Maxx-XP
SKYMAXX PRO

Version 5

Sundog™
Software

X
AVIATION

Support Documentation

TL;DR version:

Open up Plugins / SkyMAXX Pro / Configure Clouds, and adjust the "cloud area covered" setting as high as you can go while maintaining good performance on your system.

Introduction:

Thank you for supporting Maxx-XP, and congratulations on your purchase of SkyMAXX Pro 5. Our goal with version five was to introduce the most detailed, best-performing volumetric clouds possible.

SkyMAXX Pro 5 is a plug-in driven add-on that creates a dynamic sky in X-Plane 10 or 11 by adding key features lacking in the default cloud engine. The overall look and feel of X-Plane is drastically changed, and it brings a level of excitement to your simulation experience. Creating this environment, we needed a few things not available in the default cloud engine.

SkyMAXX Pro 5 Key Features:

- ✓ True volumetric ray-casted cumulus and overcast cloud options.
- ✓ Vulkan compatibility with X-Plane 11.50+
- ✓ Cloud movement depending on wind speed and direction.
- ✓ Clouds morph with weather conditions.
- ✓ A true cirrus layer with static contrails.
- ✓ 3D procedurally drawn clouds.
- ✓ Procedurally generated sky box option (based on the Hosek-Wilkie sky model) ✓ Crepuscular rays (god rays).
- ✓ Custom sky colors.
- ✓ Clouds illuminated by landing lights.
- ✓ Performance and appearance tuning using a custom user interface.
- ✓ High resolution cloud puffs for more realism.
- ✓ Cloud shadows with adjustable intensity - uses a new shadowing technique never before seen in X-Plane, with no measurable framerate impact.
- ✓ Lens flare is now available, a first for X-Plane.
- ✓ Towering cumulus clouds and cumulonimbus will be added when thunderstorms are present.
- ✓ Integrates automatically with SoundMaxx for 3D thunder sound effects
- ✓ Solid and broken 3D stratiform clouds with hyper-realistic shading and in-cloud effects
- ✓ Dynamic impostors for large cloud draw distances at high performance
- ✓ Built-in video and system memory monitor
- ✓ Soft cloud blending of clouds with terrain
- ✓ Works with Real Weather Connector for localized weather effects
- ✓ Replacement precipitation system with mixed rain / sleet / snow effects
- ✓ Support for VR
- ✓ Library of cloud art variations for cumulus, overcast, and cirrus representations
- ✓ Compatible with X-Plane 10 (64-bit) and 11, Windows and MacOS

Me, Frank, the BETA team and XA worked hard to bring you the very best for XPlane, I hope you enjoy our efforts.

John Spahn Maxx-XP

Requirements & Installation:

We made SkyMAXX Pro scalable and as frame rate friendly as possible. With that said, X-Plane 11 is a very resource-hungry program when you factor in the global scenery, aircraft simulation, weather engine, and AI traffic, to name a few features. Since SkyMAXX Pro is better on frame rates over the default cloud engine, a good rule of thumb is: if you run XPlane 11 well, SkyMAXX Pro will enhance your simulation experience when its default settings are used.
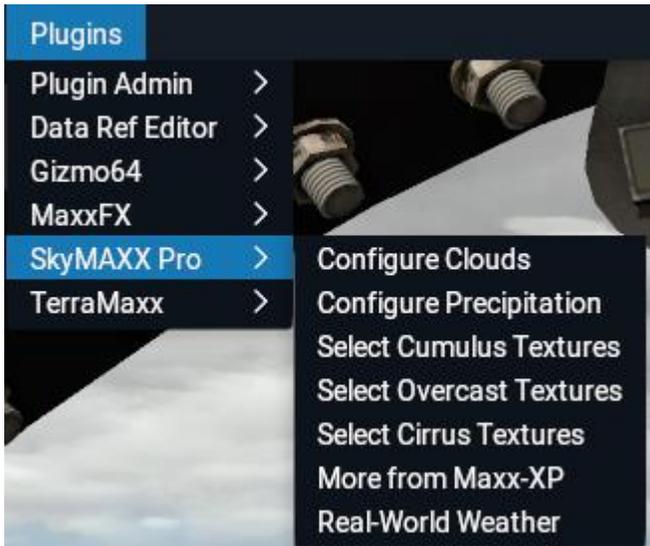
Basic Requirements:

