



Monday 3 December

Workshops	<p>Python for Environmental Scientists – venue: Environment Canterbury, 200 Tuam St.</p> <p>Climate Change: from data to decisions – venue: NIWA, 10 Kyle St.</p>
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Tuesday 4 December

7:30am	Registration Desk Opens				
8.30am	Official Opening – Mayor and Minister (TBC) Mihi/Welcomes/Health & Safety				
9:00 – 9:45 am	Keynote Speaker: Bronwyn Hayward: University of Canterbury Sea Change: Climate Change and NZ				
Room					
Session number/name	1/ Climate change 1	2/Fire management	3/Flow management	4/Eigen Modelling for Groundwater Level Prediction (Special Session)	5/NZ Water Model – Hydrology (Special Session)
Session Chair					
10.00am - 10.20am	Changes in Southern Hemisphere precipitation patterns through the 21st century in global chemistry-climate models Laura Revell University of Canterbury	How can a stable atmosphere impact extreme fire behaviour? Daisuke Seto University of Canterbury	Dry weather discharges from a monitored stormwater catchment Ed Clayton Pattle Delamore Partners	Introduction to the Eigenmodel method for determining the dynamics of groundwater level and discharge Vincent Bidwell Vincent Bidwell Consultancy	Update on the New Zealand water model-hydrology project Christian Zammit NIWA
10.20am – 10.40am	The role of anthropogenic forcing in extreme rainfall during early March 2014 in Christchurch Ben Nistor Victoria University of Wellington	The Influence of Boundary Layer Turbulence to Wildfire Spread Behaviour Jiawei Zhang University of Canterbury	Design hyetographs in flood modelling - real or fantasy John Hansford Tonkin + Taylor	Eigen modelling to predict the impacts of climate and irrigation Helen Rutter Aqualinc	Building a finer digital river network from a hybrid Lidar-15mDEM model. Ude Shankar NIWA
10.40am – 11.20am	Morning Tea + Poster Session				
Session number/name	6/Groundwater management	7/Climate & weather	8/Irrigation & drainage	9/Eigen Modelling for Groundwater Level Prediction	10/NZ Water Model – Hydrology (Special Session contd)

				(Special Session contd)	
Session Chair					
11.20am - 11.40am	Investigation of methods to predict groundwater redox status with variable amounts of available well data Murray Close ESR	Digitising New Zealand and Pacific climate data: Understanding NIWA's archive and preparing for the future Petra Pearce NIWA	A tool to compare various irrigation scenarios approaches under diverse soil plant available water conditions M S Srinivasan NIWA	An Eigenmodel Approach for Groundwater Level Prediction Julian Weir Aqualinc	Development of a surface water isotope layer for New Zealand Channa Rajanayaka NIWA
11.40am – 12.00pm	The occurrence and origin of salinity in non-coastal groundwater in the Waikato region John Hughey Waikato Regional Council	Grouping and rankings in NIWA's climate reporting Gregor Macara NIWA	Determination of optimal irrigation range for rotational grazing pasture in Canterbury, New Zealand Birendra KC Aqualinc	Gda-mc ² - estimating uncertainty bounds in the groundwater data analysis tool Lee Burbery ESR	Benchmarking in the NZ water model: What is it and why do it? Roddy Henderson NIWA
12.00pm – 12.20pm	Modelling lagoon response to assess future management regimes and climate scenarios Chris Jenkins Environment Southland	Comparison of sunshine measurement instruments in New Zealand Raghav Srinivasan NIWA	Application of WATHNET model for assessment of irrigation shortfall Shailesh Singh NIWA	Eigen-modelling to inform flow and water quality limits for te Waikoropupu Springs, Golden Bay Andrew Fenemor Maanaki Whenua Landcare Research	Progress on national surface-groundwater modelling: model development, parameterisation and regionalisation Jing Yang NIWA
12.20pm – 12.40pm	Making the most of long-screened wells in groundwater investigations David Poulsen Flinders University	The observed and simulated tropical sea breeze over the Great Barrier Reef Tony Bromley NIWA	A review of field drainage lysimeter research in New Zealand Abigail Lovett Earth & Environmental Science Ltd.	The near future of groundwater level forecasting Tim Kerr Aqualinc	Inclusion of subsurface hydraulic properties in the New Zealand Water Model-Hydrology Project Rogier Westerhoff GNS Science
12.40pm – 1.40pm	Lunch – Waterways Student Mentoring Session				
Room					
Session number/name	11/Catchments & communities 1	12/Flow forecasting	13/Groundwaters of NZ	14/Air quality + isotopes	15/Forecasting large weather and flood events
Session Chair					
1.40pm – 2.00pm	Backing the people of the Ōpāwaho/Heathcote river: Achieving flood protection and multiple values in an urban catchment Peter Christensen Christchurch City Council	The prospects for producing a reliable flood forecast: A rainfall-runoff investigation Magdy Mohssen Otago Regional Council	Investigating the groundwater resource beneath Wellington harbour: Exploration activities and hydrogeological analysis Mark Gyopari Earth In Mind	Examining the stable isotopic composition of water vapour over southern New Zealand David Pollard NIWA	Forecasting cyclones Fehi, Gita and Hola from a severe weather perspective Fulong Lu MetService
2.00pm – 2.20pm	RMA plan review as hypothesis testing – a socio-hydrology perspective David Scott ESR	Data assimilation for a hydrological flood forecasting model Greg Whyte DHI Water & Environment	Investigating the groundwater resource beneath Wellington Harbour: A new conceptual geological analysis for hydrogeological modelling John Begg GNS	Between two oceans: Auckland's urban aerosol Guy Coulson NIWA	Where science & communication meet - focusing on severe weather events Lisa Murray MetService

