



Using Blender for Earth Sciences visualization



**Barcelona
Supercomputing
Center**

Centro Nacional de Supercomputación

Oriol Tintó
Stella Paronuzzi
Thomas Arsouze



For this talk a video presentation was prepared and can be found at:

<http://tiny.cc/EGU2020-21494>

Also, the next slides will show a simple example on how to use geoscientific data within Blender.

System requirements:

Hardware Requirements

Minimum

- 64-bit dual core 2Ghz CPU with SSE2 support
- 4 GB RAM
- 1280×768 display
- Mouse, trackpad or pen+tablet
- Graphics card with 1 GB RAM, OpenGL 3.3
- Less than 10 year old

Recommended

- 64-bit quad core CPU
- 16 GB RAM
- Full HD display
- Three button mouse or pen+tablet
- Graphics card with 4 GB RAM

Optimal

- 64-bit eight core CPU
- 32 GB RAM
- Full HD displays
- Three button mouse and pen+tablet
- Graphics card with +12 GB RAM

Supported Graphics Cards

- **NVIDIA:** GeForce 400 and newer, Quadro Tesla GPU architecture and newer, including RTX-based cards, with NVIDIA drivers (list of all GeForce and Quadro GPUs)
- **AMD:** GCN 1st gen and newer (list of all AMD GPUs)
- **Intel:** Haswell and newer (list of all Intel GPUs)
- **macOS:** version 10.12 or newer with supported hardware

⚠ **Always make sure to install the latest drivers** from the graphics card manufacturer website.

ℹ These requirements are for basic Blender operation, Cycles rendering using the GPU has higher requirements.

Source: www.blender.org/download/requirements/

The video presentation was rendered using a laptop.



Using blender for Earth Sciences visualization

There are many good Blender tutorials freely available that can help anyone willing to learn.

The following slides contain few steps on how to start using global geoscientific data within Blender.



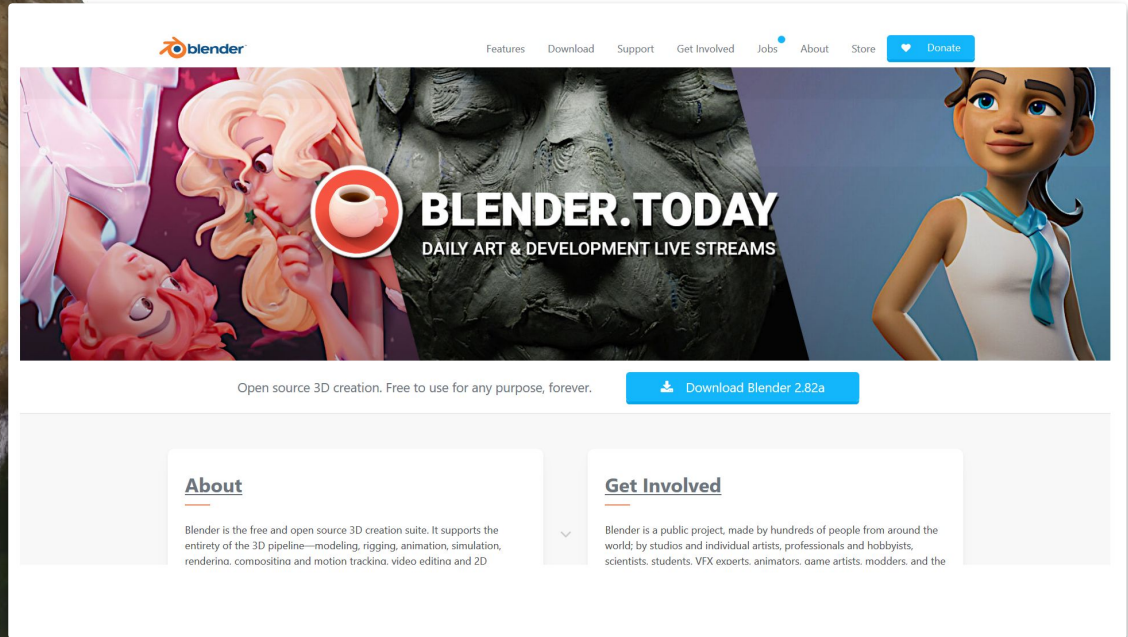
Disclaimer!

In order to follow the steps you need to have a way to represent your data in a black and white equirectangular plot.

There are many tools available that can make the job: Cartopy, Panoply, ...

