


V 1.1.0

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# How to :

## Basic manipulation :

- Rotate the planet : Click and drag on the planet with the left mouse button.
- Rotate the background/light : Click and drag on the background with the left mouse button.
- Translate/Pan the planet : Click and drag on the planet with the right mouse button.
- Zoom : Click and drag the planet with the middle mouse button
- Change the FOV (field of view) of the camera : Ctrl-left mouse button.

These controls can be redefined in *Edit->Options->Customize*. There are 4 presets matching the usual controls of Maya, 3DS max, Blender and Grand Designer

## Presets usage :

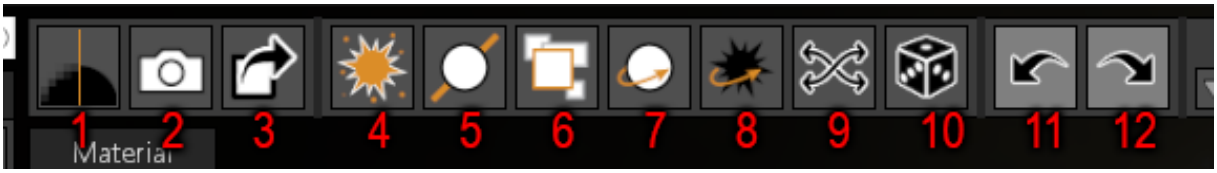
Presets are stored in preset files; you can store several presets per file, overwrite them and reload them at will. The last preset file is automatically reopened on the next session.




To manage presets files, use the File menu and the buttons located in the top panel of the application. Here are the functions of these elements :

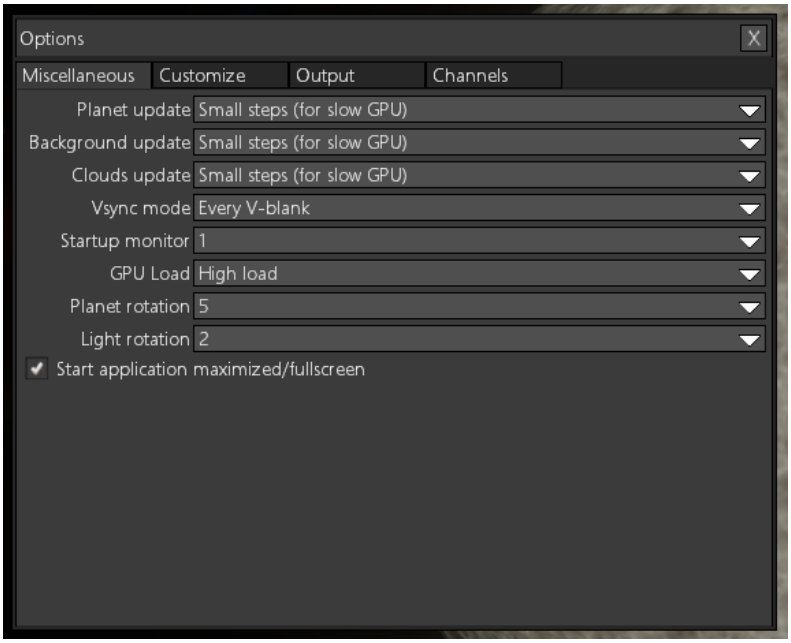
- (1) The current preset file. You can change it by creating or loading a preset file in the File menu.
- File menu entries that handle preset files
  - New preset : Create a new preset file and make it active.
  - Load preset : Load an existing preset file and make it active, they can be located where you want.
  - Save preset as : Save the current preset file under a different name and make it active.
- The dropdown menu that shows all presets available in the current file (2). Chose any of these presets to load it.
- The name of the last loaded or saved preset. If you press enter in this text box, this will save (and eventually overwrite) the preset with that name. It has the same effect as the + button (6).
- (4) Reset all parameters to their default values, like the starting state of the software.
- (5) Force the reload of the current preset.
- (6) Save or update the current preset. If the name in (3) is not yet in the list (2), it will add it to the list, if the name is present, the preset will be updated.
- (7) Delete the preset (3) from the list (2). This will not modify any parameters, so, you can always save it under another name after that.

## Use the toolbox:



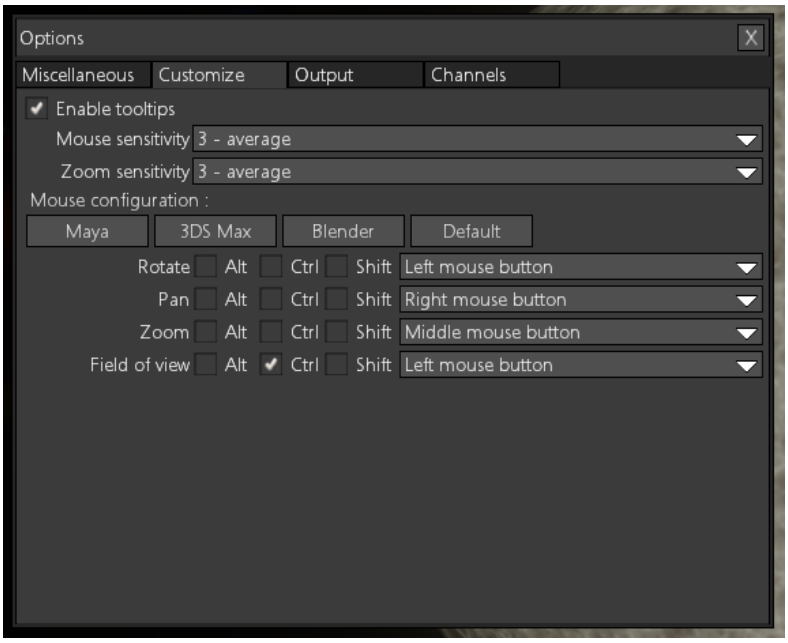

1. Generate in high definition: This regenerate the current preset in higher quality/resolution. You can modify the resolution in *Edit->Options->Render size* and the quality in *Edit->Options->Render size.*
2. Take a snapshot of the scene … either a regular one, a large one or increment and save. The action can be defined in *Edit->Options->Output->Snapshot icon.*Before doing an increment and save, you need to take a snapshot using *Edit->Snapshot or Ediit->Large snapshot* that will define the base name of the snapshotfile as well as the resolution.
3. Export the texture/model. This will open an export dialog where you can chose your export preset (Unreal/Unity/ PBR … ) and some other options. You can modify your export presets in *Edit-> Options->Channels*.
4. Change the background rotation mode. This toggles between 3 modes :
    a. Stars and sun are moving together.
    b. Stars are moving, sun is fixed.
    c. Sun is moving, stars are fixed.
    d. Stars and sun are moving together with the planet.
    e. Stars are moving with the planet, sun is fixed.
    f. Sun is moving with the planet, stars are fixed.
5. Toggle the visibility of the planet  axis.
6. Toggle the isolation mode. In planet mode, this toggles the visibility of the background, in background mode it toggles the visibility of the planet.
7. Toggle the automatic rotation of the planet.
8. Toggle the automatic rotation of the background.
9. Toggle the mixer/animation module.
10. Toggle the randomizer module.
11. Undo button (Ctrl-Z)
12. Redo button (Ctrl-Y)

