UniStorm Documentation

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Getting Started

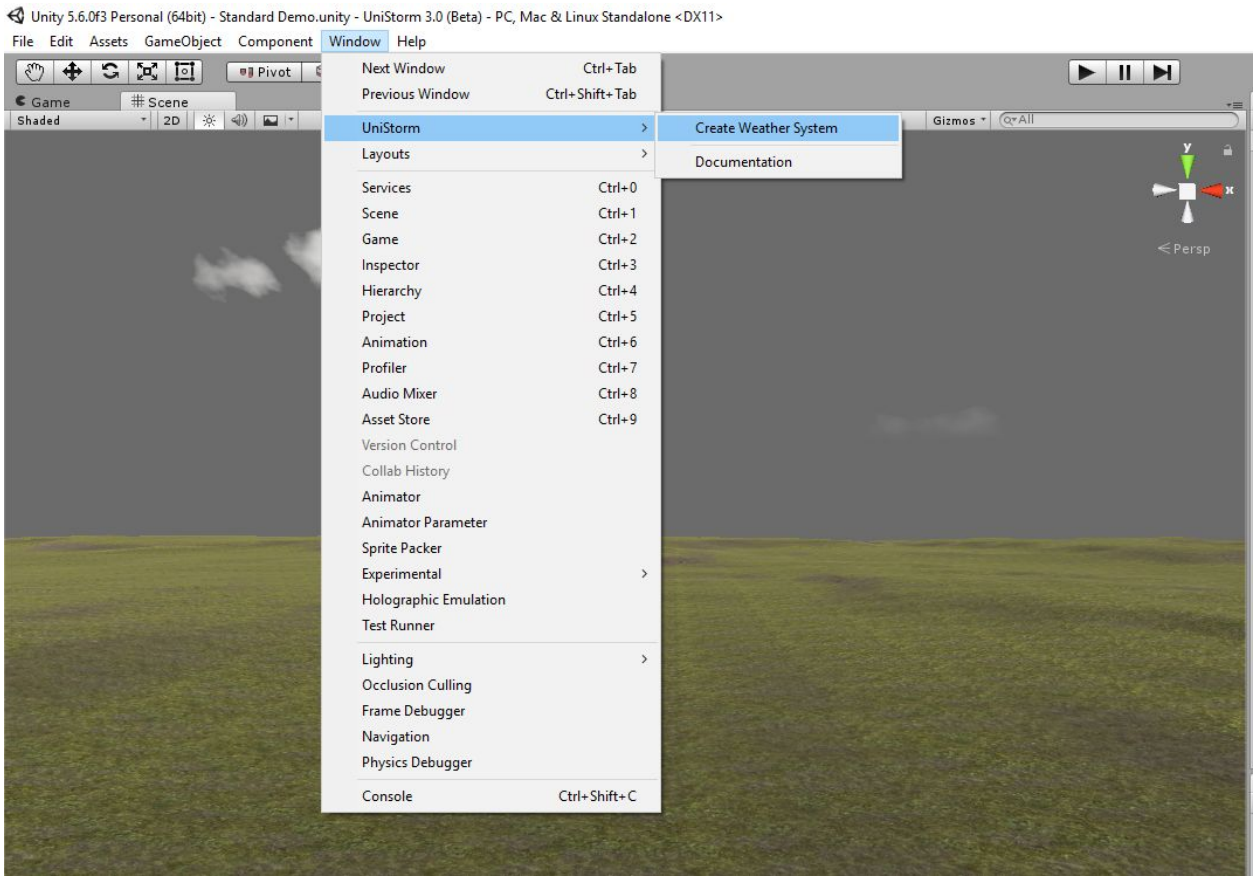
This section will cover getting started with UniStorm. The best way to learn UniStorm is to test the demo scenes. These demo scenes demonstrate some of the basic functionality UniStorm can do.

Creating a Weather System

To create a UniStorm system and add one to your scene, go to Window>UniStorm>Create Weather System in Unity using the top toolbar. This will add a UniStorm System prefab to your scene, which is the same system from the demo scenes. It has 25 weather types each with their own unique particle effects, sounds, and/or settings.

It is important that the main portion of your terrain is around the position of 0 on the Y axis. Most terrain generators, such as Gaia and MapMagic will do this automatically so there shouldn't have to be too much adjusting.

This newly created weather system has everything you need to begin testing in your scene. You can customize its settings or weather types to your game's/project's needs.

