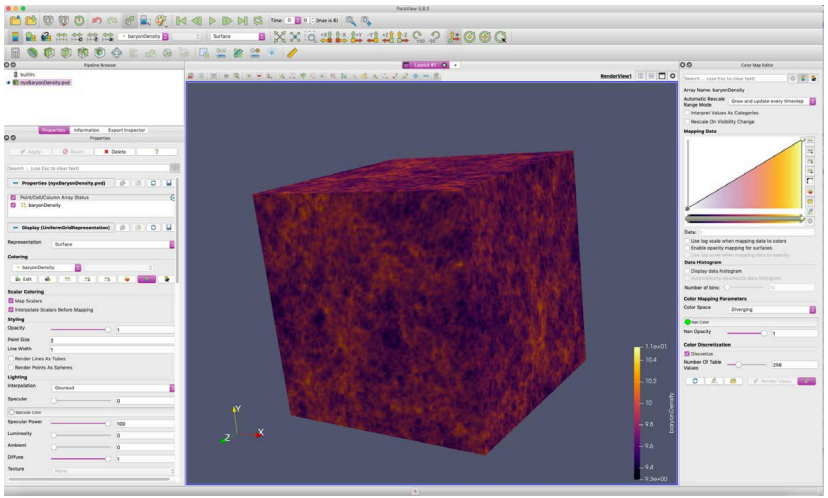
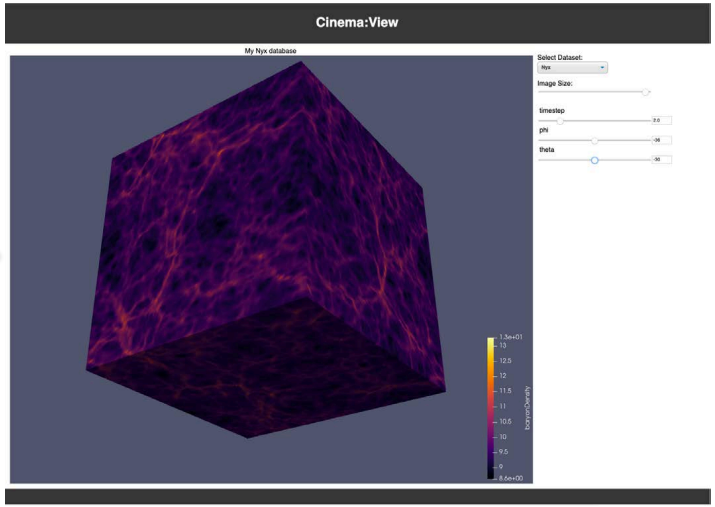
Application Export example

- Common analysis and visualization applications can output Cinema databases of whatever is being visualized
  - This results in a Cinema database that is ready to view
  - Examples: ParaView, VisIt, Galaxy, ALPINE Ascent



ParaView 5.8 can export Cinema databases



Cinema viewer w/results of export

Application Export ‘How-to’

- Instructions on how to export from ParaView
  - Install ParaView 5.8.0 from https://www.paraview.org/download/
- Download zipped example from
  - https://github.com/cinemascience/cinema_examples
  - https://cinemascience.github.io/examples.html

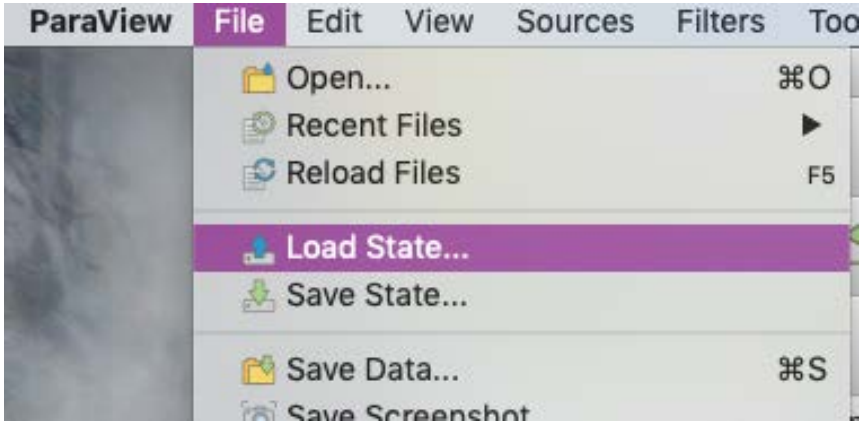
Navigate to the unzipped directory structure:

```
$ cd /<path-to>/cinema_examples/applications/paraview/5.8/
$ ls -l nyx-data/

 load-nyx-data.pvsm
 nyxBaryonDensity/
 nyxBaryonDensity.pvd
```