## Change the options:



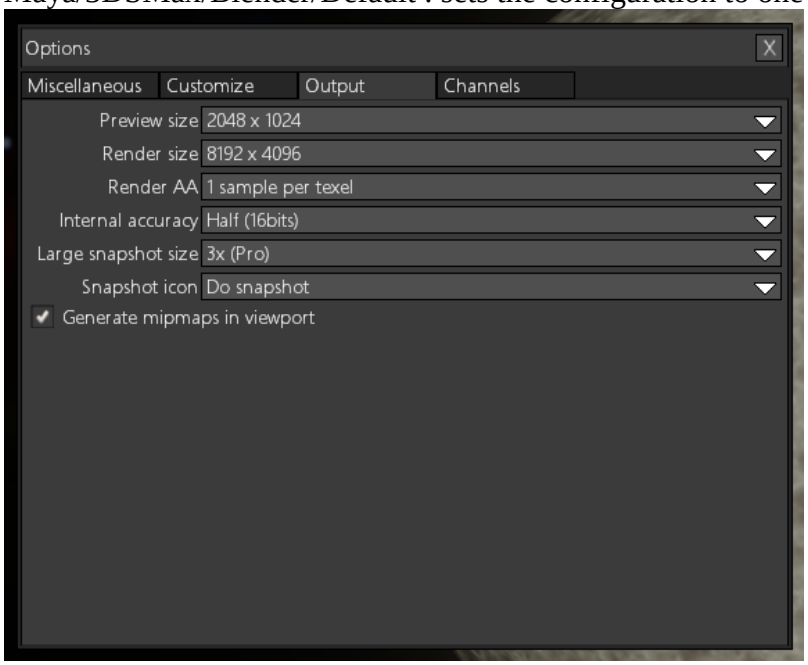

### Miscellaneous

- Planet update : refresh mode of the planet. If you have a slow graphic card, or if you want to have a quick reaction time, small steps will refresh the planets small regions by small regions, starting from the center of the planet. If you have a super fast graphic card, you can disable the progressive update to refresh the complete texture in one go. The other options are just intermediate between the two.
- Background update : same as planet update for the background.
- Clouds update : same as planet update for the clouds.
- VSync mode : Change the vertical sync settings : Every V-blank will limit the update to 50-60fps, Every second blank will limite the update to 25-30 fps, and freerun will update as fast as it can (which will increase the load on your graphic card).
- Startup monitor : When using a multi monitor setup, defines on which monitor you'd like to open Grand  Designer by default.
- GPU load : control the load of your GPU … if the load is too high for your GPU, your driver may crash and restart (This is an automatic feature of windows 10 to avoid GPU stalling).
- Planet rotation speed : rotation speed used when in automatic rotation mode (see Toolbox-7)
- Background rotation speed : rotation speed used when in automatic rotation mode (see Toolbox-8)
- Start maximized : When launching the application, chose between the maximized/windowed mode.




## Customize

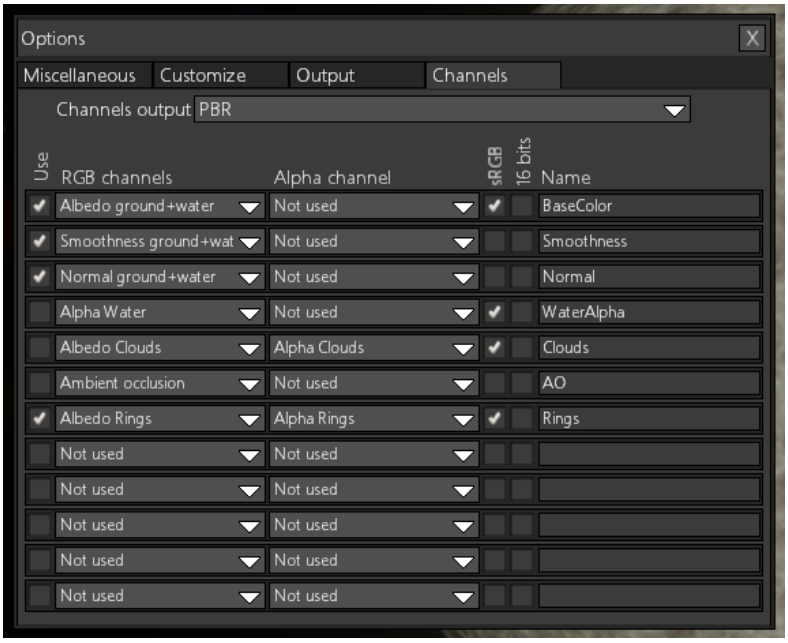
- Enable tooltips : Allow the poping of tooltips on the interface to help you while using the software.
- Mouse sensitivity : Mouse speed when dragging
- Zoom sensitivity : Mousewheel speed used when zooming
- Mouse configuration : Defines your mouse configuration.
    - Maya/3DSMax/Blender/Default : sets the configuration to one of these presets.




## Output

- Preview size : This is the size at which the texture is redrawn dynamically as soon as a parameter is updated.
- Render size : This is the size of high quality textures used for export, the one used when you regenerate your textures. Be aware that you are limited to 4k x 2k is you don’t have the pro extension (DLC).

- Render AA : This is the antialiasing level of your regenerated textures. This allows you to regenerate your textures with a given supersampling level. The higher the antialiasing, the better is your texture, but the longer it takes to regenerate it. Be aware that you are limited to 4x supersampling if you don't have the pro extension.
- Internal accuracy (pro version only) : This allows you to improve the quality of generated textures by using 32 bits per components internally. Be carefull, because this will use twice as much VRAM, so, do this only on high end video cards.
- Large snapshot : Defines the scale of the snapshots when triggering a Large one. The number is the size of the snapshot based on the resolution of the viewport (window size).
- Snapshot icon : Defines the action of the snapshot icon (snapshot, snapshot with alpha, large snapshot or increment and save)
- Generate mipmaps : Enable this to enforce the generation of the mipmaps, this will use a bit more memory (+33%), but this increases the rendering quality and speed.




## Channels

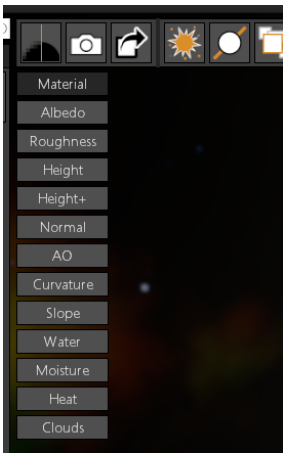
The channels output dropdown allows you to select one of the preset available, like PBR, Full, Unity or Unreal. You have also 3 custom presets for your own usage. Be careful, as all the presets can be modified.

Every line under the dropdown menu matches a file you can export. The parameters are splitted like this :

- Use : Check this checkbox if you want to activate that line. Some lines are automatically deactivated if the texture set is not used (like clouds or ring …)
- RGB Channels : select the data you want to set in the color of your texture.
- A Channel : select the data you want to set in the alpha of your texture.
- sRGB : if checked, the color is stored in sRGB format, otherwise it is stored in linear format (recommended for 16bits per component modes.)
- 16 bits : only available in the pro version, if checked, the data are store with a precision of 16bits per component.

- Grey : if checked, the texture will be exported as greyscale image and the alpha channel will be ignored.
- Name : the postfix added at the end of the name of your export.

## Use layer modes:




- Material : Full lit material.
- Albedo : Albedo (base color layer)
- Roughness : Roughness of the planet
- Height : Height of the terrain. White represent the highest portions of the terrain and black the lowest.
- Height+ : Height of the terrain, color coded
- Normal : normal maps in tangent space.
- AO : Ambient occlusion
- Curvature : Curvature of the terrain
- Slope : Slope of the terrain.
- Water : Water color
- Moisture : Moisture level (depends on the water and settings from the weather tab)
- Heat : Color coded heat (depends on the altitude and settings from the weather tab)
- Clouds : Clouds layer.

## Tune color ramps:




Once you click on a color ramp parameter, you can edit it on the right part of the screen.

1. If you select this mode, you edit the complete ramp at once, RGB ou HSV are offsets from the original colors.
2. In this mode, you can edit the first, second or third color independently.
3. In this third mode, you edit the first and last color, the central one is automatically interpolated.
4. You can edit your colors either in RGB or in HSV mode.
5. You can enter the hex value of your color directly here. You have to be in mode 2 or 3 to do that.
6. Theses sliders allows you to change the transitions between colors. The first slider modifies the smoothness of the transitions and the second slider the distance between the colors.
7. Flip ramp swap the first and third color – Invert ramp inverts the 3 colors of the ramp. Drag the eyedropper anywhere on the screen to pick the color from a reference picture easily.
8. You can add a new color preset by typing its name in the edit box and clicking the + icon (or pressing the return key). The ‘A’ icon is used to see all color presets, not only the one of your current tab.
9. These are the color presets you can recall by clicking them. They can be deleted by clicking the dustbin icon.

## Use the randomizer:




The randomizer allows you to modify randomly a selected set of parameters.

