



NASA's Goddard Space Flight Center (GSFC) hyperwall is a high-resolution video wall (5760x3240 pixels) capable of displaying multiple data visualizations and/or images simultaneously across an arrangement of screens. A 3x3 grid of screens is most common, with a "10<sup>th</sup>" screen for accompanying text. The native resolution of each screen is 1920x1080 pixels. The hyperwall software is provided by the GSFC Scientific Visualization Studio.

## Four Steps for Preparing Content

1. Determine appropriate content
2. Ensure that your content meets hyperwall requirements - see Table 1
3. Design your layout, including layout notes and story text - see Designing Your Hyperwall Content
4. Submit individual content files, design layout, layout notes, and story text

Content type	Size requirements	Screen Display	File Formats
<i>Full HD movie</i>	<i>1080p (1920x1080) @ 30fps 720p (1280x720) @ 30fps</i>	<i>1 screen, a 2x2 arrangement, and/or a 3x3 arrangement of screens</i>	<i>QuickTime H.264 MPEG</i>
<i>Large animation (frames)</i>	<i>1368x768 up to 5760x3240</i>	<i>Any number of whole screens</i>	<i>PNG TIFF</i>
<i>Still images</i>	<i>1368x768 up to 5760x3240</i>	<i>Any number of whole screens</i>	<i>PNG TIFF</i>
<i>Text</i>	<i>~1600 characters per screen</i>	<i>1 screen</i>	<i>Plain text</i>

Table 1. Content for the hyperwall must meet the requirements listed above. \*\*\*Native PowerPoint and Apple Keynote files are not supported and are only recommended when "designing" your hyperwall layout\*\*\*

# Designing Your Hyperwall Layout

A fairly easy way to design layouts is to make a PowerPoint or Keynote slide show with a 16x9 slide size (widescreen). Make a grid to represent the individual video screens on each slide. Arrange images that represent your content on each slide (**Figure 1**).

When the final design is complete and the final images/slides are created, the individual content files should be submitted along with a set of Layout Notes.

Layout Notes should include:

1. Slide number
2. A listing of the individual content file names and position coordinates as described in **Example 1**.