2.20pm – 2.40pm	Christchurch Rivers and their Communities. Swamp to City Hugh Thorpe <i>Independent</i>	NZ Water Model— river flow forecasting Celine Cattoen <i>NIWA</i>	Assessing subsurface drainage of the Kaimaumu Peatlands Sean Berry <i>Soil & Rock Consultants</i>	A pilot study of aerosol concentrations at two locations near Cook Strait Sally Gray <i>NIWA</i>	Comprehensive approach to flood frequency analysis David Leong <i>Tonkin & Taylor</i>
2.40pm – 3.00pm	Gisborne managed aquifer recharge project - Stage 2 injection trial Eric van Nieuwkerk <i>Golder Associates</i>	Assessing drivers of ensemble flood forecasting uncertainties during ex-Cyclone Debbie Kelsey Montgomery <i>NIWA</i>	Groundwater flow model development for the Rangikaki, Tarawera and Whakatane water management areas Mauricio Taulis <i>Jacobs</i>	An online tool to guide orchardists outdoor burning activities Kathleen Kozyniak <i>Hawke's Bay Regional Council</i>	Regional flood estimation tool for New Zealand Roddy Henderson <i>NIWA</i>
3.00pm – 3.20pm	Barriers to the uptake of building-scale water sensitive urban design technologies in Christchurch Vicky Southworth <i>University of Canterbury</i>	Assessing the impact of model simplification on river flow reliability predictions: a synthetic example Channa Rajanayaka <i>NIWA</i>	Groundwater allocation regime for all catchments in the bay of plenty region 2005 - 2018 Paul White <i>GNS science</i>	A quantitative analysis of Auckland's atmospheric boundary layer in relation to brown haze Hannah Marley <i>University of Auckland</i>	The world catalogue of floods – are these floods outliers? Rob Connell <i>Independent</i>

