplored role of preferential flow in soil carbon dynamics	JIN
11:20 - 11:40	Soil carbon and soil water content: comparing organic and conventional: The Mandela Trials	AUERBACH
11:40 - 12:00	Findings from the North American Project to Evaluate Soil Health Measurements: Indicator selection and new pedotransfer functions	BAGNALL
12:00 - 12:20	Evaluation of water distribution on sandy soils with ultra-low flow drip irrigation and	HOFFMAN
12:20 - 12:40	Pan-African high-resolution simulations for agriculture using terrestrial systems modelling	OLORUNTOBA
12:40 - 13:00	Physical properties at the soil surface mediate water dynamics and subsequently yields in a USA Piedmont tillage study	MATHERS
13:00 - 13:20	Novel methods to detect non-rainfall water inputs in desert soils	KOOL
13:20 - 13:30	Discussion	
13:30 - 14:30	Lunch (Safari Lodge)	

Session 3: Hydropedology and landscape hydrology

Monday 29 August (14:30 - 17:30) Nombolo Conference Centre

Chair: SIMON LORENTZ

Time	Presentation Title	Presenter
14:30 - 15:20 (Virtual keynote)	Hydropedology as an important tool to characterize ecosystem services in line with the land-related UN-Sustainable Development Goals (SDG)	BOUMA
15:20 - 15:40	Using hydropedological characteristics to improve modelling accuracy in Afromontane	HARRISON
15:40 - 16:00	Pedological and practical impacts of water movement in sandy soils	LAKER
16:00 - 16:20	Application of hydropedological interpretations in hydrological modelling	VAN TOL
16:20 - 16:40	Surface water-groundwater interaction in experimental catchments in the Kruger National	RIDDELL
16:40 - 17:00	The effect of soil physical properties on bush encroachment in the North West Province	CLOETE
17:00 - 17:30	Discussion	ALL
19:00 -	Boma Barbeque Dinner	

Session 4: Irrigation and landuse Tuesday 30 August (08:00 - 10:30) Nombolo Conference Centre Chair: RIAN TO VAN ANTWERPEN		
Time	Presentation Title	Presenter
08:00 - 08:50 (Keynote)	The Virtual Irrigation Academy: from Soil Physics to Social Learning	STIRZAKER
08:50 - 09:10	Does conservation agriculture enhance soil hydraulic properties regardless of the farming system and agro-ecological zone?	TESFAMARIAM
09:10 - 09:30	Irrigation with reverse osmosis concentrate and brackish groundwater effects soil microbial composition and soil health	SHUKLA
09:30 - 09:50	Selected properties, genesis, classification and conservative approaches of soils derived from Imo Shale Geological Formation in Anambra State, Southeastern Nigeria.	AWAOGU
09:50 - 10:10	Modelling water flow in directly seeded paddy soils under alternate wetting and drying irrigation practice using HYDRUS-1D	BWIRE
10:10 - 10:30	North Carolina	DE ROS CARVALHO
10:30 - 11:00	Tea/Posters (Conference Centre Foyer)	
Session 5: Hydrological modelling Tuesday 30 August (11:00 - 13:40) Chair: JOHAN VAN TOL		
Time	Presentation Title	Presenter
11:00 - 11:20	Zonal calibration of SWAT+ models using soft data in R	BIEGER
11:20 - 11:40	Development of a South African national input database to run the SWAT model in a GIS	LE ROUX
11:40 - 12:00	Streamflow prediction with deep learning: a South African semi-arid catchment case study	SCHUTTE
12:00 - 12:20	Accurate seasonal streamflow forecasts developed for rainfall-dominated watersheds using remote sensing soil moisture and groundwater data	WYATT
12:20 - 12:40	Importance of understanding soil-water relationships in marginal rainfed cropping areas	NORTJE
12:40 - 13:30	POSTER Presentations 1 - 7	POSTER PRESENTERS
13:30 - 14:30	Lunch (Safari Lodge)	
Session 6: Soil air and thermodynamics Tuesday 30 August (14:30 - 17:10) Nombolo Conference Centre Chair: QUIRIJN DE JONG VAN LIER		
Time	Presentation Title	Presenter
14:30 - 15:20 (Keynote)	How fast the earth does surface breathe? Gas transport in high permeability soils and earth surface discontinuities	WEISBROD
15:20 - 15:40	Creating pedotransfer functions to determine important soil hydraulic properties	KOCK
15:40 - 16:00	Coupling of surface soil moisture and evapotranspiration from field to remote sensing	MOHANTY
16:00 - 16:20	Fire effects on soil properties in a large African conservation area	STRYDOM
16:20 - 17:30	POSTER Presentations 8 - 17	POSTER PRESENTERS
19:00 -	Safari Lodge Dinner	
Mid-Conference Tour Wednesday 31 August: Meet Outside Nombolo Conference Centre		
08:15 - 16:00	Depart from Conference Venue at 08:15	
17:30	Riverside Bush Dinner	