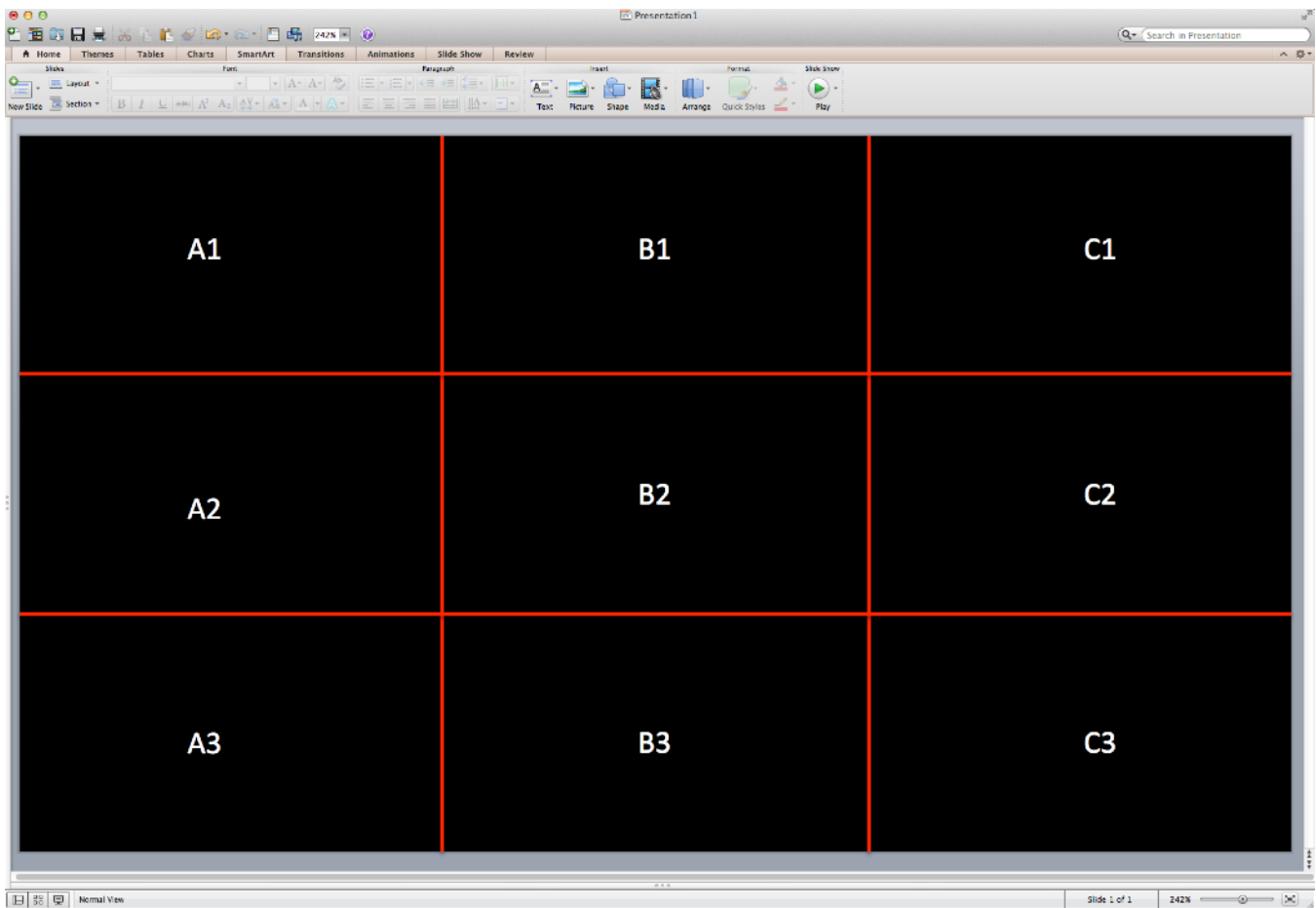
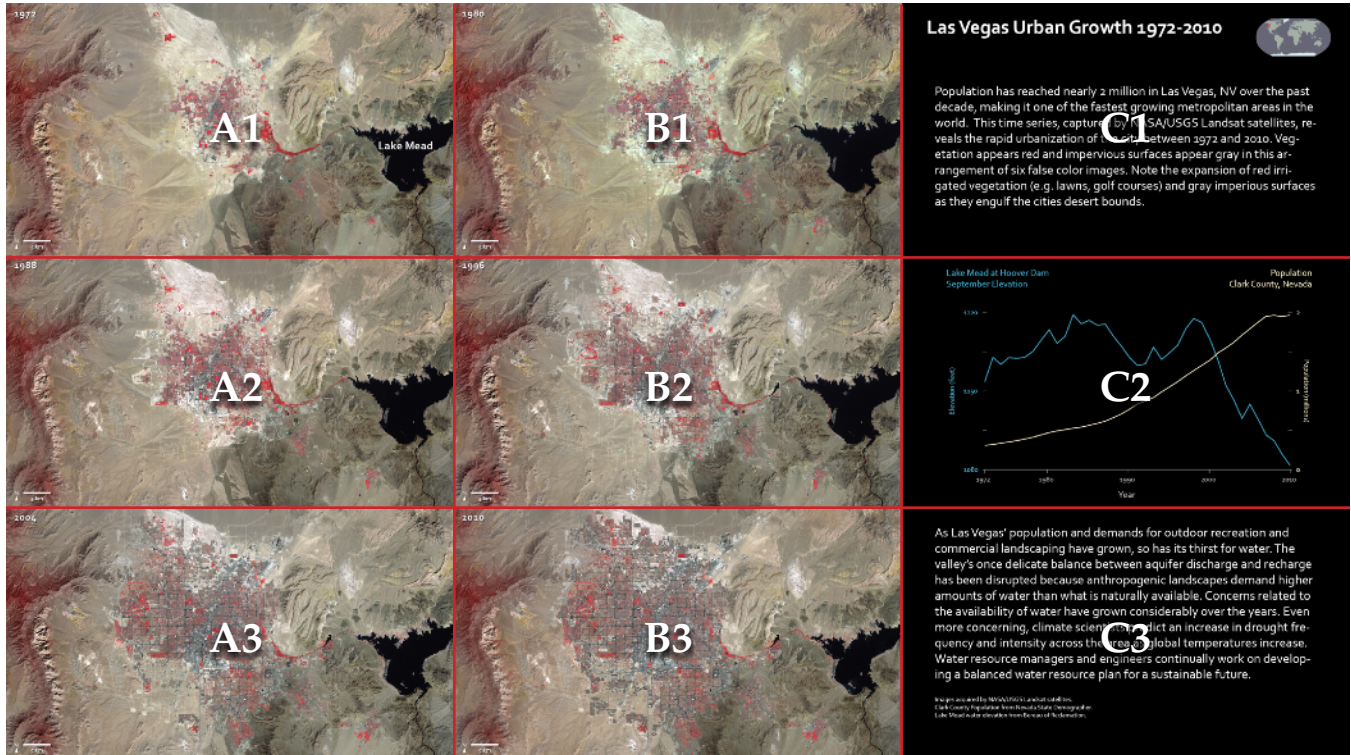


Figure 1. Using PowerPoint or Keynote, design your hyperwall layout by arranging images that represent the content you wish to show. Before you start, make a grid to represent the individual video screens (red lines). **Visit [eosps.nasa.gov/content/about-nasas-hyperwall](http://eosps.nasa.gov/content/about-nasas-hyperwall) to download template PowerPoint and Keynote files.**



# Example 1 Hyperwall Layout



Example 1. Position coordinates have been assigned to each screen. Please identify which screen(s) your content should be displayed across in your layout notes.

