



## CURRICULUM VITAE



Luis A. Méndez-Barroso, Associate Professor,  
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### (a). Professional Preparation

Sonora Institute of Technology, Cd. Obregon, Sonora, Mexico	Biotechnology, BS	1998
New Mexico Tech, Socorro, NM, USA	Hydrology, MsC	2009
Arizona State University, Tempe, AZ, USA	Geological Sciences, PhD	2014

### (b). Appointments

Sonora Institute of Technology Associate Professor, 2015- present

### (c) Research Interests

My main areas of interest are geomorphology, hydrogeology, hydrology, ecohydrology and the interactions between the Earth's surface and the atmosphere. My research focuses on understanding how topography controls the spatial and temporal distribution of water and energy fluxes at different temporal and spatial scales in hydrological systems. Both, topography and vegetation play an important role in the persistence and distribution of energy and water resources, hence; affecting the partition of diverse ecosystem processes, such as: runoff generation, infiltration aquifer recharge and precipitation recycling through plant transpiration.

### (d). Products

#### Five publications highlighting the soil-water interaction related work

1. **Méndez-Barroso, L.A.**, Vivoni, E.R., Mascaro, G. (2016). Impact of Spatially-Variable Soil Thickness and Texture on Simulated Hydrologic Conditions in a Semiarid Watershed in Northwest Mexico. *Revista Mexicana de Ciencias Geológicas*. 33:3, 365-377.
2. **Méndez-Barroso, L.A.**, Vivoni, E.R., Rodriguez, J.C., Watts, C., Garatuza-Payán, J., Yopez, E.A. (2014). A Modeling Approach Reveals Differences in Evapotranspiration and its Partitioning in Two Semiarid Ecosystems in Northwest Mexico. *Water Resources Research*. 50, doi:10.1002/2013WR014838.
3. **Méndez-Barroso, L.A.**, Vivoni, E.R. (2009). Observed Shifts in Land Surface Conditions During the North American Monsoon: Implications for a Vegetation-Rainfall Feedback Mechanism. *Journal of Arid Environmental*. doi:10.1016/j.jaridenv.2009.09.026.
4. **Méndez-Barroso, L.A.**, Vivoni, E.R., Watts, C.J. and Rodríguez, J.C. (2008). Seasonal and Interannual Relation between Precipitation, Soil moisture and Vegetation Dynamics in the North American Monsoon Region. *Journal of Hydrology*. 377(1-2): 59-70.

5. **Méndez-Barroso, L.A.**, Garatuza-Payán, J. and Vivoni, E.R. (2008). Quantifying Water Stress on Wheat using Remote Sensing in the Yaqui Valley, Sonora, Mexico. *Agricultural Water Management*. 95(6): 725-736

#### **Five other Significant publications**

1. Mascaro, G., Vivoni, E.R., **Méndez-Barroso, L.A.** (2015). Hyperresolution Hydrologic Modeling in a Regional Watershed and its Interpretation using Empirical Orthogonal Functions. *Advances in Water Resources*. 83, 190-206.
2. Vivoni, E.R., Rinehart, A.J., **Méndez-Barroso, L.A.**, Aragón, C.A., Bisht, G., Cardenas, M.B., Engle, E. Forman, B.A., Frisbee, M.D., Gutiérrez-Jurado, H.A., Hong, S., Mahmood, T.H., Tai, K. and Wyckoff, R.L. (2008). Vegetation Controls on Soil Moisture Distribution in the Valles Caldera, New Mexico, during the North American Monsoon. *Ecohydrology*. 1(3): 225-238
3. Vivoni, E.R., Watts, C.J., Rodríguez, J.C., Garatuza-Payán, J. **Méndez-Barroso, L.A.** Saiz-Hernandez, J.A. (2009). Improved Land-Atmosphere Relations through Distributed Footprint Sampling in a Subtropical Scrubland during the North American Monsoon. *Journal of Arid Environmental*. doi:10.1016/j.jaridenv.2009.09.031
4. Vivoni, E.R., Gutiérrez-Jurado, H.A., Aragón, C.A., **Méndez-Barroso, L.A.**, Rinehart, A.J., Wyckoff, R.L., Rodríguez, J.C., Watts, C.J., Bolten, J.D., Lakshmi, V. and Jackson, T.J. (2007). Variation of Hydrometeorological Conditions along a Topographic Transect in northern Mexico during the North American Monsoon. *Journal of Climate*. 20(9): 1792-1809.
5. Templeton, R.C., Vivoni, E.R., **Méndez-Barroso, L.A.**, Pierini, N.A., Anderson, C.A., Rango, A., Laliberte, A.S., Scott, R.L. (2013). High-Resolution Characterization of a Semiarid Watershed using an Environmental Sensor Network and Unmanned Aerial Vehicle Imagery: Implications on Evapotranspiration Estimates. *Journal of Hydrology*. 509: 306-319.

