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Transport Schemes in GungHo

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GungHo is the mixed finite-element dynamical core under development by the Met Office. A key component of the dynamical core is the transport scheme, which advects density, temperature, moisture, and the winds, throughout the atmosphere. Transport in GungHo is performed by finite-volume methods, to ensure conservation of certain quantities. There are a range of different finite-volume schemes being considered for transport, including the Runge-Kutta/method-of-lines and COSMIC/Lin-Rood schemes. Additional horizontal/vertical splitting approaches are also under consideration, to improve the stability aspects of the model. Here we discuss these transport options and present results from the GungHo framework, featuring both prescribed velocity advection tests and full dry dynamical core tests.