Geosci. Model Dev. Discuss., 6, C1689–C1690, 2013
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Geoscientific Model Development
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Interactive comment on "Automating the solution of PDEs on the sphere and other manifolds in FEniCS 1.2" *by* M. E. Rognes et al.

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Received and published: 15 October 2013

Your response about the energy conservation makes complete sense. For the linear test case that you present, your presentation of the energy conservation is fine, particularly with the level of energy conservation in the caption. However the reviewer's comment was also spot on. Authors sometimes present total energy to show that their model is energy conserving and in showing total energy on a graph that goes all the way down to zero, the lack of conservation is hidden. It is now clear that you have not done this. However presumably your model would not conserve energy to machine precision when solving the non-linear shallow water equations. You present results of Williamson test case 5 which is frequently used to study energy conservation. You should present the normalised energy every time step of this test case. Presumably, as

with some other discretisations, the energy conservation would be dependent on the time step. This would be much more informative than, for example fig 11 which doesn't tell us much about the accuracy of your model.

Interactive comment on Geosci. Model Dev. Discuss., 6, 3557, 2013.