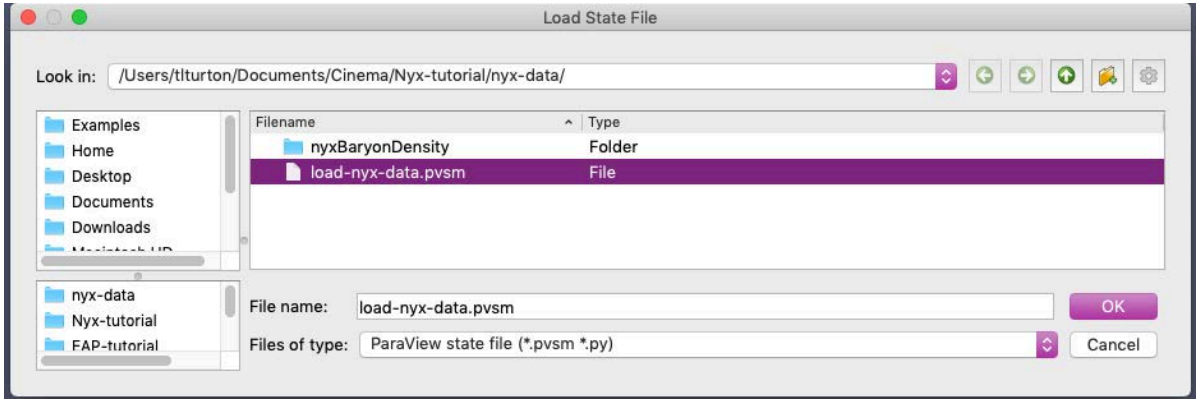
Acknowledgement
This tutorial uses a dataset from the open source Nyx cosmology simulation:
A. S. Almgren, J. B. Bell, M.J. Lijewski, Z. Lukic, E. Van Andel, “Nyx: A Massively Parallel AMR Code for Computational Cosmology” Astrophysical Journal, 765, 39, 2013. https://amrex-astro.github.io/Nyx/index.html

ParaView state file (.pvsm) loads data and create viz

Open PV 5.8.0 and select
`FILE -> Load State`



Navigate to the location of the ParaView state file on your computer:
`load-nyx-data.pvsm`



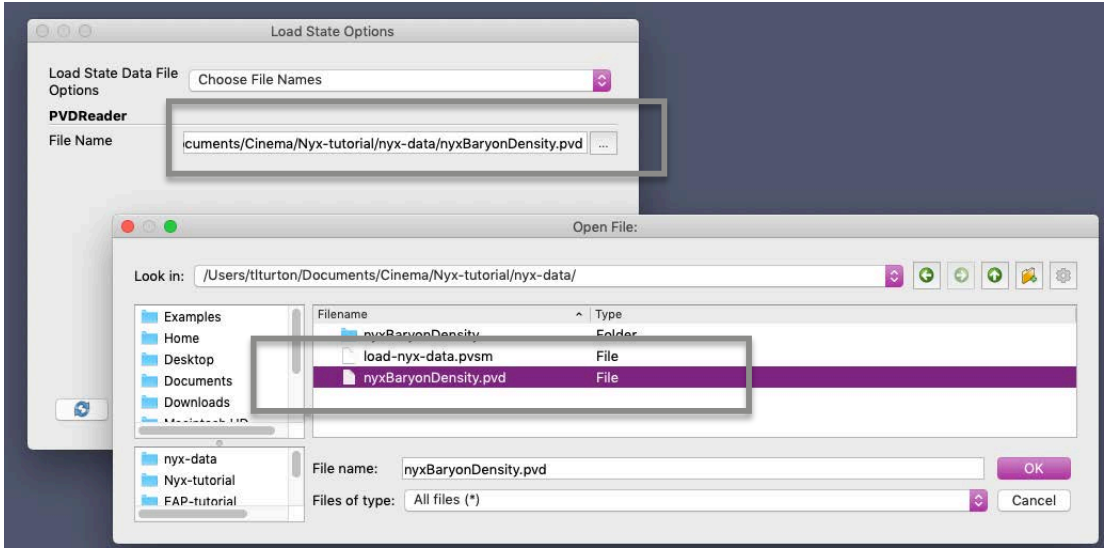
Point the state file to the location of the data files on your computer