Session 7: Root water uptake
 Thursday 1 September (08:00 - 10:20) Nombolo Conference Centre
 Chair: MICHAEL VAN DER LAAN

Time	Presentation Title	Presenter
08:00 - 08:50 (Keynote)	Mechanistically upscaling of root water uptake: from the single root segment to the	VANDERBORGHT
09:10 - 09:30	Root activity for water uptake: a hydraulic approach	KOTLAR
09:30 - 09:50	Predicting soil water retention curves from soil physical properties of old store-and-release covers in Mpumalanga Highveld, South Africa	VAN SCHALKWYK
09:50 - 10:20	Discussion	ALL
10:20 - 11:00	Tea/Posters (Conference Centre Foyer)	

Session 8: Soil physical measurements
 Thursday 1 September (11:00 - 13:00) Nombolo Conference Centre
 Chair: JAN VANDERBORGHT

Time	Presentation Title	Presenter
11:00 - 11:20	Autocorrelation in soil moisture sensor measurement errors: A mechanistic error modelling	HENDRICKX
11:20 - 11:40	Non-invasive monitoring of nanoparticle transport and fate in the soil - a spectral induced	BEN MOSHE
11:40 - 12:00	Investigating the accuracy of various calibration equations of the EnviroScan sensor in soil water content estimations in Hungary	KIBIRIGE
12:00 - 12:20	Soil water sampler concentrations are influenced by the source and history of solute addition	VAN DER LAAN
12:20 - 12:40	Soil aquifer treatment: Process optimization and alternative approaches	FURMAN
12:40 - 13:00	Discussion	ALL
13:00 - 14:00	Lunch (Safari Lodge)	

Session 9: Soil surface gaseous exchanges
 Thursday 1 September (14:00 - 16:00) Nombolo Conference Centre
 Chair: EDDIE RIDDELL

14:00 - 14:20	Estimation of surface water flux from near-surface soil moisture measurements through PDE-constrained optimization	BANDAI
14:20 - 14:40	Effects of N-fertilizer rates on CO ₂ emission and yield of maize under different tillage systems	ARIJE
14:40 - 15:40	Discussion	ALL
15:40 - 16:00	Conference closing	LORENTZ, CLOTHIER
19:00 -	Conference Dinner	

POSTERS	TOPIC	PRESENTER
1	Contributions to Vadose Zone Research by the University of Pretoria	DIPPENAAR
2	Lisse effect in Tailings Stability	THERON
3	Surface Boundary Conditions for Finite Element Simulation of Platinum Tailings in a Semi-	LORENTZ
4	The stochastic interpretation of water balance components predicted by a hydrological	DE JONG VAN LIER
5	Evaluating the reliability of the South African National Land Type Map, iSDA, AFSIS, and SoilGrids-DSSAT-10km soil databases for crop model applications in South Africa	THOMSON
6	The cosmic-ray neutron probe: a potential irrigation scheduling tool for centre-pivot irrigated	ANNANDALE
7	Digital Soil Mapping for Hydrological Modelling in the Goukou Catchment	SMIT
8	Development and Application of Micro Tensiometer	JACOBSZ
9	Emergent Properties of Soil Moisture Dynamics Beyond Darcy Scale and Their Applications in	SEGHAL
10	Contradicting strategies: How deep roots help apple trees combat droughts under varying	SI
11	Nitrogen Fixation by Mungbean Genotypes in Different Soil Textures	DIATTA
12	Plant growth in soils with particulate plastics	KIRKHAM
13	Soil structure revealed from covariation in thermal and electrical properties	HEITMAN
14	Practitioner's Comparison between In-situ and Laboratory Hydraulic Conductivity Testing.	CAHI
15	The role of preferential flow in soil biogeochemical processes	JIN
16	Global Carbon, Water, and Energy Coupling Relationships from the Field to Satellite Footprint	MBABAZI
17	Soil moisture data fusion framework for massive datasets	KATHURIA