3.20pm – 4.00pm	Afternoon Tea + Poster Session				
Session number/name	16/ Managed aquifer recharge	17/Antarctic weather & climate	18/Climate change 2	19/Rainfall mapping	20/Groundwater contaminants and transport
Session Chair					
4.00pm – 4.20pm	Managed aquifer recharge as a tool for supporting the balance between environmental demands and agriculture: a case study in the Walla Walla basin, USA Jake Scherberg <i>Williamson Water Advisory</i>	Controlled meteorological balloons over Ross Sea Polynyas Ethan Dale <i>University of Canterbury</i>	Effects of climate change and water resource limits on Wairarapa Valley water resources. Andrew Dark <i>Aqualinc</i>	Enhancing VCSN rainfall estimates for hydrological modelling Andrew Tait <i>NIWA</i>	Tracking groundwater contamination using DNA tracers Liping Pang <i>ESR</i>
4.20pm – 4.40pm	Integrated water management in the Hekeao/Hinds Plains utilising the tools of managed aquifer recharge Bob Bower <i>WGA</i>	Remote sensing of the McMurdo dry valley micro-climates and their hydrological impacts Rajasweta Datta <i>University of Canterbury</i>	Potential hydropower generation under future climate change Daniel Collins <i>NIWA</i>	Rain radar nowcasting for small catchment hydrology in New Zealand using steps Luke Sutherland-Stacey <i>Weather Radar New Zealand</i>	Plan change 2 - what it means for nutrient management and farming Stephen Collins <i>Horizons Regional Council</i>
4.40pm – 5.00pm	Estimation of the five-year impact of the Hinds MAR trial on groundwater levels and quality Patrick Durney <i>DHI Water Resources</i>	How does Antarctica cool itself? - outgoing infrared radiation Jordis Tradowsky <i>Bodeker Scientific</i>	Modelling the flow-on effects of climate change: Marokopa, NZ Raiatea Barlow Kameta <i>Victoria University of Wellington</i>	Spatial and temporal difference between rain radar and rain gauges, implications for Canterbury Geoff Austin <i>University of Auckland</i>	High resolution nitrate monitoring - joining the dots Phillip Abraham <i>ESR</i>
5.00pm – 5.20pm	Forecasting recharge rates for MAR infiltration basins Cameron Jasper <i>Pattle Delamore Partners</i>	Consistency of surface winds in multiple reanalyses products over the ross sea/ross ice shelf Adrian McDonald <i>University of Canterbury</i>	Mapping grapevine-climate relationships at high resolution in vineyard regions in the context of climate change Andrew Sturman <i>University of Canterbury</i>	On the sensitivity of urban catchment response to the different precipitation sources Nikhil Garg	Measuring actual denitrification to understand nitrogen loads through aquifers Heather Martindale <i>GNS Science</i>

				CSIRO Data61	
6:00pm – 8:00pm	Welcome Function – University of Canterbury Staff Club (Ilam House)				

