

NZHS MSNZ CONFERENCE 2022 - DUNEDIN

Monday 5 December 2022					
Workshops + Special Interest Groups					
NZHS Groundwater Forum					
Tuesday 6 December 2022					
OPENING CEREMONY - St David's Lecture Theatre					
8.45am - 9.30am					
Mihi Whakatau and Society Welcomes					
9.30 am - 9.45 am					
Morning Tea					
9.50 - 10.35					
Keynote Presentation: Bridget Scanlon: Univeristy of Austin, Texas, USA (virtual) <i>Relative Importance of Climate and Humans on Water Storage Changes using GRACE Satellite Data</i> Chair: Cath Moore					
Location	ST DAVS	ST DAV A	ST DAV B	MEL 2.15	ST DAV F
Theme	Groundwater Surface Water Interaction	NZ Water Model	General	Atmospheric Chemistry	
Session Chair	Katie Coluccio	Christian Zammit	Hisham Zarour	Dave Pollard	
10.40am-11.00am	Model-Based Hypotheses Testing For Structural Controls Of Braided River Water Exchange: The Wairau River Thomas Wöhling	2022 Update On The New Zealand Water Model (NZWAM) Lawrence Kees	Climate-Shock Resilience And Adaptation: Incorporating Climate Risk In Water Management Decision Making Zeb Etheridge	Comparison Of Arctic And Antarctic Stratospheric Climates In Chemistry Versus No-Chemistry Climate Models Olaf Morgenstern	
11.00am-11.20am	Quantifying Losses From Braided Rivers Using Active Distributed Temperature Sensing Leanne Morgan / Alice Sai Louie	Modelling Groundwater And Surface Water Interactions In The New Zealand Water Model (NZWAM) Wes Kitlasten	Source Water Risk Assessment And Management: A Practical Implementation Sally Lochhead	UV Changes Due To Daily And Seasonal Variability In Ozone Richard Mckenzie	
11.20am-11.40am	Structural Controls On Groundwater Recharge From Braided Rivers Scott Wilson	Viability Of Consents Under Climate Scenarios Using Hydrodesk Matt Wilkins	Identifying Wellbeing Aspirations For Assessing The Impacts Of Clean Water Technologies In Aotearoa New Zealand Honor Columbus	Influence Of Ozone Forcing On 21st Century Southern Hemisphere Surface Westerlies In Cmp6 Models Laura Revell	
11.40am-12.00pm	Groundwater - Surface Water Interaction At The Kauru River, North Otago Sam Yeo	The Impact Of Climate And Soil Data Input Uncertainty In Hydrological Model Performance Lawrence Kees	Making Use Of Routine Stream Monitoring Data To Unravel Hydrological Pathways Through Catchments Roland Stenger	Influences Of Antarctic Ozone Depletion On Southern Ocean Aerosols Yusuf Bhatti**	
12.00pm-1.00pm	Lunch				
Location	ST DAVS	ST DAV A	ST DAV B	MEL 2.15	ST DAV F
Theme	Groundwater Surface Water Interaction	Modelling Prediction + Data Assimilation	Rivers: Flow + Management	Go South	Case Studies
Session Chair	Leanne Morgan	Catherine Moore	Phil Mourot	Tony Bromley	Mark Schwarz
1.00pm-1.20pm	Deriving Transmission Losses From Ephemeral Rivers Using Satellite Imagery And Machine Learning Antoine Di Ciacca	An Improved Groundwater Redox Model For New Zealand Scott Wilson	Waikato River Design Floods: 20-Years On Lennie Palmer	An Overview Of The GoSouth Measurement Campaign Frank Stratmann	West Coast Floods In 2021 And 2022: Hydrometrology And The Role Of Atmospheric Rivers Rasool Porhemmat

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1.20pm-1.40pm	Groundwater Flow Paths Into Wairepo Arm And Kellands Pond, Upper Waitaki Management Zone Kate Nailue	Considerations For National Scale Model Of Groundwater Age Wes Kitlasten	Climate Change And Local Human Activities Have Altered River Flow Regimes In Canterbury Doug Booker	First Results From Ground-Based And Balloon-Borne Aerosol And Turbulence Measurements During The Gosouth Frank Stratmann	The August 2022 Atmospheric River Was One Of The Strongest Cold Season ARs In Recent History Tristan Meyers
