



OASIS4: a coupling software for next generation earth system modelling

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We present the latest version of the OASIS4 coupling software which includes the commonly known point based 2-dimensional and 3-dimensional interpolation schemes (bilinear, trilinear, bicubic, nearest neighbour), and 2-dimensional conservative remapping. Furthermore, a complete parallel search is available taking into account specific requirements at process boundaries. Identical search results are guaranteed which are independent of the domain partitioning for all supported interpolation schemes and grid types. We support this functionality for block-structured regular and horizontally irregular grids as well as Gauss-reduced grids. The geographical information is described in spherical polar coordinates. The parallel "multi-grid" search ensures low CPU cost to perform the task of the neighbourhood search and at the same time showing a good scalability when applied to grid partitioned domains. As the CPU costs for the multi-grid search increase only linear with grid-size the new software becomes extremely beneficial when applied for high-resolution models. We show first benchmark results with simple but realistic test configurations to demonstrate the efficiency and scalability. Typically, the compute time needed to perform the neighbourhood search is in the order of a few seconds and is only weakly dependent on the grid size.