Wednesday 5 th December					
	Registration Desk Opens				
8.30am – 9.15am	Keynote Speaker: John Crouch – MetService South Island West Coast Rainfall – A Polarimetric Radar View				
9.15am – 9.25am	Housekeeping and Notices				
Room					
Session number/name	21/International governance and policy	22/Earth systems & processes	23/Rainfall & flow forecasting	24/ Waimakariri Special Session	25/Climate processes
Session Chair					
9.30am – 9.50am	The elusiveness of adaptive governance: some preliminary insights from the Philippines Sahara Brahim <i>University of Canterbury</i>	Plankton to planetary waves, simulating the 'earth system' Jonny Williams NIWA	Decision-making using rainfall forecasts from multiple models Trevor Carey-Smith NIWA	Investigating the fate and transport of groundwater nitrate in the Silverstream catchment, North Canterbury Lee Burbery ESR	A convective-scale reanalysis for New Zealand Stuart Moore NIWA
9.50am – 10.10am	Spatially explicit analysis of water scarcity levels related to agricultural policy in Brazil Markus Pahlow <i>University of Canterbury</i>	Evaluation of HadGEM3 Southern Ocean cloud using observations and reanalyses Peter Kuma <i>University of Canterbury</i>	Statistical models forecasting daily river flows for operational use in a Hydroelectricity catchment Jen Purdie <i>Meridian Energy Ltd</i>	Understanding nitrate transport pathways in the Waimakariri – Christchurch area: insights from well data Henry Dillon <i>Environment Canterbury</i>	Where does our water come from - and how does it get here? Daniel Kingston <i>University of Otago</i>
10.10am - 10.30am	HIWeather New Zealand: opportunities to connect to a co-operative international research programme David Johnston <i>GNS Science / Massey University</i>	Assessing aerial dispersal of myrtle rust to Raoul Island and from West Island Richard Turner NIWA	Short-term reservoir inflow forecasting, modelling water availability for the Clutha hydro power scheme Amy Waters <i>University of Waikato</i>	Collaborative development of a stochastic groundwater model of the Waimakariri – Christchurch Aquifer System Zeb Etheridge <i>Environment Canterbury</i>	Modelling glacial mass balance with an enhanced temperature-index model Hamish Prince <i>Otago University</i>
10.30am - 11.10am	Morning Tea + Poster Session				
Room					
Session number/name	26/Weather monitoring & prediction	27/Snow	28/Groundwater quality 1	29/ Waimakariri Special Session contd	30/Hydrology
Session Chair					
11.10am - 11.30am	New Zealand gust climatology part ii: revising New Zealand regional wind speeds Amir A. Safaei Pirooz <i>The University of Auckland</i>	Resolving controls on snow distribution in the Pisa Range, New Zealand Lucy Just <i>Otago University</i>	Impacts of on-site sewage management in Glenorchy - piecing together the puzzle Alexandra Badenhop <i>e3Scientific</i>	End-member mixing analysis of recharge sources in the Christchurch Aquifer System Lisa Scott	Estimating actual evapotranspiration from a raingarden using the Bowen ratio energy balance method Tingting Hao

				<i>Environment Canterbury</i>	<i>University of Auckland</i>
11.30am – 11.50am	Time sequential thermography for spatial turbulence measurements Marwan Katurji <i>University of Canterbury</i>	The snowpack energy balance and drivers of snowmelt in the Australian Alps Shane Bilish <i>Snowy Hydro</i>	Use of sonication to better sample attached microbes from groundwater systems Louise Weaver <i>ESR</i>	Calibration-constrained uncertainty analysis of groundwater flow and contaminant transport models for the Waimakariri-Ashley region Brioch Hemmings <i>GNS Science</i>	The influence of storm origin, intensity, and duration on runoff processes in tussock grasslands in eastern Otago Sarah Mager <i>University of Otago</i>
11.50am – 12.10pm	Km-scale numerical weather prediction and ensemble methods – problems, solutions, examples and future prospects Michael Martens <i>Metservice</i>	Snow hydrology of the southern alps: A review Rasool Porhemmat <i>University of Canterbury</i>	The onshore influence of offshore fresh groundwater - a global-scale analysis Leanne Morgan <i>Waterways Centre for Freshwater Management</i>	Source zone delineation for nitrate management in the Waimakariri and Christchurch Aquifer System Matt Hanson <i>Environment Canterbury</i>	Using predictive uncertainty analysis to optimise data acquisition for stream depletion predictions Tess Op Den Kelder <i>GNS Science</i>
12.10pm – 12.30pm	Calibration of a Scanning X-Band Rain Radar with a Vertically Pointing Doppler Ku-Band Rain Radar Andrew Coffin <i>University of Auckland</i>	Characteristics and controls of snow cover variability in the Clutha catchment, revealed by remote sensing Todd Redpath <i>University of Otago</i>	Effect of varying flowpath contributions on longitudinal baseflow stream chemistry patterns Roland Stenger <i>Lincoln Agritech</i>	We've been really clever and built a stochastic model. Now, how do we make resource management decisions with the results? Zeb Etheridge <i>Environment Canterbury</i>	A tool for efficient land-use optimization under uncertainty: the stochastic impulse-response emulator Matthew Knowling <i>GNS Science</i>
12.30pm – 1.30pm	Student Lunch Session				
1.30pm – 3.00pm	Special poster session				
3.00pm – 3.20pm	Afternoon Tea				
Session number/name	31/Protecting drinking water	32/Contaminant monitoring & modelling	33/Hydrological monitoring	34/ Hydrological Modelling & Floods	35/ Groundwater
Session Chair					
3.20pm – 3.40pm	Did Havelock North's 2016 drinking water contamination transform business owners' perspective of water? Rachel Teen <i>Waterways Centre Freshwater Management</i>	New Zealand SWAT: sediment model implementation Aroon Parshotam <i>Aqualinc</i>	The Internet of things – what we did, what worked, and what didn't Rodney McKay <i>NIWA</i>	LiDAR resolution for flood models Graeme Smart <i>NIWA</i>	Nationwide estimates of renewable and non-renewable groundwater volumes in New Zealand Rogier Westerhoff <i>GNS Science</i>
3.40pm – 4.10pm	Protection of drinking water sources under multi-barrier risk based approaches following the Havelock North outbreak Tony Cussins <i>Tonkin + Taylor</i>	Hydrograph separation and nutrient load prediction using monthly stream phosphorus and nitrogen data Simon Woodward <i>DairyNZ</i>	Monitoring and modelling river landscapes with unmanned airborne vehicles (UAV's) Michael Butts <i>DHI</i>	Using ecological infrastructure to reduce flooding Deborah Maxwell <i>Victoria University of Wellington</i>	A probabilistic model of aquifer susceptibility to earthquake-induced groundwater-level changes Konrad Weaver <i>Victoria University of Wellington</i>

