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FLUME: the flexible unified model environment

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The FLUME project will provide a new software infrastructure for Earth System Modelling at the Met Office. FLUME will separate the infrastructure code from the scientific code and redesign both so that they are able to be more flexibly combined with each other and with externally provided codes. In the current system, intelligence is very poorly encapsulated, but in FLUME scientific code will be modularised and coupled through automatically generated code. Scientific code should then be easier to import into FLUME or export into other coupling frameworks.

An advantage of this approach is that it can be extended to work with other coupling frameworks. Using techniques derived from the Bespoke Framework Generator (BFG) developed at the University of Manchester, FLUME models will be able to couple using a simple argument-passing interface, or else using other interfaces such as those defined by PRISM or ESMF. In order to facilitate code-generation, FLUME models will be described using FLUME Metadata. FLUME Metadata is created and manipulated using the Definition-Configuration-Composition-Deployment (DCCD) paradigm.

This talk will describe the structure of FLUME Metadata, the stages of DCCD, the standards that scientific models must adhere to in order to be ‘‘FLUME-compliant”, and first experiences of using FLUME. These experiences will be based on using FLUME techniques to couple the UM atmosphere with the NEMO ocean model via the OASIS4 coupler.