1. Click this button to randomize.
2. Toggles the randomization of the basic parameters.
3. Toggles the randomization of the advanced parameters.
4. Toggles the randomization of the colors.
5. Toggles the randomization of all parameters, not only the ones of the current section.
6. Intensity of the randomization.

## Use the mixer/Animator:




The mixer allows you to interpolate between two presets. This is very useful to :

- Animate a scene, as this can also interpolate the position/orientation of the planet, camera, background and light.
- Finetune one or more parameters.
- Blend between two presets.

1. This button sets the start preset key.
2. This second button sets the end preset key.
3. This sliders allows yoou to blend between the start and end key.
4. This button starts the animation from beginning to end, using the current settings. If Save snaphots is toggled, a save dialog will open to define the base filename of the animation and the animation will be recorded. Hold the ESC key at any time to cancel the animation.
5. Resolution of the renders in window size units.
6. Number of frames to generate for the animation.
7. Interpolation mode for the animation. This is linear by default, but you can smooth out the beginning, the end or both.
8. Advanced parameters :
    a. Camera/Lights : toggles the animation of camera, lights and background.
    b. Parameters : toggles the animation of parameters (if you just want to make a camera movement for instance)
    c. HD : force the rebuild in HD at every frames if the core parameters are modified somehow.
    d. Display interface : render the interface while doing the snapshot. May be useful for tutorials.
    e. Save snapshots : Save a snapshot of every frames rendered. You can then make a movie out of it with software like Adobe Premiere.
9. Axis used for the revolution of the planet.
10. Percentage of the revolution done during the animation.
11. Axis used for the revolution of the background.

### All parameters descriptions :

# Planet parameters

## Global

- **X translation :** Float value between -10 and 10, X translation of the noise generators.
- **Y translation :** Float value between -10 and 10, Y translation of the noise generators..
- **Z translation :** Float value between -10 and 10, Z translation of the noise generators..
- **X rotation :** Float value between -180 and 180, X rotation of the noise generators.
- **Y rotation :** Float value between -180 and 180, Y rotation of the noise generators..
- **Z rotation :** Float value between -180 and 180, Z rotation of the noise generators..
- **X scale :** Float value between 0.5 and 2, X scaling of the noise generators.
- **Y scale :** Float value between 0.5 and 2, Y scaling of the noise generators..
- **Z scale :** Float value between 0.5 and 2, Z scaling of the noise generators..
- **Coverage percentage :** Float value between 0.01 and 1, Percentage of the covered ground area.
- **Mesh density :** Float value between 0.25 and 2, Density of polygons on the mesh.
- **Flatenning :** Float value between 0 and 1, Flatenning of the partial mesh (works only on small sections).
- **Latitude offset :** Float value between -1 and 1, Latitude offset of the covered ground area.
- **Longitude offset :** Float value between -1 and 1, Longitude offset of the covered ground area.
- **Stand upright :** On/Off value, Force the partial terrain to face up.

## Relief

- **Relief base :** Filename value, Height file defining the base altitude of the planet.
- **Use inputmap :** On/Off value, Use an external basemap.
- **Flip horizontal :** On/Off value, Flip the texture horizontally.
- **Flip verrtical :** On/Off value, Flip the texture vertically.
- **Blur radius :** Float value between 0 and 1, Blur radius of the texture (this may help removing unwanted glitches).
- **Blur intensity :** Float value between -2 and 2, Blur intensity on the texture, negative values sharpens the input.
- **Input scale :** Float value between -1 and 1, Input height scale.
- **Jitter level :** Float value between 0 and 4, Jitter added to heightmap to add a grain/randomness to the planet.

- **Additionnal noise scale :** Float value between -1 and 1, Scale of the regular noise that will be either added (positive values) or substracted (negative values).
- **Noise type :** Integer value between 0 and 24, Noise generator type.
- **Roughness :** Float value between 0.05 and 0.8, Noise roughness.
- **Low frequencies :** Float value between -1 and 2, Low frequencies intensity.
- **Medium frequencies :** Float value between -1 and 2, Medium frequencies intensity.
- **High frequencies :** Float value between -1 and 2, High frequencies intensity.
- **Distortion :** Float value between -2 and 2, Noise distortion.
- **Ramp :** Float value between 0 and 1, Noise ramp (not used on every noise types).
- **Seed :** Float value between 0 and 1, Seed used for random generation.
- **Scale :** Float value between 0.3 and 150, Noise scale.
- **Vertical scale :** Float value between 0 and 50, Noise vertical scale.
- **Octaves :** Float value between 1 and 21, Number of octaves used to generate the noise.
- **Height curve :** Curve remapping the height of the terrain.
- **Height curve_ctrl0 :** Curve remapping the height of the terrain.
- **Height curve_ctrl1 :** Curve remapping the height of the terrain.
- **Height curve_ctrl2 :** Curve remapping the height of the terrain.
- **Height curve_ctrl3 :** Curve remapping the height of the terrain.
- **Height curve_ctrl4 :** Curve remapping the height of the terrain.
- **Height curve_ctrl5 :** Curve remapping the height of the terrain.
- **Height curve_ctrl6 :** Curve remapping the height of the terrain.
- **Height curve_ctrl7 :** Curve remapping the height of the terrain.
- **Height curve_ctrl8 :** Curve remapping the height of the terrain.
- **Mask ramp :** Float value between 0 and 1, Details enhancement mask ramp.
- **Details enhancement :** Float value between -1 and 1, Details enhancement intensity.
- **Limits :** Range of values, Defines the range of details enhancement.
- **Shelf level :** Float value between 0 and 1, Continental shelf altitude.
- **Flattening intensity :** Float value between 0 and 1, Continental shelf intensity.
- **Randomization intensity :** Float value between 0 and 1, Continental shelf randomization.
- **Randomization scale :** Float value between 0.01 and 8, Continental shelf randomization scale.
- **Randomization seed :** Float value between 0 and 1, Continental shelf randomization seed.
- **Randomization balance :** Float value between -0.15 and 0.15, Continental shelf randomization balance between regular relief and continental shelf.
- **Mountains :** Color ramp with ramp shape control, Mountains colors, starting from valleys going to mountains.
- **Mountains in desert :** Color ramp with ramp shape control, Mountains colors in desertic area, starting from valleys going to mountains.
- **Color bias :** Float value between -0.6 and 0.6, Color ramp bias.
- **Color from slope :** Float value between 0 and 1, Color from slope instead of color from height.
- **Underwater :** Color ramp with ramp shape control, Underwater colors, starting from depth going to water level.
- **Color bias :** Float value between -0.6 and 0.6, Underwater color ramp bias.

- **Underwater darkening :** Float value between 0 and 3, Darkening of the underwater colors depending on the depth.
- **Land roughness :** Float value between 0 and 1, Roughness of the main land (specularity).
- **ao roughness :** Float value between -1 and 1, Roughness increase where there is AO.

## Details

- **Have details :** On/Off value, Activate the details layer.
- **Noise type :** Integer value between 0 and 24, Noise generator type.
- **Roughness :** Float value between 0.05 and 0.8, Noise roughness.
- **Low frequencies :** Float value between -1 and 2, Low frequencies intensity.
- **Medium frequencies :** Float value between -1 and 2, Medium frequencies intensity.
- **High frequencies :** Float value between -1 and 2, High frequencies intensity.
- **Distortion :** Float value between -2 and 2, Noise distortion.
- **Ramp :** Float value between 0 and 1, Noise ramp (not used on every noise types).
- **Seed :** Float value between 0 and 1, Seed used for random generation.
- **Scale :** Float value between 0.3 and 150, Noise scale.
- **Vertical scale :** Float value between 0 and 50, Noise vertical scale.
- **Octaves :** Float value between 1 and 21, Number of octaves used to generate the noise.
- **Details height curve :** Curve remapping the height of the details on the terrain.
- **Details height curve_ctrl0 :** Curve remapping the height of the details on the terrain.
- **Details height curve_ctrl1 :** Curve remapping the height of the details on the terrain.
- **Details height curve_ctrl2 :** Curve remapping the height of the details on the terrain.
- **Details height curve_ctrl3 :** Curve remapping the height of the details on the terrain.
- **Details height curve_ctrl4 :** Curve remapping the height of the details on the terrain.
- **Details height curve_ctrl5 :** Curve remapping the height of the details on the terrain.
- **Details height curve_ctrl6 :** Curve remapping the height of the details on the terrain.
- **Details height curve_ctrl7 :** Curve remapping the height of the details on the terrain.
- **Details height curve_ctrl8 :** Curve remapping the height of the details on the terrain.
- **Blending type :** Integer value between 0 and 8, Define the blending type of the detail layer.
- **Level :** Float value between 0 and 1, Reference level before intensity amplification.
- **Intensity :** Float value between 0 and 1.5, Strength of the detail layer.
- **Cut range :** Range of values, Defines the range of altitude where the details are applied.