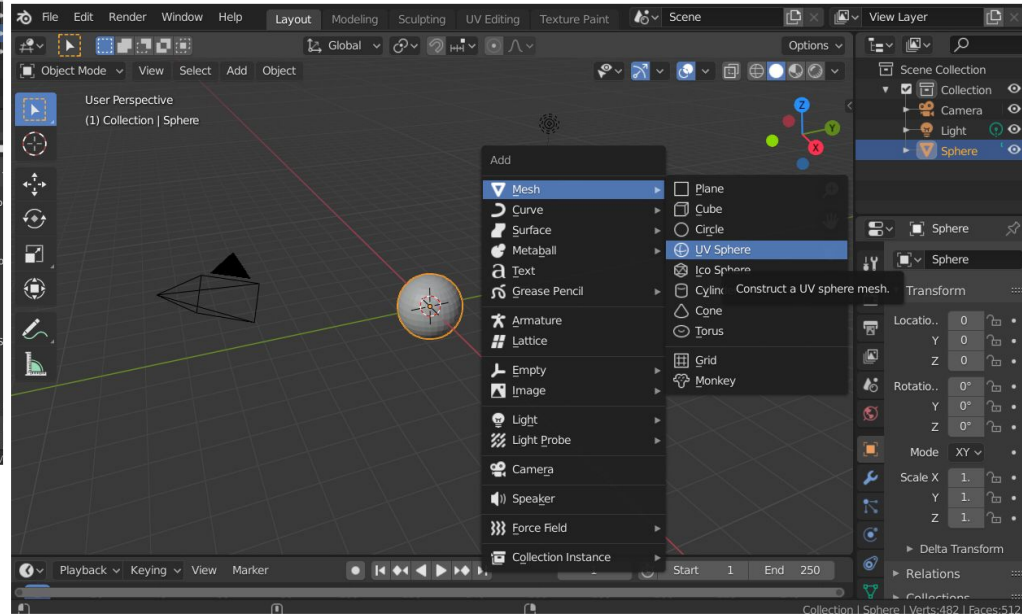
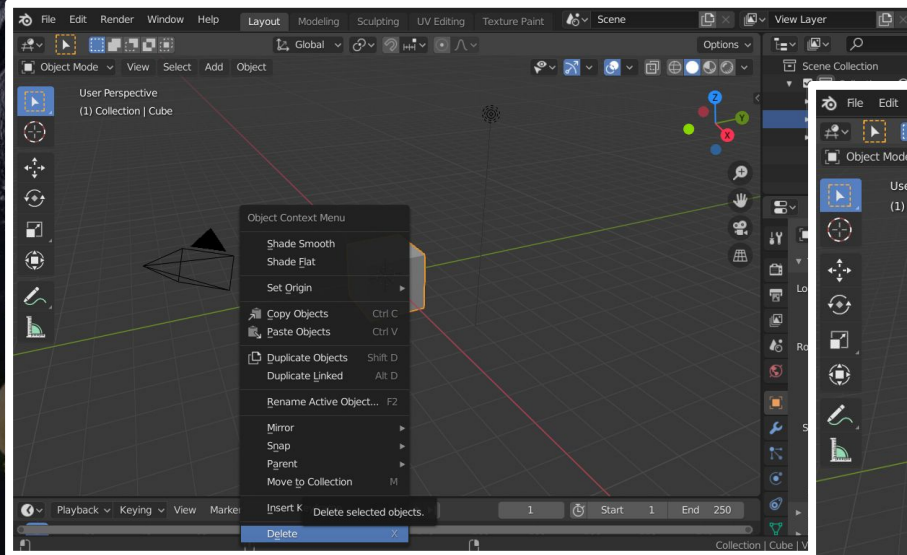
Using blender for Earth Sciences visualization