✓   Mid level GPU(video card) with at least 1GB RAM, <u>2-8 GB recommended</u>

✓   Multi-core processor

✓   8 GB system RAM **Not Recommended:**

✗   Integrated GPU's not from Nvidia or ATI

✗   Running other programs while X-Plane is running

✗   Old outdated system drivers

✗   A system that hasn't been optimized for gaming
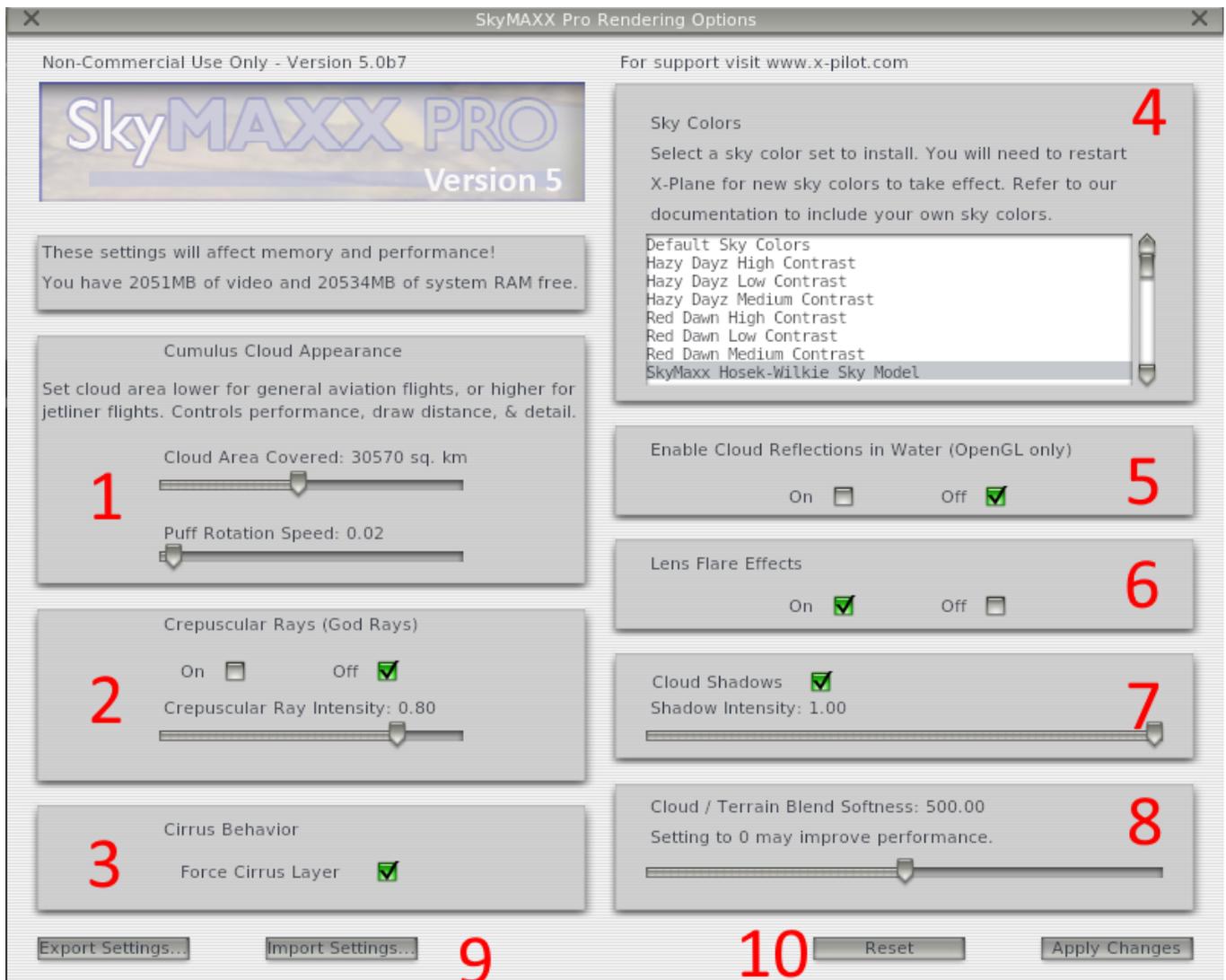
This is just a basic set of requirements to help you get the most out of SkyMAXX Pro. Please check out forums like http://X-Pilot.com for more information on hardware solutions for XPlane 11.

Configuration:

Once development started rolling along, the need for a user interface became apparent right away. Our main focus was to give the end-user control over the appearance and performance, with an easy to use UI easily accessible from within X-Plane.

