

The Death of Stationarity and the Birth of Neohydrology

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Much of hydrologic practice is built upon the base of the stationarity assumption. Under stationarity, it is possible to infer the statistical properties of future variables from the record of the past. The increasing magnitude of the human footprint on the terrestrial environment (e.g., through changing atmospheric composition, land cover and land use, water-resource development) has made stationarity an increasingly questionable basis for decision making. Consequently, hydrology must accelerate its efforts to quantify the sensitivity of terrestrial water fluxes to known anthropogenic modifications of the environment. Comprehensive land simulation models can provide the framework for this "neohydrology." I will describe recent and planned developments of one such model, with attention to vegetation and carbon dynamics, cryospheric processes, and water-resource development.