Step 1: Download Blender at www.blender.org



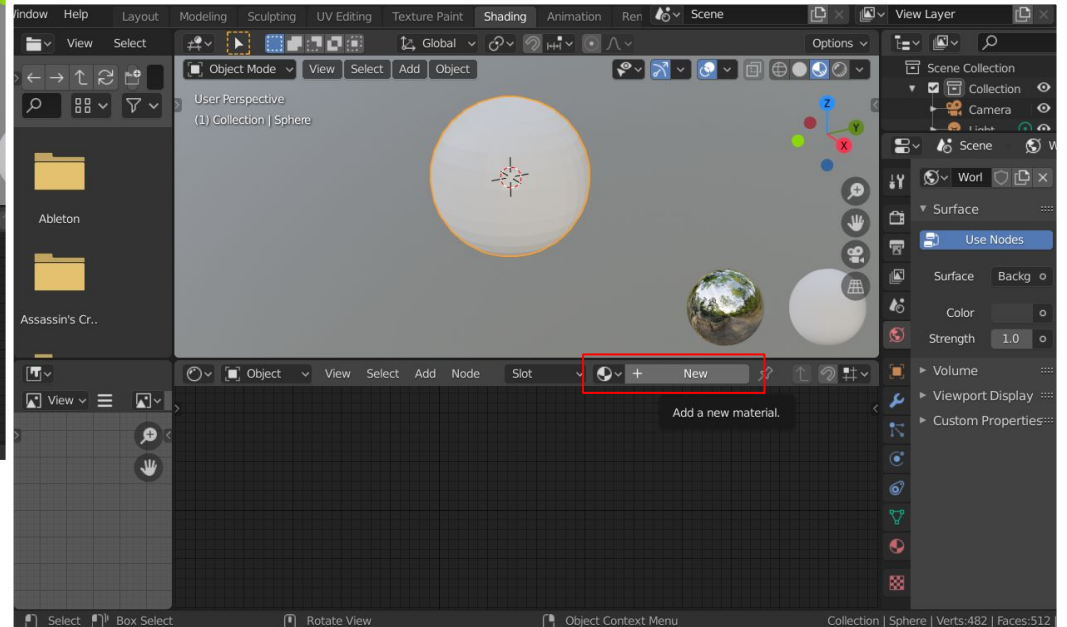
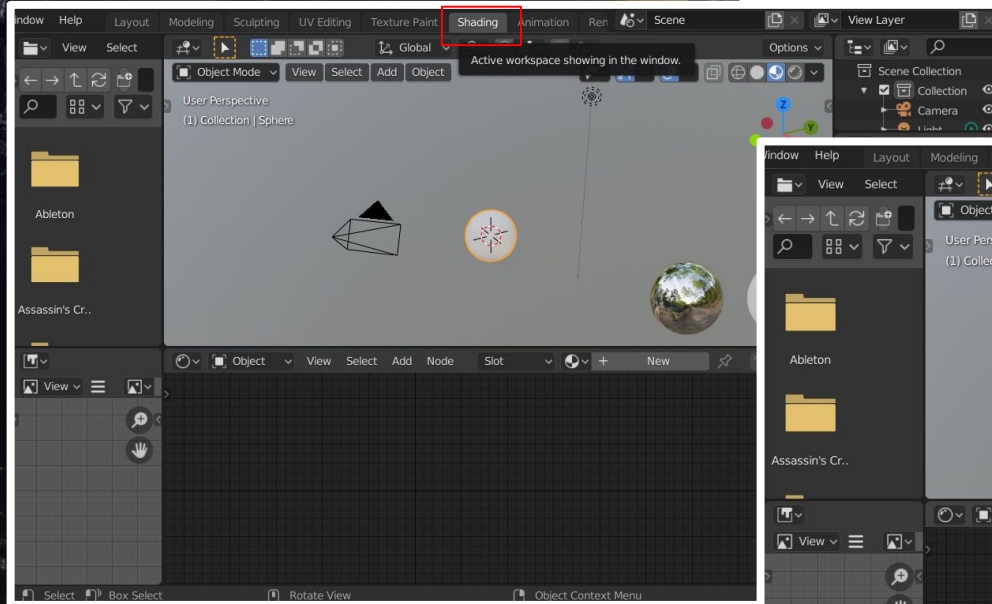
Using blender for Earth Sciences visualization