To access the UI go to the X-Plane 11 Menu/Plugins/SkyMAXX Pro/, then Select **"Configure Clouds"** to bring up SkyMAXX Pro's main configuration screen. (You'll only see "Real World Weather" in this menu if you have also installed our Real Weather Connector product.

Memory Report

SkyMaxx Pro's settings offer a lot of power to create stunning scenes with highly detailed clouds that extend all the way to the horizon, but increasing these settings comes at a memory cost. If your computer is already running tight on memory due to custom scenery or other add-ons, turning up these settings may push your system over the edge, resulting in dramatically decreased performance or even unexplained crashes. To help you adjust these settings safely, we display the current amount of free video and system memory on your system. You may adjust these settings, hit the "apply changes" button, and see their impact on your free memory in real time. If memory gets critically low while flying, SkyMaxx Pro will display a warning message as well.

(1) Cumulus Cloud Appearance

Cloud Area Covered

This is the most important setting in SkyMaxx Pro! It controls how far out clouds are drawn from your plane. If you tend to fly lower-altitude general aviation flights, you'll want to keep this setting on the lower end – at or below 10,000 square kilometers – for the best performance and the best cloud detail. If you fly high altitude jetliners primarily, then turn this up in order to see clouds that extend further out toward the horizon. At high cloud area settings, the detail of individual clouds is reduced in order to preserve performance and to look more realistic from high altitudes.

Keep in mind that low visibility conditions in X-Plane's weather may result in clouds not being drawn as far as you have specified. Also, if you're having trouble with your frame-rates in X-Plane, reducing this setting is likely to improve performance.

Puff Rotation Speed

We included a rotation effect in SkyMAXX Pro, which works alongside the morphing function of the cloud puffs. Adjusting the slider all the way left will turn this effect off, and moving it right will increase the speed. This has no effect on volumetric clouds, only the other, particle-based options.

(2) Crepuscular Rays (God Rays)

The crepuscular rays are an expensive element in SkyMAXX Pro. If you have low-end hardware, I suggest turning these off to increase performance. The intensity adjustment is there for you to tweak the god rays for your tastes. If using VR, we recommend disabling this feature.
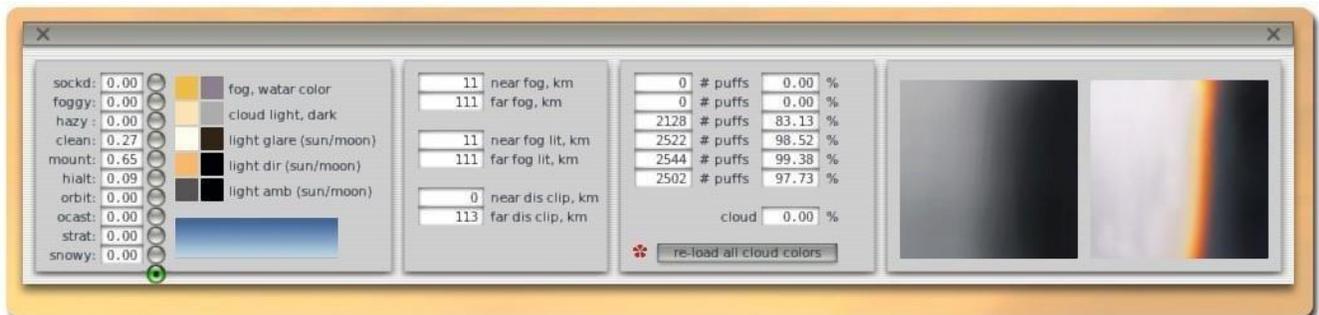
(3) Force Cirrus Layer

This option will force at least one high cirrus cloud layer in every scene, even if the currently simulated conditions do not explicitly call for one.

(4) Sky Colors

By default, SkyMaxx Pro will use our procedurally generated Hosek-Wilkie sky model. This replaces X-Plane's "sky colors" based sky with a real physical simulation of the sky at every point. If you wish to use X-Plane's default sky colors, or one of the alternative sky color sets provided with SkyMAXX Pro, you may select those here.

Six sky colors are included with SkyMAXX Pro, optimized to work seamlessly with the cloud engine. Once a sky color is selected, SkyMAXX will automatically back up the default sky colors and place them inside the root of the plug-in. There is no need to manually backup your default skies. To restore your default sky colors, just select them from the UI.

