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Plotting for Synthesis of Large Datasets

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In the age of big data, hydrologic studies contain more sites, longer and more resolute simulated and observed timeseries, and finer resolution spatial data than ever before. This growth in capabilities to collect and generate data represents a tremendous opportunity for hydrologic science, but can challenge creating and presenting figures that summarize this information in succinct, interpretable, and meaningful ways. To address this challenge, this presentation reviews several plotting approaches focused on synthesis of large hydrologic and environmental datasets from across the literature. We highlight plots that can be used to visualize multi-dimensional spatial and temporal modeling and observational data, to synthesize patterns, to highlight outliers, and above all to convey key messages. Building on these different types of plots, we highlight a set of best practices for how we as a community can create effective visualizations that synthesize large datasets of a variety of types in scientific presentations and publications.