1.40pm-2.00pm	Managing Uncertainties And Risks With A Near River Recharge Project Bill Noell	Determining Source Protection Zones For Heterogeneous Aquifers: Insights From Comparing Complex And Simple Methods Allanah Kenny	Modelling Low Flows With Machine Learning Technology To Support Water Management In The Wairau Valley Jing Yang	Lidar Observations Of Spatiotemporal Contrasts In Clouds And Aerosols (Lostecca) On The South Island NZ Julian Hofer	The Convective Outbreak Of June 2022: Was The Marine Heat Wave To Blame? Mark Schwarz
2.00pm-2.20pm	Groundwater-Surface Water Interaction In The Upper Taieri Scroll Plain, Otago Amir Levy	Modelling Framework To Estimate Fresh Groundwater Occurrences And Volumes Below Atolls Tess Davids	Structural Protection From Flooding Differences In Approaches Across The Ditch Lisa Holden	Numerical Modelling Of Aerosol-Cloud Interactions For The Gosouth Field Campaign Stuart Moore	
2.20pm-2.40pm		A new event-based rainfall-runoff equation Ali Shokri	Spatiotemporal Trends In Near-Natural New Zealand River Flow Laura Queen**	Towards A Better Understanding Of Clouds And Their Hemispherical Differences By Analyzing Cloud Images Juliane Kalla	
2.40pm - 3.30pm	Afternoon Tea and NZHS Gauging Regatta on the Leith				
Location	ST DAVS	ST DAV A	ST DAV B	BIG13	ST DAV F
	Groundwater Processes + Management	Modelling Prediction + Data Assimilation	Data Monitoring + Visualisation	Weather + Hydrological Forecasting	
	Scott Wilson	Jim Griffiths	Helen Rutter	Celine Cattoen-Gilbert	
3.30pm-3.50pm	Better Characterization Of Alluvial Aquifers By Assimilating Helicopter Electromagnetic And Bore Information Using Machine Learning Mike Friedel	Arcgis Pro Relaunch Of The Catchment Landuse For Environmental Sustainability (Clues Pro) Model: Help Wanted Annette Semadeni-Davies	Do You Have Messy Environmental Data? Create Standards To Summarise, Communicate, Or Automate Your Data Kurt Van Ness	Convection-Permitting Ensemble Weather Prediction Trevor Carey-Smith	
3.50pm-4.10pm	Shallow Groundwater Hydrographs Classification In Urban Ōtautahi / Christchurch Amandine Bosserelle**	Taieri Catchment Hydrological Model Development To Support Nps-Fm Limit Setting Process Channa Rajanayaka	Measuring Nitrate Concentrations In Water – The Pro's And Con's Of Commercial Laboratories Or Do-It-Yourself Karyne Rogers	Integrating High-Resolution Rain Radar And Spatially Distributed Hydrological Modelling For Flood Forecasting In New Zealand Beatriz Reboredo	
4.10pm-4.30pm	Metamodelling Naturalised Groundwater Levels Across Greater Wellington Region Jing Yang	Flood Hazard Forecasting By Interpolating Existing Inundation And Hazard Maps Jasmine Kang	Meteorology And The Post Quake Farming Project Sally Gray	Using Verification Methods To Evaluate Wrf Precipitation Forecasts At Different Resolutions And Environments Taren McLeod**	
4.30pm-4.50pm	Quantifying Timescales Of Seawater-Groundwater Interactions In Heterogeneous Alluvial Deposits Connor Cleary**	A Microbial Risk Assessment Tool To Protect Drinking Water Wells: Case Study And Demonstration Allanah Kenny	Otago Uses New Environmental Data Portal To Modernise Data Sharing And Compliance Nicole Nally	NZRA: The New Zealand Reanalysis Stuart Moore	
4.50pm-5.10pm	Loss Of Christchurch's High Quality Drinking Water Doug Rankin		Identifying Gaps And Challenges In Building Disaster Resilience Among Flood Affected Communities In Sri Lanka H. Unnathi S. Samaraweera**	Investigation Into The Sources Of Variability In Intense Rainfall And Flash Floods In The UK Isabelle Farley	