- **Cut softness :** Float value between 0 and 1, Transition ramp used to blend the details on the relief.
- **Color spreading :** Float value between 0 and 10, Spreading of the details noise mask.
- **Color from spreading :** Float value between -1.5 and 1.5, Color selection weight from the details spreading.
- **Color from slope :** Float value between -1.5 and 1.5, Color selection weight from the slope.
- **Color from ao :** Float value between -1.5 and 1.5, Color selection weight from the ambient occlusion.
- **Detail color :** Color ramp with ramp shape control, Details colors.
- **Color alpha :** Float value between 0 and 100, Intensity of the coloring.
- **Roughness modulation :** Float value between -1 and 1, Roughness modulation by details.

## Details 2

- **Have secondary details :** On/Off value, Activate the second details layer.
- **Noise type :** Integer value between 0 and 24, Noise generator type.
- **Roughness :** Float value between 0.05 and 0.8, Noise roughness.
- **Low frequencies :** Float value between -1 and 2, Low frequencies intensity.
- **Medium frequencies :** Float value between -1 and 2, Medium frequencies intensity.
- **High frequencies :** Float value between -1 and 2, High frequencies intensity.
- **Distortion :** Float value between -2 and 2, Noise distortion.
- **Ramp :** Float value between 0 and 1, Noise ramp (not used on every noise types).
- **Seed :** Float value between 0 and 1, Seed used for random generation.
- **Scale :** Float value between 0.3 and 150, Noise scale.
- **Vertical scale :** Float value between 0 and 50, Noise vertical scale.
- **Octaves :** Float value between 1 and 21, Number of octaves used to generate the noise.
- **Details height curve :** Curve remapping the height of the details on the terrain.
- **Details height curve_ctrl0 :** Curve remapping the height of the details on the terrain.
- **Details height curve_ctrl1 :** Curve remapping the height of the details on the terrain.
- **Details height curve_ctrl2 :** Curve remapping the height of the details on the terrain.
- **Details height curve_ctrl3 :** Curve remapping the height of the details on the terrain.
- **Details height curve_ctrl4 :** Curve remapping the height of the details on the terrain.
- **Details height curve_ctrl5 :** Curve remapping the height of the details on the terrain.
- **Details height curve_ctrl6 :** Curve remapping the height of the details on the terrain.
- **Details height curve_ctrl7 :** Curve remapping the height of the details on the terrain.
- **Details height curve_ctrl8 :** Curve remapping the height of the details on the terrain.

- **Blending type :** Integer value between 0 and 8, Define the blending type of the detail layer.
- **Level :** Float value between 0 and 1, Reference level before intensity amplification.
- **Intensity :** Float value between 0 and 1.5, Strength of the detail layer.
- **Cut range :** Range of values, Defines the range of altitude where the details are applied.
- **Cut softness :** Float value between 0 and 1, Transition ramp used to blend the details on the relief.
- **Color spreading :** Float value between 0 and 10, Spreading of the details noise mask.
- **Color from spreading :** Float value between -1.5 and 1.5, Color selection weight from the details spreading.
- **Color from slope :** Float value between -1.5 and 1.5, Color selection weight from the slope.
- **Color from ao :** Float value between -1.5 and 1.5, Color selection weight from the ambient occlusion.
- **Detail color :** Color ramp with ramp shape control, Details colors.
- **Color alpha :** Float value between 0 and 100, Intensity of the coloring.
- **Roughness modulation :** Float value between -1 and 1, Roughness modulation by secondary details.

## Micro craters

- **Have micro craters :** On/Off value, Activate the micro craters layer.
- **Seed :** Float value between 0 and 1, Seed used to generate craters positions.
- **Craters probability :** Float value between 0 and 1, Probabilities of having micro craters.
- **Prob. on details :** Float value between -1 and 1, Extra probability of having micro craters on details (secondary noise).
- **Details offset :** Float value between -1 and 0, Offset of the detail limit.
- **Details ramp :** Float value between 0.5 and 5, Ramp of the detail limit. Higher value sharpens the limit of the detail noise.
- **Radius range :** Range of values, Defines the minimal and maximal radius of micro craters.
- **Radius distribution :** Float value between 0 and 1, Balance the distribution of small and large craters.
- **Craters depth :** Float value between 0 and 0.5, Micro craters depth.
- **Craters height :** Float value between 0 and 5, Micro craters depth.
- **Border thickness :** Range of values, Defines the minimal and maximal border thickness of micro craters.
- **Shape irregularity :** Float value between 0 and 1, Micro craters shape regularity (1 is chaotic, 0 is regular).
- **Inner smoothness :** Float value between 0 and 1, Inner smoothness of the shape of the crater.
- **Age range :** Range of values, Defines the minimal and maximal influence of micro craters.
- **Above main craters :** Float value between 0 and 1, Are micro craters above or under the bigger craters.
- **Ground smoothing :** Float value between 0 and 1, Are micro craters above or under the bigger craters.
- **Color ramp :** Color ramp with ramp shape control, Craters colors.

- **Color burn :** Float value between 0 and 5, Intensity of the craters coloring.
- **Crater intensity :** Float value between 0 and 1, Rim and ejecta intensity (outer part of crater).
- **Details intensity :** Float value between -5 and 1, Details coloring on the crater floor.
- **Roughness modulation :** Float value between -1 and 1, Roughness modulation by microcraters mask.

## Craters

- **Have craters :** On/Off value, Activate the craters layer.
- **Seed :** Float value between 0 and 1, Seed used to generate craters positions.
- **Craters count :** Integer value between 0 and 500, Number of craters on the planet.
- **Minimal radius :** Float value between 0.001 and 0.25, Minimal radius of the craters.
- **Maximal radius extend :** Float value between 0 and 1, Maximal radius of the craters.
- **Radius distribution :** Float value between 0 and 1, Balance the distribution of small and large craters.
- **Height :** Float value between 0.05 and 2, Height of the crater's border.
- **Height attenuation :** Float value between 0 and 1, Attenuate the height of smaller craters.
- **Depth :** Float value between -2 and 1, Depth of the inner part of the crater.
- **Depth shape :** Float value between 0 and 1, Shape of the inner part of the crater.
- **Blending shape :** Float value between 0 and 2, Shape of the outer part of the crater.
- **Minimal age :** Float value between 0.01 and 1, Minimal age of the craters.
- **Maximal age extend :** Float value between 0 and 1, Maximal age of the craters.
- **Age size link :** Float value between 0 and 1, Increase the age of the larger craters.
- **Roundness regularity :** Float value between 0 and 1, Regularity of the crater's border.
- **Height depth regularity :** Float value between 0 and 1, Regularity of the crater's height and depth.
- **Trails intensity :** Float value between -0.1 and 0.5, Intensity of the explosion trails.
- **Trails limit :** Float value between 0 and 1, Minimal size required to have explosion trails.
- **Trails density :** Float value between 0 and 1, Density of trails around the crater.
- **Trails thickness :** Float value between 0 and 1, Thickness of the trails around the crater.
- **Trails length :** Float value between 0 and 1, Maximal length of the explosion trails.
- **Trails chaos :** Float value between 0 and 2.5, Irregularity of the trails.
- **Secondary trails length :** Float value between 0 and 4, Maximal length of the explosion trails.
- **Trails spreading :** Float value between 0 and 1.5, Irregularity of the length of trails.

