



**Climate Program Remote Sensing Workshop  
February 12-14, 2018**

**SPEAKER TITLES/ABSTRACTS**

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“Multi-resolution Approaches for Big Spatial Data”

Remote-sensing instruments have enabled the collection of big spatial data over large spatial domains such as entire continents or the globe. Basis-function representations are well suited to big spatial data, as they can enable fast computations for large datasets and they provide flexibility to deal with the complicated dependence structures often encountered over large domains. We propose two related multi-resolution approximations (MRAs) that use basis functions at multiple resolutions to (approximately) represent any covariance structure. The first MRA results in a multi-resolution taper that can deal with large spatial datasets. The second MRA is based on a multi-resolution partitioning of the spatial domain and can deal with truly massive datasets, as it is highly scalable and amenable to parallel computations on distributed computing systems.