1145-VP-2292   **Matthew A Hawks*** (`mhawks@usna.edu`), 572-C Holloway Rd, MS 9E, Annapolis, MD 21402.
Multivariate Change Detection and Localization Using Degree-K Nearest Neighbors.

We explore the topic of detecting and localizing change in a series of multivariate data using graph-theoretic statistical criteria. Change-detection methods based on graph theory are emerging due to their ability to detect change of a general nature with desirable power properties. The graph-theoretic structure of nearest neighbors according to distances between observations forms the basis of our statistical procedures. We consider the detection power of the derived statistics. In a simulation study, we evaluate the power of our proposed statistical tests in a series of vignettes in which the sampling distribution, dimensionality, change parameter (location or scale), change type (abrupt or gradual), and change magnitude each are allowed to vary. We compare detection power with contemporary parametric and graph-theoretic approaches. Although our tests alone do not provide the information needed to localize a change point, we develop a follow-on procedure that satisfies this objective. (Received September 25, 2018)