- **Color ramp :** Color ramp with ramp shape control, Craters colors.
- **Color burn :** Float value between 0 and 5, Intensity of the craters coloring.
- **Rim and ejecta intensity :** Float value between 0 and 1, Rim and ejecta intensity (outer part of crater).
- **Floor intensity :** Float value between 0 and 1, Floor intensity (inner part of crater).
- **Details intensity :** Float value between -5 and 1, Details coloring on the crater floor.
- **Roughness modulation :** Float value between -1 and 1, Roughness modulation by craters mask.

## Other

- **Low frequencies :** Float value between 0 and 5, Weight of the low frequencies (large details) in the AO.
- **Medium frequencies :** Float value between 0 and 5, Weight of the medium frequencies (average details) in the AO.
- **High frequencies :** Float value between 0 and 5, Weight of the high frequencies (small details) in the AO.
- **AO in diffuse :** Float value between 0 and 1.5, AO presence in the Albedo.
- **AO quality :** Float value between 0 and 1, Quality of the AO computation, higher value means more samples.
- **AO curve :** Curve remapping the ambient occlusion.
- **AO curve_ctrl0 :** Curve remapping the ambient occlusion.
- **AO curve_ctrl1 :** Curve remapping the ambient occlusion.
- **AO curve_ctrl2 :** Curve remapping the ambient occlusion.
- **AO curve_ctrl3 :** Curve remapping the ambient occlusion.
- **AO curve_ctrl4 :** Curve remapping the ambient occlusion.
- **AO curve_ctrl5 :** Curve remapping the ambient occlusion.
- **AO curve_ctrl6 :** Curve remapping the ambient occlusion.
- **AO curve_ctrl7 :** Curve remapping the ambient occlusion.
- **AO curve_ctrl8 :** Curve remapping the ambient occlusion.
- **AO in water :** Float value between 0 and 1, Intensity of the AO in the water.
- **AO tinting :** Float value between 0 and 1, Color tinting of the AO, 0=default grey ramp, 1=full color ramp.
- **AO colors :** Color ramp with ramp shape control, AO color ramp (if tinting is higher than 0).
- **Color bias :** Float value between -0.6 and 0.6, Color ramp bias of the AO.
- **Ground normals :** Float value between 0 and 5, Intensity of the land normal map.
- **Curvature colors :** Color ramp with ramp shape control, Color scheme of the coloring of sharp edges.
- **Curvature coloring :** Float value between 0 and 10, Coloring intensity of sharp edges.
- **Curvature coloring spread :** Float value between 0 and 1, Spreading of sharp edges coloring.

## Water

- **Have water :** On/Off value, Activate the water layer.

- **Water level :** Float value between -0.1 and 0.99, Height of the water level.
- **Water density :** Float value between 0 and 1, Density of the water.
- **Water sharpness :** Float value between 0 and 1, Sharpen the water coast.
- **Water global translucency :** Float value between 0 and 1, Translucency of the water which allow simulation of disappeared oceans.
- **Occlusion in water :** Float value between 0 and 1, Ambient occlusion in shallow water.
- **Baked in height :** On/Off value, Bake the water height in the heightmap.
- **Water :** Color ramp with ramp shape control, Water color ramp.
- **Hot water :** Color ramp with ramp shape control, Water color ramp.
- **Hot color bias :** Float value between -1 and 1, Offset of the color range used for the water
- **Color bias :** Float value between -0.6 and 0.6, Water color ramp bias.
- **Water roughness :** Float value between 0 and 1, Roughness of the water.
- **Injection intensity :** Float value between 0 and 1, Strength of the details (secondary noise) in the water layer.
- **Override water :** Float value between 0 and 1, Override of the water layer by the detail layeer.

# Weather

- **Intensity :** Float value between 0 and 2, Weight of the moisture coming from the water.
- **Spreading :** Float value between 0 and 1, Spreading of the moisture from the water.
- **Temperature :** Float value between -1.5 and 1.5, Intensity (positive or negative) of the moisture at the poles.
- **Spreading :** Float value between 0 and 1.5, Area spread of the moisture at the poles.
- **Temperature :** Float value between -1.5 and 1.5, Intensity (positive or negative) of the moisture on the equator.
- **Spreading :** Float value between 0 and 1.5, Area spread of the moisture on the equator.
- **Temperature :** Float value between -1.5 and 1.5, Intensity (positive or negative) of the moisture on the equator.
- **Limit :** Float value between 0 and 1, Height reference for the heat drop.
- **Spreading :** Float value between 0 and 1, Area spread of the moisture on the equator.
- **Temperature :** Float value between -1 and 1, Intensity (positive or negative) of the moisture on the equator.
- **Spreading :** Float value between 0 and 1, Area spread of the moisture on the equator.
- **Spread center :** Float value between -0.5 and 0.5, Center of the moisture spread.
- **CHZ offset :** Float value between -1.5 and 1.5, Circumstellar habitable zone offset : Global temperature offset (can be considered as the distance to the sun).
- **Tilt axis :** Float value between -0.5 and 0.5, Tilting of the planet axis.
- **Random strength :** Float value between 0 and 2.5, Randomization of the shape of the moisture/temperature.
- **Random scale :** Float value between 0.25 and 50, Scale of the randomization of the moisture/temperature.

- **Random seed :** Float value between 0 and 1, Randomization seed for the shape of the moisture/temperature.

## Ice caps

- **Have ice caps :** On/Off value, Activate the ice caps layer.
- **Noise type :** Integer value between 0 and 24, Noise generator type.
- **Roughness :** Float value between 0.05 and 0.8, Noise roughness.
- **Low frequencies :** Float value between -1 and 2, Low frequencies intensity.
- **Medium frequencies :** Float value between -1 and 2, Medium frequencies intensity.
- **High frequencies :** Float value between -1 and 2, High frequencies intensity.
- **Distortion :** Float value between -2 and 2, Noise distortion.
- **Ramp :** Float value between 0 and 1, Noise ramp (not used on every noise types).
- **Seed :** Float value between 0 and 1, Seed used for random generation.
- **Scale :** Float value between 0.3 and 150, Noise scale.
- **Vertical scale :** Float value between 0 and 50, Noise vertical scale.
- **Octaves :** Float value between 1 and 21, Number of octaves used to generate the noise.
- **Inverted :** On/Off value, Invert the noise result (valleys <-> mountains).
- **Ice expansion :** Float value between 0 and 1, Ice coverage, starting from the poles.
- **Ice shape sharpness :** Float value between 0 and 1, Sharpness of the ice limit.
- **Ice shape randomness :** Float value between 0 and 1, Randomization of the ice limit.
- **Ice min and max :** Range of values, Defines the minimal and maximal level of snow.
- **Slope influence :** Float value between 0 and 1, Slope of mountains influence on ice and snow positionning (0=slope is ignored, higher=slope is driving snow placement).
- **Ice color :** Color ramp with ramp shape control, Ice color ramp.
- **Color bias :** Float value between -0.6 and 0.6, Ice color ramp bias.
- **Color from slope :** Float value between 0 and 1, Select ice color from slope or from AO.
- **Ice roughness :** Float value between 0 and 1, Roughness of the ice caps (specularity).

## Desert

- **Have desertic zone :** On/Off value, Activate the desrtic zone.
- **Noise type :** Integer value between 0 and 24, Noise generator type.
- **Roughness :** Float value between 0.05 and 0.8, Noise roughness.
- **Low frequencies :** Float value between -1 and 2, Low frequencies intensity.
- **Medium frequencies :** Float value between -1 and 2, Medium frequencies intensity.
- **High frequencies :** Float value between -1 and 2, High frequencies intensity.
- **Distortion :** Float value between -2 and 2, Noise distortion.

