

PRECIPITATION METRICS AND THE ENERGY-FOOD-WATER NEXUS: CHALLENGES AND OPPORTUNITIES

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In a 2011 Global Risk report, the World Economic Forum (WEF) explicitly stated that natural resources were among the top 3 global risk clusters facing society. The report stated clearly that: “Food production requires water and energy; water extraction and distribution requires energy; and energy production requires water. Food prices are highly sensitive to the cost of energy inputs through fertilizers, irrigation, transport and processing.” Many frameworks have been used to study the Energy-Water-Food-Network (EWFN), however, there has been very little attention to the hydroclimate implications and interactions. Much of the attention has focused on greenhouse gas emission, landuse, resource management efficiency, or societal facets. The complicated interconnections of Energy-Water-Food systems have emerged as critical areas of research. We present our ongoing efforts to link satellite based precipitation data and other NASA data to support the EWFN nexus related to urban transitions and interconnections to agriculture. As a part of our broader research portfolio, satellite-based precipitation estimates are being exploited to develop scientifically rigorous but stakeholder accessible metrics. The basic questions guiding the research are: Can precipitation per urban capita or per individual be quantified using PMM datasets? If so, can spatio-temporal trends in the metric be useful in the assessment of the EWFN capacities and vulnerabilities?

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