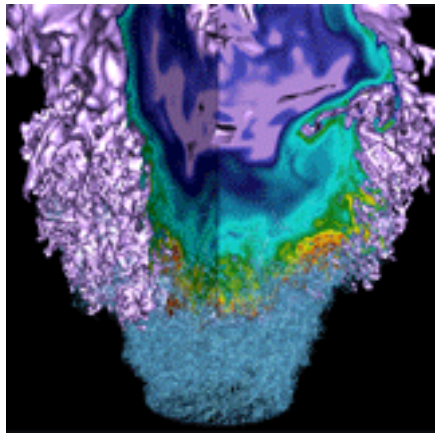
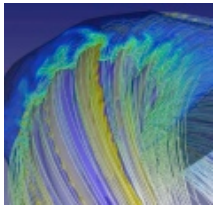
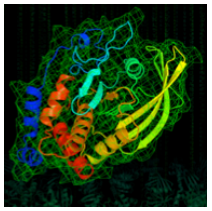
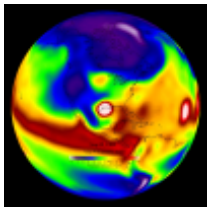
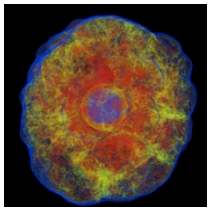
Hands On

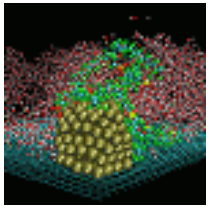












Getting Started

- **Log into NERSC using your training account**

```
laptop# ssh <trainXX>@cori.nersc.gov
```

- **Run a basic Shifter command**

```
cori# shifterimg images
```

Create an MPI Docker image

- See the helloworld examples in the github repo

```
laptop# editor hello.c
```

- Build the image and push it to DockerHub

```
laptop# docker push \
    <dockername>/hellompi:latest
```

- Pull the image to Cori with shifterimg

```
cori# shifterimg pull \
    <dockername>/hellompi:latest
```

Run the image interactively with shifter

- **Use salloc to get an interactive batch job**

```
cori# salloc –N 1 –C haswell –p
regular --reservation=CUG1C
```

- **Once a prompt has appeared run the shifter command**

```
nid# shifter --image=<earlier image>
```

- **Confirm you are in the container**

```
$ lsb_release -a
```

Run a batch job

- **Create a batch script from the github repo example**

- **Submit the job using sbatch**

```
cori# sbatch ./batch.sl
```

Hello World

```
DOE6903508:shifter canon$ cat helloworld.c
// Hello World MPI app
#include <mpi.h>
#include <stdio.h>

int main(int argc, char** argv) {
    int size, rank;
    char buffer[1024];

    MPI_Init(&argc, &argv);

    MPI_Comm_size(MPI_COMM_WORLD, &size);
    MPI_Comm_rank(MPI_COMM_WORLD, &rank);

    gethostname(buffer, 1024);

    printf("hello from %d of %d on %s\n", rank, size, buffer);

    MPI_Barrier(MPI_COMM_WORLD);

    MPI_Finalize();
    return 0;
}
```