

Supplementary. The list of 90 RHESSys-related papers

Table S1. Representative papers for six research topics

Topic	Representative Papers
Climate change	[1–5]
Disturbance	[6–10]
Urbanization	[11–15]
Land management	[16–20]
Water quality	[21–24]
Biogeochemical cycle	[25–28]

- (1) Band, L.E.; Mackay, D.S.; Creed, I.F.; Semkin, R.; Jeffries, D. Ecosystem processes at the watershed scale: Sensitivity to potential climate change. *Limnology and Oceanography* 1996, 41 (5), 928-938.
- (2) Fagre, D.B.; Comanor, P.L.; White, J.D.; Hauer, F.R.; Running, S.W. Watershed responses to climate change at Glacier National Park. *Journal of the American Water Resources Association* 1997, 33 (4), 755-765.
- (3) Liu, M.; Rajagopalan, K.; Chung, S.H.; Jiang, X.; Harrison, J.; Nergui, T.; Guenther, A.; Miller, C., et al. What is the importance of climate model bias when projecting the impacts of climate change on land surface processes? *Biogeosciences* 2014, 11 (10), 2601-2622.
- (4) Mohammed, I.N.; Bombliès, A.; Wemple, B.C. The use of CMIP5 data to simulate climate change impacts on flow regime within the Lake Champlain Basin. *Journal of Hydrology-Regional Studies* 2015, 3, 160-186.
- (5) Shin, H.; Park, M.; Lee, J.; Lim, H.; Kim, S.J. Evaluation of the effects of climate change on forest watershed hydroecology using the RHESSys model: Seolmacheon catchment. *Paddy and Water Environment* 2019, 17 (4), 581-595.
- (6) Hwang, T.; Band, L.E.; Hales, T.C.; Miniati, C.F.; Vose, J.M.; Bolstad, P.V.; Miles, B.; Price, K. Simulating vegetation controls on hurricane-induced shallow landslides with a distributed ecohydrological model. *Journal of Geophysical Research-Biogeosciences* 2015, 120 (2), 361-378.
- (7) Hanan, E.J.; Tague, C.; Schimel, J.P. Nitrogen cycling and export in California chaparral: the role of climate in shaping ecosystem responses to fire. *Ecological Monographs* 2017, 87 (1), 76-90.
- (8) Kennedy, M.C.; McKenzie, D.; Tague, C.; Dugger, A.L. Balancing uncertainty and complexity to incorporate fire spread in an eco-hydrological model. *International Journal of Wildland Fire* 2017, 26 (8), 706-718.
- (9) Hanan, E.J.; Tague, C.; Choate, J.; Liu, M.; Kolden, C.; Adam, J. Accounting for disturbance history in models: using remote sensing to constrain carbon and nitrogen pool spin-up. *Ecol. Appl.* 2018, 28 (5), 1197-1214.
- (10) Boisramé, G.F.S.; Thompson, S.E.; Tague, C.; Stephens, S.L. Restoring a Natural Fire Regime Alters the Water Balance of a Sierra Nevada Catchment. *Water Resources Research* 2019, 55 (7), 5751-5769.
- (11) Tague, C.; Band, L. Simulating the impact of road construction and forest harvesting on hydrologic response. *Earth Surf. Process. Landf.* 2001, 26 (2), 135-151.
- (12) Shields, C.; Tague, C. Ecohydrology in semiarid urban ecosystems: Modeling the relationship between connected impervious area and ecosystem productivity. *Water Resources Research* 2015, 51 (1), 302-319.
- (13) Sarkar, S.; Butcher, J.B.; Johnson, T.E.; Clark, C.M. Simulated Sensitivity of Urban Green Infrastructure Practices to Climate Change. *Earth Interact* 2018, 22 (13), 1-37.

