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Szymon Dolecki, , France, and **Frederic Mynard*** (fmynard@georgiasouthern.edu),
Mathematical Sciences, POBox 8093, Statesboro, GA 30460. *A unified theory of function spaces
and hyperspaces: local properties.*

Many classically used function space structures (including the topology of pointwise convergence, the compact-open topology, the Isbell topology and the continuous convergence) are induced by a hyperspace structure counterpart. This scheme is used to study local properties of function space structures on $C(X, \mathbb{R})$, such as character, tightness, fan-tightness, strong fan-tightness, the Fréchet property and some of its variants. Under mild conditions, local properties of $C(X, \mathbb{R})$ at the zero function correspond to the same property of the associated hyperspace structure at X . The latter is often easy to characterize in terms of covering properties of X . This way, many classical results are recovered or refined, and new results are obtained. In particular, it is shown that tightness and character coincide for the continuous convergence on $C(X, \mathbb{R})$ and is equal to the Lindelöf degree of X . As a consequence, if X is consonant, the tightness of $C(X, \mathbb{R})$ for the compact-open topology is equal to the Lindelöf degree of X . (Received January 15, 2011)