To see your new sky color selection, either restart X-Plane 10 or go to the XPlane menu/special/show sky colors and hit the "re-load all cloud colors" button:

(5) Cloud Reflections

Use these checkboxes to either enable or disable cloud reflections on the water. Reflections are not available under Vulkan due to API limitations. *(NOTE cloud reflections with water reflections set to low may look strange,   recommend setting to medium or higher from the X-Plane rendering options.)*

(6) Lens Flare

Use the check boxes to enable or disable lens flare; we thought this option added a more dynamic feel to the skies. Lens flare is automatically disabled in VR, as camera effects don't make sense in VR.

(7) Cloud Shadows

Frank found a way and man does it look pretty; we don't rely on the XPlane default for cloud shadows but instead we employed a entirely new system to bring this feature to X-Plane. The intensity can be adjusted via a slider and can be turned off using the check box. If using VR, disable cloud shadows for the best results.

(8) Cloud / Terrain Blend Softness

This controls the blending between clouds and terrain in cases where they intersect. You may adjust it anywhere between hard edges and clouds that dissipate entirely when near terrain.

(9) Import / Export Settings

These buttons let you name and save a set of settings for SkyMaxx Pro, and restore them later based on the name you gave them. These settings are saved to files inside the Resources\plugins\SilverLining\SavedSettings folder inside your X-Plane installation folder. You can trade these files with your friends, but be aware that settings files made on Windows may not work on Mac's, and vice-versa.

(10) Reset/Apply Changes

If you want to reset SkyMaxx Pro to its default settings, hit the "reset" button to get back to our recommended settings for the best compromise between performance and visual quality. If you want to apply a set of changes to the scene without closing out the configuration screen, "apply changes" lets you try them out. Keep in mind that if you have a large cloud draw distance setting, it may take a few seconds for the clouds to be regenerated when your settings are applied.
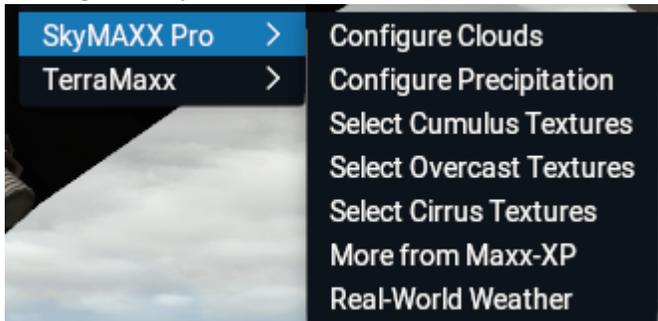
Precipitation:

SkyMaxx Pro 5 includes a new precipitation system that can replace X-Plane's built-in precipitation. Due to API limitations, these features are only available when X-Plane's OpenGL renderer is selected. Its benefits include:
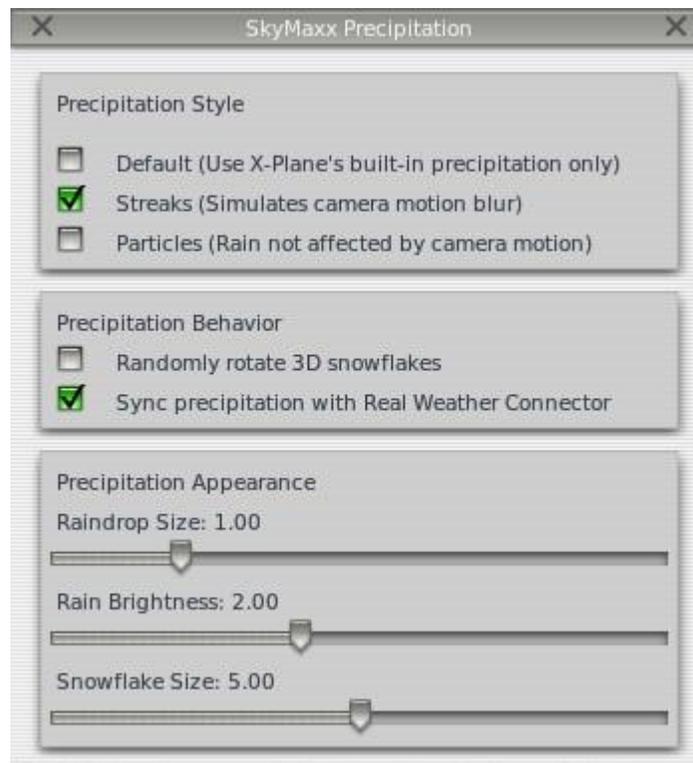
- Models rain, sleet, wet snow, and dry snow based on ambient temperature
- Different precipitation types can be mixed together
- Precipitation is attached to individual clouds; if you fly below a break in the clouds, precipitation will start and stop accordingly.
- Integrates with Real Weather Connector to reflect METAR precipitation reports accurately
- Precipitation is lit by landing lights

