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Main changes

New CSP sky shader

With the integration of a new sky shader in CSP, I decided to fully rework Sol.

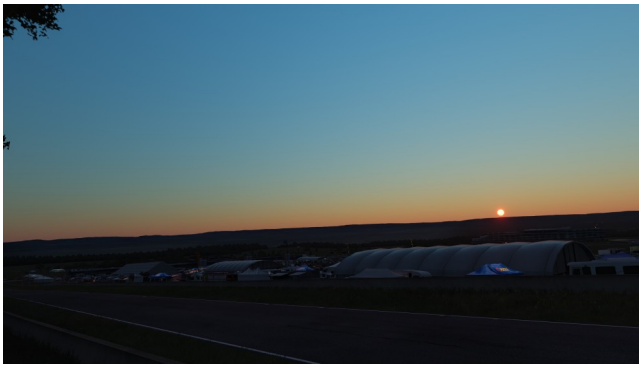
The new sky shader produces much better gradients and looks fantastic with low sun angles. But it has much more parameters and so the handling with former Sol structure would have caused many problems.

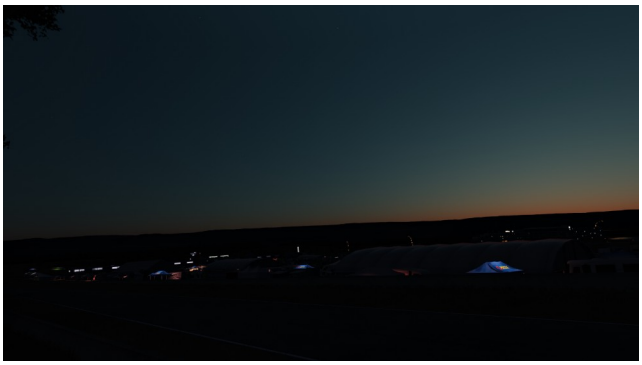
The Sky in Sol 2 is a sum of the new sky shader and some color gradients, to produce a very deep blue in the top of the dome. This blue is very artificial and can not be produced by the shader itself (same with the former sky shader).

With the new system it is much easier to generate heavy saturated parts, with less distortion or artifacts.

To use Sol 2.0, you need at least CSP 0.1.63

Some pictures of the clean sky shader, without blue booster



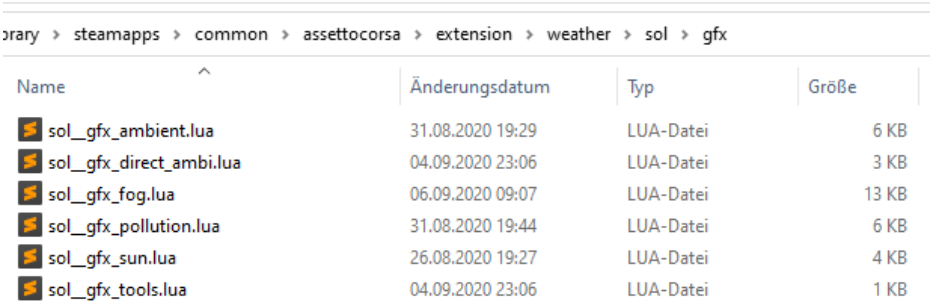


Base weather creation

With Sol 2.0 the weather build system was build from zero. Before i used 3 base weather. Every base weather consisted of 5 big LUTs (Look Up Tables), to create the values for sky, sun, ambient and fog. The resulting weather was a mix of 2 base weather. This gave me much freedom in creating the weather, but that caused a series of calculations to create the resulting weather.

With Sol 2.0 the resulting weather is created in different parts, but every part has a simple LUT. That reduces calculations a lot.

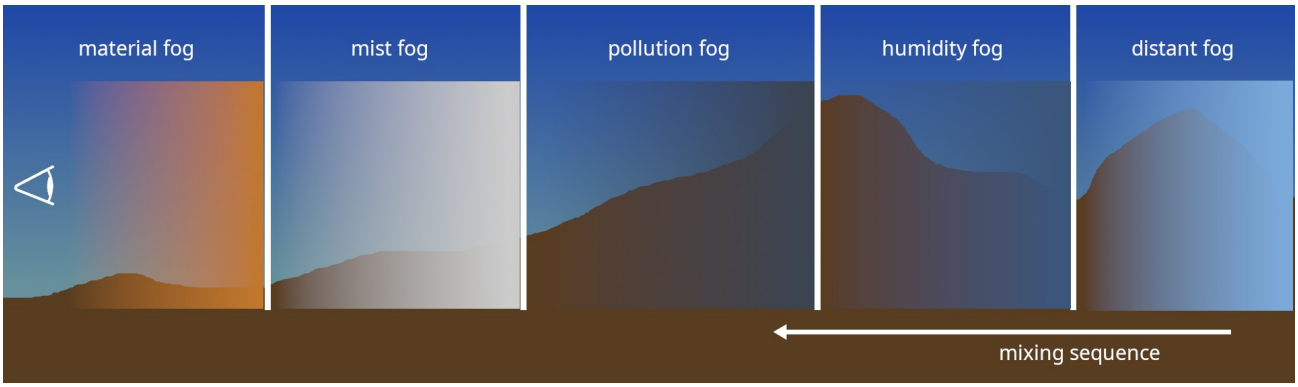
I separated the code for the weather graphics generation into the /gfx folder.



