Special Issue

Radial Basis Functions (RBFs) for the Geosciences

Message from the Guest Editors

The aim and scope of this Special Issue is on radial basis functions (RBFs) for the geosciences. In recent years, RBFs have had great success in the geosciences, competing successfully against the very best state-of-the-art methodologies in large benchmark test cases. In particular, local RBF methods, such as RBF-generated finite differences (RBF-FD) and RBF partition of unity (RBF-PU), have shown great promise, as they provide higher effective resolution compared with grid-based methods and are computationally inexpensive and easily parallelizable, both on traditional multi-core and heterogeneous (accelerator) computer architectures. Given the above compelling attributes, this Special Issue welcomes original scientific contributions that give an exposition of RBFs in the geosciences, from mathematical, numerical, or computational science viewpoints that demonstrate advancements in RBF methodology for geoscientific computing or from application viewpoints. Research articles that specifically use local RBF methods for modeling different aspects of Earth system science and include comparisons with other methods are especially encouraged for submission.

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Message from the Editor-in-Chief

Continued developments in instrumentation and modeling have driven atmospheric science to become increasingly more complex with a deeper understanding of concepts, mechanisms, and interactions. This is the field that innovation built and it has led to a better appreciation for the complexity with atmosphere. Human life is intertwined in this complexity as we strive to better understand our atmosphere. Climate change is constantly stretching the limits of our thinking and forcing new ideas and concepts to be played out. Welcome to the Anthropocene!

Editor-in-Chief

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