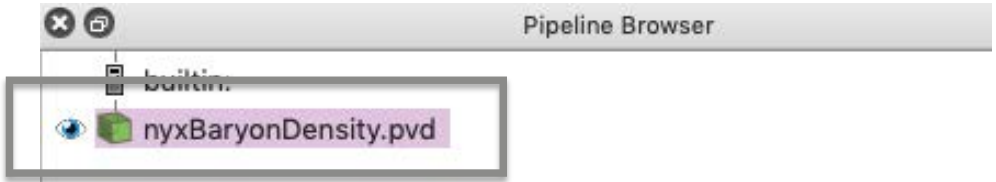
In Load State Options dialog box, select `Choose File Names` from dropdown menu

Click on the breadcrumbs menu and navigate your file system to `nyxBaryonDensity.pvd`

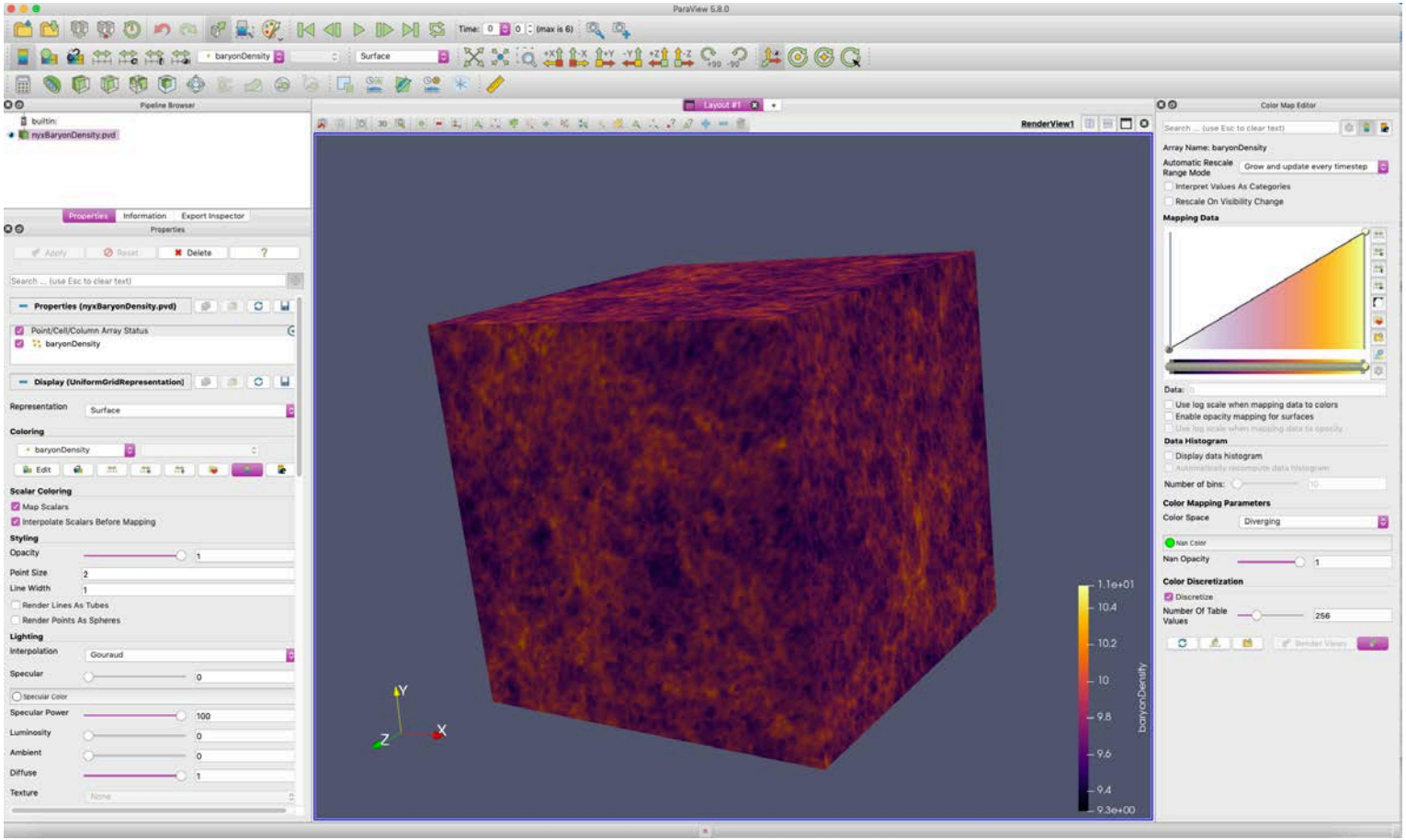
Click on OK

Select the dataset in the `ParaView Pipeline Browser`





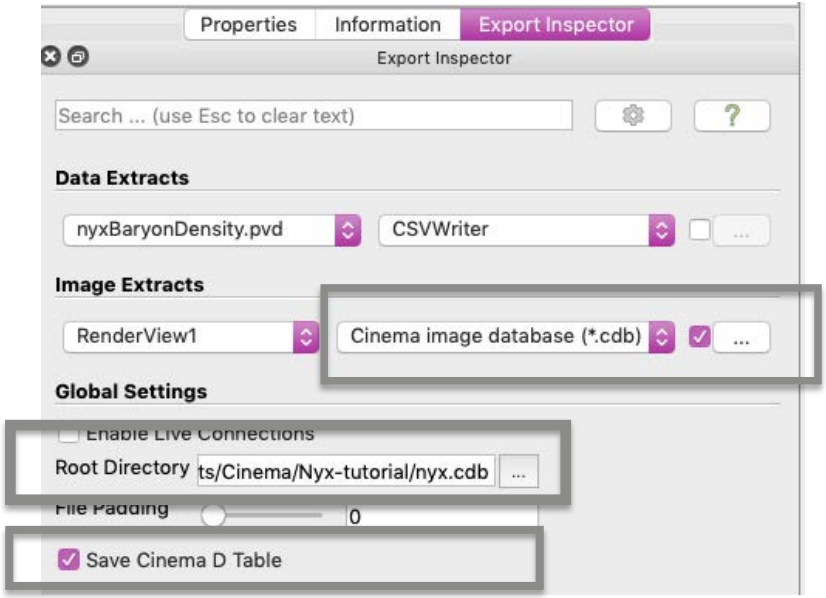
The data should be loaded and ready for Cinema export