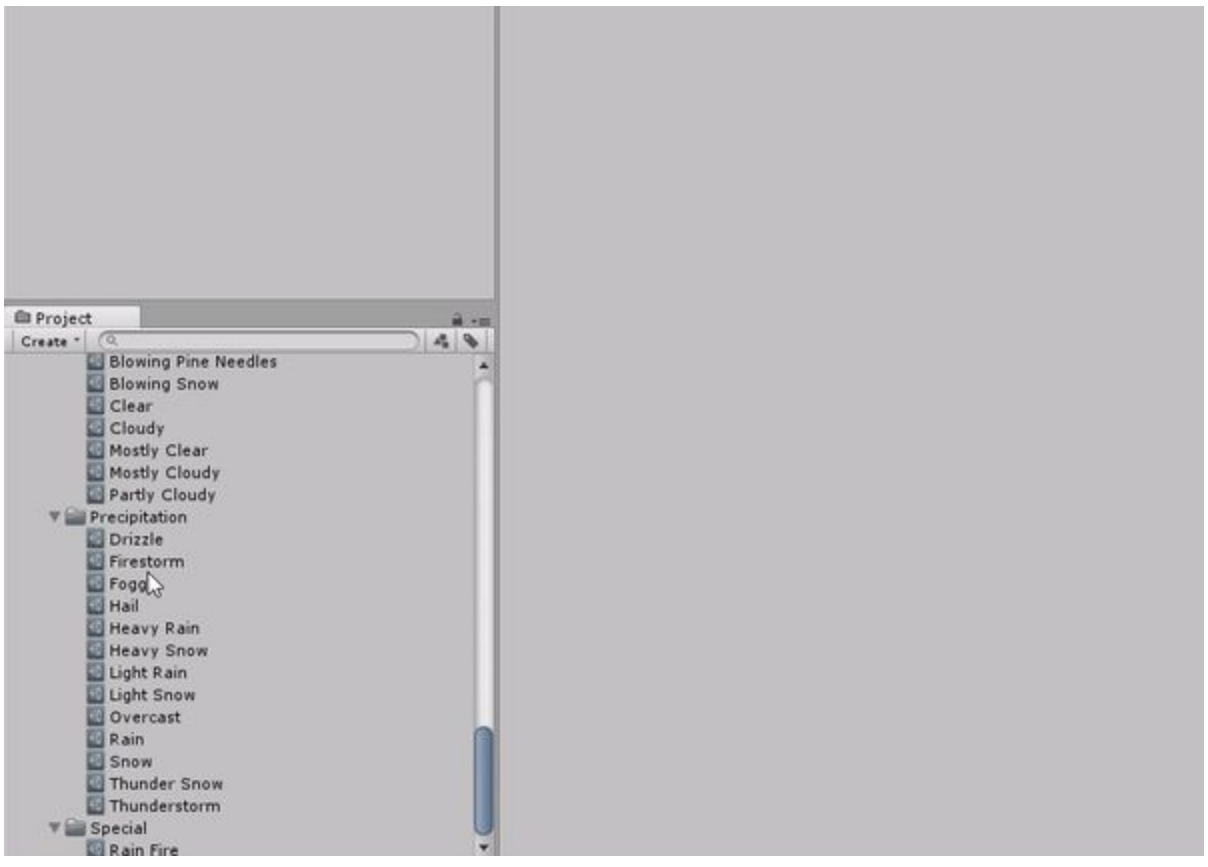


Creating a Custom Weather Type

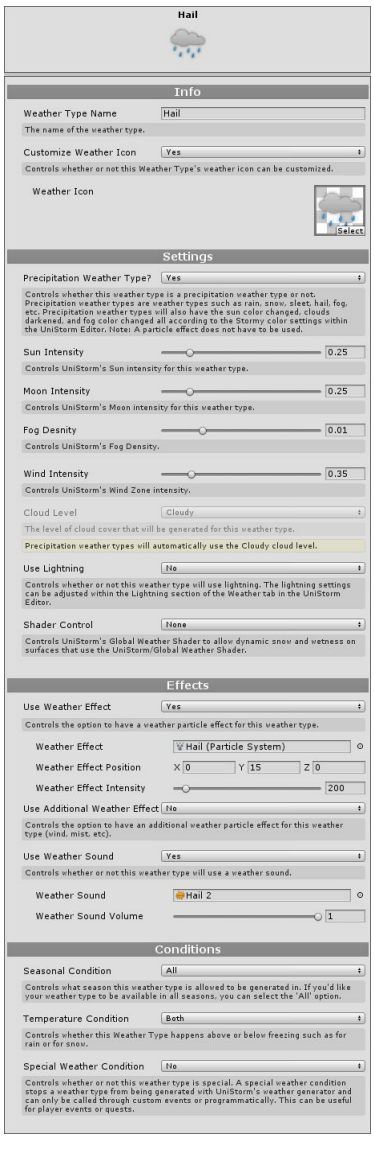
One of the best new features with UniStorm 3.0 is the move to modular weather. Now, modular weather might sound complicated, but in fact, it makes things much easier and far more customizable. Modular weather works by storing weather types in scriptable objects. These scriptable objects allow users to create custom weather types. Sand storms, auroras, hail storms, thunderstorms, etc are all possible. There are no limits to how many weather types UniStorm can use, and best of all, they allow users to use their own custom particle effects, settings, and sounds for each weather type.

The modular weather system is split up into two categories, Precipitation weather types and Non-Precipitation weather types. When weather is generated, and the conditions are appropriate such as temperature, UniStorm will generate weather accordingly. This allows the most customization while keeping the main system's code length to a minimum.

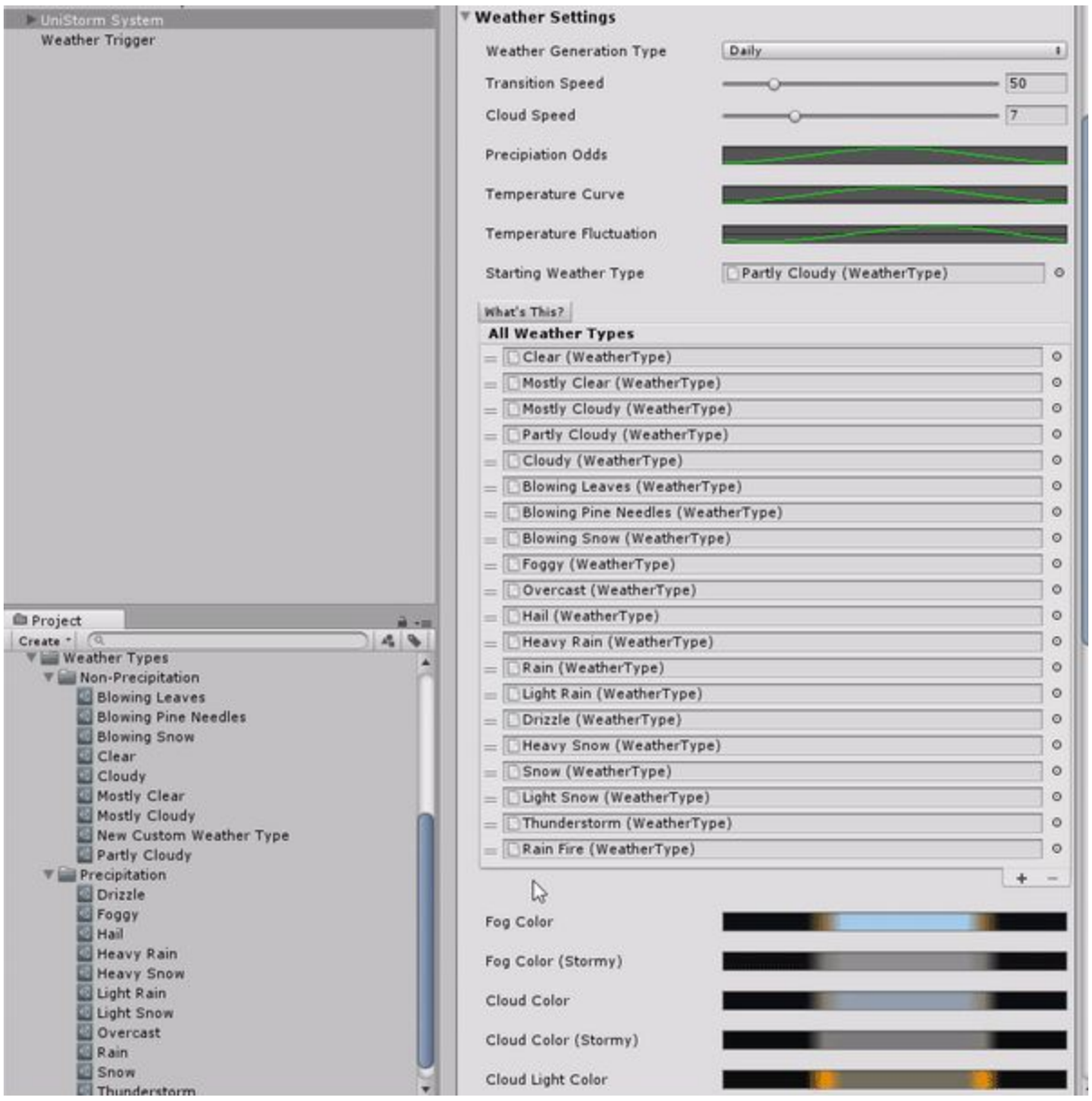
Step 1) To create a custom weather type, right click in the Project tab and go to Create>UniStorm>New Weather Type.



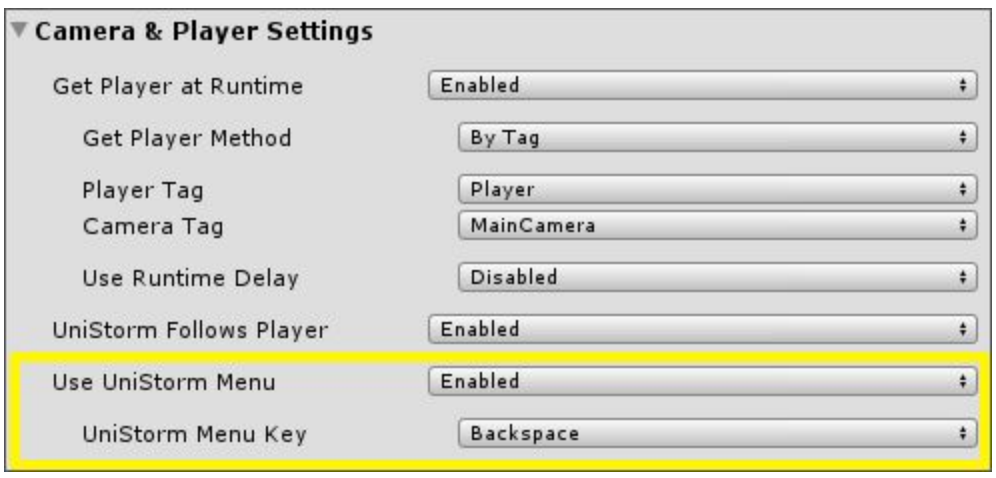
Step 2) Name and edit your newly created weather type's settings. The weather type's name will be used for UniStorm's UI, if it's enabled. You will be able to apply particle effects, change the cloud cover, apply sounds, change the fog intensity, and much more. A weather type also has conditions for it to only generate in certain seasons or temperatures. If you use a condition, that condition will need to be met in order for UniStorm to properly generate it. If it's not met, another weather type with the appropriate conditions will be generated in its place.