- **Ramp :** Float value between 0 and 1, Noise ramp (not used on every noise types).
- **Seed :** Float value between 0 and 1, Seed used for random generation.
- **Scale :** Float value between 0.3 and 150, Noise scale.
- **Vertical scale :** Float value between 0 and 50, Noise vertical scale.
- **Octaves :** Float value between 1 and 21, Number of octaves used to generate the noise.
- **Inverted :** On/Off value, Invert the noise result (valleys <-> mountains).
- **Desert expansion :** Float value between 0 and 1, Desert coverage, starting from the equator.
- **Desert shape sharpness :** Float value between 0 and 1, Sharpness of the desert limit.
- **Desert shape randomness :** Float value between 0 and 1, Randomization of the desert limit.
- **Desert min and max :** Range of values, Defines the minimal and maximal level of snow.
- **Slope influence :** Float value between 0 and 1, Slope of mountains influence on desert positionning (0=slope is ignored, higher=slope is driving snow placement).
- **Moisture influence :** Float value between 0 and 1, Influence of the moisture on the desert spreading (0=moisture is ignored, lower=desert spread more where moisture level is high, higher=desert spread less where moisture level is high)

## Sediment

- **Have sediment :** On/Off value, Activate the sediment layer.
- **Erosion blend :** Float value between 0.5 and 5, Blending level of the sediments.
- **Sediment in cavities :** Float value between 0 and 1, Amplify the amount of sediment in cavities.
- **Sediment on slopes :** Float value between 0 and 1, Filter sediment if the slope is too steep.
- **Sediment by height :** Range of values, Define the min and max value of the fade range of the sediment in conjunction with altitude.
- **Moisture select :** Float value between 0 and 1, Sediment color selected from moisture.
- **Color bias :** Float value between -0.6 and 0.6, Sediment color ramp bias.
- **Sediments on secondary :** Float value between 0 and 1, Sediment color on secondary soil.
- **Roughness modulation :** Float value between -1 and 1, Modulation of the roughness value due to the sediments.

## Vegetation

- **Have vegetation :** On/Off value, Vegetation rendering.
- **Noise type :** Integer value between 0 and 24, Noise generator type.
- **Roughness :** Float value between 0.05 and 0.8, Noise roughness.
- **Low frequencies :** Float value between -1 and 2, Low frequencies intensity.

- **Medium frequencies :** Float value between -1 and 2, Medium frequencies intensity.
- **High frequencies :** Float value between -1 and 2, High frequencies intensity.
- **Distortion :** Float value between -2 and 2, Noise distortion.
- **Ramp :** Float value between 0 and 1, Noise ramp (not used on every noise types).
- **Seed :** Float value between 0 and 1, Seed used for random generation.
- **Scale :** Float value between 0.3 and 150, Noise scale.
- **Vertical scale :** Float value between 0 and 50, Noise vertical scale.
- **Octaves :** Float value between 1 and 21, Number of octaves used to generate the noise.
- **Inverted :** On/Off value, Invert the noise result (valleys <-> mountains).
- **Grow outside sediment :** Float value between 0 and 1, Allow the vegetation to grow outside the sediment soil.
- **Blending :** Float value between 0 and 1, Blending level of the vegetation.
- **Growth by slopes :** Range of values, Defines the minimal and maximal slopes where vegetation is growing.
- **Growth by height :** Range of values, Define the min and max value of the fade range of the sediment in conjunction with altitude.
- **Color bias :** Float value between -0.6 and 0.6, Vegetation color ramp bias.
- **Moisture select :** Float value between 0 and 1, Vegetation color selected from moisture.
- **Roughness modulation :** Float value between -1 and 1, Modulation of the roughness value due to the vegetation.

## Rings

- **Have ring :** On/Off value, Rendering of the ring around the planet.
- **Ring separation :** Float value between 0 and 2, Distance from the planet to the ring.
- **Ring width :** Float value between 0.1 and 10, Width of the ring.
- **Ring tilt :** Float value between -90 and 90, Tilt of the ring.
- **Noise type :** Integer value between 0 and 24, Noise generator type.
- **Roughness :** Float value between 0.05 and 0.8, Noise roughness.
- **Low frequencies :** Float value between -1 and 2, Low frequencies intensity.
- **Medium frequencies :** Float value between -1 and 2, Medium frequencies intensity.
- **High frequencies :** Float value between -1 and 2, High frequencies intensity.
- **Distortion :** Float value between -2 and 2, Noise distortion.
- **Ramp :** Float value between 0 and 1, Noise ramp (not used on every noise types).
- **Seed :** Float value between 0 and 1, Seed used for random generation.
- **Scale :** Float value between 0.3 and 150, Noise scale.
- **Vertical scale :** Float value between 0 and 50, Noise vertical scale.
- **Octaves :** Float value between 1 and 21, Number of octaves used to generate the noise.
- **Inverted :** On/Off value, Invert the noise result (valleys <-> mountains).
- **Rings :** Color ramp with ramp shape control, Rings color range.
- **Color bias :** Float value between -0.6 and 0.6, Color ramp bias.
- **Alpha black point :** Float value between 0 and 1, Black point of the ring alpha : sets the minimal value used in the height field.

- **Alpha white point :** Float value between 0 and 1, White point of the ring alpha : sets the maximal value used in the height field.
- **Micro noise color :** Float value between 0 and 1, white noise in rings.
- **Micro noise alpha :** Float value between 0 and 1, white noise in rings translucency.
- **Inner fade ramp :** Float value between 0.01 and 1.5, Alpha ramp on the inside of the ring.
- **Outer fade ramp :** Float value between 0.01 and 1.5, Alpha ramp on the outside of the ring.

## Clouds

- **Have clouds :** On/Off value, Rendering of the clouds.
- **Noise type :** Integer value between 0 and 24, Noise generator type.
- **Roughness :** Float value between 0.05 and 0.8, Noise roughness.
- **Low frequencies :** Float value between -1 and 2, Low frequencies intensity.
- **Medium frequencies :** Float value between -1 and 2, Medium frequencies intensity.
- **High frequencies :** Float value between -1 and 2, High frequencies intensity.
- **Distortion :** Float value between -2 and 2, Noise distortion.
- **Ramp :** Float value between 0 and 1, Noise ramp (not used on every noise types).
- **Seed :** Float value between 0 and 1, Seed used for random generation.
- **Scale :** Float value between 0.3 and 150, Noise scale.
- **Vertical scale :** Float value between 0 and 50, Noise vertical scale.
- **Octaves :** Float value between 1 and 21, Number of octaves used to generate the noise.
- **Inverted :** On/Off value, Invert the noise result (valleys <-> mountains).
- **Covering :** Float value between 0 and 1, Coverage of the clouds.
- **Smoothness :** Float value between 0 and 0.3, Edge smoothness of the clouds.
- **Coriolis spread :** Float value between 0 and 5, Distribution of the Coriolis effect
- **Coriolis intensity :** Float value between -2.5 and 2.5, Intensity of the Coriolis effect.
- **Details :** Float value between 0 and 5, Extra details added on the edges of the clouds.
- **Scale :** Float value between 0.1 and 10, Scale of the twirls in the clouds.
- **Roughness :** Float value between 0 and 1, Roughness of the twirls in the clouds.
- **Vertical scale :** Float value between 0.1 and 10, Vertical scale of the twirls.
- **Intensity :** Float value between -2.5 and 2.5, Intensity of the twirls.
- **Density :** Float value between 0 and 1, Coverage of the twirls.
- **Color bias :** Float value between -0.6 and 0.6, Cloud color ramp bias.

## Cities

- **Have cities :** On/Off value, Rendering of the cities.
- **Seed :** Float value between 0 and 1, Seed used for random generation.
- **Lights scale :** Float value between 1 and 100, Cities scale.
- **Lights limit :** Float value between 0 and 1, Cities scale.

