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foreSIGHT: an R-package for scenario-neutral climate impact assessments

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Scenario-neutral climate impact assessments rely on the availability of suitable sets of plausible hydroclimate variable time series (e.g. rainfall, temperature, potential evapotranspiration). Generating hydroclimate variable time series that are capable of strategically stress-testing a system can require significant technical investment. Likewise, there are logistical overheads in simulating and visualizing system performance resulting from the broad range of hydroclimate scenarios. These significant simulation and visualization demands form a barrier to the broad scale adoption of scenario-neutral approaches. An R-package, foreSIGHT (Systems Insights from the Generation of Hydroclimate Time series), is therefore introduced, with three key features: (i) perturbed time series generation — for stress-testing systems, (ii) integration of system modelling – to enable the seamless use of perturbed time series, and (iii) visualization tools – to display stress-test outputs and to overlay additional sources of climate information that add context to the evaluation (e.g. climate projections). The software enables easy repetition of the stress-test investigations to evaluate different system management and design options. R-package use is demonstrated for a domestic rainwater tank system using inputs modelled on South Australian conditions.