Use the Export Inspector to set up the Cinema database export

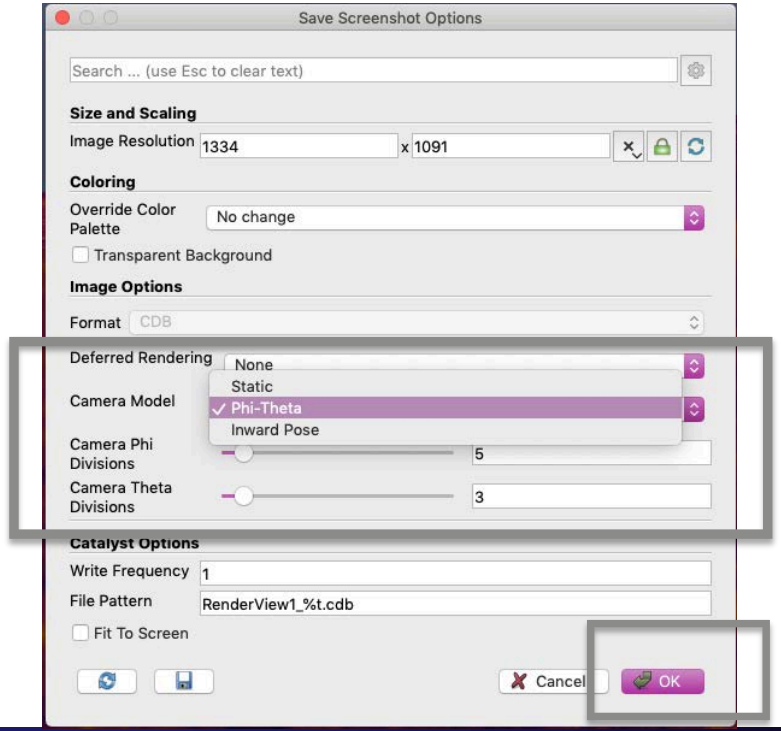
Select Cinema options in Export Inspector:

- `Cinema image database (*.cdb)`
- Click on breadcrumbs menu for Save Screenshot Options
- Enter path and database name, nyx.cdb
- Click on Save Cinema D Table



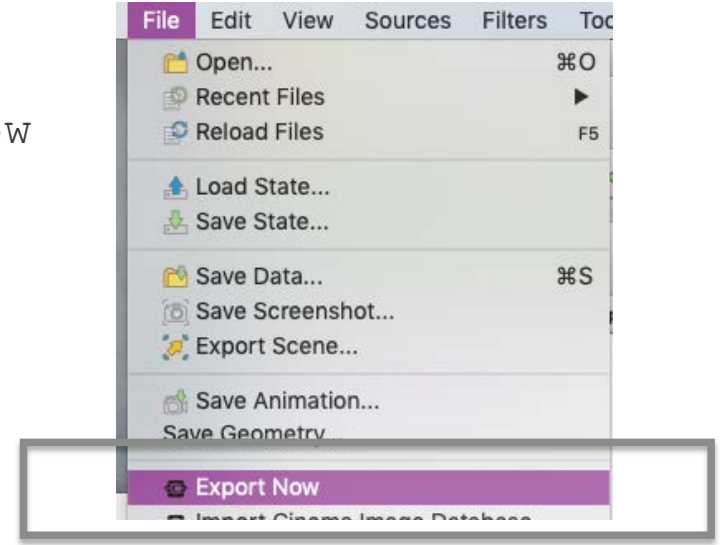
In Save Screenshot Options dialog box:

- Choose Phi-Theta under Camera Model
- Update phi/theta divisions if desired



Export Now!

Then export via
`File -> Export Now`



It will take a short while for the export. You can watch its progress via the Time counter in the top menu bar

Now view using Cinema:View

Navigate to the cinema_view directory:

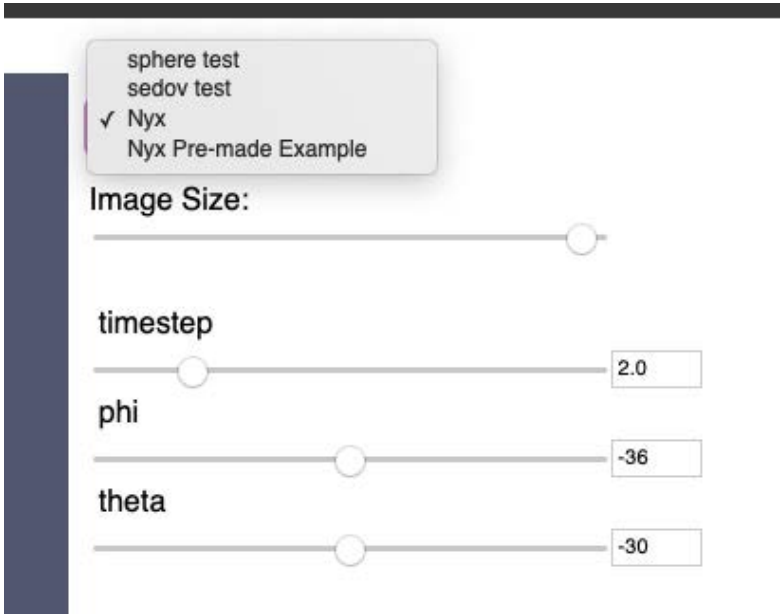
```
$ ls -l cinema_view/

 cinema/
 cinema_view.html
 data/

$ ls -l cinema_view/data/

 databases.json
 nyx-example.cdb/
 nyx.cdb/
 sphere.cdb/
```