5.30pm-7.30pm	Welcome Function - Otago Museum				

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Wednesday 7 December 2022					
8.30am - 9.20am	<p align="center">Keynote Presentation: Grant Hose: Macquarie University, Sydney <i>Assessing Change in Groundwater Ecosystems and Why It Matters</i> Chair: Louise Weaver</p>				
Location	ST DAVS	ST DAV A	ST DAV B	ST DAV E	ST DAV F
Theme	Groundwater Quality + Quantity	Catchments Communities and Integrated Management	Large Scale Climate Variability	Sediment Transport + Turbidity	Snow and Mountains
Session Chair	Murray Close	Channa Rajanayaka	Daihi Stone	Sarah Mager/Chrissy Bright	Rasool Porhemmat
9.20am - 9.40am	Using Principal Component Analysis And Hierarchical Cluster Analysis To Explore Groundwater Quality Data Sets Ben Wilkins	Groundwater Modelling To Support Management Of Sustainable Growth Of The Cambridge Township Breda Savoldelli	Dynamical Downscaling Of CMIP6 Climate Models: Experimental Design And Historical Evaluation Peter Gibson	A Low-Cost Open-Source Clarity Sensor Ed Clayton**	Observed Mountainside Temperature Lapse-Rates Tim Kerr
9.40am-10.00am	Waikato Groundwater Quality And Management Response Efficacy John Hadfield	Source Water Risk Management Area Modelling For Groundwater: Issues And Uncertainties Helen Rutter	Future Changes In Dry And Wet Extremes Hidden Within Annual Rainfall Signals Luke Harrington	Dynamic Sediment Transport Routing Model Arman Haddadchi	Satellite Observations Of Snow Depth To Support Hydrological Modelling In Aotearoa New Zealand Todd Redpath
10.00am-10.20am	Recycling Of End-Of-Life Tyres In Seismic Isolation Foundation Systems - Assessment Of Potential Leaching Laura Banasiak	Agile, Adaptive Water Allocation Policy John Bright	High-Frequency Variability In The Southern Hemisphere: Observations And Cmp6 Models. Isaac Campbell**	Mass movement sediment delivery and mobilisation in alpine catchments Kate Hodgson**	The Effects Of Snow On Surface Meteorological Variables: Sensitivity Tests Yang Yang
10.20am-10.50am	Morning Tea				
Location	ST DAVS	ST DAV A	ST DAV B	ST DAV E	ST DAV F
Theme	Groundwater Processes + Management	Ma te haumarua o te wai	Groundwater Ecosystems	DMS, CCN and Particulates	General Meteorology
Session Chair:	Jeremy Bennet	Celine Cattoen-Gilbert	Louise Weaver	Laura Revell	Richard Turner
10.50am-11.10am	Recharge Models May Not Need To Be Complex For Robust Groundwater Management Predictions Suzana Guzman	Mā Te Haumarua Ō Te Wai: Increasing Flood Resilience Across Aotearoa Emily Lane	Factors Influencing The Distribution Of Stygofauna In Groundwater Systems. Murray Close	The Influence Of Reactive Halogen Species In Dms Oxidation Over The Southern Ocean Abhijith Ulayottil Venugopal	Emergence and De-Emergence of CFC-Induced Ozone Depletion in the Southern Hemisphere Fergus Robertson**
11.10am-11.30am	Fluid Flow Along Tectonic Faults In Lithified Rocks Inbar Vaknin**	Cascading Model System For National Flood Assessment Cyprien Bosserelle	Making The Unseen Seen: Hidden Taonga In Our Groundwater Louise Weaver	Condensation Nuclei Off The West Coast Of The North Island, New Zealand. Tony Bromley	Improving Auckland's Rainfall Observation System Luke Sutherland-Stacey
