

Rafael Rosolem
Department of Civil Engineering
Water and Environmental Engineering
Cabot Institute for the Environment
Postal address:
Queen's Building
University Walk
Clifton
Bristol
BS8 1TR
Email: Rafael.Rosolem@bristol.ac.uk



Research output

Quantifying the impacts of land cover change on hydrological responses in the Mahanadi river basin in India

Naha, S., Rico-Ramirez, M. A. & Rosolem, R., 16 Dec 2021, In: Hydrology and Earth System Sciences. 25, 12, p. 6339-6357 19 p.

Cosmic-Ray neutron Sensor PYthon tool (crspy): An open-source tool for the processing of cosmic-ray neutron and soil moisture data

Power, D., Rico-Ramirez, M. A., Desilets, S., Desilets, D. & Rosolem, R., 30 Nov 2021, Copernicus GmbH.

DRYP 1.0: a parsimonious hydrological model of DRYland Partitioning of the water balance

Quichimbo, E. A., Bliss Singer, M., Michaelides, K., Rosolem, R., Hobley, D. E. J. & Cuthbert, M. O., 15 Nov 2021, In: Geoscientific Model Development. 14, 11, p. 6893-6917 25 p.

On doing hydrology with dragons: Realizing the value of perceptual models and knowledge accumulation

Wagener, T., Gleeson, T., Coxon, G., Hartmann, A., Howden, N., Pianosi, F., Rahman, M., Rosolem, R., Stein, L. & Woods, R., 1 Nov 2021, In: Wiley Interdisciplinary Reviews: Water. 8, 6, e1550.

Hourly potential evapotranspiration at 0.1° resolution for the global land surface from 1981-present

Singer, M. B., Asfaw, D. T., Rosolem, R., Cuthbert, M. O., Miralles, D. G., MacLeod, D., Quichimbo, E. A. & Michaelides, K., 24 Aug 2021, In: Scientific Data. 8, 1, 13 p., 224.

Performance evaluation of Eta/HadGEM2-ES and Eta/MIROC5 precipitation simulations over Brazil

Almagro, A., Oliveira, P. T. S., Rosolem, R., Hagemann, S. & Nobre, C. A., 1 Nov 2020, In: Atmospheric Research. 244, 105053.

Empirical evidence for resilience of tropical forest photosynthesis in a warmer world

Smith, M. N., Taylor, T. C., van Haren, J., Rosolem, R., Restrepo-Coupe, N., Adams, J., Wu, J., de Oliveira, R. C., da Silva, R., de Araujo, A. C., de Camargo, P. B., Huxman, T. E. & Saleska, S. R., 12 Oct 2020, In: Nature Plants. 6, 10, p. 1225-1230 6 p.

Opportunities and challenges in using catchment-scale storage estimates from cosmic ray neutron sensors for rainfall-runoff modelling

Dimitrova-Petrova, K., Geris, J., Wilkinson, M. E., Rosolem, R., Verrot, L., Lilly, A. & Soulsby, C., 1 Jul 2020, In: Journal of Hydrology. 586, 124878.

Towards the representation of groundwater in the Joint UK Land Environment Simulator

Batelis, S. C., Rahman, M., Kollet, S., Woods, R. & Rosolem, R., 30 Jun 2020, In: Hydrological Processes. 34, 13, p. 2843-2863 21 p.

A soil moisture monitoring network to characterize karstic recharge and evapotranspiration at five representative sites across the globe

Berthelin, R., Rinderer, M., Andreo, B., Baker, A., Kilian, D., Leonhardt, G., Lotz, A., Lichtenwoehrer, K., Mudarra, M., Y. Padilla, I., Pantoja Agreda, F., Rosolem, R., Vale, A. & Hartmann, A., 25 Feb 2020, In: Geoscientific Instrumentation, Methods and Data Systems. 9, 1, p. 11-23 13 p.

Towards a computationally efficient free-surface groundwater flow boundary condition for large-scale hydrological modelling

Mostaqimur Rahman, A. S. M., Rosolem, R., Kollet, S. J. & Wagener, T., Jan 2019, In: *Advances in Water Resources*. 123, p. 225-233 9 p.