Step 3) After you have finished creating and editing your weather type, you will need to apply it to UniStorm's All Weather Types list. This will allow it to create all needed components for your weather type when UniStorm initializes. There is nothing more you have to do to set things up. At any time, you can edit your weather types, however, it is recommended that this is not done during runtime.



Step 4) If you would like to test your newly created weather type, go to the Camera & Player Settings tab. Ensure that Use UniStorm Menu is enabled. Pick a UniStorm Menu Key (which is the key that will allow you to enable and disable the menu) that suits your game.

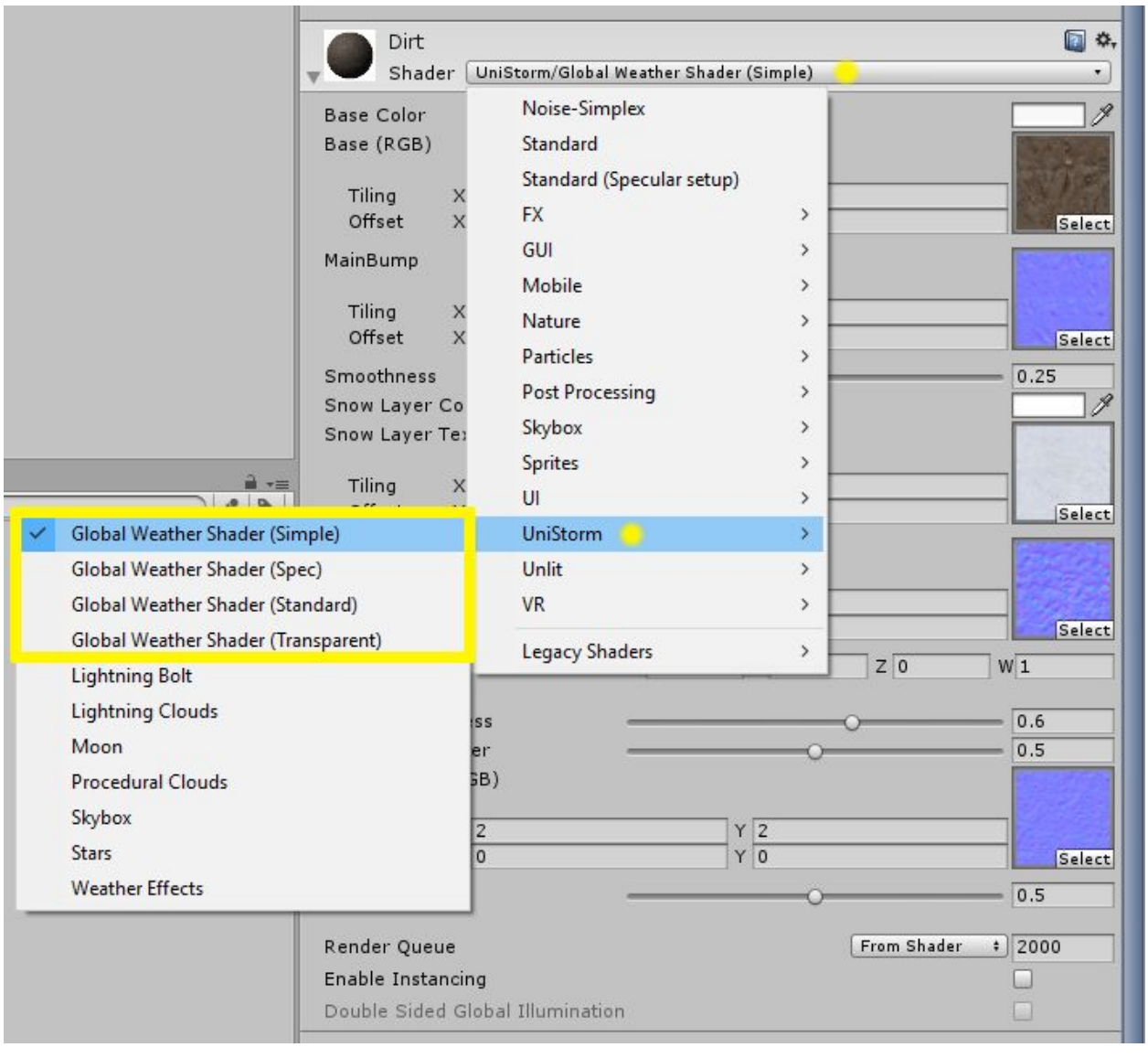


Step 5) Play the scene and enable the UniStorm Menu by pressing the UniStorm Menu Key button. You will see a dropdown list off all the different weather types. These use the Weather Type Name from each weather type. Select the weather type you would like to test and press the “Change Weather” button. You will see UniStorm transition to your selected weather type. You can do this with as many weather types you would like to test as needed. UniStorm will still generate weather according to your weather list and your weather type’s conditions, this is just used to test your weather types to ensure they are working correctly.