## Layout Notes for Example 1

A1: las\_vegas\_1972.tif

A2: las\_vegas\_1978.tif

A3: las\_vegas\_1984.tif

B1: las\_vegas\_1990.tif

B2: las\_vegas\_2000.tif

B3: las\_vegas\_2010.tif

C1: las\_vegas\_intro\_text.png

C2: las\_vegas\_graph.png

C3: las\_vegas\_closing\_text.png

10<sup>th</sup> screen: NASA logo

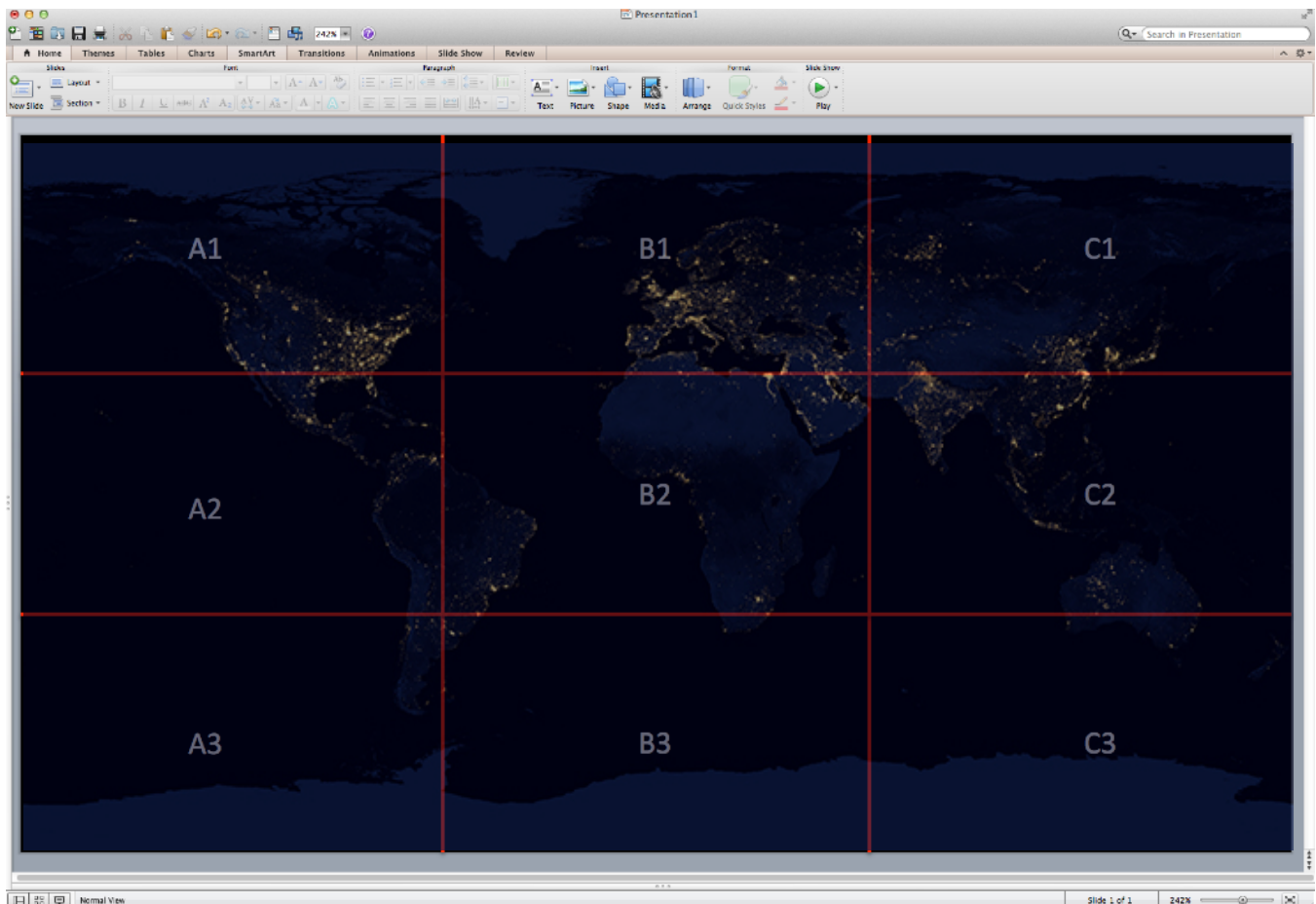


# Example 2 Hyperwall Layout

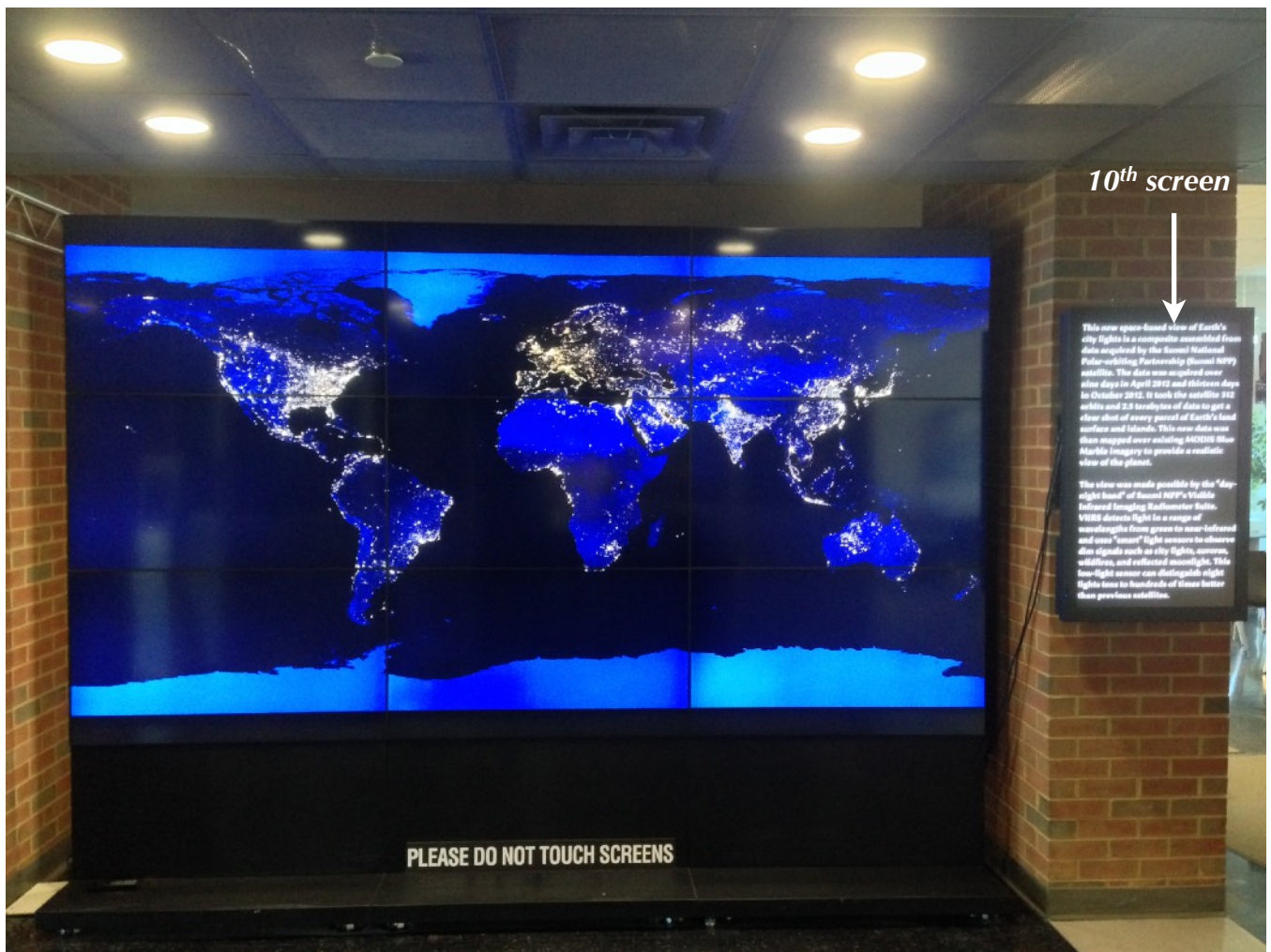
## Layout Notes for Example 2

A1-C3: EarthatNight.png (a single 5760x3240 pixel image displayed across all screens)

**10<sup>th</sup> screen:** One way to study the spatial distribution, or arrangement, of human settlements is to view the planet from space during nighttime hours. The brightest areas are generally the most urbanized but not necessarily the most populated. The Visible Infrared Imaging Radiometer Suite (VIIRS) “day-night band” onboard the Suomi National Polar-orbiting Partnership (NPP) satellite can observe dim signals such as city lights, wildfires, gas flares, auroras, and reflected moonlight during nighttime hours. Swaths of data are processed to find moonless, non-cloudy picture elements, or pixels. Over time, all moonless and non-cloudy pixels for a particular location during night-time hours are averaged to produce a global image that depicts the Earth’s lights at night. The data are used to study settlement patterns and the effects of future population growth. Once other sources of light like fire and lightning are removed, the “human footprint” is revealed. The remaining light comes from stable light sources such as streetlights, headlights, store signs, etc. Areas with more of these stable light sources are usually more economically developed. The image shown here is a composite of data acquired over nine days in April and thirteen days in October 2012.