- (14) Bell, C.D.; Tague, C.L.; McMillan, S.K. Modeling Runoff and Nitrogen Loads From a Watershed at Different Levels of Impervious Surface Coverage and Connectivity to Storm Water Control Measures. *Water Resources Research* 2019, 55 (4), 2690-2707.
- (15) Leonard, L.; Miles, B.; Heidari, B.; Lin, L.; Castronova, A.M.; Minsker, B.; Lee, J.; Scaife, C., et al. Development of a participatory Green Infrastructure design, visualization and evaluation system in a cloud supported jupyter notebook computing environment. *Environmental Modelling & Software* 2019, 111, 121-133.
- (16) Lopez-Moreno, J.I.; Zabalza, J.; Vicente-Serrano, S.M.; Revuelto, J.; Gilaberte, M.; Azorin-Molina, C.; Moran-Tejeda, E.; Garcia-Ruiz, J.M., et al. Impact of climate and land use change on water availability and reservoir management: scenarios in the Upper Aragon River, Spanish Pyrenees. *Sci Total Environ* 2014, 493, 1222-31.
- (17) Peng, H.; Jia, Y.W.; Tague, C.; Slaughter, P. An Eco-Hydrological Model-Based Assessment of the Impacts of Soil and Water Conservation Management in the Jinghe River Basin, China. *Water* 2015, 7 (11), 6301-6320.
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- (19) Martin, K.L.; Hwang, T.; Vose, J.M.; Coulston, J.W.; Wear, D.N.; Miles, B.; Band, L.E. Watershed impacts of climate and land use changes depend on magnitude and land use context. *Ecohydrology* 2017, 10 (7).
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- (22) Tague, C. Modeling hydrologic controls on denitrification: sensitivity to parameter uncertainty and landscape representation. *Biogeochemistry* 2009, 93 (1-2), 79-90.
- (23) Bell, C.D.; Tague, C.L.; McMillan, S.K. A model of hydrology and water quality for stormwater control measures. *Environmental Modelling & Software* 2017, 95, 29-47.
- (24) Son, K.; Lin, L.; Band, L.; Owens, E.M. Modelling the interaction of climate, forest ecosystem, and hydrology to estimate catchment dissolved organic carbon export. *Hydrological Processes* 2019, 33 (10), 1448-1464.
- (25) Creed, I.F.; Band, L.E.; Foster, N.W.; Morrison, I.K.; Nicolson, J.A.; Semkin, R.S.; Jeffries, D.S. Regulation of nitrate-N release from temperate forests: A test of the N flushing hypothesis. *Water Resources Research* 1996, 32 (11), 3337-3354.
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- (28) Zierl, B.; Bugmann, H.; Tague, C.L. Water and carbon fluxes of European ecosystems: An evaluation of the ecohydrological model RHESSys. *Hydrological Processes* 2007, 21 (24), 3328-3339.
- (29) Band, L.E.; Patterson, P.; Nemani, R.; Running, S.W. Forest Ecosystem Processes at the Watershed Scale - Incorporating Hillslope Hydrology. *Agricultural and Forest Meteorology* 1993, 63 (1-2), 93-126.

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- (33) Coughlan, J.C.; Running, S.W. Regional ecosystem simulation: A general model for simulating snow accumulation and melt in mountainous terrain. *Landscape Ecology* 1997, 12 (3), 119-136.
- (34) Mackay, D.S.; Band, L.E. Forest ecosystem processes at the watershed scale: Dynamic coupling of distributed hydrology and canopy growth. *Hydrological Processes* 1997, 11 (9), 1197-1217.
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- (36) Creed, I.F.; Band, L.E. Exploring functional similarity in the export of nitrate-N from forested catchments: A mechanistic modeling approach. *Water Resources Research* 1998, 34 (11), 3079-3093.
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- (38) Baron, J.S.; Hartman, M.D.; Band, L.E.; Lammers, R.B. Sensitivity of a high-elevation Rocky Mountain watershed to altered climate and CO₂. *Water Resources Research* 2000, 36 (1), 89-99.
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- (42) Meentemeyer, R.K.; Moody, A. Distribution of plant life history types in California chaparral: the role of topographically-determined drought severity. *Journal of Vegetation Science* 2002, 13 (1), 67-78.
- (43) Samanta, S.; Mackay, D.S. Flexible automated parameterization of hydrologic models using fuzzy logic. *Water Resources Research* 2003, 39 (1).
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- (46) Zierl, B.; Bugmann, H. Global change impacts on hydrological processes in Alpine catchments. *Water Resources Research* 2005, 41 (2).
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- (48) Sanford, S.E.; Creed, I.F.; Tague, C.L.; Beall, F.D.; Buttle, J.M. Scale-dependence of natural variability of flow regimes in a forested landscape. *Water Resources Research* 2007, 43 (8).
- (49) Tague, C.; Grant, G.; Farrell, M.; Choate, J.; Jefferson, A. Deep groundwater mediates streamflow response to climate warming in the Oregon Cascades. *Climatic Change* 2007, 86 (1-2), 189-210.
- (50) Christensen, L.; Tague, C.L.; Baron, J.S. Spatial patterns of simulated transpiration response to climate variability in a snow dominated mountain ecosystem. *Hydrological Processes* 2008, 22 (18), 3576-3588.
- (51) Hwang, T.; Kangw, S.; Kim, J.; Kim, Y.; Lee, D.; Band, L. Evaluating drought effect on MODIS Gross Primary Production (GPP) with an eco-hydrological model in the mountainous forest, East Asia. *Global Change Biology* 2008, 14 (5), 1037-1056.
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- (65) Tague, C.L.; McDowell, N.G.; Allen, C.D. An integrated model of environmental effects on growth, carbohydrate balance, and mortality of *Pinus ponderosa* forests in the southern Rocky Mountains. *PLoS ONE* 2013, 8 (11), e80286.
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