V2Karst V1.1: a parsimonious large-scale integrated vegetation–recharge model to simulate the impact of climate and land cover change in karst regions

Sarrazin, F., Hartmann, A., Pianosi, F., Rosolem, R. & Wagener, T., 6 Dec 2018, In: *Geoscientific Model Development*. 11, 12, p. 4933-4964 32 p.

Cosmic-ray Neutron Rover Surveys of Field Soil Moisture and the Influence of Roads

Schron, M., Rosolem, R., Kohli, M. A., Piuissi, L., Schröter, I., Kögler, S., Oswald, S. E., Wollschläger, U., Samaniego, L., Dietrich, P. & Zacharias, S., Sep 2018, In: *Water Resources Research*. 54, 9, p. 6441-6459 19 p.

Exploration of drought propagation mechanisms and controls for the 2014-2017 Southeast Brazil drought

Zhang, J., Rosolem, R., Pontes, L. M., da Rocha, H. R., Batelis, S. & Rahman, A. S. M. M., 2018, *AGU Fall Meeting 2018*.

Impact of multi-day field calibration of novel cosmic-ray soil moisture sensors

Xie, Z. & Rosolem, R., 21 Dec 2017, *IEEE SENSORS 2017 - Conference Proceedings*. Institute of Electrical and Electronics Engineers (IEEE), p. 1-3 3 p. (Proceedings of IEEE Sensors; vol. 2017-December).

Improving calibration and validation of cosmic-ray neutron sensors in the light of spatial sensitivity

Schrön, M., Köhli, M., Scheffele, L., Iwema, J., Bogena, H. R., Lv, L., Martini, E., Baroni, G., Rosolem, R., Weimar, J., Mai, J., Cuntz, M., Rebmann, C., Oswald, S. E., Dietrich, P., Schmidt, U. & Zacharias, S., 6 Oct 2017, In: *Hydrology and Earth System Sciences*. 21, 10, p. 5009-5030

Land surface model performance using cosmic-ray and point-scale soil moisture measurements for calibration

Iwema, J., Rosolem, R., Rahman, M., Blyth, E. & Wagener, T., 9 Jun 2017, In: *Hydrology and Earth System Sciences*. 21, 6, p. 2843-2861 19 p.

Towards a simple representation of chalk hydrology in land surface modelling

Rahman, A. S. M. M. & Rosolem, R., 25 Jan 2017, In: *Hydrology and Earth System Sciences*. 21, 1, p. 459-471 13 p.

A Multimethod Global Sensitivity Analysis Approach to Support the Calibration and Evaluation of Land Surface Models

Pianosi, F., Iwema, J., Rosolem, R. & Wagener, T., 1 Jan 2017, *Sensitivity Analysis in Earth Observation Modelling*. Elsevier Inc., p. 125-144 20 p.

Reducing soil moisture measurement scale mismatch to improve surface energy flux estimation

Iwema, J., Rosolem, R., Rahman, A. S. M. M., Blyth, E. & Wagener, T., 8 Nov 2016, In: *Hydrology and Earth System Sciences Discussions*. 44 p.

Simultaneous soil moisture and properties estimation for a drip irrigated field by assimilating cosmic-ray neutron intensity

Han, X., Franssen, H-J. H., Bello, M. Á. J., Rosolem, R., Bogena, H., Alzamora, F. M., Chanzy, A. & Vereecken, H., Aug 2016, In: *Journal of Hydrology*. 539, p. 611-624 14 p.

The effect of chalk representation in land surface modelling

Rahman, A. S. M. M. & Rosolem, R., 26 May 2016, In: *Hydrology and Earth System Sciences Discussions*. 38 p., 244.

DasPy 1.0 – the Open Source Multivariate Land Data Assimilation Framework in combination with the Community Land Model 4.5

Han, X., Li, X., He, G., Kumbhar, P., Montzka, C., Kollet, S., Miyoshi, T., Rosolem, R., Zhang, Y., Vereecken, H. & Franssen, H-J. H., 28 Aug 2015, In: *Geoscientific Model Development Discussions*.

Investigating temporal field sampling strategies for site-specific calibration of three soil moisture-neutron intensity parameterisation methods

Iwema, J., Rosolem, R., Baatz, R., Wagener, T. & Bogaen, H. R., 24 Jul 2015, In: Hydrology and Earth System Sciences. 19, 7, p. 3203-3216 14 p.

