

Publications, peer-reviewed

Frampton, A., 2025. Enhanced transport with early arrivals and reduced attenuation for ensemble realisations of discrete fracture networks with internal fracture heterogeneity. *Hydrogeology Journal*. Accepted.

Hamm, A., Schytt Mannerfelt, E., Mohammed, A.A., Painter, S.L., Coon, E.T., **Frampton, A.**, 2025. Model-based analysis of solute transport and potential carbon mineralization in the active layer of a hillslope underlain by permafrost with seasonal variability and climate change. *The Cryosphere* 19, 3693–3724. <https://doi.org/10.5194/tc-19-3693-2025>

Stock, B., **Frampton, A.**, 2025. Analysis and Generation of Rough-Surfaced Fractures with Variable Aperture Based on Self-Affine Methods Using Surface Scan Measurements. *Rock Mech Rock Eng.* <https://doi.org/10.1007/s00603-024-04381-9>

Frampton, A., 2025. Flow channelling and variability in transit times and tortuosity in a fractured rock model with small scale heterogeneity. *Adv. Geosci.* 65, 149–158. <https://doi.org/10.5194/adgeo-65-149-2025>

Lemieux, J., **Frampton, A.**, Fortier, P., 2024. Recent Advances (2018–2023) and Research Opportunities in the Study of Groundwater in Cold Regions. *Permafrost & Periglacial* ppp.2255. <https://doi.org/10.1002/ppp.2255>

Hamm, A., Magnússon, R.Í., Khattak, A.J., **Frampton, A.**, 2023. Continentality determines warming or cooling impact of heavy rainfall events on permafrost. *Nat Commun* 14, 3578. <https://doi.org/10.1038/s41467-023-39325-4>

Magnússon, R.Í., Hamm, A., Karsanaev, S.V., Limpens, J., Kleijn, D., **Frampton, A.**, Maximov, T.C., Heijmans, M.M.P.D. 2022. Extremely wet summer events enhance permafrost thaw for multiple years in Siberian tundra. *Nat Commun* 13, 1556. <https://doi.org/10.1038/s41467-022-29248-x>

Stock, B., Frampton, A., 2022. Processing and Conversion of Raw Point-Cloud Laser Measurements and Auxiliary Data of Rough-Surfaced Fractures To Generate Corresponding Fracture Aperture Fields. Presented at the 3rd International Discrete Fracture Network Engineering Conference, Santa Fe, New Mexico, USA. <https://doi.org/10.56952/ARMA-DFNE-22-0020>

Hamm, A., **Frampton, A.** 2021. Impact of lateral groundwater flow on hydrothermal conditions of the active layer in a high-Arctic hillslope setting. *The Cryosphere* 15, 4853–4871. <https://doi.org/10.5194/tc-15-4853-2021>

Stock, B., **Frampton, A.** 2021. Flow Experiments Through 3D Printed Rough-Walled Single-Fracture Replicas. Presented at the 3rd International Discrete Fracture Network Engineering Conference, Houston, Texas, USA, p. DFNE 21-2340.

Åhlén, I., Hambäck, P., Thorslund, J., **Frampton, A.**, Destouni, G., Jarsjö, J. 2020. Wetlandscape size thresholds for ecosystem service delivery: Evidence from the Norrström drainage basin, Sweden. *Science of The Total Environment*, 704, 135452. <https://doi.org/10.1016/j.scitotenv.2019.135452>

Frampton, A., Hyman, J. D., & Zou, L. 2019. Advective transport in discrete fracture networks with connected and disconnected textures representing internal aperture variability. *Water Resources Research*, 2018WR024322. <https://doi.org/10.1029/2018WR024322>

Grenier, C., Anbergen, H., Bense, V., Chanzy, Q., Coon, E., Collier, N., Costard, F., Ferry, M., **Frampton, A.**, Frederick, J., Gonçalves, J., Holmén, J., Jost, A., Kokh, S., Kurylyk, B., McKenzie, J., Molson, J., Mouche, E., Orgogozo, L., Pannetier, R., Rivièrè, A., Roux, N., Rühaak, W., Scheidegger, J., Selroos, J.-O., Therrien, R., Vidstrand, P., Voss, C. 2018. Groundwater flow and heat transport for systems undergoing freeze-thaw: Intercomparison of numerical simulators for 2D test cases. *Advances in Water Resources* 114, 196–218, doi: [10.1016/j.advwatres.2018.02.001](https://doi.org/10.1016/j.advwatres.2018.02.001).

