

# Overview and Basic System Use

Updated for SOS 4.0.1

**As a point of clarification, any image or animation that is shown on the sphere is called a dataset and a collection of datasets is called a playlist.**

1. Basic Setup
  - a. SOS is two computers, four video projectors, one sphere
  - b. Four video projectors
    - i. One to four starting with number one closest to the computer and then going counterclockwise
  - c. Two dual output graphics cards to support the four projectors and a third graphics card to run the user interface
  - d. The computer is responsible for:
    - i. running the main user interface to the system
    - ii. real time data collection
    - iii. providing the interface to the automation control protocol
  - e. All Linux operating system Ubuntu (currently version 12.04)
  - f. "hot" spare is identical to the primary computer as a backup system
  - g. All of the SOS software is written and maintained by NOAA.
2. Turning the System On and Off
  - a. Primary computer should be always on
    - i. It will automatically log into the user sosdemo
  - b. Spare computer doesn't have to be on, but should be for backups
  - c. To change users log out and then log in using username and password
  - d. Power button icon in the top right menu bar for logging in and out
  - e. To shut the system off use the same icon
  - f. To force a sudden power off hold the power button for 5 seconds
3. SOS Stream GUI
  - a. Launched by icon on the Desktop labeled "SOS Start"
  - b. Four menus: "SOS," "File," "Library," and "Controls."
  - c. Includes information about current dataset, buttons similar to those on a VCR, the current playlist, and a search bar
  - d. SOS Menu
    - i. Only has two items, "About SOS" and "Quit."
  - e. File Menu
    - i. "Open Playlist" option will open window where you can select a playlist to open
    - ii. "Reload Current Playlist" must be clicked to refresh playlist
    - iii. "Update Playlist Data" will scan through your playlist and download any files that are missing. This is a useful feature if you have
    - iv. "Install New Data" requires a .sosx file which the NOAA staff will supply to you if you request help in downloading a new dataset.
    - v. "Edit Playlists" will launch the Playlist Editor

- vi. “Open Texture,” “Open Image Sequence,” and “Open MPEG-4 File” allow you to open either JPEGs, PNGs, or MPEG4s directly
      - vii. “Autorun,” will turn on Autorun
    - f. Library Menu
      - i. Provides access to the datasets, sorted by category -land, ocean, atmosphere, astronomy, models and simulations, and extras
      - ii. All category is an alphabetical list of every dataset on the system
      - iii. Live programs datasets have accompanying scripts that can be found online
      - iv. Realtime datasets are all grouped together into one category
      - v. Earthnow category are special datasets that are generated about twice a month and have an accompanying blog: <http://sphere.ssec.wisc.edu/>.
      - vi. Overlays library includes useful maps, such as country borders,
      - vii. custom site categories are generated by each site
      - viii. To update the library, use the “Update Library” option
    - g. Controls Menu
      - i. Provides options for controlling the sphere and gives you the keyboard shortcuts that are available.
      - ii. “Frame Delay” option allows you to adjust the frames per second, first dwell and last dwell.
      - iii. “Sphere Tilt” option allows you to adjust the tilt on the x, y, and z axis
      - iv. “Reset Sphere Tilt” option will reset the tilt of the sphere.
    - h. For more information about the currently loaded dataset, click the “Details” button in the SOS Stream GUI
    - i. The Search Bar will generate a playlist from user search criteria
4. Opening a Playlist
- a. Normal-demo.sos is automatically opened when SOS is launched
  - b. Click on the “File” menu and select “Open Playlist”
  - c. Playlists are saved in the directory /home/sos/sosrc for the user sos and /home/sosdemo/sosrc for the user sosdemo.
  - d. A warning message will pop up for any errors
  - e. Click a dataset to load it on the sphere
    - i. Yellow while loading
    - ii. Green if it loads properly
    - iii. Red if it is unable to load
  - f. Make sure to reload playlist if any changes are made
  - g. With iPad tap “Datasets” at the bottom of the app, and then tap “Load Playlist”
5. Using a Playlist
- a. In Autorun mode the system will run through the playlist on an automatic timer
  - b. Can control system from the keyboard of the primary computer
    - i. Slider bar indicates frame number
    - ii. Control menu documents keyboard shortcuts
  - c. Third option is to use remote control
    - i. Wii remote
    - ii. SOS Remote app for iOS devices such as iPads and iPhones