Sol_weather.lua now only contains the routines to manage the weather building.

Fog creation

Fog is now interpolated from a sequence of 5 fog layers.
Every fog layer has its own settings, like blend, distance or backlit.
All parameters are interpolated, using the dense of the individual fog layer.



This way of creating the final fog values helped a lot to get more consistency of the fog behaviour, esp. with sunsets, where the sky shader does huge changes.

Easy to use performance and night presets

Use the preset buttons to quickly adjust performance impact and the look of nighttimes.

Custom weather app

You can quickly composite your own weather with Sol_custom_weather.
Its ideal for taking screenshots in replays. It overwrites the existing weather.

Activate it, by selecting “use custom weather”.

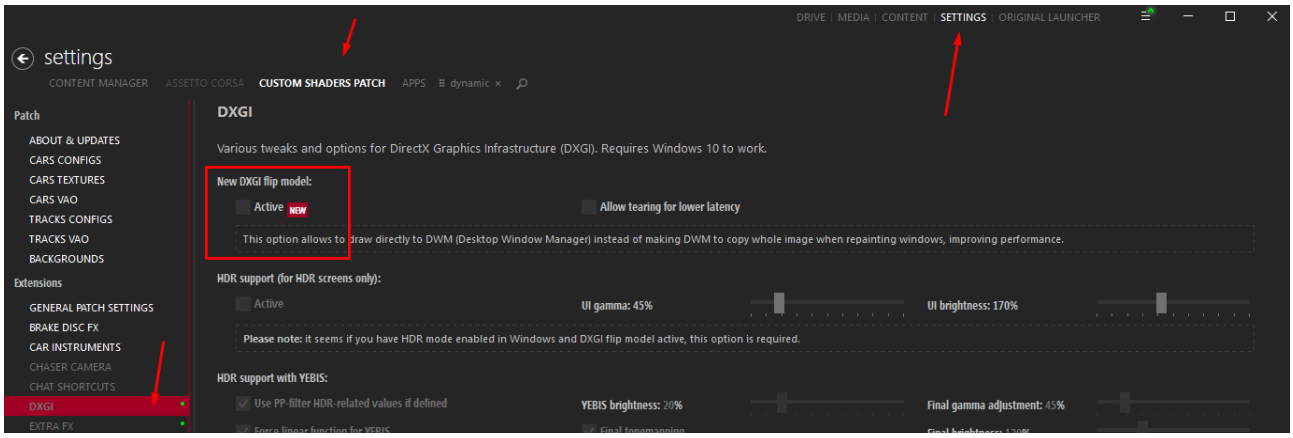
Post Processing deactivated

Sol 2.0 has a reworked look for deactivated PP.

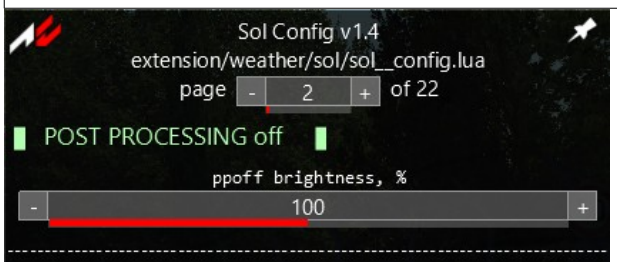
The sky, sun light, ambient light, fog, reflections brightness and many other things are adapted, to limit the color values. This prevents a clipping of colors and big white overblown parts.

Many user still use PP off for VR, to reach high frame rate. So I took care of it.
If you want to use PP Off, deactivate Post Processing in the Video settings:

Be sure you have “New DXGI flip model” deactivated !



With Sol you can even adjust the overall picture brightness.	Set sky preset 9, recommended to use with PP off



All clouds render methods included

With Sol 2.0, 2d clouds, “base implementation” 3d clouds and “sky sim” 3d clouds are usable in one implementation. They can be selected on Sol_config page 6.

2d clouds / clouds__render_method = 0

“base implementation” 3d clouds / clouds__render_method = 1

“sky sim” 3d clouds / clouds__render_method = 2

Advanced static distant clouds

With “sky sim” 3d clouds / clouds__render_method = 2 there now much improved static clouds, which will give a much better feel of distance.

New config parameters

Page 7 (Sky)

`day__horizon_glow`
(brightness, colorfulness of the horizont while day)

`night__horizon_glow`
(glow of horizont while night),

> parameter was moved from page 8

Page 8 (Clouds)

`clouds__distance_multiplier`
(How far clouds will be drawn, best at 1.75)

`clouds__quality`
(quality of the cloud's appearance, economic value = 0.7)

> Clouds consits of multiple textures. The higher the quality is, the more textures or used to form the cloud.