Frampton, A., Hyman, J.D.H., Zou, L. 2018. Advective transport in a synthetic discrete fracture system with internal variability in permeability, in: 52nd US Rock Mechanics / Geomechanics Symposium. Presented at the ARMA, DFNE, Seattle, Washington, USA.

Zou, L., **Frampton, A.** (2018). Impacts of Dead-ends on Flow and Transport in Fractured Rocks, in: 52nd US Rock Mechanics / Geomechanics Symposium. Presented at the ARMA, DFNE, Seattle, Washington, USA.

Finsterle, S., Lanyon, B., Åkesson, M., Baxter, S., Bergström, M., Bockgård, N., **Frampton, A.**, et al. (2018). Conceptual uncertainties in modelling the interaction between engineered and natural barriers of nuclear waste repositories in crystalline rocks. Geological Society, London, Special Publications, SP482.12. <https://doi.org/10.1144/SP482.12>

Schuh, C., **Frampton, A.** & Christiansen, H. H. (2017). Soil moisture redistribution and its effect on inter-annual active layer temperature and thickness variations in a dry loess terrace in Adventdalen, Svalbard. *The Cryosphere* 11, 635–651, doi: [10.5194/tc-2016-173](https://doi.org/10.5194/tc-2016-173).

Ströberg, A., Ebert, K., Jarsjö, J. & **Frampton, A.** (2017). Contaminated area instability along Ångermanälven River, northern Sweden. *Environmental Monitoring and Assessment* 189, doi: [10.1007/s10661-017-5839-0](https://doi.org/10.1007/s10661-017-5839-0).

Dessirier, B., Åkesson, M., Lanyon, B., **Frampton, A.**, Jarsjö, J. (2016). Reconstruction of the water content at an interface between compacted bentonite blocks and fractured crystalline bedrock. *Applied Clay Science*, doi: [10.1016/j.clay.2016.10.002](https://doi.org/10.1016/j.clay.2016.10.002)

Gisnås, K., Etzelmüller, B., Lussana, C., Hjort, J., Sannel, A.B.K., Isaksen, K., Westermann, S., Kuhry, P., Christiansen, H.H., **Frampton, A.**, Åkerman, J. (2016). Permafrost Map for Norway, Sweden and Finland. *Permafrost and Periglacial Processes*, doi: [10.1002/ppp.1922](https://doi.org/10.1002/ppp.1922).

Dessirier, B., **Frampton, A.**, Fransson, Å., Jarsjö, J. (2016). Modeling early in situ wetting of a compacted bentonite buffer installed in low permeable crystalline bedrock. *Water Resources Research* 52, 6207–6221, doi: [10.1002/2016WR018678](https://doi.org/10.1002/2016WR018678).

Pannetier, R., **Frampton, A.** (2016). Air warming trends linked to permafrost warming in the sub-Arctic catchment of Tarfala, Sweden. *Polar Research* 35, doi:[10.3402/polar.v35.28978](https://doi.org/10.3402/polar.v35.28978).

Sjöberg, Y., Coon, E., Sannel, A.B.K., Pannetier, R., Harp, D., **Frampton, A.**, Painter, S.L., Lyon, S.W. (2016).

Thermal effects of groundwater flow through subarctic fens-A case study based on field observations and numerical modeling. *Water Resources Research*, doi: [10.1002/2015WR017571](https://doi.org/10.1002/2015WR017571).