Example 2 layout using PowerPoint.



10<sup>th</sup> screen



This new space-based view of Earth's city lights is a composite assembled from data acquired by the Suomi National Polar-orbiting Partnership (Suomi NPP) satellite. The data was acquired over nine days in April 2012 and thirteen days in October 2012. It took the satellite 912 orbits and 2.5 terabytes of data to get a clear shot of every parcel of Earth's land surface and oceans. This new data was then merged over existing MODIS Sea-Viewing Wide-Of-Area-of-Imagery to provide a satellite view of the planet.

This view was made possible by the "day-night band" of Suomi NPP's Visible Infrared Imaging Radiometer Suite. VIIRS detects light in a range of wavelengths from green to near-infrared and uses "narrow" light sensors to observe day signals such as city lights, coronas, wildfires, and reflected moonlight. This low-light sensor can distinguish night lights ten to hundreds of times better than previous satellites.

PLEASE DO NOT TOUCH SCREENS

Actual hyperwall display for Example 2.

# Frequently Asked Questions

## 1. What content works best on the hyperwall?

High resolution images and visualizations look best on the hyperwall. Designing a presentation for the hyperwall is similar to creating a PowerPoint presentation but with more of a focus on the imagery and less of a focus on the text. The imagery and visualizations drive the story. However, there is an added challenge that in order for the presentation to look good, the images must be high resolution. Standard definition video or imagery does not work well on the hyperwall. With that in mind, it's important to keep in mind the size requirements listed in **Table 1**.

## 2. What do I do if my content does not meet the requirements in Table 1?

Call us to discuss.

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## 3. What types of content can and cannot be displayed on the hyperwall?

High definition movies (1080p preferred; 720p can be used but are not recommended)

Very large animations with a native resolution up to 5760x3240

Still images

Text

*Please note that native PowerPoint and Apple Keynote files are NOT supported by the hyperwall software and should only be used when designing your hyperwall layout.*

Hyperwall does not support animated effects. Any parts of a presentation requiring animation must be rendered out into a series of frames that can be played as an animation or made into an HD movie.

## 4. Does the hyperwall have audio?

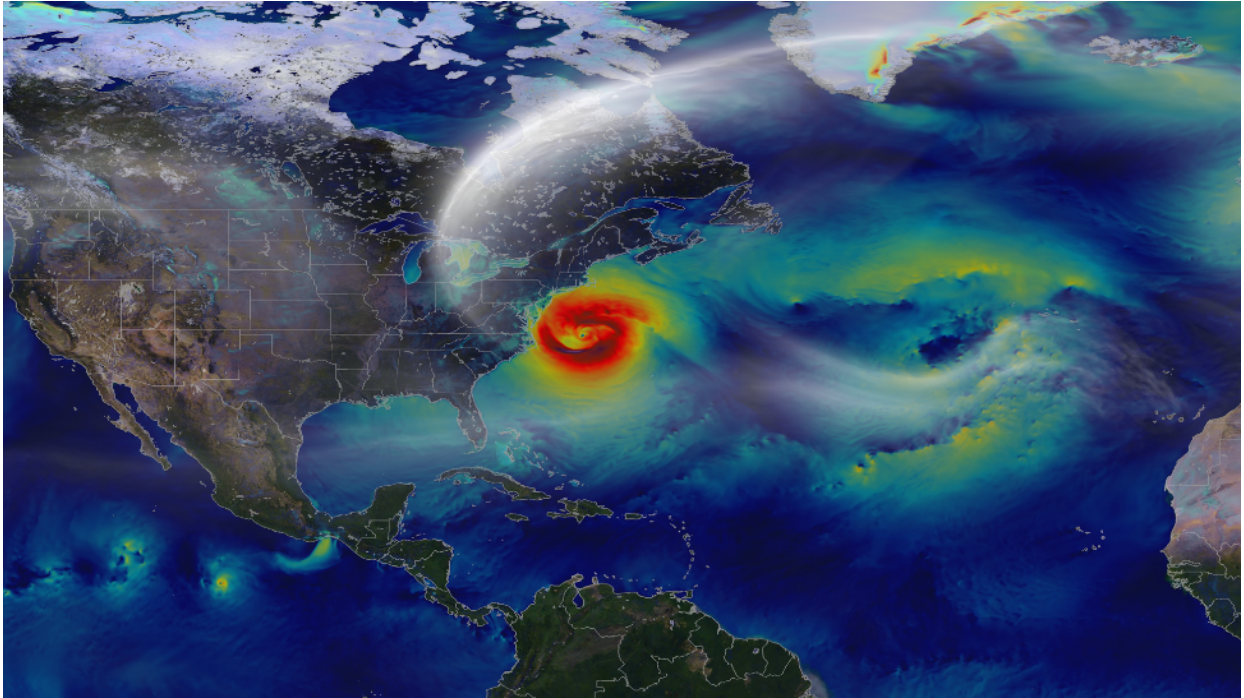
Audio is supported. If a video file (MPEG, Quicktime, etc.) has embedded audio, it can be played with the movie. There is a 5-10 second transition before and after a video of this type is played. Audio can also be played as a background for other visuals if it is not embedded with the visuals.

