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Coupled anisotropic global MHD and pitch angle resolved inner magnetosphere models

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We have recently extended the University of Michigan BATS-R-US code with the capability of solving the anisotropic MHD equations. The BATS-R-US code can be coupled with various inner magnetosphere models inside the Space Weather Modeling Framework. The Comprehensive Ring Current Model (CRCM) solves for the bounce-averaged kinetic equations resolving both the energy and pitch-angle distributions. The CRCM model has been recently parallelized to allow faster than real time execution. We have developed a consistent coupling between the anisotropic MHD and the pitch-angle resolved inner magnetosphere models. We present the new algorithm, and some verification and validation tests, including two-way coupled BATS-R-US - CRCM simulations of magnetic storms.