

# Reviews of Geophysics

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**Cover:** Related to D'Odorico et al. (<https://doi.org/10.1029/2017RG000591>), Irrigating land to grow crops is one example of the food, energy, water nexus. These crop sprinklers are located in the Sacramento-San Joaquin Delta, the hub of California's water distribution system, which supplies irrigation to more than 1,800 agriculture users in the region. Credit: Paul Hames/California Department of Water Resources (Public domain). See pp. 456–531.

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and Maria Cristina Rulli  
([https://doi.org/10.1002/  
2017RG000591](https://doi.org/10.1002/2017RG000591))

**THE GLOBAL FOOD-ENERGY-WATER NEXUS**

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We investigate the trade offs of water use for food or energy production and the nexus among water, food, and energy. We investigate the broader issue of feeding the planet with limited resources while ensuring sustainability, resilience, and equity. We analyze a number of approaches to future food and energy security.

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Chao Zhang and Ning Lu  
([https://doi.org/10.1029/  
2018RG000597](https://doi.org/10.1029/2018RG000597))

**WHAT IS THE RANGE OF SOIL WATER DENSITY? CRITICAL REVIEWS WITH A UNIFIED MODEL**

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We conduct critical reviews on the experimental and theoretical methodologies on soil water density to identify their limitations, flaws, and uncertainties. We synthesize some recent findings on intermolecular forces, interfacial interactions, and soil water retention mechanisms to clarify molecular scale physico-chemical mechanisms governing the soil water density. We propose a unified model to quantify soil water density variation.

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