Applying a Global Weather Shading Material

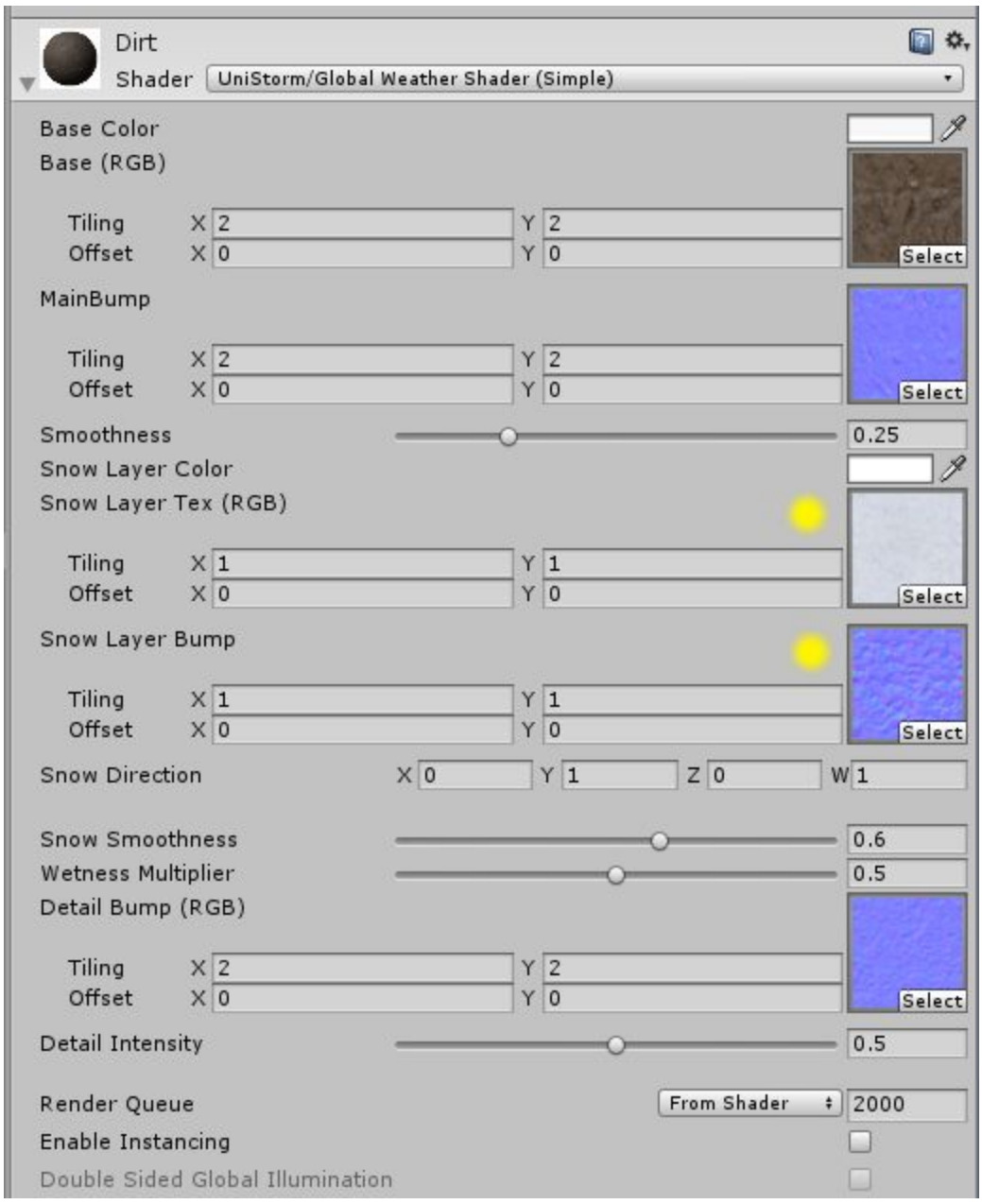
UniStorm's PBR Global Weather Shader allows objects to receive rain and snow shading during rainy and snowy weather types. Rain shading allows surfaces to get shinier, but only on surfaces no greater than 90 degrees. The inside of most surfaces will appear dry, such as inside buildings and roofs. Snow, will function the same, but with accumulative snow shading. The snow texture, snow bump texture, and snow specular level can all be customized. When the weather is not raining or snowing, UniStorm will fade out the weather shading.

Step 1) To change your material to a UniStorm Global Weather Shader, go to the material you would like to update. Select the material menu drop down and go to UniStorm>Global Weather Shader and pick the shader that suits your needs.

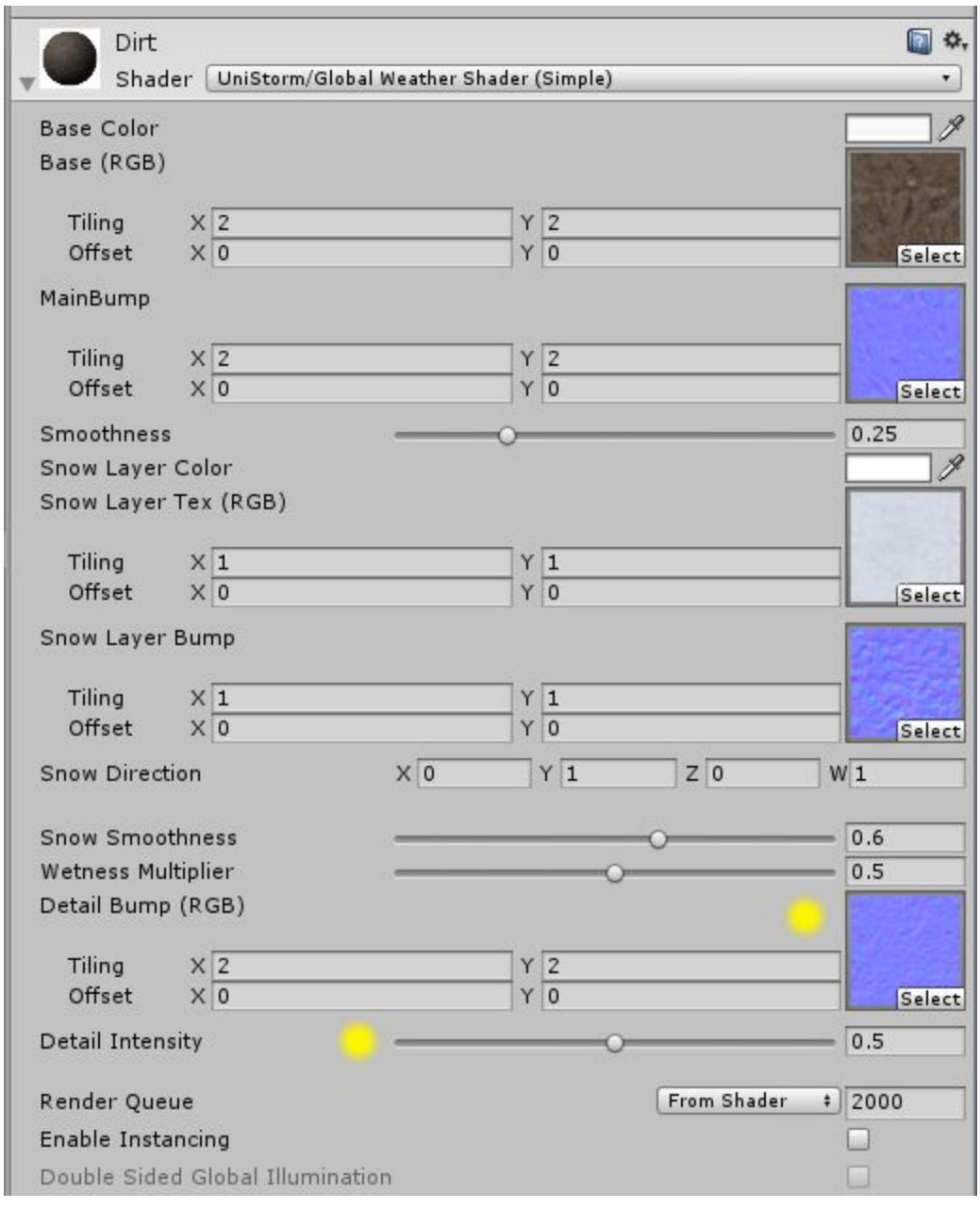


Step 2) This will change your material to UniStorm Global Weather Shader. You will need to reapply some of the base textures as the names have switched, such as Occlusion and Bump

Map. After you have reapplied your base textures, you will need to apply a snow texture and a snow bump texture. UniStorm has a snow texture and snow bump map that can be used, however, a custom ones can also be used instead.



Step 3) If you would like to add a detailed bump map, you can do so using the Detail Bump texture slot. This will provide additional bump detail to your material. The Detailed Intensity slider allows you to control how intense the Detail Bump is.



Step 4) The default settings should be fine for your Global Weather Shader material, however, they can be adjusted as needed. If you would like your material to not receive global snow shading, you can set the snow direction's Y axis to 0.

