EPOCH and VisIt tutorial

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1 Prerequisite Packages

1.1 Fortran Compiler

1. First of all, to use EPOCH, you need fortran compiler. To find out if you have it, on the terminal, type which gfortran. If you have it installed, this /usr/local/bin/gfortran will be your output.

2. To download gfortran, please follow the instructions here `https://gcc.gnu.org/wiki/GFortranBinaries`.

3. You can choose to use Homebrew for the installation if you are using Mac. `https://formulae.brew.sh/formula/gcc#default`

1.2 OpenMPI

1. Install OpenMPI by following the instructions here `https://formulae.brew.sh/formula/open-mpi`

2. If you are downloading OpenMPI using another method, make sure you download the latest version for the EPOCH code to run.

1.3 CMake

1. Download and install CMake `https://cmake.org/download/`

2. On terminal, add path export PATH=$PATH:$HOME/Applications/CMake.app into either one your system uses. For

   (a) bash
   nano ~/.bash_profile or nano ~/.bashrc

   (b) zsh
   nano ~/.zsh_profile or nano ~/.zshrc

2 EPOCH

1. Compile EPOCH if it is your first time running it by changing to the correct working directory that you store your data. Taking 2D EPOCH as an example, switch to epoch2d by using this command
   cd $HOME/epoch/epoch2d

2. Type
   make or make COMPILER=gfortran (if the former doesn't work) to compile the code. A new directory called "bin" containing all the compiled binary naming epoch1d, epoch2d, epoch3d will be created after code compilation.

3. Execute the binary file by typing ./bin/epoch2d and the code will run. You shall see the EPOCH logo and things like this.

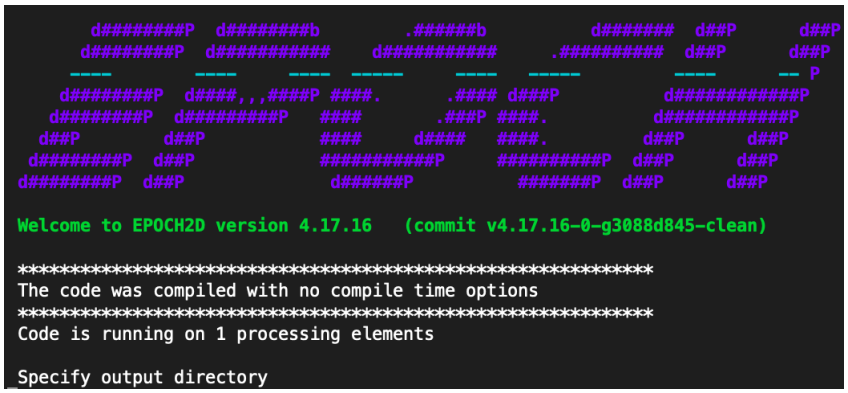

Figure 1: EPOCH Logo

4. Type ./Data, then the code shall run. Note that there must be a file name input.deck in the Data folder. Otherwise you have to copy the deck file you intend to run and paste it in Data folder and name it as input.deck. Then only you run the code. Note that the example deck file used in this manual is laser_focus.deck.

3 VisIt

VisIt is needed to read the sdf file.

1. Install VisIt here `https://visit-dav.github.io/visit-website/releases-as-tables/#latest`

2. You can either choose to add VisIt to your path so that you can open it by typing visit on the terminal or just simply click on the app. You shall see this on your screen.