- **Lights sharpness :** Float value between 0 and 1, Cities scale.
- **Roads scale :** Float value between 0.5 and 20, Cities scale.
- **Secondary roads scale :** Float value between 2.5 and 15, Secondary roads scale (relative to primary ones).
- **Secondary roads :** Float value between 0 and 1, Secondary roads intensity.
- **LF cities :** Float value between 0 and 1, Low frequency cities.
- **MF cities :** Float value between 0 and 1, Medium frequency cities.
- **HF cities :** Float value between 0 and 1, High frequency cities.
- **Cities coverage :** Float value between 0 and 1, Coverage of the cities.
- **Roads coverage :** Float value between 0 and 1, Coverage of the roads.
- **Roads width :** Float value between 0.01 and 1.5, Coverage of the roads.
- **Spread around roads :** Float value between 0.05 and 0.9, Spread cities around roads.
- **Minimal altitude :** Float value between -0.1 and 0.9, Minimal altitude relative to water level under which no city is generated.
- **Minimal smoothness :** Float value between 0.001 and 0.5, Minimal altitude transition smoothness.
- **Maximal altitude :** Float value between 0 and 1.1, Maximal altitude above which no city is generated.
- **Maximal smoothness :** Float value between 0.001 and 0.5, Maximal altitude transition smoothness.
- **Minimal temperature :** Float value between -1.5 and 0.5, Influence of the coast on cities location.
- **Maximal temperature :** Float value between -0.5 and 1.5, Influence of the coast on cities location.
- **Coastal cities :** Float value between -0.5 and 1, Influence of the coast on cities location.
- **Terrain modifier :** Float value between 0 and 5, Affects the roads to follow the terrain relief.
- **Slope influence :** Float value between 0 and 1, Influence of slopes on cities location.
- **AO influence :** Float value between -1 and 1, Influence of AO on cities location.
- **Direct bias :** Float value between -0.6 and 0.6, Direct light bias.
- **Direct intensity :** Float value between 0 and 1.5, Directt light intensity.
- **Indirect bias :** Float value between -0.6 and 0.6, Indeirect color ramp bias.
- **Indirect intensity :** Float value between 0 and 1.5, Indirect light intensity.
- **Cities blending :** Float value between 0 and 2, The alpha value of the cities in daylight.
- **Cities blending limit :** Float value between 0 and 1, The alpha value of the cities in daylight.
- **Cities sharpness :** Float value between 0 and 1, The alpha value of the cities in daylight.
- **Color bias :** Float value between -0.6 and 0.6, Color ramp bias.

## Color correction

- **Shadows :** Color value, Coloring of shadows of the planet albedo.
- **Midtones :** Color value, Coloring of midtones of the planet albedo.
- **Highlights :** Color value, Coloring of highlights of the planet albedo.

- **Temperature :** Float value between -2 and 2, Color temperature shift of the planet albedo.
- **Tint :** Float value between -2 and 2, Color tint of the planet albedo.
- **Hue :** Float value between -0.5 and 0.5, Hue shift of the planet albedo.
- **Saturation :** Float value between 0 and 2, Color saturation of the planet albedo.
- **Vibrance :** Float value between -1 and 1, Color vibrance of the planet albedo.
- **Value :** Float value between 0 and 10, Color value of the planet albedo.
- **Contrast :** Float value between 0 and 2, Color contrast of the planet albedo.
- **Gain :** Float value between 0.01 and 5, Gain of the planet albedo.
- **Gamma :** Float value between 0.01 and 5, Gamma of the planet albedo.
- **Ground :** Float value between -1 and 2, Correction weight made on the planet's ground.
- **Water :** Float value between -1 and 2, Correction weight made on the planet's water.
- **Clouds :** Float value between -1 and 2, Correction weight made on the planet's clouds.
- **Rings :** Float value between -1 and 2, Correction weight made on the planet's rings.

## Shader

- **Planet radius :** Float value between 0.1 and 100, Size of the planet (for reference).
- **Amplitude :** Float value between 0 and 15, Displacement amplitude.
- **Tesselation :** Float value between 1 and 16, Tesselation level.
- **Displacement offset :** Float value between 0 and 1, Displacement reference height.
- **Water emissive :** Float value between 0 and 1, Water self emit intensity.
- **Water normal intensity :** Float value between 0 and 1, Intensity of the water's normals.
- **Indirect intensity :** Float value between 0 and 3, Intensity of the envmap used for the lighting.
- **Global shadows :** Float value between 0 and 1, Intensity of the realtime shadows on the ground.
- **Shadows dithering :** Float value between 0 and 0.2, Intensity of the dithering that helps masking the surface acne due to the shadows.
- **Night lights offset :** Float value between -1 and 1, Night light on offset.
- **Night lights intensity :** Float value between 0.1 and 100, Night light on offset.
- **Clouds translucency :** Float value between 0 and 1, Transparency level of the clouds.
- **Clouds intensity :** Float value between 0 and 1, Luminosity of the clouds.
- **Clouds speed :** Float value between -1 and 1, Rotation speed of the cloud texture.
- **Clouds Offset :** Float value between -1 and 1, Offset of the cloud texture.
- **Clouds shadows :** Float value between 0 and 2, Darkness of the clouds shadows.
- **Clouds fluffyness :** Float value between 0.01 and 1, Defines how fluffy the clouds are.
- **Clouds coverage :** Float value between 0 and 1, Cloud coverage on the planet.

- **Clouds height :** Float value between 0 and 0.15, Parallax height of the clouds.
- **Have atmosphere :** On/Off value, Render atmosphere.
- **Atm inverse red :** Float value between 0 and 1, Inverse wavelength for the red component.
- **Atm inverse green :** Float value between 0 and 1, Inverse wavelength for the green component.
- **Atm inverse blue :** Float value between 0 and 1, Inverse wavelength for the blue component.

# Backgrounds parameters

## Global

- **X translation :** Float value between -20 and 20, X translation of the noise generators.
- **Y translation :** Float value between -20 and 20, Y translation of the noise generators..
- **Z translation :** Float value between -20 and 20, Z translation of the noise generators..
- **X rotation :** Float value between -180 and 180, X rotation of the noise generators.
- **Y rotation :** Float value between -180 and 180, Y rotation of the noise generators..
- **Z rotation :** Float value between -180 and 180, Z rotation of the noise generators..
- **X scale :** Float value between 0.5 and 2, X scaling of the noise generators.
- **Y scale :** Float value between 0.5 and 2, Y scaling of the noise generators..
- **Z scale :** Float value between 0.5 and 2, Z scaling of the noise generators..
- **Fixed background :** On/Off value, When rendering in HD, the full sphere is replaced with a fixed background, giving a much higher resolution result.

## Nebulae

- **Use layer :** On/Off value, Activate or not the nebulae rendering.
- **Noise source :** Integer value between 0 and 4, Noise generator source.
- **Roughness :** Float value between 0.05 and 0.8, Noise roughness.
- **Low frequencies :** Float value between 0 and 2, Low frequencies intensity.
- **Medium frequencies :** Float value between 0 and 2, Medium frequencies intensity.
- **High frequencies :** Float value between 0 and 2, High frequencies intensity.
- **Distortion :** Float value between -8 and 8, Noise distortion.
- **Distortion depth :** Float value between -1 and 1, Distortion depth innfluence.
- **Seed :** Float value between 0 and 1, Seed used for random generation.
- **Scale :** Float value between 0 and 50, Noise scale.

- **Octaves :** Float value between 1 and 12, Number of octaves used to generate the noise.
- **Substeps :** Float value between 1 and 4, Number of substeps to improve visual quality. This may affect the rendering time and responsiveness of the software.
- **Main color :** Color ramp with ramp shape control, Background of the nebulae.
- **Color range :** Range of values, Define the min and max value of the color range of the background.
- **Color range tuning :** Float value between -0.03 and 0.03, Adjustment of the ramp.
- **Density :** Float value between 0 and 10, Intensity of layer.
- **Alpha attenuation :** Float value between 0 and 1, Intensity of layer.
- **Depth :** Float value between 0 and 40, Depth of layer.
- **Intensity :** Float value between 0.01 and 10, Intensity of layer.
- **Noise :** Float value between 0 and 5, Intensity of the noise used in background generation.

## Masking

- **Use layer :** On/Off value, Activate or not the nebulae masking.
- **Noise source :** Integer value between 0 and 4, Noise generator source.
- **Roughness :** Float value between 0.05 and 0.8, Noise roughness.
- **Low frequencies :** Float value between 0 and 2, Low frequencies intensity.
- **Medium frequencies :** Float value between 0 and 2, Medium frequencies intensity.
- **High frequencies :** Float value between 0 and 2, High frequencies intensity.
- **Distortion :** Float value between -8 and 8, Noise distortion.
- **Distortion depth :** Float value between -1 and 1, Distortion depth innfluence.
- **Seed :** Float value between 0 and 1, Seed used for random generation.
- **Scale :** Float value between 0 and 50, Noise scale.
- **Octaves :** Float value between 1 and 12, Number of octaves used to generate the noise.
- **Masking type :** Integer value between 0 and 3, Define the blending type of the masking layer.
- **Masking range :** Range of values, Define the min and max value of the masking range of the background.
- **Masking range tuning :** Float value between -0.03 and 0.03, Adjustment of the ramp.
- **Alpha attenuation :** Float value between 0 and 1, Intensity of layer.
- **Depth :** Float value between 0 and 40, Depth of layer.
- **Noise :** Float value between 0 and 5, Intensity of the noise used in background mask generation.