Frampton, A., Destouni, G. (2015). Impact of degrading permafrost on subsurface solute transport pathways and travel times. *Water Resources Research* 51, 7680–7701, doi: [10.1002/2014WR016689](https://doi.org/10.1002/2014WR016689).

Dessirier, B., **Frampton, A.**, Jarsjö, J. (2015). A global sensitivity analysis of two-phase flow between fractured crystalline rock and bentonite with application to spent nuclear fuel disposal. *Journal of Contaminant Hydrology* 182, 25–35, doi: [10.1016/j.jconhyd.2015.07.006](https://doi.org/10.1016/j.jconhyd.2015.07.006).

Dessirier, B., Jarsjö, J., **Frampton, A.** (2014). Modeling Two-Phase-Flow Interactions Across a Bentonite Clay and Fractured Rock Interface. *Nuclear Technology*, doi: [10.13182/NT13-77](https://doi.org/10.13182/NT13-77).

Frampton, A. (2014), Fracture transmissivity estimation using natural gradient flow measurements in sparsely fractured rock. In *Fractured Rock Hydrogeology, International Association of Hydrogeologists* (Sharp, J.M., Jr., and Troeger, U., eds.), doi: [10.1201/b17016-10](https://doi.org/10.1201/b17016-10).

Frampton, A., Painter, S.L., Destouni, G. (2013). Permafrost degradation and subsurface-flow changes caused by surface warming trends. *Hydrogeology J*, 21:271–280, doi: [10.1007/s10040-012-0938-z](https://doi.org/10.1007/s10040-012-0938-z).

Sjöberg, Y., **Frampton, A.**, Lyon, S.W. (2013). Using streamflow characteristics to explore permafrost thawing in northern Swedish catchments. *Hydrogeology J*, 21:271-280, doi: [10.1007/s10040-012-0932-5](https://doi.org/10.1007/s10040-012-0932-5).

Cvetkovic, V. and **Frampton, A.** (2012). Solute transport and retention in three-dimensional fracture networks, *Water Resour. Res.*, 48, W02509, doi: [10.1029/2011WR011086](https://doi.org/10.1029/2011WR011086).

Frampton, A., Painter, S., Lyon, S.W., and Destouni, G. (2011). Non-isothermal, three-phase simulations of near-surface flows in a model permafrost system under seasonal variability and climate change, *Journal of Hydrology*, 403, 352-359, doi: [10.1016/j.jhydrol.2011.04.010](https://doi.org/10.1016/j.jhydrol.2011.04.010).

Frampton, A. and Cvetkovic, V. (2011). Numerical and analytical modeling of advective travel times in realistic three-dimensional fracture networks, *Water Resour. Res.*, 47, W02506, doi: [10.1029/2010WR009290](https://doi.org/10.1029/2010WR009290).

Frampton, A., Painter, S., Sjöberg, Y., and Destouni, G. (2011). Transient modelling of permafrost dynamics in changing climate scenarios, *7th IEEE proceedings*, PID2087089, 113-118, Stockholm, doi: [10.1109/eScience.2011.24](https://doi.org/10.1109/eScience.2011.24)

Frampton, A. and Cvetkovic, V. (2010). Inference of field scale fracture transmissivities in crystalline rock using flow log measurements, *Water Resour. Res.*, 46, W05506, doi: [10.1029/2009WR008367](https://doi.org/10.1029/2009WR008367).

Fiori, A., Boso, F., de Barros, F.P.J., de Bartolo, S., **Frampton, A.**, Severino, G., Suweis, S., Dagan, G. (2010). An Indirect Assessment on the Impact of Connectivity of Conductivity Classes upon Longitudinal Asymptotic Macrodispersivity, *Water Resour. Res.*, 46, W11502, doi: [10.1029/2009WR008590](https://doi.org/10.1029/2009WR008590).