#### **(e). Synergistic Activities**

1. Luis Mendez has helped to integrate remote sensing data, field observations and mathematical simulations to evaluate and quantify the temporal and spatial evolution of water fluxes and states within the arid and semiarid basins of the Northern Mexican state of Sonora. Such integration has helped to understand the hydrological and ecosystem processes within semiarid basins.
2. Luis joined Sonora Institute of Technology in 2014. Since 2015, Luis has become Assistant Professor. During this time, Luis has developed the undergraduate-level courses Surface and Groundwater Hydrology, Geology and Introduction to programming. Furthermore, He has developed the graduate-level course Hydrogeology.
3. Luis is founder member of the National Laboratory of Coastal Resilience. Currently, The national Laboratory is formed by three main Academic Institutions: The Sonora Institute of Technology (ITSON), The National Autonomous University of Mexico (UNAM, campus Sisal, Yucatan) and the Southeastern Center for Global Change and Sustainability (CCGSS). Luis supports this Laboratory with Hydrological simulations and analysis of Hydrological Observations.

4. Luis has been training undergraduate and graduate students in Water and Environmental Sciences. Luis is linked to the undergraduate program “Environmental Sciences Engineering” and two graduate programs: “Master in Science in Natural Resources Management” and “Doctor in Environmental Engineering”.
5. Since 2015, Luis has established two sites for ecological monitoring: The Navopatia coastal observatory and the Cuchujaqui River Hydrological field station. Luis has helped to deployed meteorological stations and scientific sensors to estimate water and energy fluxes for different spatial domains (point, catchment, basins and watershed).

**(f). Student Supervision**

Graduate students:

Gregorio Juarez-Cansdales (MS, 2016-); Lizeth Caballero (MS,2016-), Javier Navarro-Estupiñan (PhD, 2016-), Jorge Uhh-Zonda (2016-) Mazuly Vega-Puga (MS, 2013-1015), Marco Gonzalez (MS, 2012-2014); Cesar Gonzalez- Parra (MS, 2012-2014); Ariel Castro-Lopez (MS, 2012-2014).

Undergraduate students:

Guillermo de Jesus-Lopez (BS, 2012-2016), Edna de la Llata-Quiroga (BS, 2012-2016), Patricia Villalobos (2013-2017), Juan Rivas (BS, 2013-2017).

**(g). Funded projects that are relevant to this proposal**

Luis A. Mendez-Barroso with Alec Torres Freyermuth, Karina Esqueda and Paulo Salles Alfonso de Almeida. “Creation and Consolidation of the National Laboratory of Coastal Resilience”, National Council of Science and Technology, Mexican Federal Agency, \$90,000 (2015-2016).

**(g). Collaborators and co-authors for the last three years**

Vivoni, Enrique; Gutierrez, Hugo; Robles-Morua, Agustin; Yopez-Gonzalez, Enrico; Mascaro, Giuseppe; Garatuza-Payan, Jaime; Rodriguez, Julio; Watts, Christopher.

PhD advisor: Vivoni, Enrique. (Arizona State University)