6. Using the Wii Remote
  - a. Wii remote has to be paired to the computer before initial use
    - i. Launch the SOS Stream GUI
    - ii. Double-click the “Alignment” icon on the Desktop
    - iii. In the window that opens, select “Wii remotes”
    - iv. Select “Pair a Wiimote”
    - v. Press the red button on the back of the remote.
  - b. In order to connect the remote, start the SOS Stream GUI (if it’s not already open), and then press any button on the remote
    - i. Should see the blue lights flashing at the bottom of the remote
    - ii. Once connected it will vibrate once and one blue light will be on
  - c. If the remote won’t work, close the SOS Stream GUI and restart it
  - d. Any time the SOS Stream GUI is closed, the remotes will disconnect
  - e. Remotes disconnect if they go out of the range of the Bluetooth dongle ~100ft
  - f. Functions of the Wii Remote – **see handout**
  
7. Using the SOS Remote App
  - a. The SOS Remote Manual contains much more detail on the functions of the remote
  - b. In order to use the iPad it must be on the same Wi-Fi network as the SOS system
  - c. SOS Remote App is freely available through the Apple App Store
  - d. Give options to load a playlist, navigate through a playlist, tilt and orient the sphere, browse through the library, draw on the sphere and much more
  - e. Five icons along bottom: Presentation, Datasets, Layers, Web Page, and Settings.
  - f. Functions of the SOS Remote App – **see manual**
  
8. Organization of Data
  - a. Six main categories
    - i. Astronomy
    - ii. Atmosphere
    - iii. Land
    - iv. Models and Simulations
    - v. Oceans
    - vi. Extras
  - b. Each dataset in just one category to remove redundancy
  - c. Each dataset is in its own folder which contains (if available):
    - i. JPEG or PNG file named for resolution (if still image)
    - ii. Folder with images named for the resolution of the images
    - iii. An equatorial cylindrical equidistant video (.mp4) of the data
    - iv. Text file labeled labels.txt
    - v. Text file labeled playlist.sos
    - vi. Color bars and other supporting images
    - vii. Media folder with thumbnails, videos, and supporting documents
  - d. A uniform naming convention has been used among the folders
  - e. Datasets that are related to one another are all grouped into one folder
  
9. Two Types of Datasets
  - a. Textures consist of one still image that can be set to rotate on the sphere
  - b. Time series are either image sequences or MPEG4 files that animate

#### 10. Playlist.sos

- a. Each dataset must have a playlist.sos to specify how the data is displayed on the sphere
- b. Any specifications that are made in the playlist.sos will be used in all of the playlists that include that dataset
- c. Only one dataset per playlist.sos file
- d. At very minimum, “name” and “data” must be included
- e. Anything with a “#” in front of it is considered a comment and won’t affect how the dataset is displayed
- f. Can be multiple playlist.sos files in one folder for different versions of the dataset, the file names simply need to start with playlist and end with sos

#### 11. SOS Playlists

- a. A playlist is an ordered list of datasets
- b. All playlist file names have to end with the extension .sos and are stored in either /home/sos/sosrc or /home/sosdemo/sosrc depending on the user
- c. Basic format of a playlist is a file that points to all of the playlist.sos files for the datasets
- d. Make personal changes in your demo playlist under the “include”.

#### 12. Making a Playlist

- a. First method for making playlist is to manually type the playlist in a text editor and save the file with a .sos extension
- b. Second method is to use the playlist editor, which is a drag and drop program
  - i. Can be launched from the “Playlist Editor” icon on the Desktop, or through the SOS Stream GUI with the “Edit Playlists” option under “File.”
  - ii. Two main tabs at the top, “Playlists” and “Clip Library.”
  - iii. Playlist editor saves continuously, so there is no “Save” button.

#### 13. Giving a Presentation

- a. Can be broad and include datasets from all of the categories, or narrowly focused on a topic such as climate change or the solar system
- b. The preferred way to present Science On a Sphere® is with a live presenter to lead the audience through a playlist using either the Wii remote or the SOS Remote app.
- c. Standard presentation at the David Himes Planet Theater at NOAA in Boulder, CO is 30 – 45 minutes and includes 10 datasets on average
- d. SOS Remote App offers many tools for enhancing a live docent presentation including annotation, zooming, and layering

#### 14. Autorun

- a. The system displays each dataset for a default three minutes
- b. Should have supporting audio or text so that the audience can understand the dataset
- c. Many sites give live presentations with the sphere throughout the day, and in between presentations leave the sphere on Autorun

#### 15. SOS Add-ons

- a. Side wall projectors or flat screen televisions can be linked to the Science On a Sphere® software to sync a PowerPoint presentation with a SOS demo
- b. Kiosk software packages available to accompany SOS that utilize a touch screen monitor

16. Audience Considerations

- a. Consider if the audience will sit in one location or move about the sphere
- b. If audience is distributed, allow a dataset to play through several times, rotating it so that everyone gets to see everything

17. SOS Users Collaborative Network

- a. NOAA Office of Education List Serve
- b. SOS Yahoo List Serve