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Interactive Comment

Interactive comment on "Technical note: Recursive rediscretisation of geo-scientific data in the Modular Earth Submodel System (MESSy)" *by* P. Jöckel

Anonymous Referee #1

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General comments:

The author describes a procedure to regrid data, e.g. for the use in 3d models. I appreciate that the procedure has been described in detail. The paper is well written and lacks only 2 minor points, which I would recommend to include.

First, I rather would think that these kind of algorithms are standard procedures. They should have been used widely. However, no comment is given whether procedures of this kind are used / documented elsewhere and whether there are differences to the procedure described here.

Second, perhaps I am too picky, but I would like to have some definitions given more exactly. The advantage would be that the reader better knows the assumptions and can decide whether the algorithm can be applied for the individual problem. Details see below:

Minor comments:

4674/20 include: defined by **a convex combination of** hybrid levels (with ...

4675/24 As a first sentence the problem should be clarified: I.e. a function F, which is defined on a grid should be redefined on another grid. And then function could be clearly defined, by explaining the domain and the codomain, i.e. let $\mathcal{A} \subseteq R^{\mathcal{K}}$, the set, which is decomposed into grids. The set of all regarded grids is $\tau = \{\mathcal{X}_1, ..., \mathcal{X}_{\mathcal{N}}\}$ and F is defined as

$$F : \tau \longrightarrow R, \mathcal{X}_i \mapsto F(\mathcal{X}_i).$$

Define $|\bullet|$ as a metric, or what exactly can it be? At least (11) should hold.

Then I would suggest to actually define the two grids which are lateron used $\mathcal{A}_i$ and $\mathcal{B}_i \in \tau$, which fulfil (2) and (3) are not empty and $|\mathcal{A}_i| \neq 0$.

4677/9-14 It was not obvious to me how this was done. Mathematical induction proves it. Is there a simpler way? Short comment would be appreciated.

4679/16 Since the function F is actually defined on sets and no topology is defined for τ one cannot apply the definition of continuity, at least as far as I understood. However, the example statement is important and should be included.

4680/16 As far as I understood it (22) is correct. But perhaps I misunderstood S. Rast's comment. One could explicitely write it down: In the case the metric $|\bullet|$ can be writen as $\mathcal{K}$ sub metrices: $|(x_1, ..., x_\mathcal{K})| = |x_1|_1 \times ... \times |x_\mathcal{K}|_\mathcal{K}$, (22) follows immediatly.

Interactive comment on Atmos. Chem. Phys. Discuss., 6, 4673, 2006.