VANGUARDFX



Vanguard Cloud

Volumetric skies for 3ds Max — twenty weathers, real cloud physics on the GPU, any shape as a cloud.

USER GUIDE · VERSION 1.7.33 · 3DS MAX 2024 – 2027

vanguardfx.pro

1 Getting started

VanguardCloud is a sky object. You draw a domain in the viewport and it fills with clouds you shape by type, preset or physics simulation. It renders in **Vanguard Render** (included in the installer), and exports VDB volumes for Corona, V-Ray and other renderers.

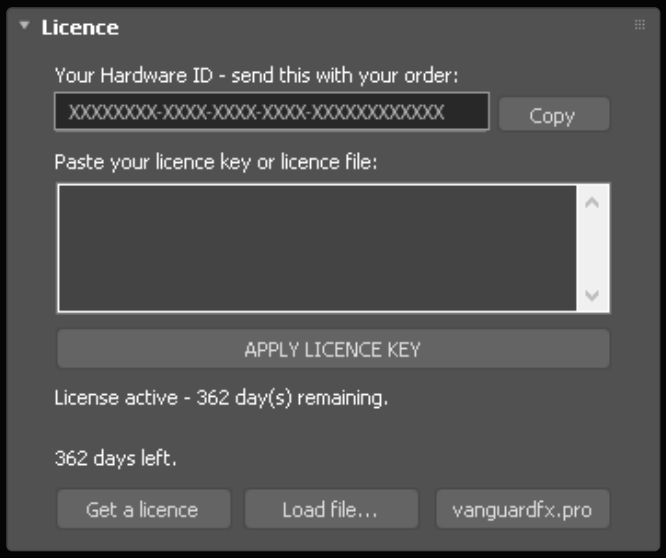
Install

1. Download the installer from **vanguardfx.pro/cloud.html** (or *My licences* after purchase).
2. Close every 3ds Max, run `VanguardFX_Cloud_Setup_v1.7.33.exe`, tick your Max versions (2024 – 2027).
3. If Windows says "Windows protected your PC", press *More info* > *Run anyway*.
4. The installer adds VanguardCloud, the Cloud Material and the Vanguard Render renderer it needs.

Activate

1. Create a VanguardCloud, open the **Modify** panel > **Licence** rollout and press **Copy** beside *Your Hardware ID*.
2. Buy a plan on vanguardfx.pro and paste the Hardware ID at checkout. One licence is one computer.
3. Sign in > **My licences** > download the licence file, then press **Load file…** (or paste it and press **Apply licence key**). No restart.

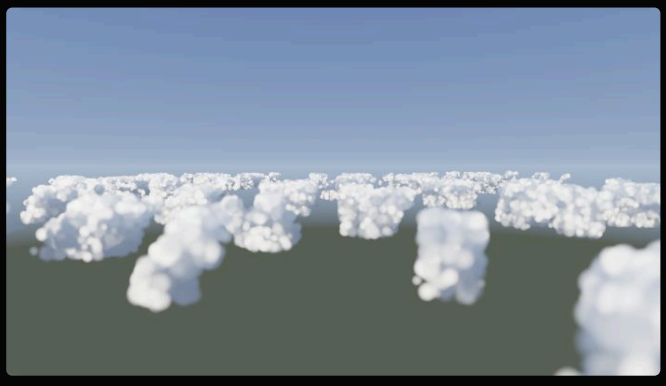
> A VanguardCloud licence also lets Vanguard Render draw clouds, sky and lightning. Rendering meshes in Vanguard Render needs its own licence.



Licence rollout (Hardware ID hidden here).

Where it appears in Max

- **Create > Geometry > VanguardFX > VanguardCloud**: drag the domain in a top viewport.
- **Modify panel**: the VanguardCloud rollout with every setting, plus Licence and About / Help.
- **Material Editor > Cloud Material**: built for you by *Build / Update Cloud Material*.
- **Render Setup > Assign Renderer > Vanguard Render**: its Sun and lighting, Sky and atmosphere and Lightning settings shape the light on the clouds.