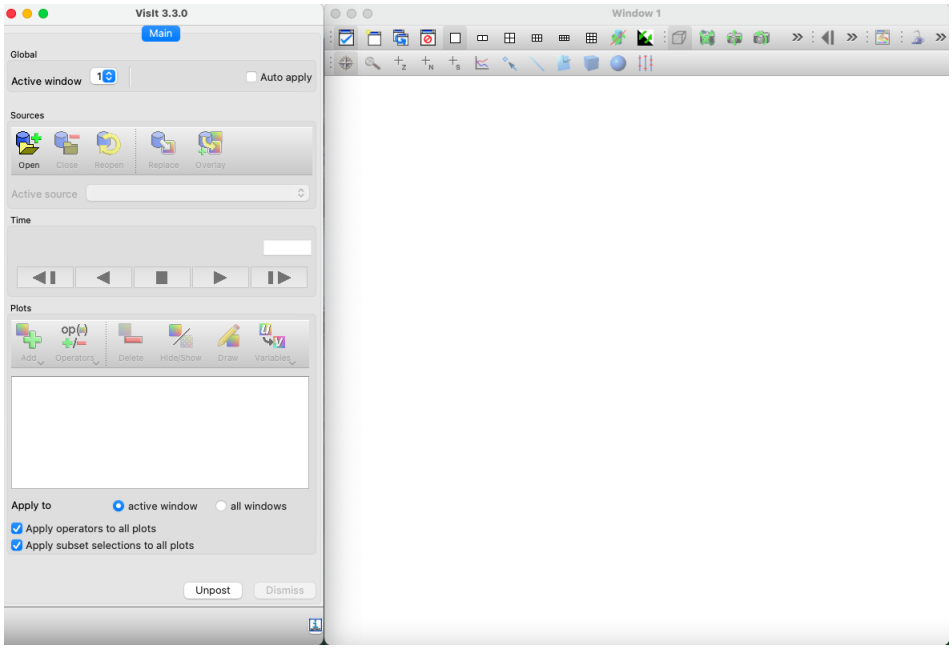

Figure 2: VisIt

3. Then, follow the procedure on the pictures.

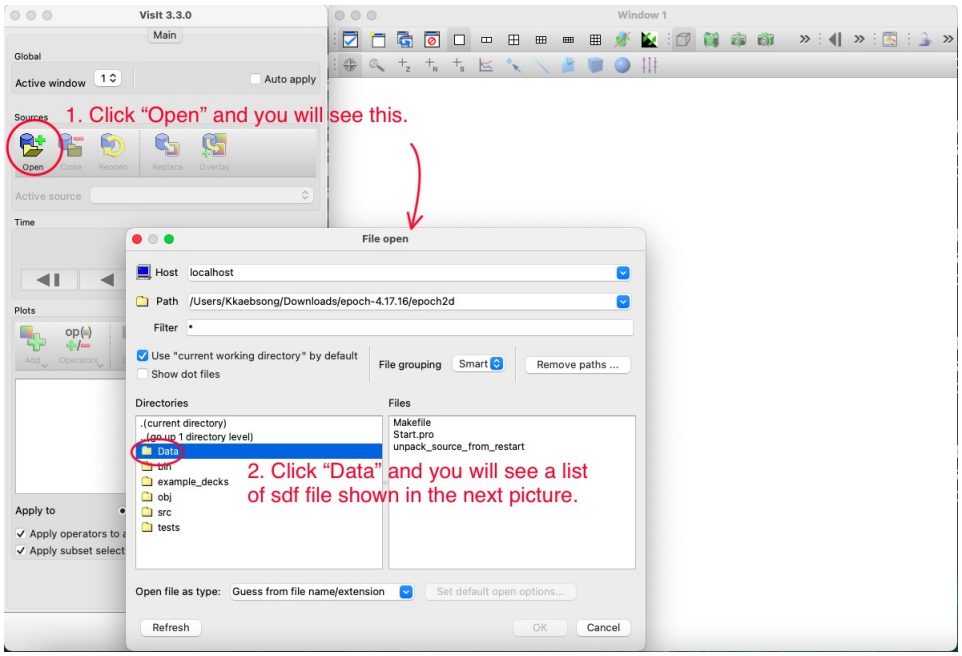

Figure 3: VisIt

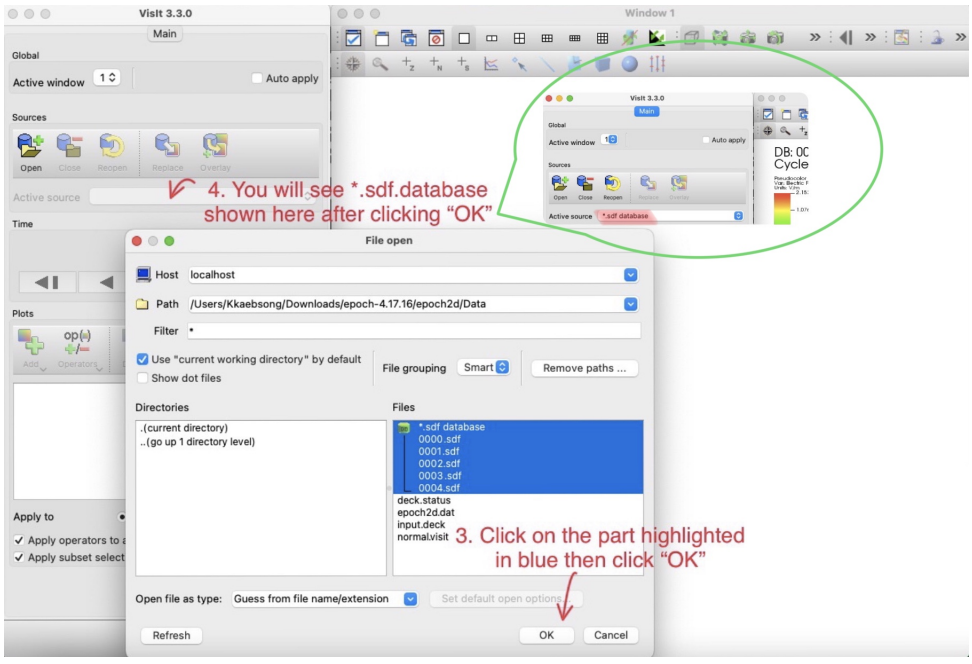

