



DREAM-3D and the importance of model inputs and boundary conditions

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Recent work on radiation belt 3D diffusion codes such as the Los Alamos "DREAM-3D" code have demonstrated the ability of such codes to reproduce realistic magnetospheric storm events in the relativistic electron dynamics - as long as sufficient "event-oriented" boundary conditions and code inputs such as wave powers, low energy boundary conditions, background plasma densities, and last closed drift shell (outer boundary) are available. In this talk we will argue that the main limiting factor in our modeling ability is no longer our inability to represent key physical processes that govern the dynamics of the radiation belts (radial, pitch angle and energy diffusion) but rather our limitations in specifying accurate boundary conditions and code inputs. We use here DREAM-3D runs to show the sensitivity of the modeled outcomes to these boundary conditions and inputs, and also discuss alternate "proxy" approaches to obtain the required inputs from other (ground-based) sources.