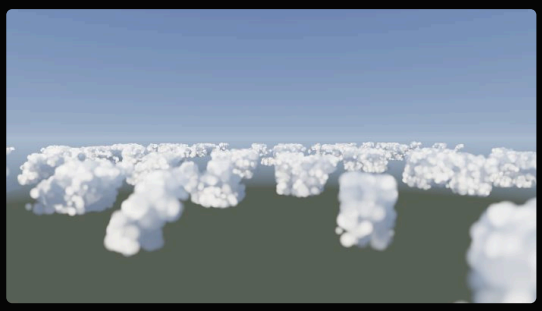
The viewport shows the sky as cloud points.

2 Your first sky in 5 steps

1

Create the sky

Create > Geometry > VanguardFX > VanguardCloud, drag a domain in the Top view. 4 × 4 km is the default; make it reach past what the camera sees.



2

Pick a preset

In the **Preset** group choose a sky — *Fair weather*, *Storm*, *Golden hour*… All the values above are set for you.



3

Assign Vanguard Render

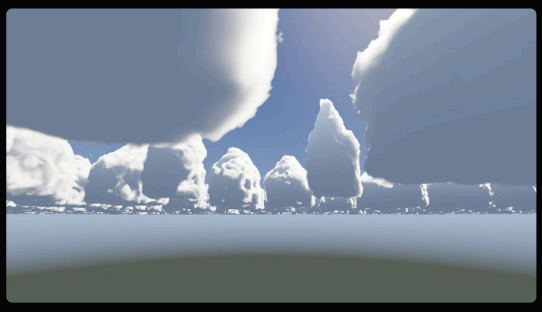
F10 > Common > Assign Renderer > **Vanguard Render**, preset *Preview*. Aim the sun with Sun and lighting, or let a Sun Positioner drive it.



4

Shape it

Change **Coverage**, **Cloud type** and **Base height**; add a second deck of altocumulus or cirrus higher up. Scrub the timeline — the wind moves it.



5

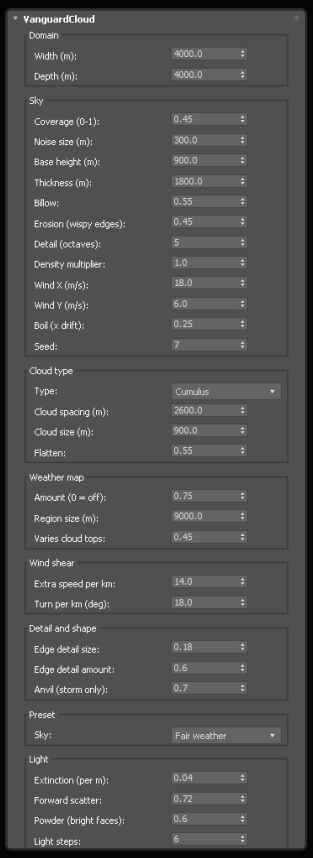
Render

Press Render. Use the *Production* preset for finals; the render cache bakes the sky once per frame so animation stays fast.