Figure 4: VisIt

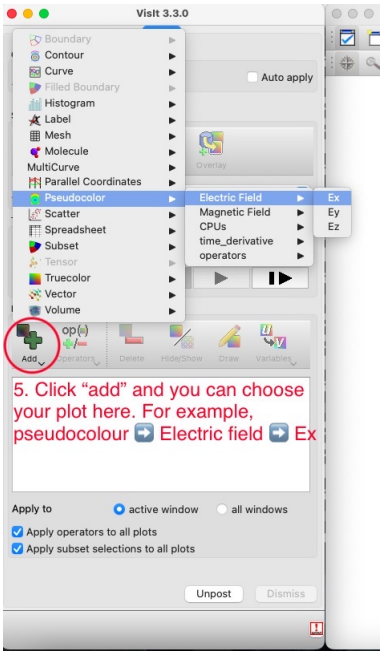

Figure 5: VisIt

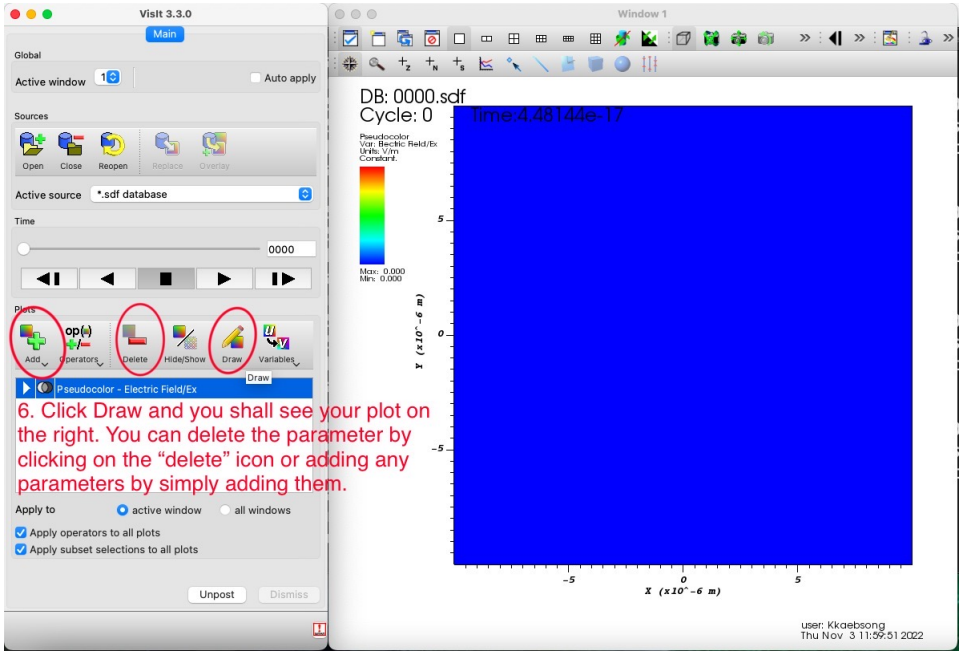

Figure 6: VisIt

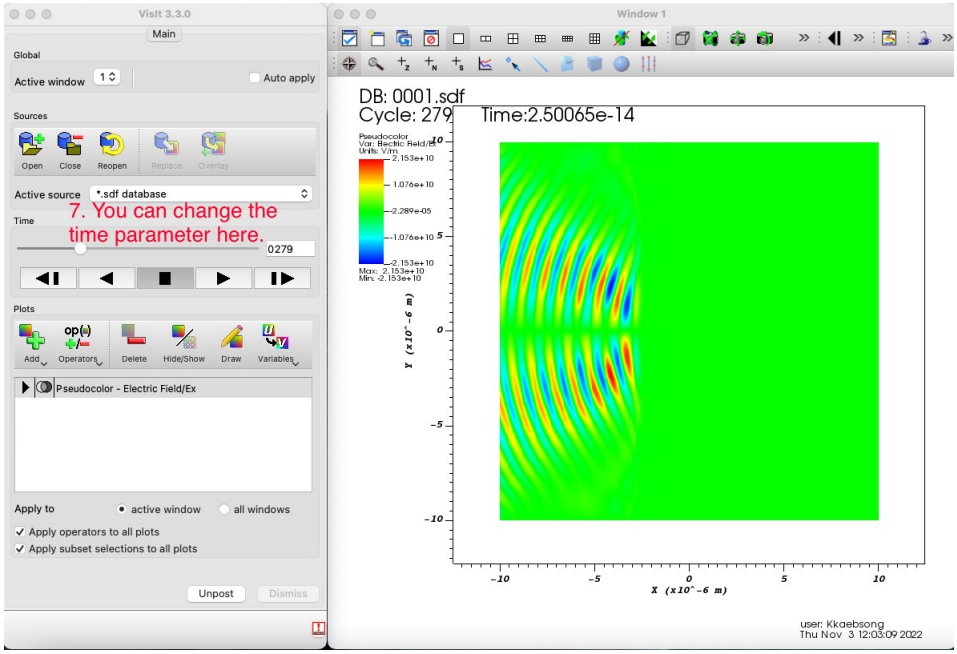

Figure 7: VisIt