

## CAM tutorial Docker container software issue (06/10/2019)

[Mac OS] OS X version 10.9.5 (a very old Mac OS)

[Issue Description]

### 1. Install Docker Toolbox for an old MacOS

Since the Mac OS does not satisfy the minimum OS requirement for **Docker Desktop** (macOS Sierra 10.12 or newer), I had to install **Docker Toolbox** instead.

To get Docker Toolbox for older Mac or Windows OS, follow this link:

<https://docs.docker.com/toolbox/overview/>

Based on your OS, click one of the boxes under *Ready to get started?* for the right **Toolbox** package and follow the right link for installation instruction. In my case, following the instruction at:

[https://docs.docker.com/toolbox/toolbox\\_install\\_mac/](https://docs.docker.com/toolbox/toolbox_install_mac/)

I went through Step 1 to 3, but skipped the optional "Add shared directories" step.

### 2. Install and Run SCAM

Following the tutorial instruction [practical-1.0\_setup.pdf, TI hereafter] steps 2-4, I downloaded, unzipped\*, and loaded the tar file to docker. Since optional, I skipped TI 5.

Following TI step 6, by typing:

```
> docker run -p 8888:8888 -v
{local_path}/scam1.0/work:/home/scam/work -d scam_tutorial_v1.0
```

It didn't seem to work\*\*. Therefore, I used the alternative approach and skipped to step 9.

```
> docker run -it -v {Local Path}/scam1.0/work:/home/scam/work --entrypoint=/bin/bash
scam_tutorial_v1.0
```

Instead of running the model in the jupyter file browser, I just opened a regular terminal window and successfully run the model.

#### Issues & Solutions:

\*When unzipping the scam\_tutorial package, it didn't work. So, -f is used to force it. See below

```
> gunzip scam_tutorial_v1.0.tar.gz
gunzip: scam_tutorial_v1.0.tar.gz has 1 other links -- skipping
```

```
> gunzip -f scam_tutorial_v1.0.tar.gz
```

```
> ls
scam_tutorial_v1.0.tar
```

\*\*When unzipping the scam\_tutorial package, it didn't work. So, -f is used to force it. See below

```
> docker run -p 8888:8888 -v {local path}:/home/scam/work -d scam_tutorial_v1.0
```

```
afa96a525f6ddfe4cf1f7f6aade1dfc6003ad4c99d34288573e5edd44deebc45
```

```
> docker run -p 8888:8888 -v {local path}:/home/scam/work -d scam_tutorial_v1.0
```

```
c7f4c375ed531675bc0a9c86a48d96c5f33c63dac68ad7cae400764be81953ce
```

```
docker: Error response from daemon: driver failed programming external connectivity on endpoint gracious_visvesvaraya
(3ca01c44a2a3f6c69c105a1dac4ffbec6a3549a338afbe8317d38fc9adde419d): Bind for 0.0.0.0:8888 failed: port is already
allocated.scam_tutorial_v1.0.tar
```

### 3. Launch Jupyter Lab to Process & Visualize Data Output

It failed when I tried to start up the jupyter lab in a browser using <http://127.0.0.1:8888>. In the browser window, it says

```
This site can't be reached
127.0.0.1 refused to connect.
```

This is because for some unknown reason, I cannot reach the jupyter lab inside the container.

*[Note: if you launch with the bash shell, this will not work since the jupyter server is not running in the container]*

Solution to this is to install the jupyter lab on the local computer. Some related libraries may need to be installed/updated. The installation/updates done by Brian include:

```
> conda install -c conda-forge jupyterlab netcdf4 matplotlib nodejs tornado=5.1.1 xarray nc-time-axis
nbsserverproxy
```

```
> conda install -c conda-forge pyzmq
```

(this is for Error "AttributeError: type object 'IOLoop' has no attribute 'initialized'" when starting up the jupyter lab)

```
> conda install tornado=4.5.3
```

(this is for Error "[E 13:23:27.941 LabApp] Unhandled error in API request" when starting up the jupyter lab)

### 4. Summary

In an old mac OS, an older version of Docker must be installed. The container and shared "work" directory can be built. SCAM can also be run successfully in the shared "work" directory. The problem is that the jupyter lab in the container cannot be reached.

#### Final Procedures for Running SCAM and Jupyter Lab

**Step 1.** Choose "Docker Quickstart Terminal" (either from the Docker directory under Applications, or from the Launchpad) to start up a Docker terminal window.

**Step 2.** In the Docker terminal window, type the following to go to the "scam" directory. Then go to the "work" directory for exercises.

```
> docker run -it -v {Local Path}/scam1.0/work:/home/scam/work --entrypoint=/bin/bash
scam_tutorial_v1.0
```

**Step 3.** Open a regular Terminal window of your local computer and start up the jupyter lab locally (NOT the jupyter lab inside the container). Simply do the following.

```
> jupyter lab
```