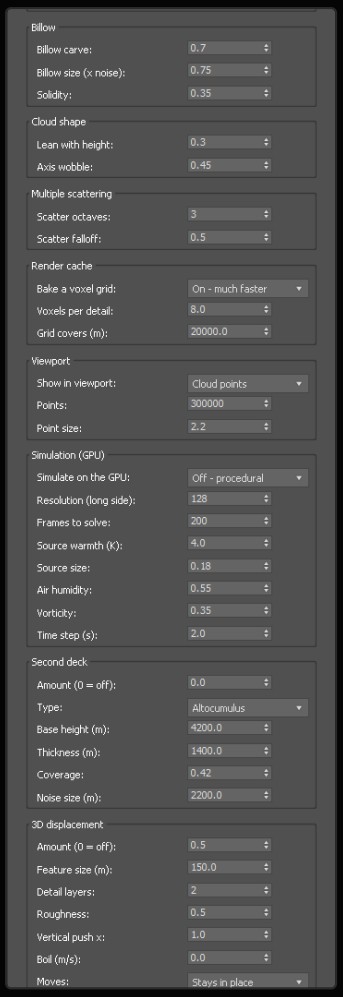


3 Every control explained

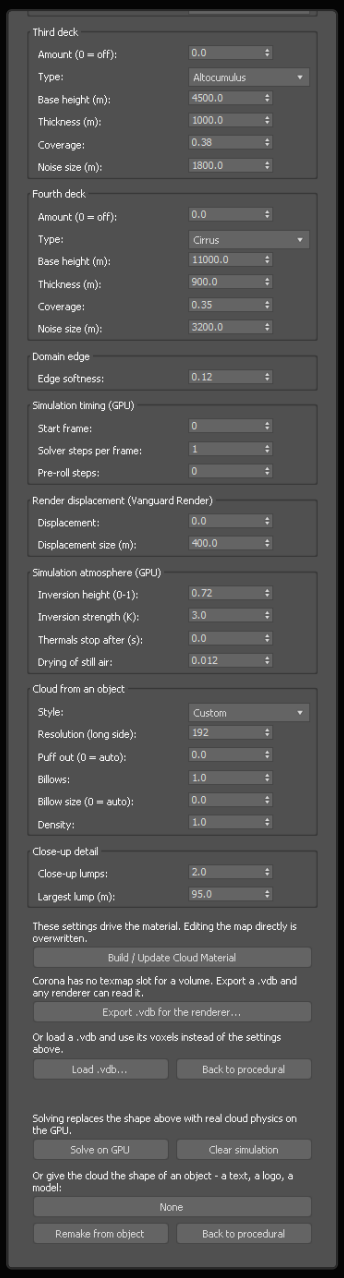
Everything is on one rollout in the Modify panel, saved with the scene and animatable. Groups below follow the panel from top to bottom.



Control	Range	Default	What it does · when to change it
DOMAIN			
Width (m)	1 – 1e+06	4000	Size of the cloud domain along X. Clouds exist only inside it; make it reach past the camera's view.
Depth (m)	1 – 1e+06	4000	Size of the domain along Y.
SKY			
Coverage (0-1)	0 – 1	0.45	Share of the sky that is cloud. 0.2 scattered, 0.45 fair weather, 0.8 nearly overcast.
Noise size (m)	5 – 100000	300	Size of the base noise. Larger gives bigger, calmer cloud masses.
Base height (m)	-10000 – 100000	900	Height of the flat cloud bases above the ground.
Thickness (m)	10 – 100000	1800	Height from base to the tallest tops.
Billow	0 – 3	0.55	Rounded, puffy top shapes.
Erosion (wispy edges)	0 – 1	0.45	Eats the edges into wisps. 0 hard edges, 1 very wispy.
Detail (octaves)	1 – 8	5	Noise octaves. More is finer detail and slower.
Density multiplier	0 – 100	1	Multiplies the cloud's density: thin and bright or thick and dark.
Wind X (m/s)	-500 – 500	18	Wind along X. The sky drifts over the timeline.
Wind Y (m/s)	-500 – 500	6	Wind along Y.
Boil (x drift)	0 – 4	0.25	How fast the shapes change while they drift.
Seed	0 – 99999	7	Change for a different sky with the same settings.
CLOUD TYPE			
Type	list	Cumulus	Layer, Cumulus, Stratocumulus, Cirrus, Cumulonimbus, Fog or Altocumulus. Sets how the field is built.
Cloud spacing (m)	50 – 200000	2600	Average distance between separate clouds.
Cloud size (m)	10 – 100000	900	Size of one cloud.
Flatten	0.05 – 4	0.55	Squashes clouds vertically; lower is taller.
WEATHER MAP			
Amount (0 = off)	0 – 1	0.75	Large clear and thick regions kilometres apart, so the sky reads as weather. 0 = off.
Region size (m)	500 – 500000	9000	Size of those regions.
Varies cloud tops	0 – 1	0.45	How much the regions also vary cloud-top height.
WIND SHEAR			
Extra speed per km	0 – 300	14	Wind gets faster with height, so tops run ahead of bases.
Turn per km (deg)	-180 – 180	18	Wind turns with height, leaning clouds sideways.
DETAIL AND SHAPE			
Edge detail size	0.01 – 1	0.18	Size of the small edge detail, relative to the cloud.
Edge detail amount	0 – 2	0.6	Strength of that edge detail.
Anvil (storm only)	0 – 2	0.7	Spread of the flat anvil top. Storm type only.
PRESET			
Sky	list	Fair weather	20 skies in one click: Fair weather, Overcast, Storm, Cirrus, Mackerel sky, Fog bank, Supercell, Sea of clouds, Golden hour and more. Sets the values above.
LIGHT			
Extinction (per m)	0.0001 – 1	0.04	How quickly light dies inside the cloud. Higher is denser and darker.
Forward scatter	-0.95 – 0.95	0.72	Forward scattering: bright silver edges when looking towards the sun.
Powder (bright faces)	0 – 1	0.6	Darker, crisper sun-facing edges, as in real cumulus.
Light steps	1 – 32	6	Samples towards the sun. More gives cleaner self-shadowing.
BILLOW			
Billow carve	0 – 1	0.7	How deeply the billows carve the surface.
Billow size (x noise)	0.05 – 4	0.75	Billow size relative to the base noise.
Solidity	0.05 – 1	0.35	How solid the core is under the billows.
CLOUD SHAPE			
Lean with height	-2 – 2	0.3	Clouds lean as they grow taller.
Axis wobble	0 – 2	0.45	Bends each cloud's vertical axis.
MULTIPLE SCATTERING			
Scatter octaves	1 – 6	3	Orders of multiple scattering. 3 is the soft, luminous look.
Scatter falloff	0.05 – 0.95	0.5	How quickly each further order fades.