4.10pm – 4.30pm	The use of simple tools for managing risks to wellfields Katy Grant <i>Pattle Delamore Partners</i>	Export of nitrogen and phosphorus from subsurface drained dairy pastures on the Hauraki Plains Greg Barkle <i>Aqualinc</i>	Monitoring; for what purpose? Nicole Calder-Steele <i>Environment Canterbury</i>	A simplified approach to groundwater model calibration James Griffiths NIWA	Groundwater flow and transport model simplifications using equilibrium water table and particle pathline methods Mike Toews <i>GNS Science</i>
4.30pm – 4.50pm	Modelling in heterogeneous aquifers and how this relates to source protection zone delineation Catherine Moore <i>GNS Science</i>	The influence of unsaturated zone drainage status on shallow groundwater redox conditions in Reporoa basin Juliet Clague <i>Lincoln Agritech Ltd</i>	Chemical composition of alpine rivers in the southern alps, New Zealand Sophie Horton <i>University of Otago</i>	“Looped Rating” effect in Whanganui River rated flows Graham Macky <i>Macky Fluvial Consulting Ltd</i>	Groundwater availability of the Franklin Deep Waitemata Aquifer using FEFLOW modelling and flow-net analysis Philip Kelsey <i>Earthtech Consulting</i>
5.00pm – 6.00pm	NZHS AGM La Vida MSNZ AGM La Vida				
From 7.00pm	Student Function Venue TBC				