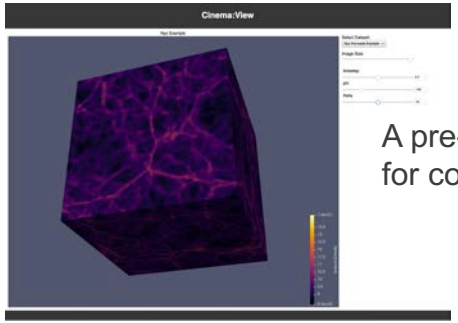
databases.json contains list of available databases w.r.t. cinema_view directory

Move your nyx.cdb into the cinema_view/data directory

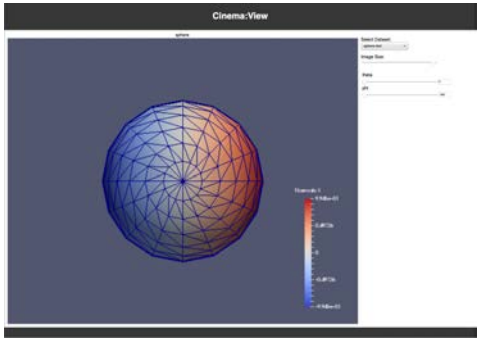
```
$ open cinema_view.html -a Firefox
```

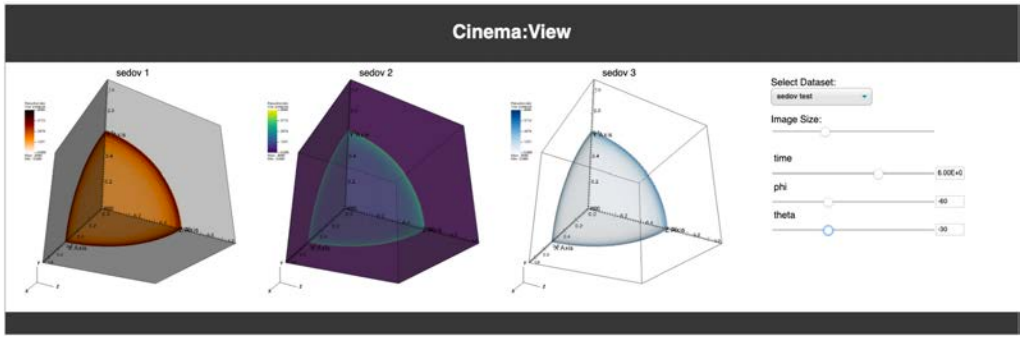
Already populated databases to illustrate viewer functionality



