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"Gtool5": a Fortran90 library of input/output interfaces for self-descriptive multi-dimensional numerical data

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Abstract. A Fortran90 input/output library, "gtool5", is developed for use with numerical simulation models in the fields of Earth and planetary sciences. The use of this library will simplify implementation of input/output operations into program code in a consolidated form independent of the size and complexity of the software and data. The library also enables simple specification of the metadata needed for post-processing and visualization of the data. These aspects improve the readability of simulation code, which facilitates the simultaneous performance of multiple numerical experiments with different software and efficiency in examining and comparing the numerical results. The library is expected to provide a common software platform to reinforce research on, for instance, the atmosphere and ocean, where a close combination of multiple simulation models with a wide variety of complexity of physics implementations from massive climate models to simple geophysical fluid dynamics models is required.

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