Cvetkovic, V. and **Frampton, A.** (2010). Transport and retention from single to multiple fractures in crystalline rock at Äspö (Sweden): 2. Fracture flow simulations and global retention properties, *Water Resour. Res.*, 46, W05506, doi: [10.1029/2009WR008030](https://doi.org/10.1029/2009WR008030).

Frampton, A. and Cvetkovic, V. (2009). Significance of injection modes and heterogeneity on spatial and temporal dispersion of advecting particles in two-dimensional discrete fracture networks, *Advances in Water Resources*, 32, ADWR1301, doi: [10.1016/j.advwatres.2008.07.010](https://doi.org/10.1016/j.advwatres.2008.07.010).

Frampton, A. and Cvetkovic, V. (2007). Upscaling particle transport in discrete fracture networks: 2. Reactive tracers, *Water Resour. Res.*, 43, W10429, doi: [10.1029/2006WR005336](https://doi.org/10.1029/2006WR005336).

Frampton, A. and Cvetkovic, V. (2007). Upscaling particle transport in discrete fracture networks: 1. Nonreactive tracers, *Water Resour. Res.*, 43, W10428, doi: [10.1029/2006WR005334](https://doi.org/10.1029/2006WR005334).

Landeryou, M., Eames, I., **Frampton, A.**, Cottenden, A.M. (2004). Modelling strategies for liquid spreading in medical absorbents. *International Journal of Clothing Science and Technology* 16, 163–172, doi: [10.1108/09556220410520441](https://doi.org/10.1108/09556220410520441)

Eames, I., Small, I., **Frampton, A.**, Cottenden, A.M. (2003). Experimental and theoretical study of the spread of fluid from a point source on an inclined incontinence bed-pad. *Journal of Engineering in Medicine* 217, 263–271, doi: [10.1243/095441103322060712](https://doi.org/10.1243/095441103322060712)

Landeryou, M., Cottenden, A., Eames, I., **Frampton, A.** (2003). Bulk Liquid-transport Properties of Multi-layered Fibrous Absorbents. *Journal of the Textile Institute* 94, 67–76, doi: [10.1080/00405000308630629](https://doi.org/10.1080/00405000308630629).

Doctoral Thesis

Frampton, A., 2010. Stochastic analysis of fluid flow and tracer pathways in crystalline fracture networks. Doctoral Thesis, KTH. US AB, Stockholm, Sweden. ISBN 978-91-7415-560-0. ISSN 1650-8602. ISRN KTH/LWR/PHD 1056-SE. TRITA LWR PhD 1056. [URL link](#).

Technical reports

Dessirier, B., **Frampton, A.**, and Jarsjö, J. (2017). Two-phase flows during re-saturation of sparsely fractured bedrock and bentonite around canisters for deep storage of spent nuclear fuel – Modelling Task 8 of SKB Task Forces GWFTS and EBS (No. P-17-02) (p. 48). Swedish Nuclear Fuel and Waste Management Co (SKB), Stockholm, Sweden. URL: <https://www.skb.com/publication/2489155/P-17-02.pdf>

Frampton, A., Gotovac, H., Holton, D., and Cvetkovic, V. (2015). Äspö Task Force on modelling of groundwater flow and transport of solutes. Task 7 – Subsurface flow and transport modelling of hydraulic tests and in situ borehole flow measurements conducted at Olkiluoto Island (No. P-13-42). Swedish Nuclear Fuel and Waste Management Co (SKB), Stockholm, Sweden

Frampton, A., Cvetkovic, V., and Holton, D. (2009). Äspö Task Force on modelling of groundwater flow and transport of solutes – Task 7A. Task 7A1 and 7A2: Reduction of performance assessment uncertainty through modelling of hydraulic tests at Olkiluoto, Finland. International Technical Document ITD-09-05. Svensk Kärnbränslehantering AB, Stockholm, Sweden.