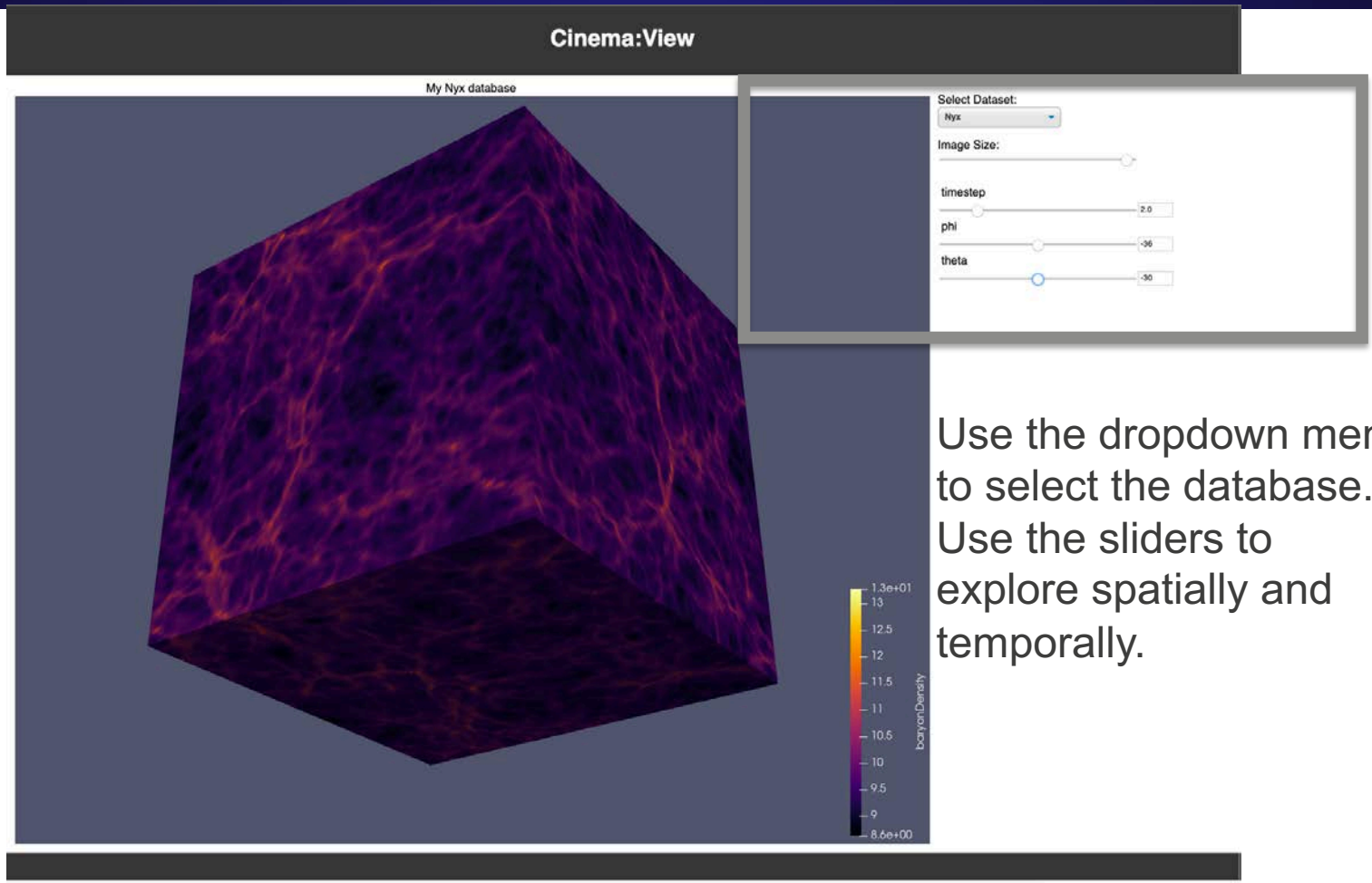


A pre-populated Nyx database for comparison





Viewing with Cinema:View



Use the dropdown menu to select the database. Use the sliders to explore spatially and temporally.

Note on browser security

- To use Cinema viewers, you **MUST** allow local file access. Do this in the following way, but be sure to reset these options when you are done:
- **Firefox (preferred)**
  - in about:config, set privacy.file_unique_origin to **false** This is essential for cinema to work
  - in about:config, set security.fileuri.strict_origin_policy to **false** This allows loading of a file from any folder
- **Safari**
  - Safari->Preferences->Advanced->Show Develop menu in menu bar
  - Safari->Develop->Disable Local File Restrictions (on)
- **Chrome**
  - open **chrome** with the option --disable-web-security
  - Mac example:
    - open -na "Google Chrome" cinema_view.html --args --user-data-dir="YOUR_PATH_TO_REPO" --disable-web-security