Thursday 6th December

	Registration Desk Opens				
8.30am – 9.15am	Keynote Speaker: <i>Simon Cox - GNS Science</i> Water And The Hydrological Cycle – The Source Of Life, But A Major Driver Of Future Hazards				
9.15am – 9.20 am	Housekeeping and Notices				
9:20-9:50 (6-min orals)	Stochastic artefacts - unexpected images David Scott ESR Hydrology sounds interesting Graeme Smart NIWA Water the effects of undocumented stopbanks? Thomas Wallace University of Canterbury Developing a new class of pathogen surrogates for water applications Liping Pang ESR Ltd				
Room					
Session number/name	36/Groundwaters of NZ	37/Mapping NZ geology	38/Shallow groundwater dynamics	39/Environment flows	40/Water allocation
Session Chair					
10.00am – 10.20am	Aquiferwatch – towards an operational tool to predict Wairau plain aquifer depletion Thomas Wöhling <i>Technische Universität Dresden / Lincoln Agritech</i>	The data, or the geology? A multi-model analysis of solute transport in synthetic braided-river deposits. Jeremy Bennet <i>University of Tübingen / Tonkin + Taylor</i>	Understanding the dynamics of shallow groundwater: the Christchurch experience Helen Rutter Aqualinc	A new approach to substrate mapping: supporting high resolution habitat suitability assessments for environmental flows Jo Hoyle NIWA	Assessing the impact of over-allocation on the flow regime: Raparapawai stream case study Raelene Mercer <i>Horizons Regional Council</i>
10.20am – 10.40am	Utility assessment of reduced order models (ROMs) as surrogates for the Wairau Plain groundwater model Moritz Gosses <i>Tu Dresden</i>	Laboratory studies of mixing between an open framework gravel channel and a permeable reactive barrier Laura Banasiak ESR	Subsurface flowpaths of Christchurch springs Michael Stewart <i>Aquifer Dynamics & GNS Science</i>	River flow vs waves: processes controlling river mouth lagoon dynamics Richard Measures NIWA	Using vulnerability assessments to design “big river” flow studies in catchments involving multiple Hapu Gail Tipa <i>Tipa and Associates Ltd</i>
10.40am - 11.20am	Morning Tea + Poster Session				
Room					
Session number/name	41/Groundwater quality 2	42/Extreme events	43/Applied Hydrology	44/Groundwater management 2	45/ Reservoirs & Hydropower
Session Chair					
11.10am – 11.30am	Denitrification rate inputs to groundwater models Theo Sarris ESR	Investigating New Zealand’s droughts in the 20th and 21st centuries Abha Sood NIWA	Application of Gibbs’ model to drainage networks and its implication on flood mitigation in urban catchments Yongwon Seo <i>Korean Water Resource Association</i>	Groundwater supply protection zones in France: Case study and perspectives in New Zealand Frederika Mourot GNS Science	Development and application of a hydropower reservoir routine for the soil and water assessment tool (SWAT) Jayandra Shrestha <i>University of Canterbury</i>
11.30am – 11.50am	Sources of nitrate in the Tinwald, Ashburton area Philippa Aitchison-Earl <i>Environment Canterbury</i>	Two unprecedented marine and land heatwaves in New Zealand: Summers of 1934/35 and 2017/18 compared Brett Mullan NIWA	You don’t have to visit a river to know its hydraulics Doug Booker NIWA	Understanding groundwater dynamics from tritium and ¹⁸ O in coastal Wairau plain aquifer; NZ Peter Davidson <i>Marlborough District Council</i>	Lake Taupo storage: Is it needed? Earl Bardsley <i>University of Waikato</i>
11.50am – 12.10pm	Pathways for nutrient contamination of Barkers Creek, South Canterbury Hamish Graham	Why did the Clutha have record flows in 1957/58? James Renwick <i>Victoria University of Wellington</i>	A Study on the Development of Loss Function for the Transportation Facilities in South Korea	Groundwater dynamics in the coastal Wairau plain aquifer Uwe Morgenstern GNS Science	

