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A future prospect on computer simulations of Geospace

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The purpose of this paper is to discuss a future prospect/direction of computer simulations for Solar-Terrestrial and Planetary (STP) sciences. Owing to the rapid development of computer technology in the recent days, the computer simulation has become an essential approach in the STP science. Tera-scale computers become much more common in the present day, that will enable us to accelerate various new sciences. It is important to discuss how to use them and what they are used for. In this paper, current status and future prospect of fluid (MHD and multi-fluids) and kinetic (particle and Vlasov) simulations are described. Strategy of unique Peta- and Exa-scale supercomputing projects will be discussed.

Keywords: computer simulation, supercomputer, kinetics, fluid dynamics, cross-scale coupling