Control	Range	Default	What it does · when to change it
RENDER CACHE			
Bake a voxel grid	list	On - much faster	Bake the field into a voxel grid once per frame. Much faster; leave on.
Voxels per detail	2 – 16	8	Voxels per detail feature. Raise for close-ups.
Grid covers (m)	100 – 1e+06	20000	Area the baked grid covers around the camera.
VIEWPORT			
Show in viewport	list	Cloud points	Box only, cloud points, or dense points in the viewport.
Points	1000 – 6e+07	300000	Number of viewport points. Lower if the viewport gets slow.
Point size	0.2 – 8	2.2	Size of each point.
SIMULATION (GPU)			
Simulate on the GPU	list	Off - procedural	Off uses the procedural sky. Solve once or On the timeline grows real cloud physics on the GPU.
Resolution (long side)	32 – 512	128	Grid cells along the domain's long side.
Frames to solve	1 – 4000	200	Frames solved for Solve once.
Source warmth (K)	0.1 – 20	4	How warm the rising thermals are. Warmer is taller clouds.
Source size	0.02 – 0.9	0.18	Size of the warm sources, as a fraction of the domain.
Air humidity	0.05 – 0.99	0.55	Moisture in the air: more humidity, more cloud.
Vorticity	0 – 2	0.35	Keeps small swirls alive.
Time step (s)	0.1 – 100	2	Seconds of weather per solver step.
SECOND DECK			
Amount (0 = off)	0 – 1	0	Second cloud layer. 0 = off.
Type	list	Altocumulus	Type of that layer.
Base height (m)	-10000 – 100000	4200	Its base height.
Thickness (m)	10 – 100000	1400	Its thickness.
Coverage	0 – 1	0.42	Its coverage.
Noise size (m)	5 – 100000	2200	Its noise size.
3D DISPLACEMENT			
Amount (0 = off)	0 – 2	0.5	Large 3D displacement that breaks up the shapes. 0 = off.
Feature size (m)	5 – 5000	150	Size of the displaced features.
Detail layers	1 – 5	2	Layers of displacement detail.
Roughness	0 – 1	0.5	How rough each finer layer is.
Vertical push x	0 – 3	1	Extra upward push.
Boil (m/s)	0 – 100	0	Speed at which the displacement churns.
Moves	list	Stays in place	Displacement stays in place or moves with the wind.
THIRD DECK			
Amount (0 = off)	0 – 1	0	Third cloud layer. 0 = off.
Type	list	Altocumulus	Type of that layer.
Base height (m)	-10000 – 100000	4500	Its base height.
Thickness (m)	10 – 100000	1000	Its thickness.
Coverage	0 – 1	0.38	Its coverage.
Noise size (m)	5 – 100000	1800	Its noise size.
FOURTH DECK			
Amount (0 = off)	0 – 1	0	Fourth layer, usually high cirrus. 0 = off.
Type	list	Cirrus	Type of that layer.
Base height (m)	-10000 – 100000	11000	Its base height.
Thickness (m)	10 – 100000	900	Its thickness.
Coverage	0 – 1	0.35	Its coverage.
Noise size (m)	5 – 100000	3200	Its noise size.