## 5. How can I arrange my content on the hyperwall?

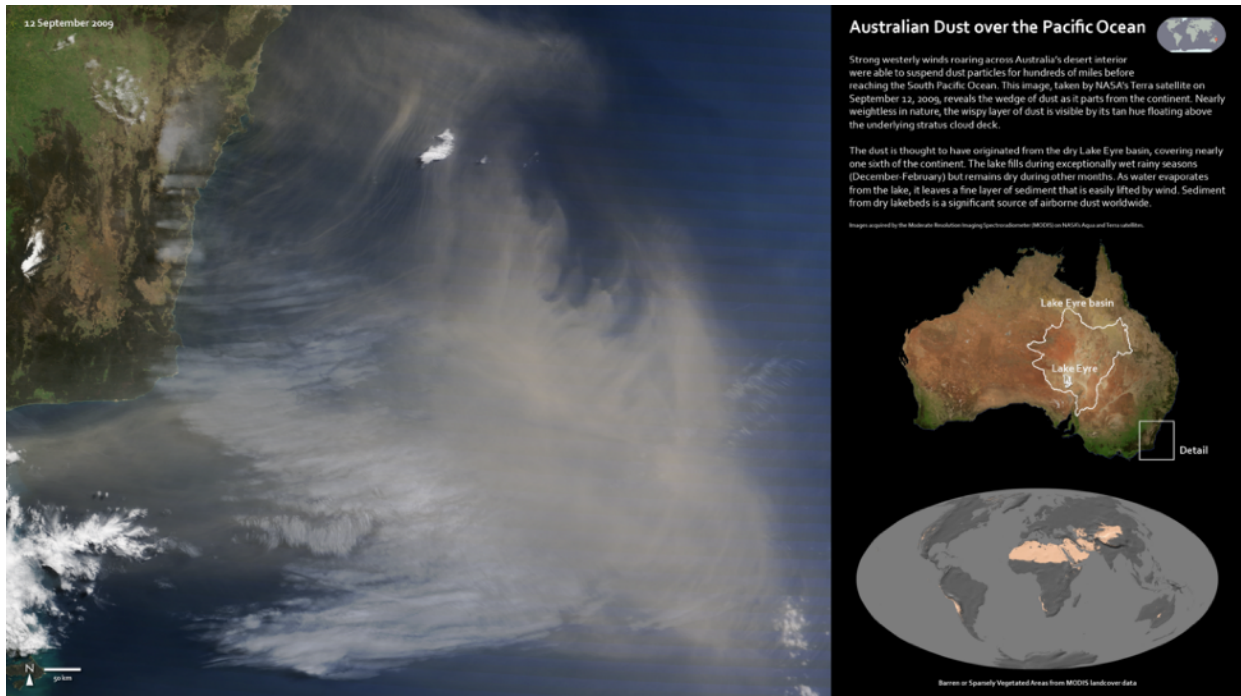
See example hyperwall designs and layouts (next pages).



