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Data Assimilation Methods on a Non-conservative Adaptive Mesh

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Adaptive mesh methods are used to model a wide variety of physical phenomena. Some of these models, in particular those of sea ice movement, are particularly interesting in that they use a remeshing process to remove and insert mesh points at various points in their evolution. This presents a challenge in developing compatible data assimilation schemes, as the dimension of the state space we wish to estimate can change over time when these remeshings occur. In this work, we first describe a remeshing scheme for an adaptive mesh in one dimension. We then develop advanced data assimilation methods that are appropriate for such a moving and remeshed grid. We hope to extend these techniques to two-dimensional models, like the Lagrangian sea ice model neXtSIM [**?**].

References

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