Preprints and other publications

Stock, B., Frampton, A., 2023. Fracture aperture generation using surface scan measurements of natural rock samples (preprint). Preprints. <https://doi.org/10.22541/essoar.169566449.99205257/v1>

Hamm, A., Magnússon, R., Jan, A., Frampton, A., 2022. Warming or cooling? The impact of heavy summer rainfall on permafrost environments. <https://doi.org/10.21203/rs.3.rs-2237155/v1>

Frampton, A., 2014. P. M. Adler, J.-F. Thovert, V. V. Mourzenko: Fractured Porous Media: Oxford Univ. Press, 2013, pp. 175. Mathematical Geosciences 46, 771–773. doi: [10.1007/s11004-014-9527-0](https://doi.org/10.1007/s11004-014-9527-0)

Frampton, A., Dessirier, B., Pannetier, R., 2014. Visual PyFlow – an open-source graphical solver of the groundwater flow equation. Available at https://bitbucket.org/Visual_PyFlow.

Contributions at scientific conferences and workshops, selected

Hamm, A., Mohammed, A., Coon, E., Painter, S.L., Frampton, A., 2024. Modeling carbon transport in permafrost-affected groundwater systems. Presented at the AGU24, AGU.

Gylling, Björn, Gylling, B, Trincherro, P., Kröhn, M., Choi, S., Hyman, J., Wang, T.-T., Jancovec, J., Frampton, A., Stock, B., Hokr, M., Pulkkanen, V.-M., Finsterle, S., 2025. SKB Task Force GWFTS: Pragmatic Validation of Models for Flow and Transport in Fractures. <https://doi.org/10.22541/essoar.173687388.86367600/v1>

Frampton, A., 2024. Effects of internal fracture variability on flow channelling in discrete fracture network models. Presented at the EGU General Assembly, Copernicus Meetings, Vienna, Austria. <https://doi.org/10.5194/egusphere-egu24-11766>

Frampton, A., Fischer, B., Clemenzi, I., Hamm, A., Scaini, A., 2023. Runoff dynamics along hillslopes with groundwater springs in a mountainous sub-arctic catchment, in: Declining Glacier, Snow Cover and Permafrost and Their Impacts on Downstream Hydrology. Presented at the IUGG, Berlin, pp. IUGG23-4354.

Stock, B., Frampton, A., 2022. Processing and Conversion of Raw Point-Cloud Laser Measurements and Auxiliary Data of Rough-Surfaced Fractures To Generate Corresponding Fracture Aperture Fields. Presented at the 3rd International Discrete Fracture Network Engineering Conference, OnePetro, Santa Fe, New Mexico, USA. <https://doi.org/10.56952/ARMA-DFNE-22-0020>

Hamm, A., Frampton, A., 2022. Modeling groundwater flow and solute transport in the active layer of hillslope system in permafrost environments. Presented at the EGU General Assembly, Copernicus Meetings. <https://doi.org/10.5194/egusphere-egu22-2251>

Frampton, A., Hamm, A., 2022. Implementing physics-based models for studying thermal gradients and lateral flows in the active layer of hillslopes in permafrost regions, in: Polar Regions, Climate Change and Society. Presented at the 28th International Polar Conference, Alfred Wegener Institute for Polar and

Marine Research, Potsdam, Germany, p. 158. https://doi.org/10.57738/BzPM_0762_2022

Stock, B., Frampton, A., 2021. Flow Experiments Through 3D Printed Rough-Walled Single-Fracture Replicas, in: 3rd International Discrete Fracture Network Engineering Conference. Presented at the 3rd International Discrete Fracture Network Engineering Conference, Houston, Texas, USA, p. DFNE 21-2340.