## Example Designs and Layouts

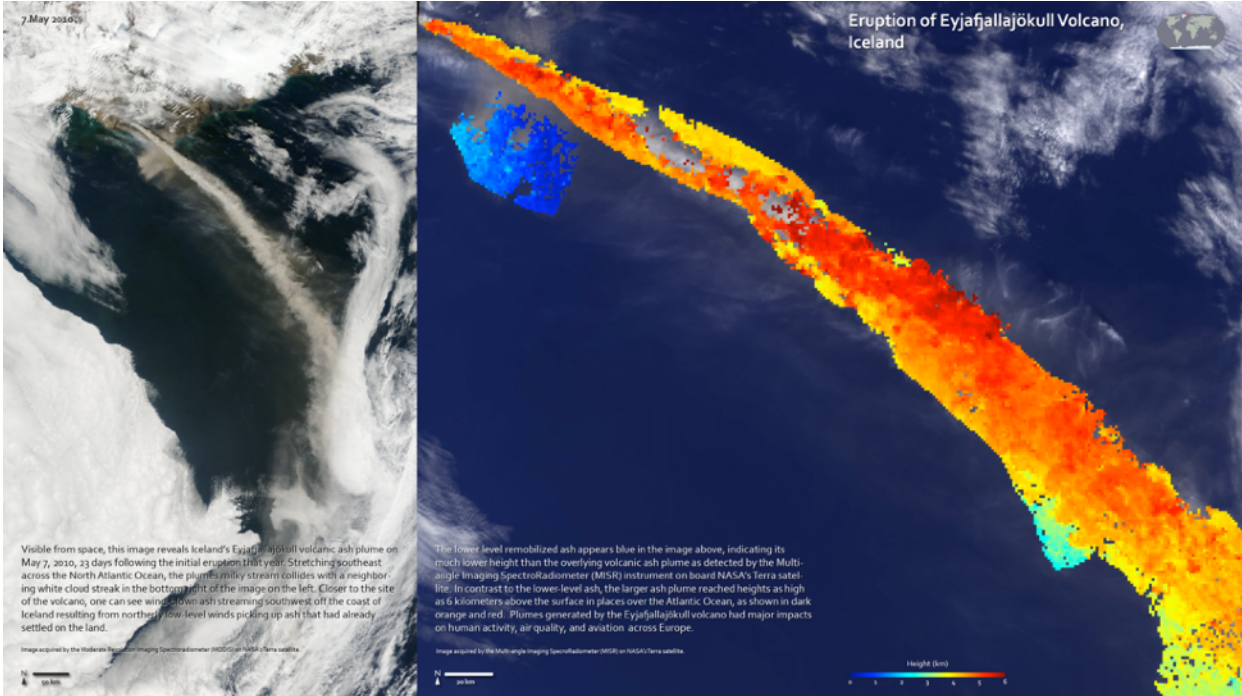


Single animation across all nine screens.

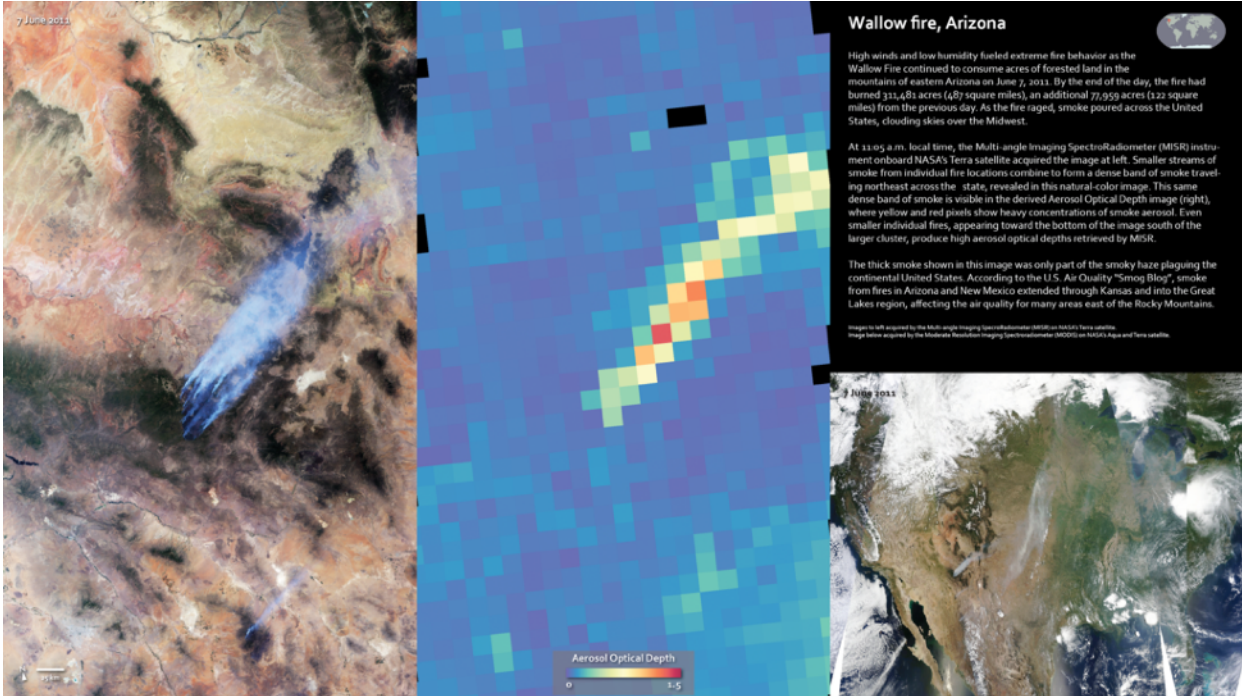


Single large image spanning A1-B3. Single images for C1, C2, and C3.