11.30am-11.50am	Multiyear Drought Impact (2018-2019-2020) On The Groundwater System Of The Dutch Sandy Area Perry de Louw	Automated Generation Of Hydrologically Conditioned Digital Elevation Models For National-Scale Hydrodynamic Modelling Rose Pearson	Optimising Methods For Sampling Groundwater Ecosystems For Environmental Impact Assessments And Routine Monitoring Grant Hose	Importance Of Sampling Frequency In Determining Airborne Microplastic Deposition Flux Alex Aves**	Improving wind gust estimation from NWP models: Methodologies and Dependency on Model Resolution Annick Terpstra
11.50am-12.10pm	Offshore Freshened Groundwater In New Zealand Leanne Morgan	Improving Gridded Rainfall Spatial Interpolation For Extreme Events Raghav Srinivasan	National Survey Of Groundwater Bacterial Diversity: Insights Into Relationships Between Microbial Biodiversity And Groundwater Karen Houghton	Enabling Primary Marine Organic Aerosol As A Source Of Ice Nucleating Particles In The Nzesm Nick Edkins	Verification Of Sky Conditions In Public Forecasts On The South Island's West Coast Clare O'Connor**
12.10am-12.30pm	Nitrate Trends And Pulses Under A Changing Climate Helen Rutter	Cross Validation And Characterization Of Rainfall Extreme Events Between Rain Gauges And WRF In North-Canterbury Andrea Pozo**	Open Q&A slot: monitoring ecosystems for the NPS-FM(2020)		

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12.30 - 2.00pm					
Poster Session Lunch					
Location	ST DAVS	ST DAV A	ST DAV B	BIG13	ST DAV F
Theme	Groundwater Surface Water Interaction	Ma te haumarua o te wai	Large Scale Climate Variability	Machine Learning in Weather Climate + Hydrology	Groundwater Processes + Management
Session Chair	Amandine Bosserelle	Emily Lane	Nathanael Melia	Peter Gibson	Lee Burberry
2.00pm-2.20pm	Towards An Extended Wairau Plains Groundwater Model Thomas Wöhling	Floods in ungauged rivers: improving quick and slow flow pathway partitioning in a hydrological model. Celine Cattoen	Water Cycle Changes: The IPCC AR6 View James Renwick	Combining Physics And Artificial Intelligence - A Hybrid Model For Improved Climate Projections Neelesh Rampal	Groundwater Capture And Protection Zones – Capturing The Water Services Act Requirements Hisham Zarour
2.20pm-2.40pm	Wainui Stream Catchment Assessment Oliver Anderson	Modelling Inundation In Aotearoa: A New Tool Tested On The Buller River Flooding Alice Harang	Modelling The Potential Impacts Of Climate Change On Auckland's Water Resources Sarah Innes	Development Of Climate Inputs For Hydrological Models Patrick Durney	A review of methods to map and estimate population size for urban catchments. Mckay Price**
2.40pm-3.00pm	Investigating Groundwater Sources To A Coastal Lagoon Using Hydrogeochemistry And Nutrient Analysis Katie Coluccio	Uncertainty In Predictions Of Flood Inundation Caused By Model Grid Sampling Martin Nguyen**	Does The Southern Hemisphere Westerly Jet Return To Normal Under Net-Negative Ghg Emissions? Hunter Douglas**	A Data-Driven Approach To Predicting Floods In Real-Time Phil Mourot	Using Noble Gas (Ar, Ne) Concentrations To Evaluate Denitrification Capacity Of New Zealand Groundwater Matthew Coble
3.00pm-3.20pm	Saltwater Intrusion From An Estuarine River In Christchurch Irene Setiawan**	Estimating The Cost Of The July 2021 Buller Floods Attributable To Climate Change Sam Dean	Modelling The Hazard And Risk From Landslide Dam Outburst Floods In The West Coast Region Jane McMecking**	Compound And Seesaw Event Occurrence Across New Zealand: A Multivariate Perspective Morgan Bennet**	
3.20pm-3.50pm	Afternoon Tea				
Location	ST DAVS	ST DAV A	ST DAV B	BIG13	ST DAV F