A large-scale simulation model to assess karstic groundwater recharge over Europe and the Mediterranean

Hartmann, A., Gleeson, T., Rosolem, R., Pianosi, F., Wada, Y. & Wagener, T., 11 Jun 2015, In: Geoscientific Model Development. 8, 6, p. 1729-1746 18 p.

The water balance components of undisturbed tropical woodlands in the Brazilian cerrado

Oliveira, P. T. S., Wendland, E., Nearing, M. A., Scott, R. L., Rosolem, R. & Da Rocha, H. R., Jun 2015, In: Hydrology and Earth System Sciences. 19, 6, p. 2899-2910 12 p.

Correction of systematic model forcing bias of CLM using assimilation of cosmic-ray Neutrons and land surface temperature: a study in the Heihe Catchment, China

Han, X., Franssen, H. J. H., Rosolem, R., Jin, R., Li, X. & Vereecken, H., Jan 2015, In: Hydrology and Earth System Sciences. 19, 1, p. 615-629 15 p.

A simulation model to assess groundwater recharge over Europe's karst regions

Hartmann, A., Gleeson, T., Rosolem, R., Pianosi, F., Wada, Y. & Wagener, T., 19 Nov 2014, In: Geoscientific Model Development Discussions.

Translating aboveground cosmic-ray neutron intensity to high-frequency soil moisture profiles at sub-kilometer scale

Rosolem, R., Hoar, T., Arellano, A., Anderson, J. L., Shuttleworth, W. J., Zeng, X. & Franz, T. E., 4 Nov 2014, In: Hydrology and Earth System Sciences. 18, 11, p. 4363-4379 17 p.

An assessment of the effect of horizontal soil moisture heterogeneity on the area-average measurement of cosmic-ray neutrons

Franz, T. E., Zreda, M., Ferre, T. P. A. & Rosolem, R., 1 Oct 2013, In: Water Resources Research. 49, 10, p. 6450-6458 9 p.

The COsmic-ray Soil Moisture Interaction Code (COSMIC) for use in data assimilation

Shuttleworth, W. J., Rosolem, R., Zreda, M. & Franz, T. E., 14 Aug 2013, In: Hydrology and Earth System Sciences. 17, 8, p. 3205-3217 13 p.

Erratum: cOSMOS: The COsmic-ray soil moisture observing system (Hydrology and Earth System Sciences (2012) 16 (4079-4099))

Zreda, M., Shuttleworth, W. J., Zeng, X., Zweck, C., Desilets, D., Franz, T. & Rosolem, R., 8 Mar 2013, In: Hydrology and Earth System Sciences. 17, 3, p. 1065-1066 2 p.

A universal calibration function for determination of soil moisture with cosmic-ray neutrons

Franz, T. E., Zreda, M., Rosolem, R. & Ferre, T. P. A., 1 Feb 2013, In: Hydrology and Earth System Sciences. 17, 2, p. 453-460 8 p.

Ecosystem scale measurements of biomass water using cosmic-ray neutrons

Franz, T. E., Zreda, M., Rosolem, R., Hornbuckle, B., Irvin, S., Adams, H., Kolb, T., Zweck, C. & Shuttleworth, W. J., 2013, In: Geophysical Research Letters.

The Effect of Atmospheric Water Vapor on Neutron Count in the Cosmic-ray Soil Moisture Observing System

Rosolem, R., Shuttleworth, W. J., Zreda, M., Franz, T. E., Zeng, X. & Kurc, S., 2013, In: Journal of Hydrometeorology.

Field Validation of a Cosmic-Ray Neutron Sensor Using a Distributed Sensor Network

Franz, T. E., Zreda, M., Rosolem, R. & Ferre, T. P. A., Nov 2012, In: Vadose zone journal. 11, 4, 10 p.

Measurement depth of the cosmic ray soil moisture probe affected by hydrogen from various sources

Franz, T. E., Zreda, M., Ferre, T. P. A., Rosolem, R., Zweck, C., Stillman, S., Zeng, X. & Shuttleworth, W. J., 21 Aug 2012, In: *Water Resources Research*. 48, 9 p., ARTN W08515.