	<i>Environment Canterbury</i>		Shinbum Hwang <i>Sangji University</i> <i>Korean Water Resource Association</i>		
12.10pm – 12.30pm	Water management ki uta ki tai for the Selwyn river system Brett Painter <i>Environment Canterbury</i>	Earthquake-induced aquifer leakage exacerbated manifestation of liquefaction in Christchurch, New Zealand Simon Cox <i>GNS Science</i>	Bucket science in the barn [soil hydraulic conductivity] David Painter <i>DPC</i>	Stochastic response function for stream depletion assessment - practical implementation in Hawke's Bay Pawel Rakowski <i>Hawkes Bay Regional Council</i>	
12.30pm – 12.50pm	Catchment scale surface water management in the Waimakariri Water Zone Carey Lintott <i>Beca</i>	Southern alps snow and ice losses for summer 2017/18: From remote sensing and modelling Jim Salinger <i>University of Haifa</i>	To calibrate or not to calibrate? That is the question! Dirk van Walt <i>Van Walt</i>	Pump testing an unconfined sand aquifer, Mahia, Hawke's Bay Amir Levy <i>Lattey Group</i>	
12.50pm – 1.50pm	Lunch				
Room					
Session number/name	46/Groundwater quality	47/Groundwater modelling	48/Surface and Groundwater Hydrology	49/Climate processes II	
Session Chair					
1.50pm – 2.10pm	Sampling groundwater macro-fauna – what does it tell us? Annette Bolton <i>ESR</i>	Water quality model performance evaluation methods Jon Williamson <i>Williamson Water Advisory</i>	Waitohi Catchment Integrated Groundwater and Surface Water Investigation Bas Veendrick <i>Pattle Delamore Partners</i>	Investigation of the two wind peaks in the upper troposphere and lower stratosphere during deepwave Ed-Yang Yang <i>NIWA</i>	
2.10pm – 2.30pm	Working Towards Establishing a NZ Groundwater Superfun Site?!? Lee Burbery <i>ESR</i>	Waimapu Stream (Tauranga) - The Perils of Extra Calibration Philip Wallace <i>DHI</i>	Design and impact assessment of coastal wetland using an integrated catchment model Dragan Tutulic <i>DHI</i>	Evaluating New Zealand's agricultural methane emissions Alexander Geddes <i>NIWA</i>	
2.30pm – 2.50pm	Emerging organic contaminants in New Zealand groundwaters: pilot assessment in the Waikato Region Magali Moreau <i>GNS Science</i>	The effect of pilot points location on calibration results Husam Baalousha <i>Hamad Bin Khalifa University</i>	Optimized Rakaia River management through modelling its flow regime and interaction with its water users Wilco Terink <i>Environment Canterbury</i>	Zero Carbon Bill - does methane deserve a reprieve? Ben Liley <i>NIWA</i>	
2.50pm – 3:30pm	Afternoon Tea + Poster Session				
Room					
Session number/name	50/Instrumentation in hydrology	51/Catchment & communities 2	52/Hydrological tools	53/Groundwater quality 3	
Session Chair					
3.30pm – 3.50pm	A new instrument for measuring in-situ suspended sediment concentration and size grading in rivers Murray Hicks <i>NIWA</i>	Increasing Community Resilience by Establishing Emergency Water Bores in Fractured Greywacke Vanessa Dally <i>Cardno NZ</i>	Using traditional statistical tools in the big data era: managing groundwater level variations in wetlands Theodora Avaniidou <i>Beca</i>	Beneath the surface: Estimating sedimentation in a water reservoir Ryan Nicol <i>Pattle Delamore Partners</i>	

3.50pm – 4.10pm	Automatic discharge measurement of lowland weedy streams Jeremy Bulleid NIWA	Stream bank erosion as a result of socio-economic goals and why we should think more broadly Tim Ellis Environment Southland	From stochastic airborne EM inversion to geologic model: Application of a two-step machine learning workflow Michael Friedel Lincoln Agritech	Natural background nutrient yields in the Ruamahanga river catchment - a comparison of overseer and instream water quality derived nutrient generation yields for native forest catchments Kate Clay Jacobs Engineering	
4.10pm – 4.30pm	Determining groundwater flow paths and velocities using electrical resistivity tomography with salt tracer injection Richard Mellis Southern Geophysical	Restoring the Taniwha Spring: A partnership project between Rotorua Lakes Council and Ngati Rangiwewehi Clare Maginness Pattle Delamore Partners	Groundwater Sourced Air Conditioning Systems in the Christchurch CBD Carl Steffens Pattle Delamore Partners	Does a quickflow component improve the representation of nitrate transfers in the Reporoa basin? Mark Flintoft Aqualinc	
4.30pm	<i>Conference Close</i>				
6.30pm	Conference Dinner – Christchurch Art Gallery				

Friday 7th December

8.30am	Field Trips – depart La Vida car park
	See website for details