Page 9 (Sun)

`sun__fog_bloom`
(litten fog by the sun [distant fog, humidity, smog, mist, material])

Page 10 (Ambient)

`ambient__sun_color_balance`
(The saturation of ambient and sun light while day)

`ambient__AO_visibility`
(The visibility of ambient light with Ambient Occlusion)

Page 15 (Nerd Sky)

`nerd__sky_adjust.Scale`
(Scaling of the sky gradient)

Page 12 (Graphics)

`gfx__reflections_brightness`
`gfx__reflections_saturation`

> for manipulating reflections
> CSP 1.65-preview41 or later is needed for this

Page 18 (Nerd Fog)

nerd__fog_use_custom_distant_fog
(activate using custom distant fog – look at “Fog creation” for distant fog)

nerd__fog_custom_distant_fog.distance
nerd__fog_custom_distant_fog.blend
nerd__fog_custom_distant_fog.density
nerd__fog_custom_distant_fog.exponent
nerd__fog_custom_distant_fog.backlit
nerd__fog_custom_distant_fog.sky
fog modulation of the sky, this can be negative and then it will brighten the horizont

nerd__fog_custom_distant_fog.night
night visibility

nerd__fog_custom_distant_fog.Hue
nerd__fog_custom_distant_fog.Saturation
nerd__fog_custom_distant_fog.Level

Page 21 (CSP Lights)

(custom control of CSP lights)

nerd__csp_lights_adjust.bounced_day = 0.00
nerd__csp_lights_adjust.bounced_night = 1.00
nerd__csp_lights_adjust.emissive_day = 0.65
nerd__csp_lights_adjust.emissive_night = 1.00

New custom config variables

Custom Sky Preset

Use this variables to make your own sky preset:

```
SOL__custom_sky_preset.hue = 0
SOL__custom_sky_preset.saturation = 1
SOL__custom_sky_preset.level = 1
SOL__custom_sky_preset.atmosphere_color = rgb(1,1,1)
SOL__custom_sky_preset.booster = 0
SOL__custom_sky_preset.cloud_adaption = 1
SOL__custom_sky_preset.cloud_opacity = 1
SOL__custom_sky_preset.cloud_level = 1
SOL__custom_sky_preset.cloud_saturation = 1
SOL__custom_sky_preset.cloud_saturation_limit = 1
```

To use it, set

```
sky__blue_preset = 8
```

Look in:
\steamapps\common\assettocorsa\system\cfg\ppfilters\sol_custom_configs\
custom config example V2.lua

New custom config functions

update_sol_custom_config__post()

With this function, you can manipulate the core weatherFX elements after all Sol calculations/weatherFX calls

```
function update_sol_custom_config__post()

     -- a HSV variable (color) has 3 members:
     -- color.h ( Hue (0=red, 60=yellow, 120=green, 180=cyan,
240=blue, 315=magenta) )
     -- color.s ( Saturation )
     -- color.v ( Value )

     local sun = GFX__get_sun_light_HSV()
     local amb = GFX__get_ambient_light_HSV()
     local fog = GFX__get_fog_color_HSV()

     amb.v = amb.v * (1 + 2.0*duskdawn_compensate(0))
     fog.v = fog.v * (1 + 0.5*duskdawn_compensate(0))
     sun.v = sun.v * sun_compensate(2)

     GFX__set_ambient_light_HSV(amb)
     GFX__set_fog_color_HSV(fog)
     GFX__set_sun_light_HSV(sun)
end
```

Look in:
\steamapps\common\assettocorsa\system\cfg\ppfilters\sol_custom_configs\
custom config example V2.lua

Changes to Track adaptions, Sol track config parameters

Due to the big changes, I decided to make new parameters for Sol 2.
If you want to customize:

`HORIZON_OFFSET`
: mostly for adapting the clouds height to the track

`DOME_SIZE`
: Mostly for adapting the track's horizon textures. Initial value is 35000m. Reduce it, if the textures are already washed out.
DOME_SIZE also changes the look of the clouds sky curvature.

`FOG_LEVEL`
`FOG_BLEND`
`FOG_DISTANCE`

`HUMIDITY_OFFSET`
: Preset a humidity value for a track, e.g. 0.85 for tracks near the sea or 0.0 for deserts

use [SOL2] as section name

```
64  [SOL]
65  HORIZON_OFFSET=-0.7
66  SUN_DAWN=2
67  SUN_DUSK=3.5
68  SMOG_MORNING=0.075
69  SMOG_NOON=0.2
70  SMOG_EVENING=0.3
71  EXPOSURE_FIX=1
72
73  [SOL2]
74  HORIZON_OFFSET=-1.00
75  DOME_SIZE = 25000
76  FOG_LEVEL=1.00
77  FOG_BLEND=1.00
78  FOG_DISTANCE=1.00
```