Importing or Exporting a UniStorm Profile

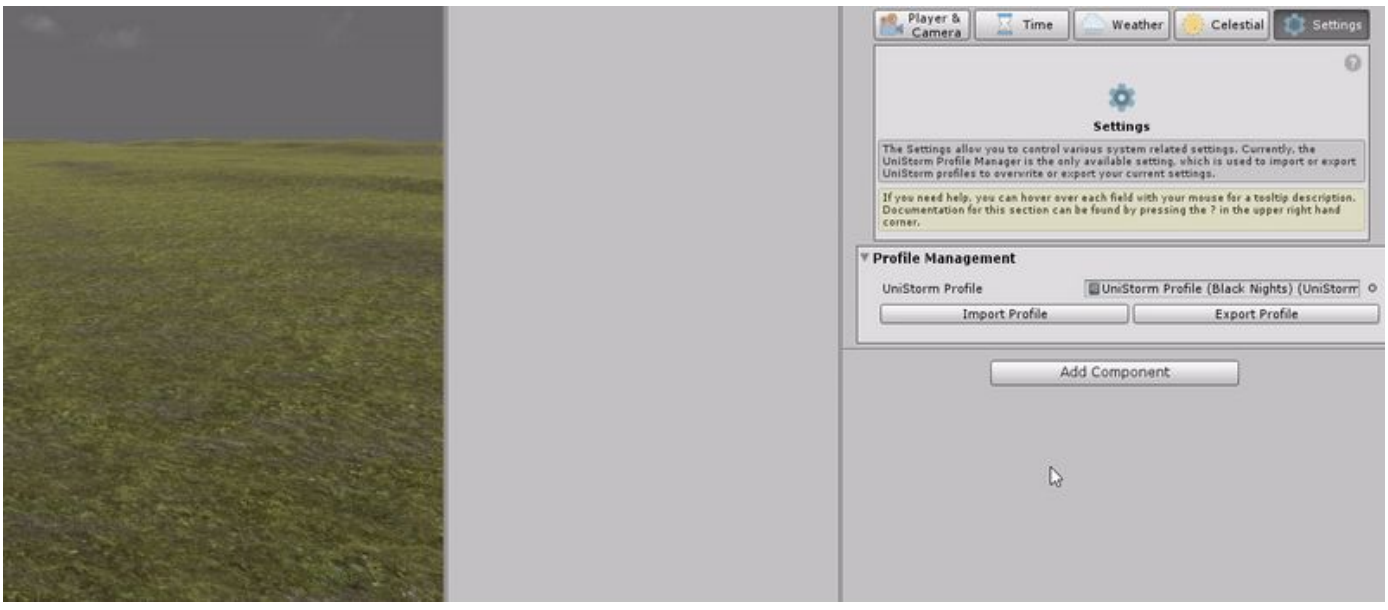
UniStorm Profile Management allows users to import the settings from the currently applied UniStorm Profile. This will overwrite all of your UniStorm color values as well as the Sun and Moon Intensity curves. Users can create as many UniStorm Profiles as needed. These can be useful for testing multiple kinds of lighting, colors, and settings without having to manually apply them with each UniStorm System.

Importing a UniStorm Profile

Step 1) Go to the Settings tab within the UniStorm Editor. Here, you will see a slot to apply a UniStorm Profile object. A UniStorm Profile is a scriptableobject that stores UniStorm's color and light intensity variables. There are 3 included UniStorm Profiles with UniStorm; UniStorm Profile (Standard), UniStorm Profile (Darker Nights), and UniStorm Profile (Black Nights). Of course, custom UniStorm Profiles can be used as well. Assign the UniStorm Profile you would like to import to the UniStorm Profile slot.

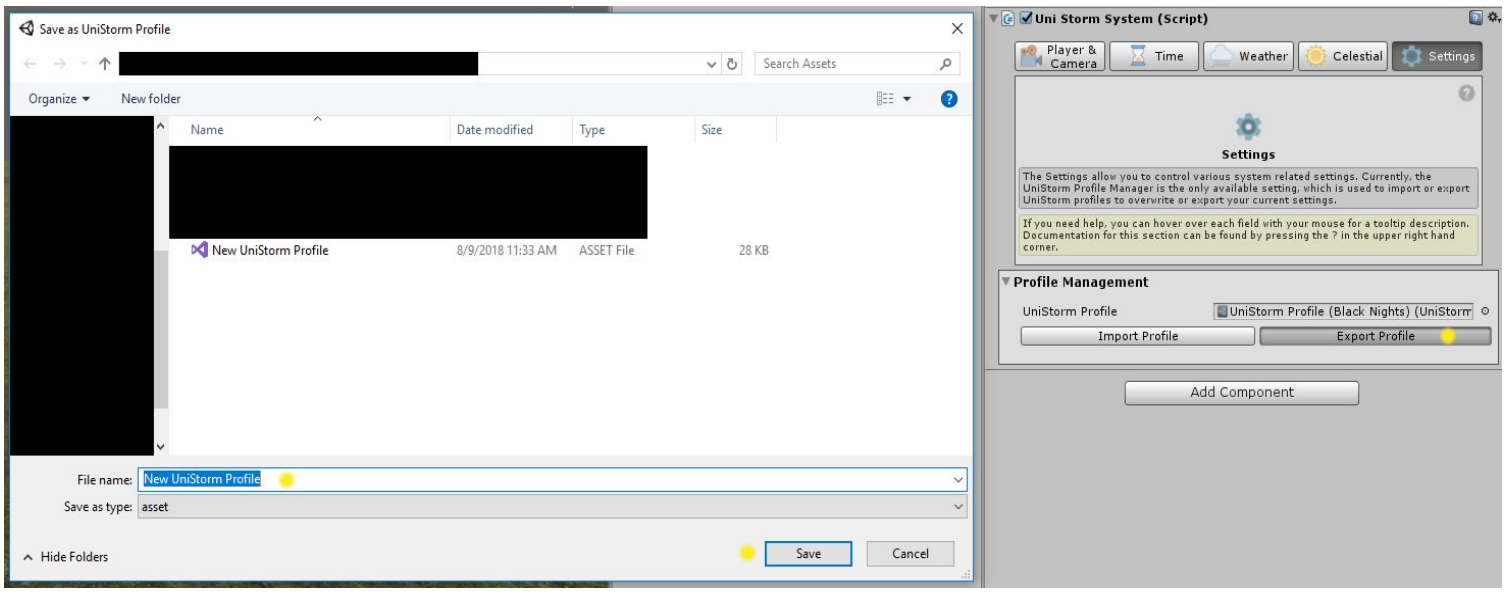
Step 2) Press the "Import Profile" button to import the settings from the UniStorm Profile slot. This will import all settings from the UniStorm Profile in the UniStorm Profile slot. After the progress bar has finished, you will get a confirmation message that everything imported

successfully. All the proper settings from the UniStorm Profile should now be applied to your UniStorm system. **Note: This process cannot be undone so it is recommended that you have a backup UniStorm Profile of your original settings.**

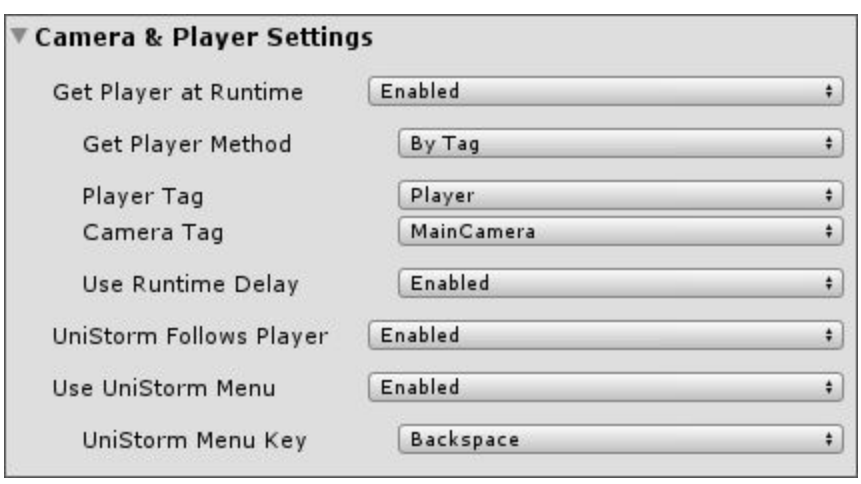


Exporting a UniStorm Profile

Step 1) Go to the Settings tab within the UniStorm Editor. Here, you will see a button called “Export Profile”. Press this button to export your current UniStorm settings to an asset file. This will open up a save menu for you to pick a location to save your UniStorm Profile. After pressing the “Save” button, your UniStorm settings will be saved to an asset file that UniStorm will see as a UniStorm Profile. You can use this UniStorm Profile to import settings to another UniStorm system, if desired.