Theme	Groundwater Processes + Management	Modelling Prediction + Data Assimilation	Power and Industry	Machine Learning in Weather, Climate + Hydrology	PDP Student Networking Workshop
Session Chair	Mike Stewart	Husam Baalousha	Jim Salinger	Neelesh Rampal	Christina Bright
3.50pm-4.10pm	A Groundwater Isoscape For New Zealand Vanessa Trompetter	A Bayesian Framework For Mapping The Probability Of Groundwater Inundation Under Sea Level Rise Scenarios Lee Chambers	An Inventory Of Global Rocket Launch Emissions And Projected Near-Future Impacts On Stratospheric Ozone Laura Revell	A Multiple Classification View Of Clouds Over Southern Ocean Cyclones Alex Schuddeboom	
4.10pm-4.30pm	Chemistry-Assisted Hydrograph Separation: A Novel Constraint For Groundwater Models Paul Oluwunmi	Improving Stochastic Modelling Workflow Visualisation, Interrogation And Interaction Brioch Hemmings	Model Bias Correction To Assess Impact Of Climate Change On Future Hydro-Power Capacity Jim Griffiths	Applications For Ai Downscaling Of Sub-Seasonal Forecasts: High Resolution Drought Predictions And River Flow Forecasts Tristan Meyers	
4.30pm-4.50pm	Groundwater Tracers For Understanding Water And Nitrate Flow Through Te Hoiere / Pelorus Catchment Uwe Morgenstern	The Fifth Revision Of The Hutt Aquifer Model: An Update On An Update Jeremy Bennett	Dry-Calm-Cloudy Years In Aotearoa's Energy Future Ben Liley	Can Deep Machine Learning Add Context To Traditional Weather And Climate Measurements? - Case Study Jeremy Bulleid	
5.00pm-6.00pm	NZHS – AGM			NZMS – AGM Metsoc 50th Anniversary Oral History Project Ciaran Doolin	
from 7.00pm	ENVC Social Function - Vault 21				

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Thursday 8 December 2022					
8.30am - 9.15am	<p align="center">Keynote Presentation: Graeme Smart NIWA, Christchurch <i>Recent Flood Disasters – The Exceptional Phenomenon of Global Watering</i> Chair: TBC</p>				
9:15 am –10:00	NZHS - Service Award Presentations				
10.00am-10.20am	Morning Tea				
Location	ST DAVS	ST DAV A	ST DAV B	MEL 2.15	ST DAV F
Theme	Groundwater Quality + Quantity	Irrigation, Drainage, Soils + Water	Essential Freshwater: Science for Implementation	Rainfall Statistics	Indigenous Knowledge Systems
Session Chair	Laura Banasiak	Trevor Webb	Estefania Santamaria Cerrutti	Tim Kerr	Karyne Rogers
10.20am-10.50am	Contaminant Transport And Risks To Groundwater Quality From An On-Site Wastewater Management System Andy Pearson	S-Map Soil Parameters For Swat Soil & Water Assessment Tool Catchment Model Joseph Pollacco	New Zealand 3D Hydrogeological Map: The Big Picture Maria Estefania Santamaria Cerrutti	Is Climate Change Evident In Wellington Rainfall Records? Deborah Maxwell	Indigenous Knowledge To Underpin Climate Change Adaptation: Water Management Insights From Overseas Frederika Mourot
10.50am-11.10am	Dual Porosity Modelling Of Seawater Intrusion In Fractured Aquifers Husam Baalousha	Trialling An In-Stream Woodchip Denitrifying Bioreactor As An Edge-Of-Field N-Mitigation Practice Lee Burbery	Building New Zealand's 3D Aquifer Map: Facies Mapped At The National Scale For Coastal Systems Paul White	Characterising Extreme Rainfall In New Zealand As A Function Of Spatial And Temporal Scale Using Radar Observations John Nicol	Model-Based Processing Of Measured And Historical Stream Behaviour; Seeking Culturally Meaningful Environmental Catherine Moore