# Example designs and layout



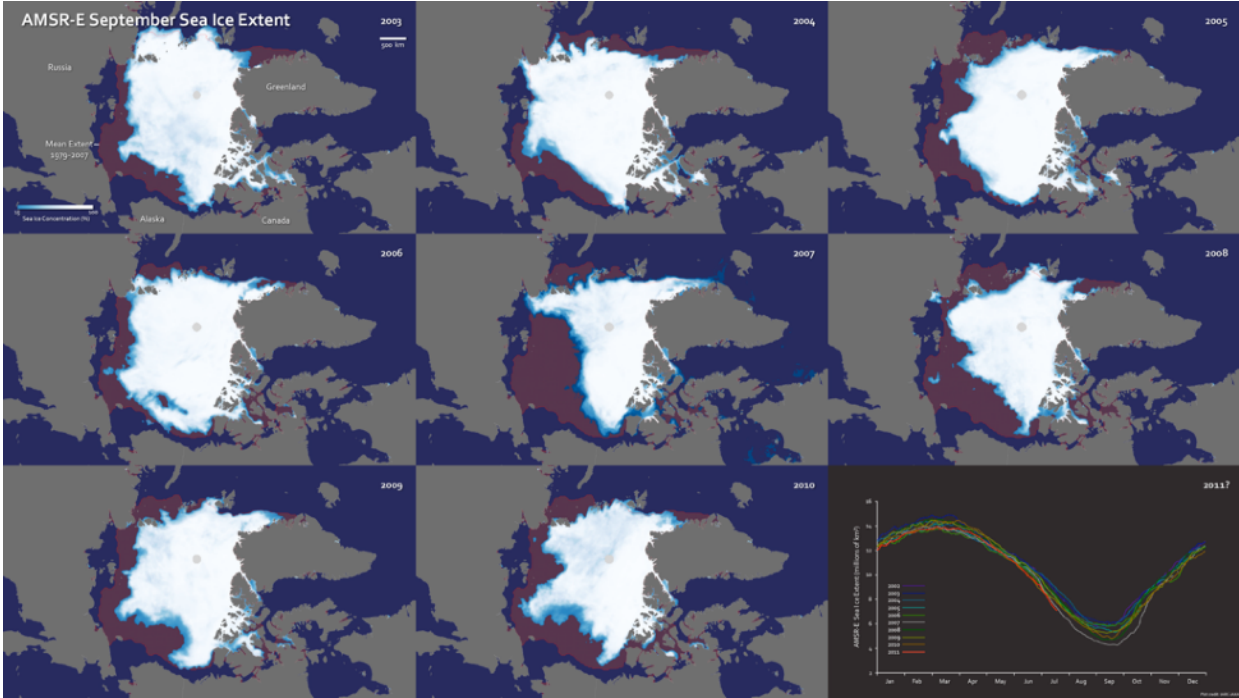
Large image spanning A1-A3. Large image spanning B1-C3.



Single large images spanning A1-A3 and B1-B3. Single image spanning C1-C2. Single image on C3.



# Example designs and layout



Single image per screen.

24 June 2011

Andes

Detail

Volcanic Ash Plume

Settled Ash

**Puyehue-Cordón Caulle Volcanic Complex**

On June 4, 2011, a fissure opened in Chile's Puyehue-Cordón Caulle Volcanic Complex, sending ash 45,000 feet (14,000 meters) into the air. This image, taken on June 11, 2011, shows the path of the volcanic ash plume. Winds blowing from the west carried the plume downwind, across Argentina and eventually reaching the South Atlantic Ocean.

Clear skies allow the snow-covered Andes Mountains to be seen just north and south of the erupting volcano. The opposite is true for areas downwind of the volcano beneath the highest concentrations of volcanic ash. It is hard for even the tiniest bit of sunlight to penetrate the thick plume as revealed by the dark shadow cast on the earth's surface directly south of the plume.

The width of the plume increases with increasing distance from the volcano as particulates disperse in the atmosphere. The zigzag path of the plume over Argentina suggests shifts in wind direction. East of the Andes, heavier volcanic ash sediment has settled on the land below, blunting large portions of Argentina. It appears that some of the settled ash has been picked up again, this time by surface winds that may eventually carry the sediment out to sea.

A high resolution image acquired 6 weeks later shows ash covering the mountain slopes and pumice floating in lakes.

Image on left acquired by the Moderate Resolution Imaging Spectroradiometer (MODIS) on NASA's Terra satellite. Image below acquired by the Advanced Land Imager (ALI) on NASA's EO-1 satellite.

18 Aug 2011

Pumice

Snow

Ash

Single large image spanning A1-B3. Single images spanning C1-C2. Single image on C3.