Camera & Player Settings



The Camera & Player Settings allow you to control what objects UniStorm uses for its player

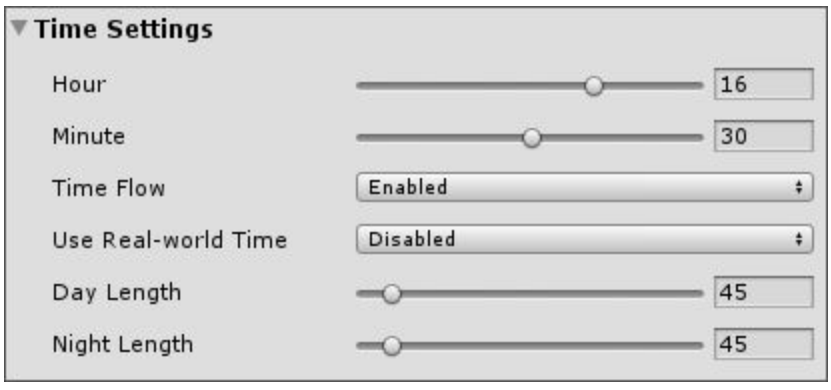
and camera. Additional options will be displayed depending on which options you enable.

- **Get Player at Runtime** - Controls whether or not UniStorm will get your player at runtime. This is useful if your player is instantiated or created at runtime. This will open up additional options for you to choose how your player is found during runtime.
    - **By Tag**
        - **Player Tag** - The tag UniStorm will search for during runtime to assign as the player object to UniStorm.
        - **Camera Tag** - The tag UniStorm will search for during runtime to assign as the camera object to UniStorm. Your camera's Far Clipping Plane will be set to 16,000, which is the appropriate distance UniStorm requires in order to see all of the distant objects.
    - **By Name**
        - **Player Name** - The name UniStorm will search for during runtime to assign as the player object to UniStorm.
        - **Camera Name** - The name UniStorm will search for during runtime to assign as the camera object to UniStorm. Your camera's Far Clipping Plane will be set to 16,000, which is the appropriate distance UniStorm requires in order to see all of the distant objects.
- **Use Runtime Delay** - Controls whether or not UniStorm will wait to initialize until the runtime player has been created and found.
- **Player Transform** - The parent transform your player uses.
- **Player Camera** - The main camera your player uses.
- **UniStorm Follows Player** - Controls whether or not UniStorm will follow your player when using large or infinite terrains.
- **Use UniStorm Menu** - Controls whether UniStorm's UI menu is usable during runtime. This menu allows the ability to control UniStorm's time and weather via a slider and drop down UI. UniStorm's Menu will be enabled on start. All weather types will automatically be displayed in the Weather Dropdown.
    - **UniStorm Menu Key** - Controls which key will enable UniStorm's menu.

Time Management

The Time Management allow you to control various time related settings such as starting time, starting date, and time flow.

Time Settings

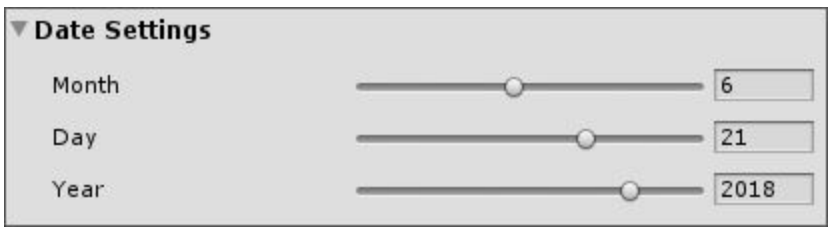


- **Hour** - The starting hour UniStorm will start with. This will also be updated while UniStorm is running.
- **Minute** - The starting minute UniStorm will start with. This will also be updated while UniStorm is running.
- **Time Flow** - Controls whether UniStorm's time is currently flowing. Setting this to

Disabled will stop UniStorm's time. This can also be called programmatically, if needed.

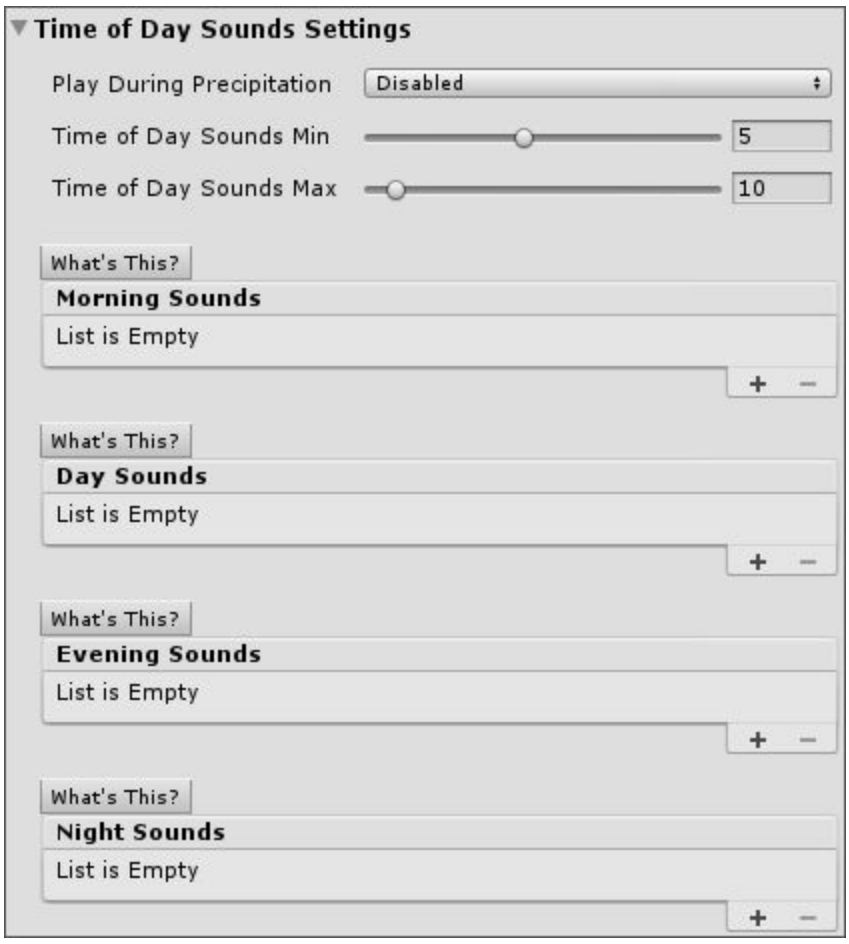
- **Use Real-world Time** - Controls whether UniStorm's time will use real-world time. This will overwrite your starting time on start and your UniStorm Date will use the real-world date. Your hour and minute control will not be be available with this option enabled.
- **Day Length** - Controls how long, in minutes, UniStorm's Days are. For example, if your Day length was set to 1, your days would be 1 minute long.
- **Night Length** - Controls how long, in minutes, UniStorm's Nights are. For example, if your Day length was set to 2, your days would be 2 minute long.

Date Settings



- **Month** - The starting month UniStorm will start with. The month, as well as the day, will determine what season UniStorm is in. The month will also be updated while UniStorm is running.
- **Day** - The starting day UniStorm will start with. The day, as well as the month, will determine what season UniStorm is in. The month will also be updated while UniStorm is running.
- **Year** - The starting year UniStorm will start with. The month will also be updated while UniStorm is running.

