FEWSTERN

First Name: **Laureline** Last Name: **Josset**

Title: **Postdoctoral Student**

Institution: **Columbia Water Center, Columbia University**

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Education:

PhD: MS: BS:

General Areas of Expertise:

Water system analysis and optimization, conjunctive use of surface and groundwater, uncertainty quantification and propagation, integrated modeling.

Short Bio:

Laureline Josset obtained a PhD degree in Earth Sciences from the University of Lausanne (CH) and is now a Postdoctoral Research Fellow at the Columbia Water Center at Columbia University (US). Her research interests are centered on water sustainability and its relationship with the transition of the energy sector to renewables, and the evolution of diets and agricultural practices. She focuses on the quantification of water stresses through integrated assessments and explores how conjunctive use of water sources together with infrastructural and financial strategies on the different sectors could increase the resiliency of our water systems.

Five Representative Publications:

Josset, L., Rising, J., Russo, T., Troy, T., Devineni, N., Allaire, M., Ho, M. & Lall, U. (2016). How conjunctive use of surface and ground water could increase resiliency in US. AGU Fall Meeting Abstract.
Josset, L., Allaire, M., Rising, J., Russo, T., Troy, T., Ho M. & Lall, U. (2016). A conjunctive model of surface and groundwater for the U.S. to explore stresses on water resources. Geostatistics for Environment conference, abstract.
Josset, L., Allaire, M., Rising, J., Thomas, C. & Lall, U. (2017). Water data in US: a spatial, temporal and sectoral analysis. AGU Fall Meeting Abstract, accepted.
Josset, L., Ginsbourger, D., & Lunati, I. (2015). Functional error modeling for uncertainty quantification in hydrogeology, Water Resources Research
Lall, U., Rising, J., Ho, M. W., Josset, L., Allaire, M., Troy, T., Devineni, N., Ruddell, B. L. & Pal, I. (2016). A Road Map for America's Water for the Next 20 Years, American Geophysical Union, Fall General Assembly

FEWSTERN Symposium 2017 Presentation Title and Abstract:

Simulating and Optimizing FEWs across Continental US at the county scale

To evaluate the resiliency of FEW systems, we propose a modeling approach combining a representation of the agricultural sector with land areas and crop models, the energy sector through thermo-electric plants, and the water sector comprising both supply (surface water, reservoirs and groundwater) and demands (for the industrical, mining, energetic, agricultural and urban sectors). The formulation is implemented within the model "America's Water Analysis, Synthesis and Heuristic", a simulation and optimization framework for the conterminous US discretized at the county-scale. The results determine the optimal operational decisions for each sources (e.g. reservoirs releases, surface water withdrawals, groundwater abstraction, cultivated areas and crops) at each time step for a given time horizon. To account for uncertainty in weather conditions and its impact on availability and demand, the optimization is performed for an ensemble of climate scenarios. Here we present two sets of results: the optimization of the conjunctive use of surface and ground water to mitigate water availability effects for conterminous US, and the optimization of crop choices conjointly with water sources in Colorado to adapt to climate variability.

SUBMIT RESET