Magnússon, R., Hamm, A., Karsanaev, S.V., Limpens, J., Kleijn, D., Frampton, A., Maximov, T.C., heijmans, monique, 2021. Extremely wet summer events enhance permafrost thaw for multiple years in Siberian tundra. <https://doi.org/10.21203/rs.3.rs-512675/v1>

Hamm, A., Frampton, A., 2021. Impact of lateral groundwater flow on hydrothermal conditions of the active layer in a high arctic hillslope setting. <https://doi.org/10.5194/tc-2021-60>

Åhlén, I., Hambäck, P., Thorslund, J., Frampton, A., Destouni, G., Jarsjö, J., 2020. Wetlandscape size thresholds for multiple ecosystem service delivery. Presented at the EGU2020, Copernicus Meetings, pp. EGU2020-1622. <https://doi.org/10.5194/egusphere-egu2020-1622>

Frampton, A., Zou, L., 2020. Dispersion in small-scale discrete fracture networks with internal fracture roughness: Challenges for site-scale modelling. Presented at the EGU2020, Copernicus Meetings, pp. EGU2020-21854. <https://doi.org/10.5194/egusphere-egu2020-21854>

Frampton, A., Zou, L., 2019. Analysis of flow and transport pathways in numerical models of fracture networks with small-scale heterogeneity. Presented at the EGU General Assembly, Copernicus Meetings, Vienna, p. 16657.

Ruvalcaba Baroni, I., Bayer, T., Gustafsson, E., Frampton, A., Beer, C., 2019. Methane and carbon dioxide evasion from Arctic lakes: A methodological review. Presented at the EGU General Assembly, Copernicus Meetings, p. 4935.

Frampton, A. (2017). Subsurface flow pathway dynamics in the active layer of coupled permafrost-hydrogeological systems under seasonal and annual temperature variability. In EGU General Assembly Conference Abstracts (Vol. 19, p. 9289). Retrieved from <http://meetingorganizer.copernicus.org/EGU2017/session/24601>

Schuh, C., Frampton, A., & Christiansen, H. H. (2017). Effects of soil moisture retention on ice distribution and active layer thickness subject to seasonal ground temperature variations in a dry loess terrace in Adventdalen, Svalbard. In EGU General Assembly Conference Abstracts (Vol. 19, p. 9242). Retrieved from <http://meetingorganizer.copernicus.org/EGU2017/EGU2017-9242.pdf>

Zou, L., & Frampton, A. (2018). Impacts of Dead-ends on Flow and Transport in Fractured Rocks. In 52nd US Rock Mechanics / Geomechanics Symposium (Vol. 18–1141). Seattle, Washington, USA.

Frampton, A., & Hyman, J. D. (2017). Flow channelling in discrete fracture networks with connected and disconnected permeability fields. In SIAM. Erlangen, Germany.

Finsterle, S., & et al. (2017). Conceptual Uncertainties in Modelling the Interaction between Engineered and Natural Barriers. Presented at the Clay Conference 2017, Davos, Switzerland.

Frampton, A., Pannetier, R., Destouni, G. 2016. Mechanisms governing solute transport in the active layer of coupled permafrost-hydrogeological systems. Presented at the 11th International Conference on Permafrost, Potsdam, Germany.

Schuh, C., Frampton, A., Christiansen, H.H., 2016. Soil moisture redistribution and effect on active layer response to temperature variations in a dry loess terrace in Adventdalen, Svalbard. Presented at the 11th International Conference on Permafrost, Potsdam, Germany.

Pannetier, R., Frampton, A., 2016. Analysis of Flow Pathways and Transport Times in a Periglacial Permafrost Catchment near Kangerlussuaq, Greenland. Presented at the 11th International Conference on Permafrost, Potsdam, Germany.

Grenier, C., Anbergen, H., Bense, V., Coon, E., Collier, N., Costard, F., Ferry, M., Frampton, A., others, 2016. The InterFrost benchmark of Thermo-Hydraulic codes for cold regions hydrology – first intercomparison phase results. Presented at the 11th International Conference on Permafrost, Potsdam, Germany.

Frampton, A., Destouni, G., 2016. Solute transport modelling in a coupled water and heat flow system applied to cold regions hydrogeology, in: EGU General Assembly Conference Abstracts. p. 15497.