Time of Day Sounds Settings



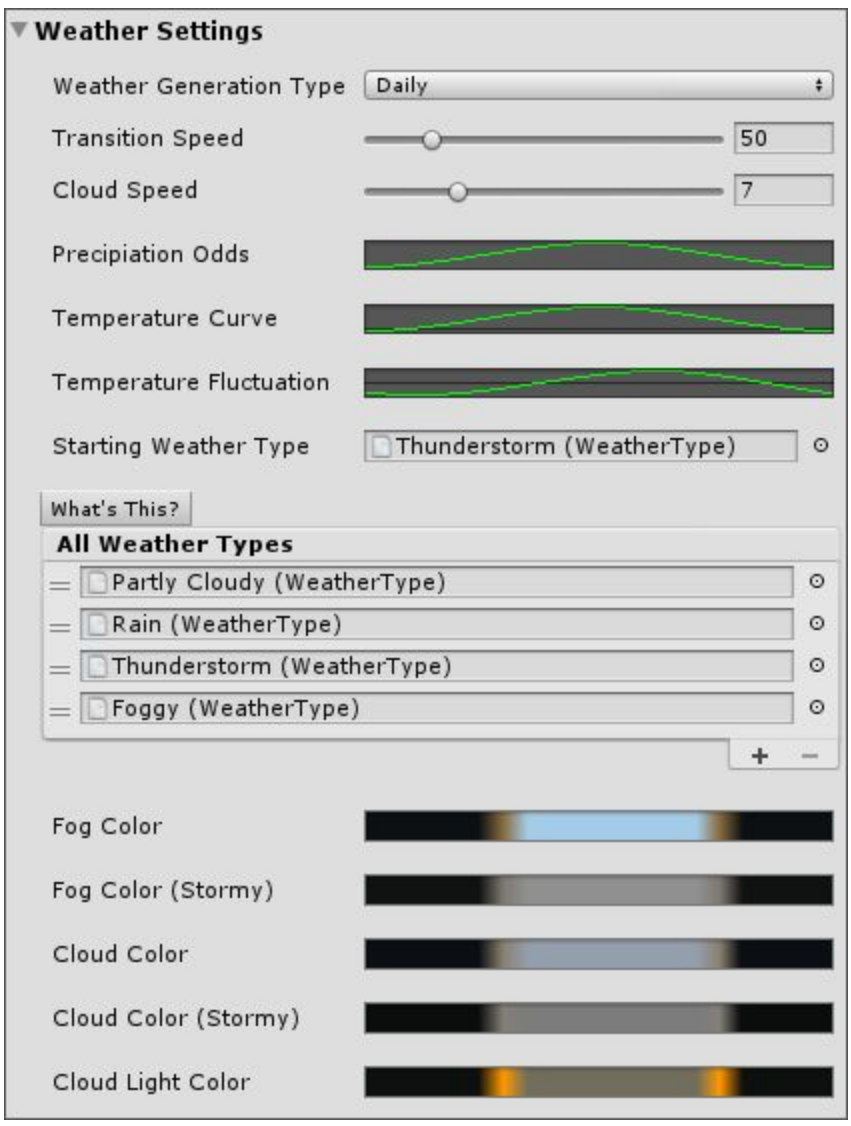
- **Play During Precipitation** - Controls whether UniStorm's Time of Day sounds will play during precipitation weather types.
- **Time of Day Sounds Min** - The minimum seconds needed for a time of day sound to trigger.
- **Time of Day Sounds Max** - The maximum seconds needed for a time of day sound to trigger.

- **Morning - Night Sounds** - A list of possible sounds that UniStorm will play during the Morning, Day, Evening and Night. This is played randomly depending on the seconds set within the Time of Day Sounds Min and Max.

Weather Management

The Weather Management allow you to adjust various settings related to weather. These include the Weather Types that UniStorm can use, fog and cloud colors, and lightning settings.

Weather Settings

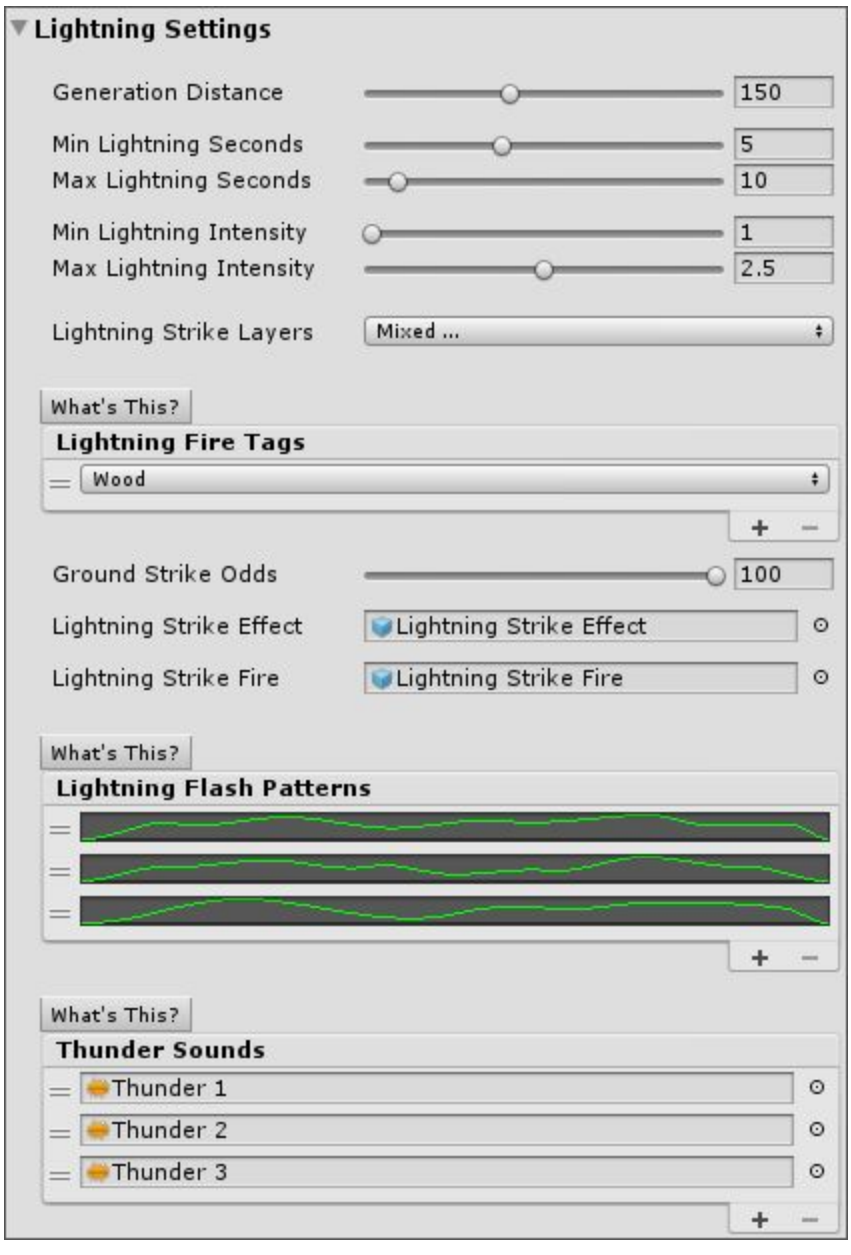


- **Weather Generation Type** - Controls whether UniStorm's weather is generated per hour or per day. When using Daily weather generation, a generated hour for the weather change is also generated.
- **Transition Speed** - Controls how fast UniStorm will transition Weather Types.
- **Cloud Speed** - Controls how fast UniStorm's procedural clouds move across the sky.
- **Precipitation Odds** - Controls the odds of UniStorm's precipitation throughout the year. X represents the calendar month and Y represents the odds.
- **Temperature Curve** - Controls UniStorm's temperature throughout the year. X represents the calendar month and Y represents the temperature.
- **Temperature Fluctuation** - Controls UniStorm's temperature fluctuation throughout the day. X represents the hour and Y represents the temperature fluctuation.
- **Starting Weather Type** - The starting weather type UniStorm will start with.
- **All Weather Types** - A list of all possible Weather Types that UniStorm will use when generating weather. To create a new Weather Type, right click in the project tab and go

to Create>UniStorm>New Weather Type. When this is done, it will create a new weather type for you to customize as you'd like. More information on weather types, please see the Creating a Custom Weather Type section.