11.10am-11.30am	Using Surface Nuclear Magnetic Resonance To Characterize River Systems In New Zealand Mathias Vang	Deriving Drainage From Soil Moisture Multi-Depth Sensors Joseph Pollacco	New Zealand 3D Hydrogeological Map: The Wairau Plains Coastal Groundwater System Martin Crundwell	XRain: Extreme Precipitation For Data Scarce Areas Cameron Oliver	Narratives, Sources Of Knowledge, Cultures, And Intentionality: Impacts On Natural Resources, Hazards, And Environments Pierre Glynn
11.30am-11.50pm	Waimea Plains Groundwater Quality Investigation 2021 Melanie Westley	N-Wise Irrigation – Field Testing John Bright	New Zealand 3D Hydrogeological Map: 3DFacies in the Heretaunga Plains Coastal Groundwater System Paul White	Examination Of The Classification Of Precipitation Events In Extreme Weather Event Database For New Zealand Gokul Vishwanathan**	Yakama Nation Managed Aquifer Recharge Partnership Clare Houlbrooke
11.50am-12.10pm	Groundwater Nitrification – Natural Production Of Nitrate Below The Water Table At Te Waikoropupū Springs Mike Stewart	Hand Augers And Micro Drill Rigs. Reliability And Usefulness In Site Investigations Dirk Van Walt	Aquifer Mapping Projects Using Airborne Time-Domain Electromagnetics: Overview And Update Maiwenn Herpe	When It Rains, It Pours: An Identified Relationship Between Wet Day Frequency And Precipitation Intensity Cameron McErlich**	Open session Q&A: Knowledge and Cultures
12.15-1.30pm	Lunch				

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Location	ST DAVS	ST DAV A	ST DAV B	BIG13	ST DAV F
Theme	Groundwater Quality + Quantity	Ecosystem Health Measures + Environmental Flows	Surface Water Quantity + Quality	Large-Scale Climate Variability	Runaka Hui (TBC)
Session Chair	Roland Stenger	Lawrence Kees	Doug Booker	James Renwick	
1.30pm-1.50pm	Are Nitrate Loss Mitigations Improving Water Quality? Zeb Etheridge	Predicting Naturalized Catchment Conditions Using Ensemble Machine Learning To Inform Otago's Land And Water Plan Mike Friedel	Chemical Contamination In Lake Opuha Doug Rankin	An Update On Research Projects Of The Weather And Wildfire Theme: Resilience To Nature's Challenge Richard Turner	
1.50pm-2.10pm	Assessing Groundwater Quality Impacts From Near River Recharge Ryan Nicol	An Assessment Of Geo Hazards At Gunns Camp, Fiordland, Following The February 2020 Storm Event Chase Hemming	Critical Assessment Of The Bowel Cancer Studies On The Effects Of Drinking Water Nitrate Selva Selvarajah	CO ₂ : A Hidden Driver Of Declining Global Water Quality? Adam Hartland	
2.10-2.30pm	On Site Wastewater Treatment Effects: Trying To Improve Certainty In An Uncertain World Ross Hector	Design Methodology For Culverts With Fish Passage Gustaaf Kikkert	Water Velocity Profiles With Surface Wind Interactions Hamish Biggs	Aotearoa New Zealand's 21st-Century Wildfire Climate Nathanael Melia	
2.30pm-2.50pm		A Proposed Framework For River Flow Management To Support Implementation Of The NPS-FM Doug Booker	The Relative Influence Of Climate, Landscape Structure, And Forest Harvest On Catchment Suspended Sediment Export Brian McGlynn	Average Circulation Conditions That Precede River Flooding In Eastern Catchments Of New Zealand Amy Bridges**	
2.50-3.10pm			Where's The Best Water? Alternative Water Supply Investigations In Rural New Zealand: A Case Study Of Carterton, New Zealand Sarah Yeo	Coupled Ocean-Atmosphere Summer Heatwaves In The New Zealand Region: An Update Jim Salinger	
3.15pm-3.30pm	Conference Close				
3.30pm - 3.45pm	Afternoon Tea				
3.45pm - 6.30pm	Free time to prep for dinner				
6.30pm	Conference Dinner - Dunedin Town Hall				
	FRIDAY 9 DECEMBER				
	FIELD TRIPS - meet at 8.45am for 9.00am departure (St David St)				
	PROGRAMME IS SUBJECT TO CHANGE				