Frampton, A., 2016. Groundwater flow and solute transport modelling in coupled permafrost-hydrogeological systems. Presented at the 32nd Nordic Geological Winter Meeting, Helsinki, Finland.

Ströberg, A., Ebert, K., Jarsjö, J., Frampton, A., 2016. Contaminated area instability – the example of Ångerman River, northern Sweden. Presented at the 32nd Nordic Geological Winter Meeting, Helsinki, Finland.

Frampton, A., Pannetier, R., Destouni, G., 2015. Modelling groundwater transport and travel times in warming permafrost. Presented at the Grundvattendagarna, Sveriges Geologiska Undersökning, Göteborg, Sweden.

Grenier, et al., 2015. The InterFrost benchmark of Thermo-Hydraulic codes for cold regions hydrology – first inter-comparison results, in: Geophysical Research Abstracts. Presented at the EGU General Assembly, Vienna, 9723.

Pannetier, R., Frampton, A., 2015. Transient modeling of the hydro-thermal state of frozen ground in the sub-arctic catchment of Tarfala, Sweden., in: Geophysical Research Abstracts. Presented at the EGU General Assembly, Vienna, 11471.

Sjöberg, Y., Lyon, S., Pannetier, R., Coon, E., Harp, D., Frampton, A., Painter, S., 2015. Thermal effects from groundwater flow-A case study from a subarctic fen within the sporadic permafrost zone of Tavvavuoma, Sweden, in: Geophysical Research Abstracts. Presented at the EGU General Assembly, Vienna, 14029.

Frampton, A., 2015. Impact of thawing ground on subsurface water flow and transport in a modelled permafrost system, in: Geophysical Research Abstracts. Presented at the EGU General Assembly, Vienna, 11787.

Frampton, A., Destouni, G., Pannetier, R., 2014. Changes in travel times in thawing permafrost systems. Presented at the AGU Fall Meeting, San Francisco, C11C–0386.

Frampton, A., Destouni, G., 2014a. Modelling permafrost-induced hydrological change and associated changes in solute transport across scales, in: Geophysical Research Abstracts. Presented at the EGU General Assembly, Vienna, 10837.

Frampton, A., Destouni, G., 2014b. Impact of hydro-climatic variability and change on travel time distributions in modelled active layer systems. Presented at the EUCOP4, Evora, Portugal, EUCOP4–0385.

Frampton, A., Destouni, G., 2013. Changes in subsurface water residence times under permafrost formation and degradation dynamics subject to hydro-climatic variability and change. Presented at the EGU General Assembly, Geophysical Research Abstracts, Vienna, EGU2013–5038.

Frampton, A., Painter, S.L., Destouni, G., 2012. Effects of hydrological inputs on the dynamics of permafrost system formation and degradation, in: Geophysical Research Abstracts. Presented at the EGU General Assembly, Vienna, EGU2012–5204–1.

Frampton, A., Cvetkovic, V., 2012. Modelling flow and transport in sparsely fractured rock using flow log data, in: International Association of Hydrogeologists. Presented at the Groundwater in Fractured Rocks Conference, Prague.

Frampton, A., 2012. Modelling groundwater flow in partially frozen media. Presented at the Hydro-Perm Workshop, Longyearbyen, Svalbard.

Frampton, A., Painter, S.L., Lyon, S.W., Sjöberg, Y., Destouni, G., 2011. Transient modeling of permafrost dynamics in a changing climate. Presented at the AGU Fall Meeting, San Francisco, C53G–02.

Frampton, A., Cvetkovic, V., 2011. Modelling sparsely fractured rock using flow log data. Presented at the Deep Hydrogeology Workshop, Department of Earth Sciences, Uppsala University, Sweden.

Frampton, A., Painter, S.L., Lyon, S.W., Destouni, G., 2011. Non-isothermal, three-phase simulations of near-surface flows in a model permafrost system under seasonal variability and climate change, in: Geophysical Research Abstracts. Presented at the EGU General Assembly, Vienna, EGU2011–8916.