A fully multiple-criteria implementation of the Sobol' method for parameter sensitivity analysis

Rosolem, R., Gupta, H. V., Shuttleworth, W. J., Zeng, X. & Goncalves de Goncalves, L. G., 6 Apr 2012, In: *Journal of Geophysical Research: Atmospheres*. 117, D7, 18 p., ARTN D07103.

COSMOS: the COsmic-ray Soil Moisture Observing System

Zreda, M., Shuttleworth, W. J., Zeng, X., Zweck, C., Desilets, D., Franz, T. E. & Rosolem, R., 2012, In: *Hydrology and Earth System Sciences*. 16, 11, p. 4079-4099 21 p.

The potential of the COSMOS network to be a source of new soil moisture information for SMOS and SMAP

Hornbuckle, B., Irvin, S., Franz, T., Rosolem, R. & Zweck, C., 2012, *IEEE International Geoscience And Remote Sensing Symposium (IGARSS)*. NEW YORK: IEEE Computer Society, p. 1243-1246 4 p. (IEEE International Symposium on Geoscience and Remote Sensing IGARSS).

Towards a comprehensive approach to parameter estimation in land surface parameterization schemes

Rosolem, R., Gupta, H. V., Shuttleworth, W. J., de Goncalves, L. G. G. & Zeng, X., 2012, In: *Hydrological Processes*.

Cosmic-Ray Neutrons, An Innovative Method for Measuring Area-Average Soil Moisture

Zreda, M., Zeng, X., Shuttleworth, W. J., Zweck, C., Ferre, T. P. A., Franz, T. E. & Rosolem, R., 1 Aug 2011, In: *GEWEX Newsletter*. 21, 3, p. 6-10 5 p.

Land surface modeling inside the Biosphere 2 tropical rain forest biome

Rosolem, R., Shuttleworth, W. J., Zeng, X., Saleska, S. R. & Huxman, T. E., 16 Dec 2010, In: *Journal of Geophysical Research: Biogeosciences*. 115, 19 p., ARTN G04035.

Can the Deforestation Breeze Change the Rainfall in Amazonia? A Case Study for the BR-163 Highway Region

Saad, S. I., da Rocha, H. R., Silva Dias, M. A. F. & Rosolem, R., Nov 2010, In: *Earth Interactions*. 14, 25 p., ARTN 18.

Is the data collection period of the Large-Scale Biosphere-Atmosphere Experiment in Amazonia representative of long-term climatology?

Rosolem, R., Shuttleworth, W. J. & de Goncalves, L. G. G., 18 Nov 2008, In: *Journal of Geophysical Research: Biogeosciences*. 113, 12 p., ARTN G00B09.

Evaluation of the effect of selective logging on the energy-water and carbon exchange processes

Rosolem, R., Bastidas, L. A., Shuttleworth, W. J., De Goncalves, L. G. G., Burke, E. J., Da Rocha, H. R., Miller, S. D. & Goulden, M. L., 2005, *Regional Hydrological Impacts of Climatic Change - Hydroclimatic Variability*. Franks, S., Wagener, T., Bogh, E., Gupta, H. V., Bastidas, L., Nobre, C. & Galvao, C. D. O. (eds.). WALLINGFORD: International Association of Hydrological Sciences Publications, p. 118-125 8 p. (IAHS PUBLICATION; vol. 296).

Measurements of CO2 exchange over a woodland savanna (Cerrado Sensu stricto) in southeast Brasil

da Rocha, H. R., Freitas, H., Rosolem, R., Negron-Juarez, R., Tannus, R., Ligo, M., Cabral, O. & Silva Dias, M. A. F., 2002, In: *Biota Neotropica*. 2, 1, 11 p.

Projects

AMUSED: A Multi-scale Soil moisture-Evapotranspiration Dynamics study - AMUSED

Iwema, J., Rahman, A. S. M. M. & Rosolem, R.

30/11/14 → 30/05/19

Impacts of Climate Change on the Water Balance in East African Drylands

Michaelides, K., Mitchell, D. M. & Rosolem, R.

1/12/18 → 31/07/19

MOSAIC Digital Environment Feasibility Study

Rosolem, R.

14/11/19 → 13/11/20

NERC IOF Bristol - USP: Brazilian Experimental datasets for MULTI-scale Subsurface-surface interactions under Extreme Drought (BEMUSED)

Rosolem, R.

1/02/18 → 30/08/21