Control	Range	Default	What it does · when to change it
DOMAIN EDGE			
Edge softness	0 – 0.5	0.12	Fades clouds out near the domain's edges so no hard wall shows.
SIMULATION TIMING (GPU)			
Start frame	-100000 – 100000	0	Frame where the timeline simulation starts.
Solver steps per frame	1 – 50	1	Solver steps per frame. More is faster weather.
Pre-roll steps	0 – 5000	0	Steps solved before the start frame, so the sky is already formed.
RENDER DISPLACEMENT (VANGUARD RENDER)			
Displacement	0 – 2	0	Extra fine displacement at render time in Vanguard Render.
Displacement size (m)	10 – 100000	400	Size of that displacement.
SIMULATION ATMOSPHERE (GPU)			
Inversion height (0-1)	0.1 – 1	0.72	Height (fraction of the domain) where a warm lid stops rising air: flat tops.
Inversion strength (K)	0 – 30	3	Strength of that lid.
Thermals stop after (s)	0 – 100000	0	Stop the thermals after this time to let clouds decay. 0 = never.
Drying of still air	0 – 0.5	0.012	How fast still air dries the cloud out.
CLOUD FROM AN OBJECT			
Style	list	Custom	Look of a cloud made from an object: puffy, cauliflower, wispy smoke, storm, readable text, thin mist.
Resolution (long side)	32 – 384	192	Voxel resolution of the object's cloud.
Puff out (0 = auto)	0 – 1e+06	0	How far the cloud swells past the object's surface. 0 = automatic.
Billows	0 – 2	1	Strength of billows on it.
Billow size (0 = auto)	0 – 1e+06	0	Billow size. 0 = automatic.
Density	0 – 10	1	Its density.
CLOSE-UP DETAIL			
Close-up lumps	0 – 3	2	Small lumps that keep edges sharp when the camera is close or inside the cloud.
Largest lump (m)	5 – 2000	95	Size of the largest lump.

Buttons

Build / Update Cloud Material	Makes or refreshes the Cloud Material that carries these settings to the renderer.
Export .vdb for the renderer...	Writes the sky as an OpenVDB volume: load it in Corona, V-Ray, Arnold or any renderer that reads VDB.
Load .vdb... / Back to procedural	Use voxels from a VDB file instead of the settings above, and return.
Solve on GPU / Clear simulation	Run the cloud physics with the Simulation settings, or discard the result.
Pick object... / Remake from object	Any mesh — text, a logo, a model — becomes a cloud in the chosen Style.



Cumulus over the sea, VanguardCloud in Vanguard Render.

4 Recipes

Summer afternoon

Preset **Fair weather**; coverage **0.35**; base **1100 m**, thickness **1500 m**; deck 4 cirrus amount **0.4**; sun elevation **35°**.

Thunderstorm

Preset **Supercell**; density **1.6**; anvil **1.2**; Vanguard Render lightning **on**, 10/min; sun intensity **0.4**, haze amount **0.8**.

Golden hour

Preset **Golden hour**; sun elevation **4°**, warmth **0.7**; Sky follows the sun **on**; forward scatter **0.8**.

Flying through cloud

Type **Cumulus**; render cache voxels **12**; close-up lumps **2.5**, largest lump **60 m**; light steps **10**.

Logo made of cloud

Pick object: your text mesh; style **Readable text**; resolution **256**; billows **0.6**; wind **0** so it holds still.

Clouds growing over time

Simulate **On the timeline**; resolution **160**; humidity **0.7**; source warmth **6 K**; pre-roll **50**.



Fair weather



Storm



Overcast

5 Rendering & export

- **Vanguard Render** renders VanguardCloud natively on the GPU — the fastest and best-looking path. Clouds also shadow VanguardCity and any mesh.
- **Stills:** preset Production, samples 64–128, render cache on.
- **Animation:** wind and boil move the sky with no simulation; render cache on, time limit per frame.
- **Corona, V-Ray, Arnold:** press *Export .vdb for the renderer…* and load the file in that renderer's volume object (Corona VolumeGrid, V-Ray VRayVolumeGrid).
- **Passes:** Vanguard Render's VR Clouds Only, Sky, Direct Sun, Skylight GI, Haze, Z Depth and Thickness elements.