## Lighting

- **Lighting color :** Color ramp with ramp shape control, Color of the light used to lit the nebulae.
- **Lighting bias :** Float value between -0.6 and 0.6, Cloud color ramp bias.

- **Lighting range :** Range of values, Define the min and max value of highlight range.
- **Highlighting position :** Integer value between 0 and 3, Highlight position in the color ramp.
- **Highlighting distribution :** Float value between 0.01 and 20, Nebulae highlight distribution.
- **Highlighting intensity :** Float value between 0 and 100, Nebulae highlight intensity.
- **Directionnal lighting :** On/Off value, Light the nebulae using a direction.
- **Z direction :** Float value between -1 and 1, Intensity Z direction for light.
- **XY Orientation :** Float value between -3.1416 and 3.1416, Light orientation.
- **Lighting contrast :** Float value between 0.1 and 5, Lighting ramp contrast.
- **Local lighting :** Float value between 0.01 and 0.25, Local lighting.

## Stars

- **Use layer :** On/Off value, Activate or not the stars rendering.
- **Stars seed :** Float value between 0 and 1, Random seed used to generate stars parameters
- **Stars density :** Float value between 0 and 0.5, Density of the stars
- **Stars intensity :** Float value between 0 and 100, Brightness intensity of the stars
- **Stars size :** Float value between 0 and 2, Size of the stars.
- **Bright stars ratio :** Float value between 0 and 5, Chance of have super bright stars in the sky dome.
- **Bright stars boost :** Float value between 0.15 and 5, Boost level of bright stars, high values increases their brightness.
- **Noise type :** Integer value between 0 and 24, Noise generator type.
- **Roughness :** Float value between 0.05 and 0.8, Noise roughness.
- **Low frequencies :** Float value between -1 and 2, Low frequencies intensity.
- **Medium frequencies :** Float value between -1 and 2, Medium frequencies intensity.
- **High frequencies :** Float value between -1 and 2, High frequencies intensity.
- **Distortion :** Float value between -2 and 2, Noise distortion.
- **Ramp :** Float value between 0 and 1, Noise ramp (not used on every noise types).
- **Seed :** Float value between 0 and 1, Seed used for random generation.
- **Scale :** Float value between 0.3 and 150, Noise scale.
- **Vertical scale :** Float value between 0 and 50, Noise vertical scale.
- **Octaves :** Float value between 1 and 21, Number of octaves used to generate the noise.
- **Inverted :** On/Off value, Invert the noise result (valleys <-> mountains).
- **mask intensity :** Float value between -2 and 2, Intensity of the mask
- **nebulae stars spread :** Float value between -1 and 1, Use a positive value to have more stars in the nebulae, use a negative value to have less stars in the nebulae.
- **nebulae stars density :** Float value between 0 and 1, Use a positive value to have more stars in the nebulae, use a negative value to have less stars in the nebulae.
- **Colors :** Separator, Color range of the stars
- **Stars nebula coloring :** Float value between 0 and 1, Stars recoloring.

- **Nebulae border :** Float value between 0 and 3, Thickness of the nebulae uncolored border.
- **Randomized coloring :** Float value between 0 and 1, Randomization level of coloring

## Sun

- **Sun scale :** Float value between 0.05 and 2, Size of the sun
- **Sun glow intensity :** Float value between 0 and 5, Intensity of the sun
- **Sun hue :** Float value between 0 and 1, Hue of the color of the sun
- **Sun saturation :** Float value between 0 and 1, Saturation of the color of the sun
- **Sun light intensity :** Float value between 0.5 and 6, Light intensity of the sun
- **Fill intensity :** Float value between 0 and 5, Intensity of the fill light
- **Fill hue :** Float value between 0 and 1, Hue of the color of the fill light
- **Fill saturation :** Float value between 0 and 1, Saturation of the color of the fill light
- **Flares presets :** Integer value between 0 and 10, Flare model placed at sun position
- **Flares intensity :** Float value between 0.01 and 1.5, Intensity of the flare.

# Post effects parameters

## Post effect

- **Activate :** On/Off value, Activation of the dithering layer.
- **Dithering intensity :** Float value between 0 and 15, Dithering added to the image when doing the tonemapping.
- **Activate :** On/Off value, Activation of the bloom layer.
- **Bloom intensity :** Float value between 0 and 0.4, Intensity of the bloom effect
- **Lens dirt :** Float value between 0 and 0.95, Intensity of the lens dirt effect
- **Activate :** On/Off value, Activation of the sharpening layer.
- **Sharpening intensity :** Float value between 0 and 1, Intensity of unsharp mask effect
- **Sharpening radius :** Float value between 0.5 and 3, Radius of unsharp mask effect
- **Activate :** On/Off value, Activation of the vignetting layer.
- **Vignetting intensity :** Float value between 0 and 5, Intensity of the vignetting.
- **Vignetting blur :** Float value between 0 and 1, Blur level on the corner of the screen.
- **Chromatic aberration :** Float value between -5 and 5, Chromatic aberrations level.
- **Activate :** On/Off value, Activation of the Purkinje effect (Shifting to the blue at low illuminations).
- **Shift :** Float value between 0 and 5, Intensity of the Purkinje effect (Shifting to the blue at low illuminations).
- **Threshold :** Float value between 0 and 1, Threshold level to apply the Purkinje effect.

- **Activate :** On/Off value, Activation color corrections.
- **Shadows :** Color value, Coloring of shadows of the planet albedo.
- **Midtones :** Color value, Coloring of midtones of the planet albedo.
- **Highlights :** Color value, Coloring of highlights of the planet albedo.
- **Temperature :** Float value between -2 and 2, Color temperature shift of the planet albedo.
- **Tint :** Float value between -2 and 2, Color tint of the planet albedo.
- **Hue :** Float value between -0.5 and 0.5, Hue shift of the planet albedo.
- **Saturation :** Float value between 0 and 2, Color saturation of the planet albedo.
- **Vibrance :** Float value between -1 and 1, Color vibrance of the planet albedo.
- **Value :** Float value between 0 and 10, Color value of the planet albedo.
- **Contrast :** Float value between 0 and 2, Color contrast of the planet albedo.
- **Gain :** Float value between 0.01 and 5, Gain of the planet albedo.
- **Gamma :** Float value between 0.01 and 5, Gamma of the planet albedo.

## Material

- **Activate shadows :** On/Off value, Render shadows in the viewport.

## F.A.Q.

Q. I'm getting a fatal error right after the main screen opens saying "Fatal Error" "Player is already running".

*A.Try running the application directly from steam and not from a shortcut you've created yourself.*

Q. I start it up and I see stars in the viewport but only a black spot for the planet. I do have Direct X 11, what's going on?

*A. If you have a laptop, check also that you are using the correct graphic card, not the low-end integrated one (often an intel one) ... If your main graphic card is an nvidia, you can change that by choosing Nvidia Control Panel in the desktop menu (Right mouse button), than go to Manage 3D settings and select the NVidia processor in the 'Preferred graphics processor', than retry the application. In the latest version (1.0.5 and up) of GD, there is a warning if you try to run the application with an intel CG.*

Q. Is there any tutorials available?

*A. Yes, there is a playlist available. Launch the software and go to Help->Online tutorials.*

Q. I can't export to resolution higher than 4k x 2k? I've read that GD can export to 16k x 8k…

*A.Anything above 4k requires the PRO DLC to be available, the basic version of the software is limited to 4k or less. The same goes for the snapshots, basic version can do only 1x snapshots, PRO DLC allows up to 8x resolution.*

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