- Precipitation draws properly against SkyMAXX Pro's clouds and is consistent with SkyMAXX Pro's cloud positions
- Rain appearance changes realistically based on view angles and lighting angles
- True 3D precipitation with raindrops and snowflakes both near and far
- Extensive user customization options

To configure SkyMAXX Pro's precipitation system, select **"Configure Precipitation"** from the Plugins/SkyMAXX Pro menu:

You should see the following screen:

Precipitation Style:

- **Default:** Disables our precipitation system and uses X-Plane's built-in system instead. When this is selected, other options in the precipitation UI will be removed. If you want to stick with the rain you're used to in X-Plane, choose Default.
- **Streaks:** Rain and sleet effects will "streak" with camera motion, much like X-Plane's built-in effects. This leads to a sort of "warp drive" starfield effect while flying through rain, which some people like, and some don't. It's really more of a film effect than a reflection of reality, but it's what most people expect to see.
- **Particles:** The appearance of individual raindrops is not affected by the camera's motion. This is closer to reality but not what many people expect to see.
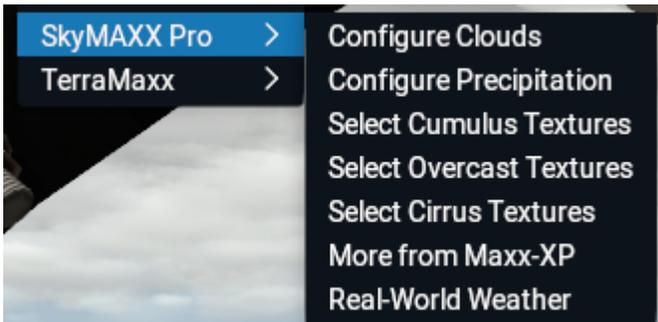
Precipitation Behavior:

- **Randomly rotate 3D snowflakes:** If selected, individual snowflakes will be randomly spun relative to the view angle. While this is closer to reality, it makes snowflakes harder to see and less uniform in appearance, which most people don't expect to see. If this is not selected, snowflakes will always be drawn facing the camera instead.
- **Sync precipitation with Real Weather Connector:** If you have our Real Weather Connector product installed, our precipitation system can communicate with it to accurately reflect the precipitation type and amount being reported by real-world weather stations. If this option is unchecked, or real world weather is not enabled in X-Plane, we will read X-Plane's global datarefs instead to determine the local precipitation type based on the precipitation amount and ambient temperature XPlane gives us.

Precipitation Appearance:

- **Raindrop size:** This affects the width of rain and sleet particles or streaks. If you're having a hard time seeing the rain, increasing this setting can help. And if you think the rain is too visible, try reducing it.
- **Rain brightness:** This controls how opaque individual rain or sleet particles are. Increasing this setting makes rain and sleet stand out more against the background, making them more visible. Reducing this setting makes the effect more subtle.
- **Snowflake size:** Controls the size of individual snowflakes when wet or dry snow is being simulated. Use this to make the snow effect more or less pronounced.
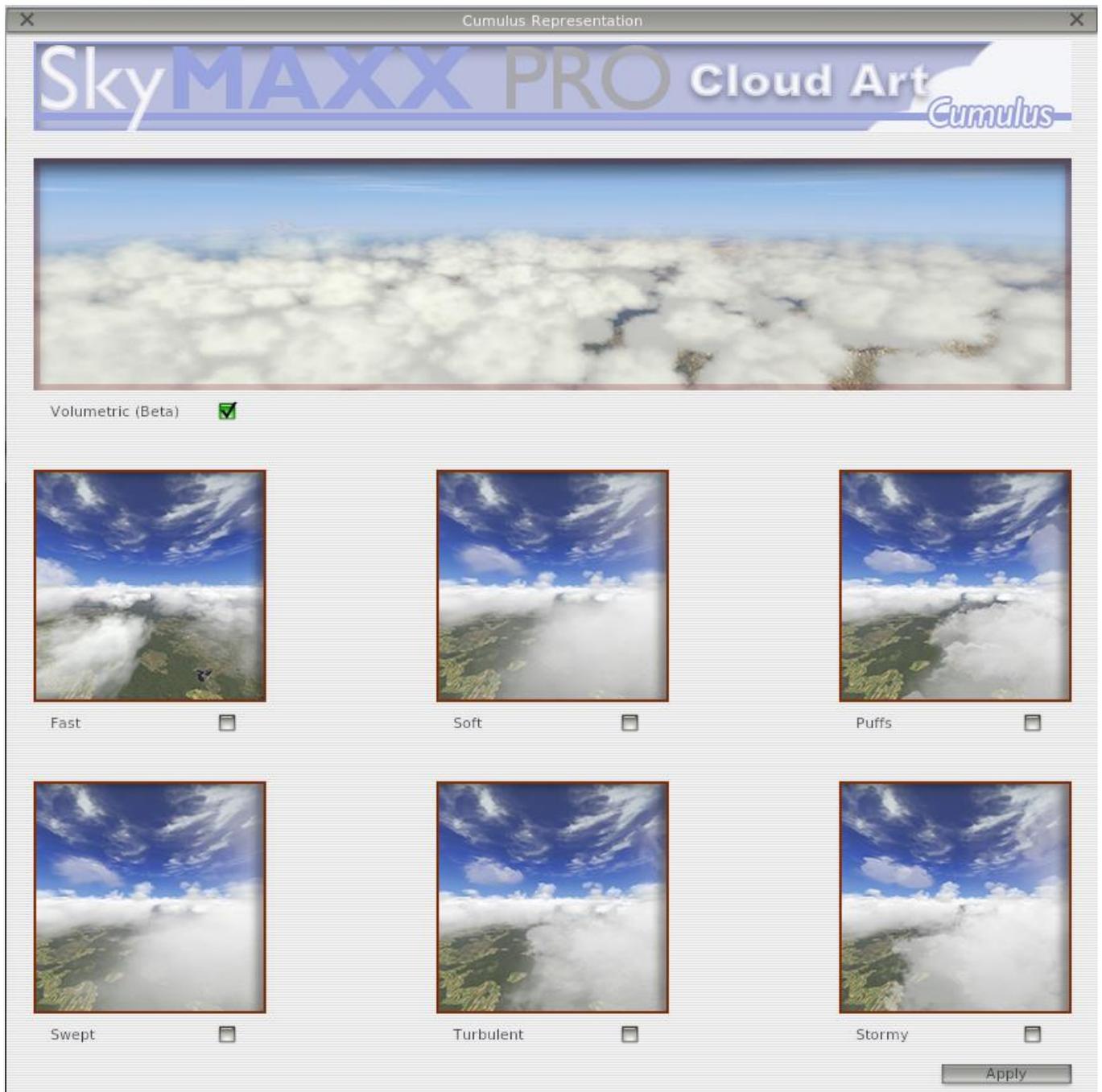
Selecting Cloud Art:

From the plugin menu, you'll see options to customize the representations for cumulus, overcast, and cirrus clouds:
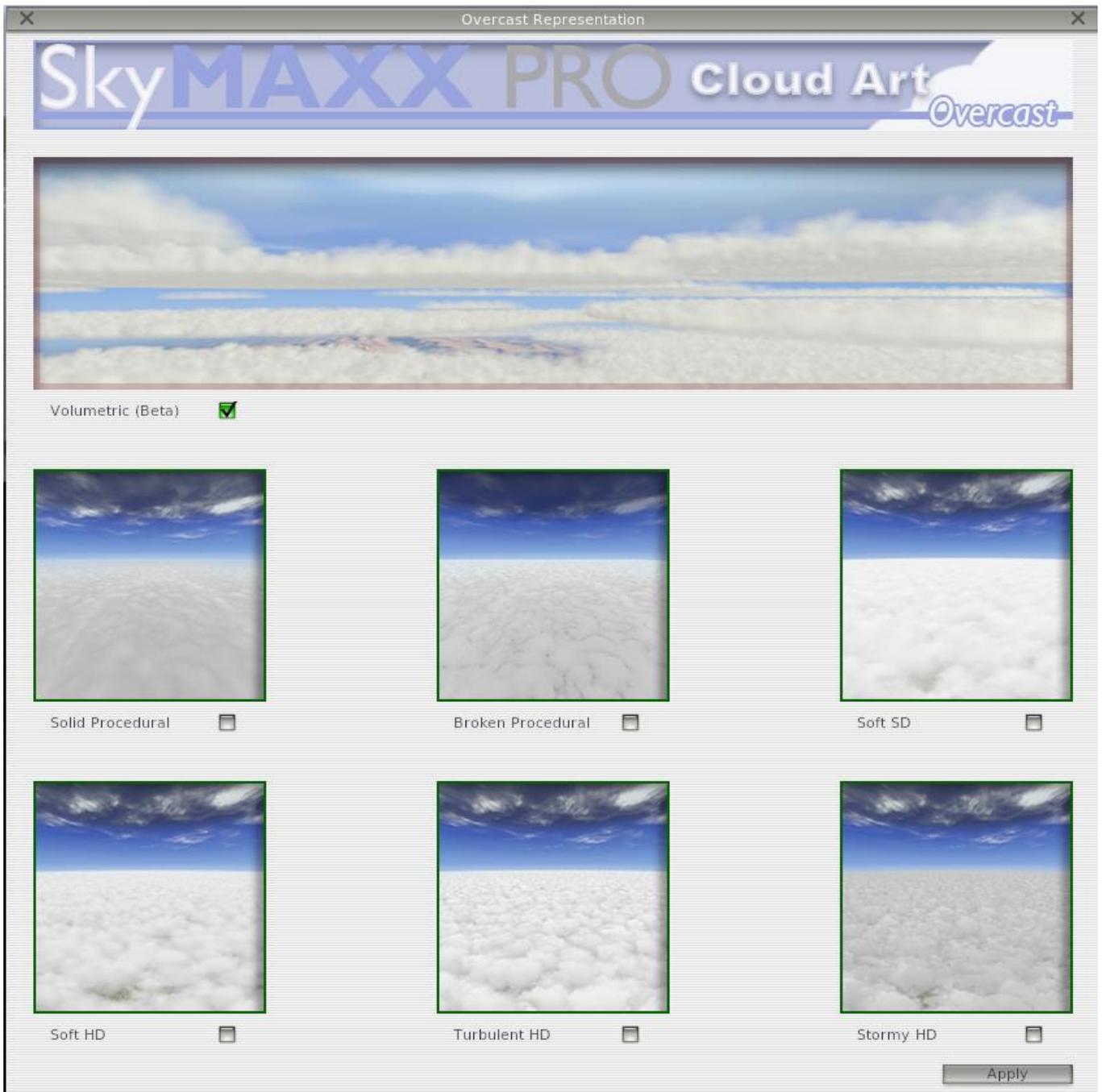

Each cloud type presents you with six options to choose from. For cumulus clouds, you may select from a range of styles that allow you to find your own preference for smoothness, crispness, and performance. The changes are subtle, but you'll notice them.
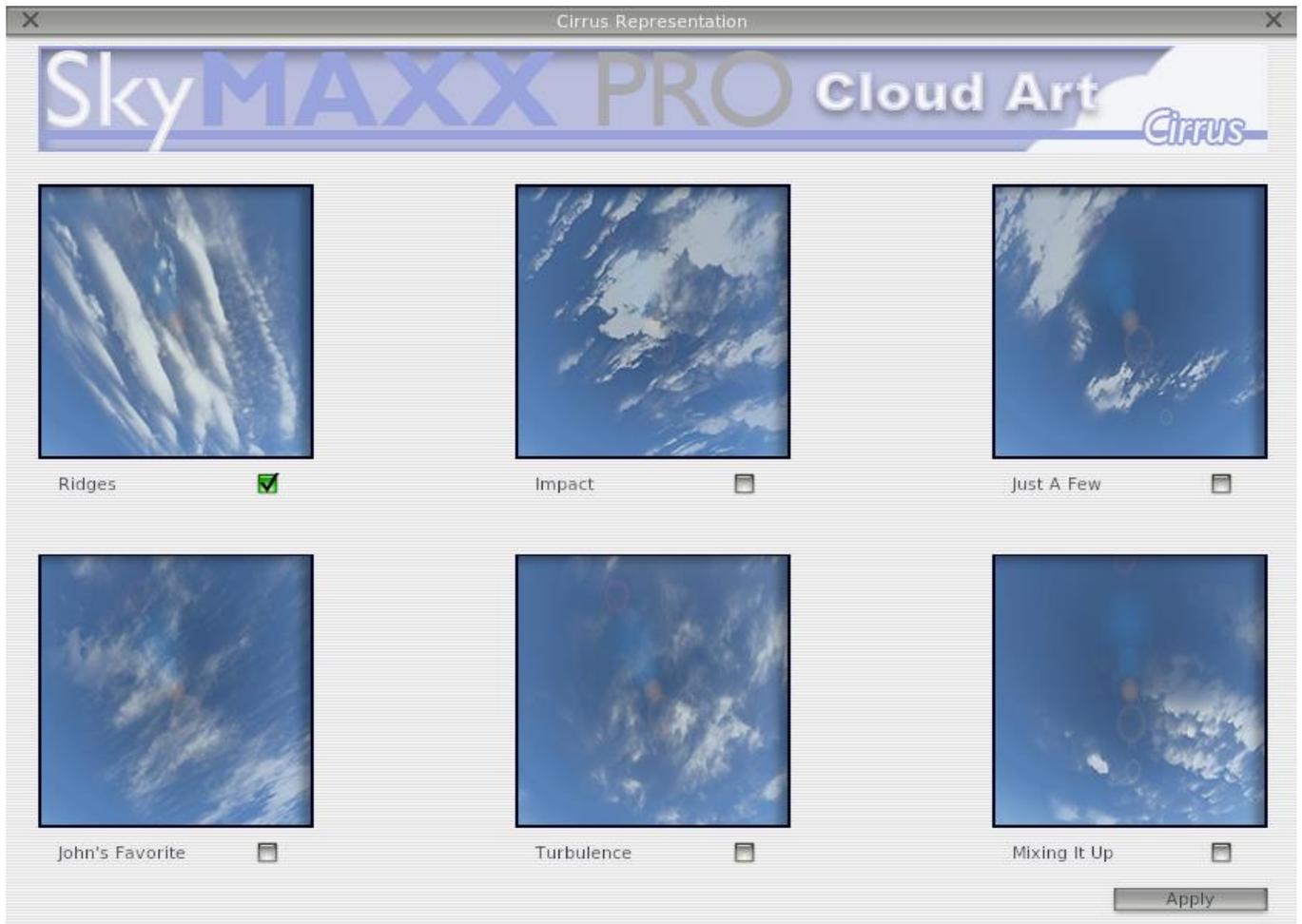
In SkyMaxx Pro 5, we've introduced a new "volumetric" option. These clouds use the same cloud growth model as the other cloud types, but renders them using GPU ray-casting instead of via billboard particles. This eliminates any anomalies of 2D billboards visibly rotating as you approach the clouds, and on many systems, they perform better as well. The downside is that volumetric clouds consume large amounts of memory on your video card; if you don't have large amounts of video memory, or you have already filled it up with custom scenery and the like, volumetric clouds could result in decreased performance or even crashes if you exhaust your memory entirely. You may need to adjust the "cloud area covered" setting in the main configuration screen to find a good balance for your system.