Step 2: Open Blender, delete the Cube and add an Sphere



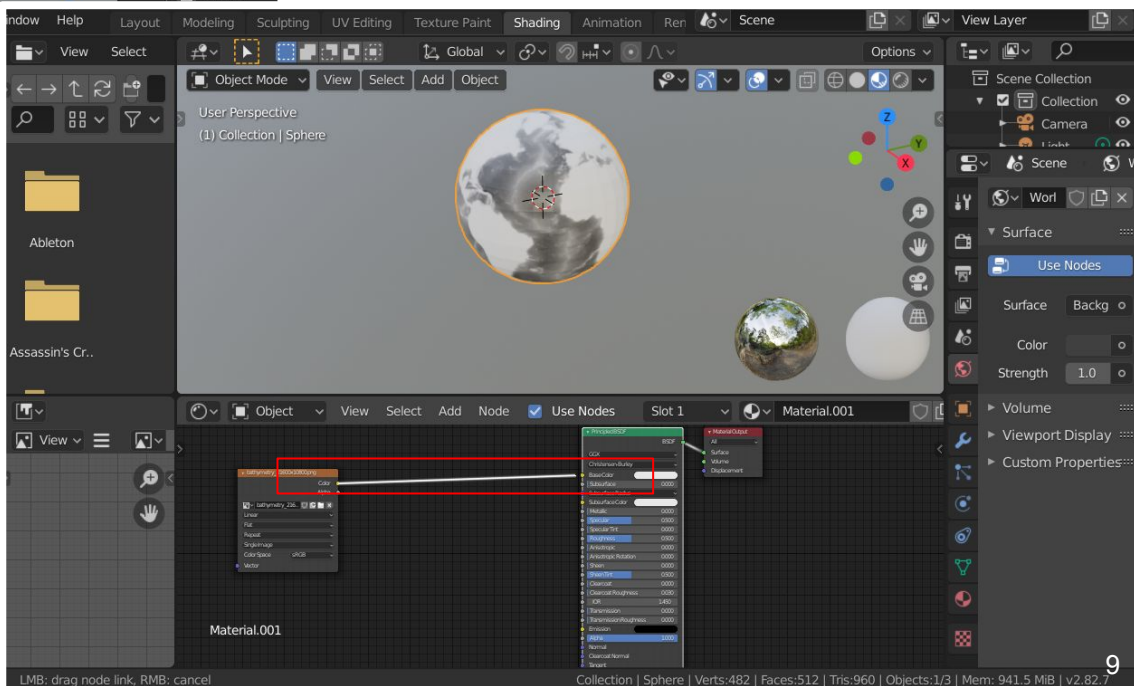
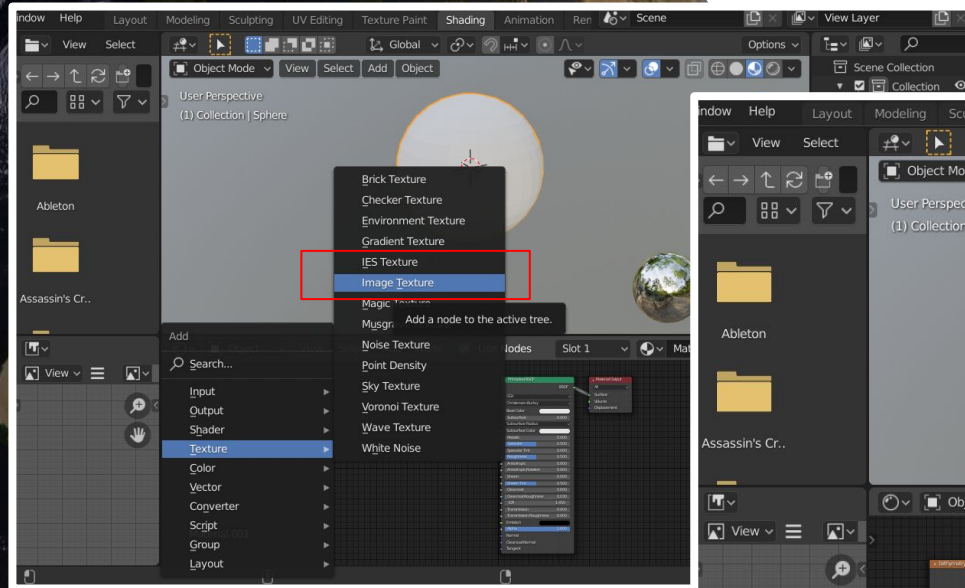
Using blender for Earth Sciences visualization

Step 3: Switch to Shaders tab and create a new material.



