Spherical Harmonics Least Square approximation on the Cubed-Sphere grid

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Abstract

In previous works, we have considered the problem how to associate a Spherical Harmonics subspace tothe Cubed Sphere, (1, 2, 3). In this talk we will show that a least squares approximation is numerically moreefficient than an interpolatory approach, in particular regarding condition numbers of the matrices involved.Accurate quadrature rules have been obtained with our approach. These rules serve in turn to define discretedifferential operators. In this talk, we will summarize our approximation procedure, its main properties andnumerical results for various PDE's on the sphere, including convection and diffusion PDE's of interest forclimate modelling.This work was supported by the French National program LEFE (Les Enveloppes Fluides et l'Environnement).
References:

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Keywords: Spherical harmonics, Cubed, Sphere, Least Square

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