Overcast provides a wider range of options. "Solid" and "broken" are procedural 3D clouds that do not use puffs, or billboards, but they will only appear when overcast conditions are covering the entire visible area at a similar cloud altitude. "Volumetric" uses the same GPU ray-casting technique used for volumetric cumulus clouds, described above. The remaining options use large, wide, densely packed billboards to cover the sky with overcast clouds that are more puffy in appearance.

Cirrus clouds will appear at high altitude if the "force cirrus" option is enabled, or you are using Real Weather Connector and an external weather injector such as FSGRW that specifies cirrus cloud placement. There are several stylistic choices for this clouds available to you as well:

In each case, simply select the cloud art you're interested in and the scene will update to allow you to preview the appearance. Once you've settled on a texture set, hit "apply" and your selection will be saved.

Modifying SkyMAXX Pro:

I included a few features in SkyMAXX Pro to allow for updates or user submitted content, and extend the product by allowing some of the art assets to be modified. Some art assets are subjective and by giving the end-user options we hope to generate more appeal.

Sky Colors

This is one of the most subjective topics I have seen in the X-Plane community. With SkyMAXX Pro, you have the ability to install as many different sky colors sets as you would like. Once installed, they will show up in the user interface and be

selectable. There are many freeware options out there already. Find the sky set that appeals to you.

Installation:

Navigate to Resources/plugins/silverlining/skyColors/... Drop your sky set into the skyColors folder, fire up X-Plane 10, and load the new sky color set using the configuration option described in section 2 of this manual.

Using SkyMAXX Pro with VR:

SkyMaxx Pro is compatible with VR headsets, but maintaining high performance is critical in VR. Before enabling VR mode, **we highly recommend disabling "crepuscular rays"** in the SkyMaxx Pro settings, and lowering the "cloud area covered" slider as needed to ensure high framerates.

When VR is active, you may wish to also disable the cloud shadow and cloud/terrain blending features in SkyMaxx Pro's configuration screen to preserve the performance VR requires.

X-Plane will use its own precipitation effects instead of SkyMaxx Pro's when in VR mode.

Support:

Customer support may be contacted through www.xaviation.com.
Also check out the official support forum on www.xpilot.com.

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