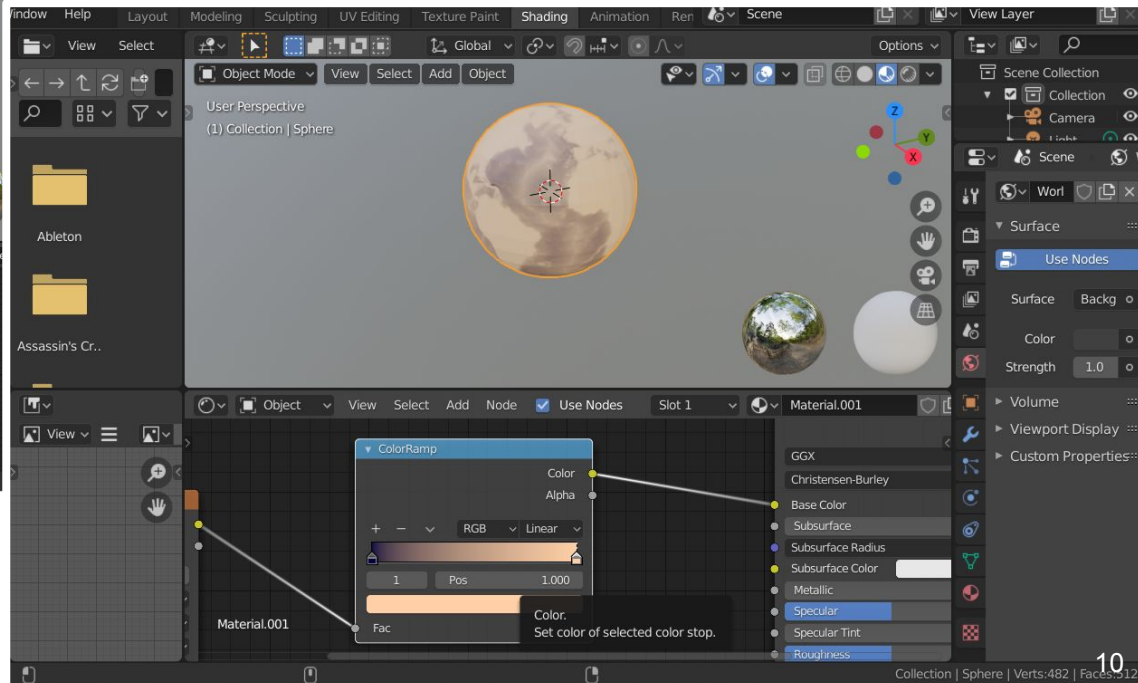
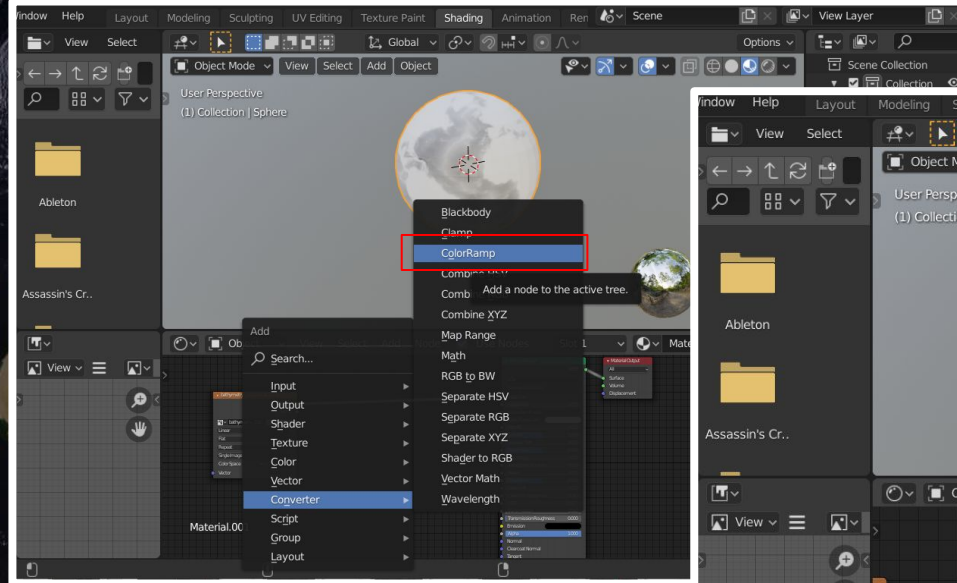
Using blender for Earth Sciences visualization

Step 4: Add an Image texture, select your equirectangular black and white plot and connect it to the base color.



Using blender for Earth Sciences visualization

Step 5: Add a color ramp converter to customize the color map.



Step 6: Experiment a bit with the unlimited possibilities.





Bonus:

- It is possible to directly load any data inside Blender without the need of producing an intermediate plot using python scripts. We are working on an **Addon to load and interpolate netCDF** data directly inside Blender.
- There's a huge development effort in Blender and soon there will be **OpenVDB** integrated, which will make possible to work with 3D data much easily.



For any questions or comments please
don't hesitate to contact me at:
oriol.tinto@bsc.es