6 Troubleshooting & FAQ

› **The viewport is slow.**
Lower *Points* in the Viewport group, or set Show in viewport to *Box only* while animating.

› **The render shows no clouds.**
Check the renderer is **Vanguard Render** (or that the exported VDB is loaded in your renderer), the camera looks at the domain, and Coverage and Density are above 0.

› **Clouds stop at a hard wall.**
The domain is too small for the view. Enlarge Width/Depth, or raise *Edge softness*.

› **Clouds look soft or blurry up close.**
Raise *Voxels per detail* in Render cache and *Close-up lumps*.

› **Rendering is slow.**
Keep *Bake a voxel grid* on, use the Preview preset while working, and lower Light steps.

› **The sky looks the same every frame / changes too fast.**
Wind X/Y move it; *Boil* changes the shapes. Set both to 0 for a still sky.

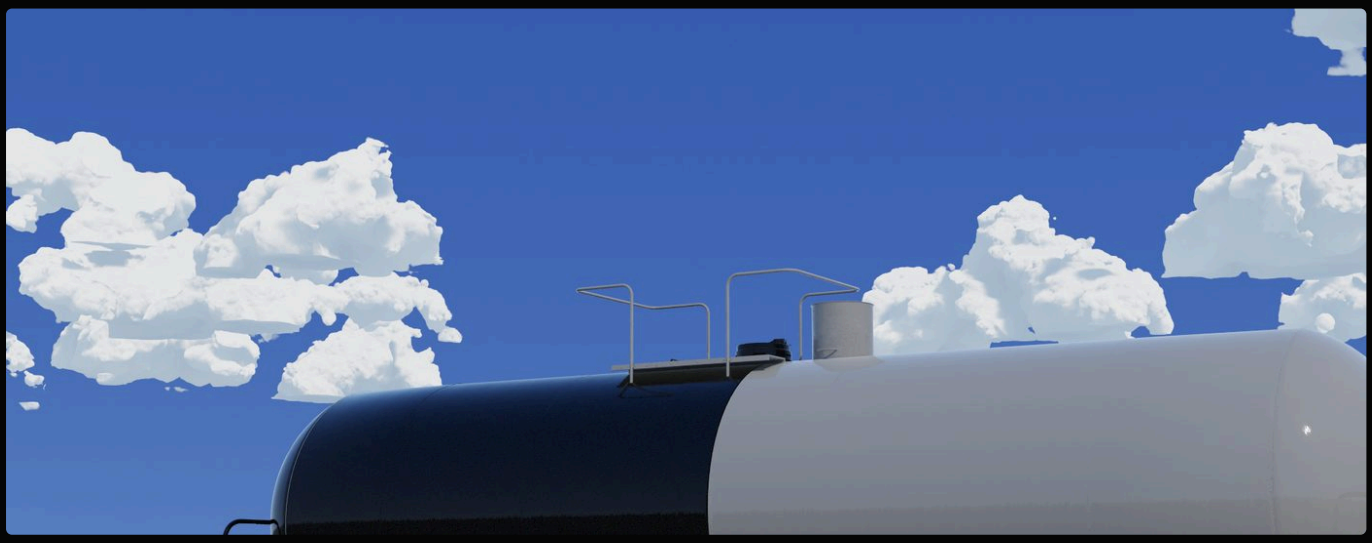
› **"Solve on GPU" does nothing.**
Set *Simulate on the GPU* to Solve once or On the timeline first, and make sure an NVIDIA card is present.

› **"That is your licence key, not your licence file."**
Sign in at vanguardfx.pro > My licences > Download licence file, then Load file….

› **Meshes don't render, only clouds.**
Expected with a VanguardCloud licence alone: meshes in Vanguard Render need a Vanguard Render licence.

7 Requirements & licence

- 3ds Max **2024, 2025, 2026 or 2027**, Windows 10/11 64-bit.
- **NVIDIA GPU** with CUDA for rendering and simulation.
- 16 GB RAM or more.
- **One licence, one computer**, tied to the Hardware ID.
- Plans and prices: vanguardfx.pro/cloud.html.
- Support: **support@vanguardfx.pro** — include the version from the About / Help rollout.



VanguardCloud over a scene, rendered in Vanguard Render.

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