- **Fog Color** - A gradient that controls the fog color during non-precipitation Weather Types. Each element is a transition into the next time of day.
- **Fog Color (Stormy)** - A gradient that controls the fog color during precipitation Weather Types. Each element is a transition into the next time of day.
- **Cloud Color** - A gradient that controls the base color of UniStorm's clouds during non-precipitation Weather Types. Each element is a transition into the next time of day.
- **Cloud Color (Stormy)** - A gradient that controls the base color of UniStorm's clouds during precipitation Weather Types. Each element is a transition into the next time of day.
- **Cloud Light Color** - A gradient that controls the light color of UniStorm's clouds when the clouds are receiving light. Each element is a transition into the next time of day.

Lightning Settings



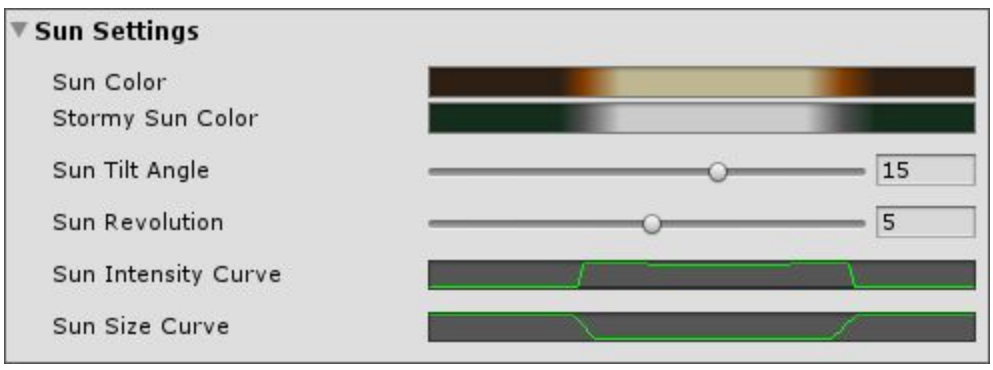
- **Generation Distance** - Controls the maximum distance lightning can be generated around the player.
- **Min Lightning Seconds** - Controls the minimum seconds for lightning to be generated.
- **Max Lightning Seconds** - Controls the maximum seconds for lightning to be generated.
- **Min Lighting Intensity** - Controls the minimum light intensity for the lightning to be generated.
- **Max Lightning Intensity** - Controls the maximum light intensity for the lightning to be generated.
- **Detection Distance** - Controls the distance of UniStorm's lightning strike collider. The larger the radius, the more likely lightning will strike objects instead of the ground.
- **Lightning Strike Layers** - Controls what layers UniStorm's procedural lightning can strike.

- **Lightning Fire Tags** - A list of tags that will create a fire particle effect when struck by lightning.
- **Ground Strike Odds** - Controls the odds in which UniStorm's lightning will strike the ground or other objects of the appropriate tag.
- **Lightning Strike Effect** - The effect that plays when lightning strikes the ground.
- **Lightning Strike Fire** -The fire effect that plays when lightning strikes an object of the appropriate tag.
- **Lightning Strike Patterns** - A list of possible lightning flash patterns that UniStorm will use during lightning Weather Types.
- **Thunder Sounds** - A list of possible thunder sounds that UniStorm will play during lightning Weather Types.

Celestial Settings

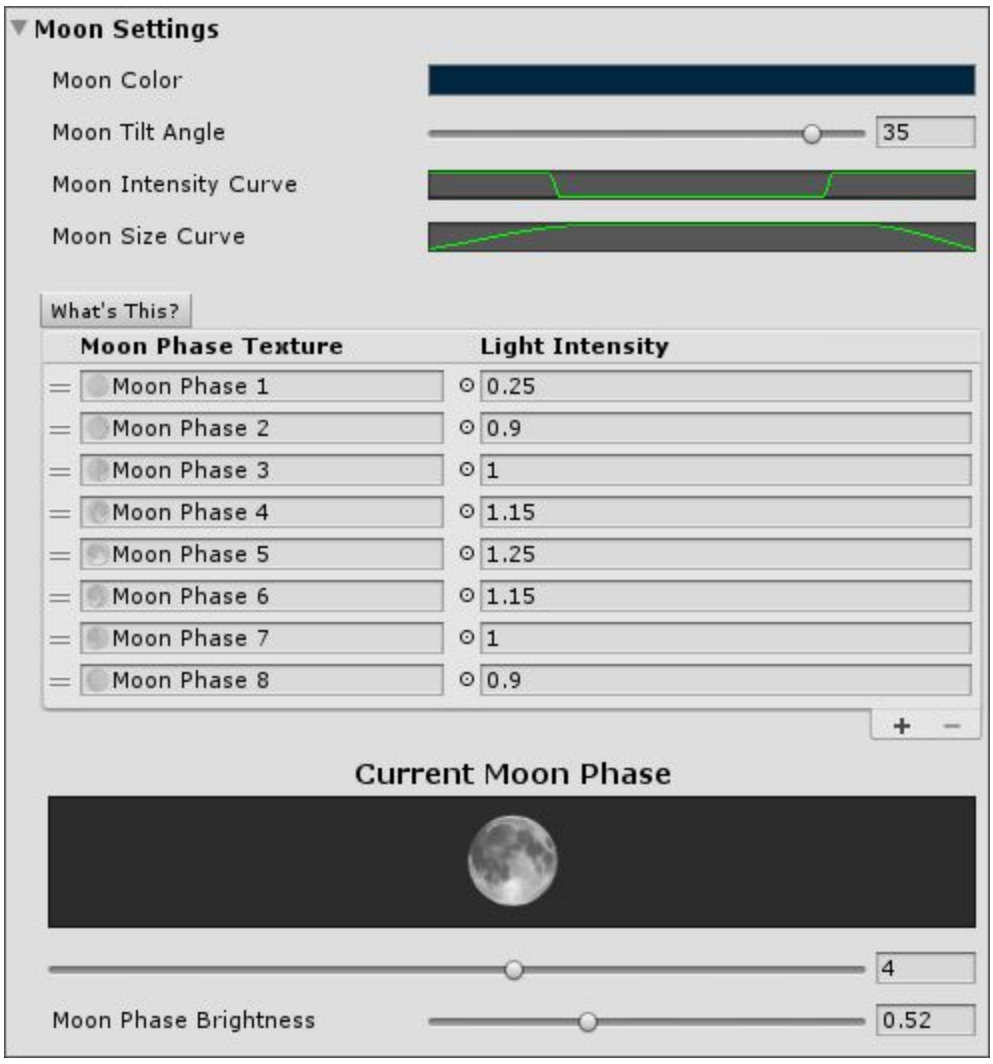
The Celestial Settings allow you to control various celestial settings and colors for UniStorm's sun, moon, stars, and atmosphere.

Sun Settings



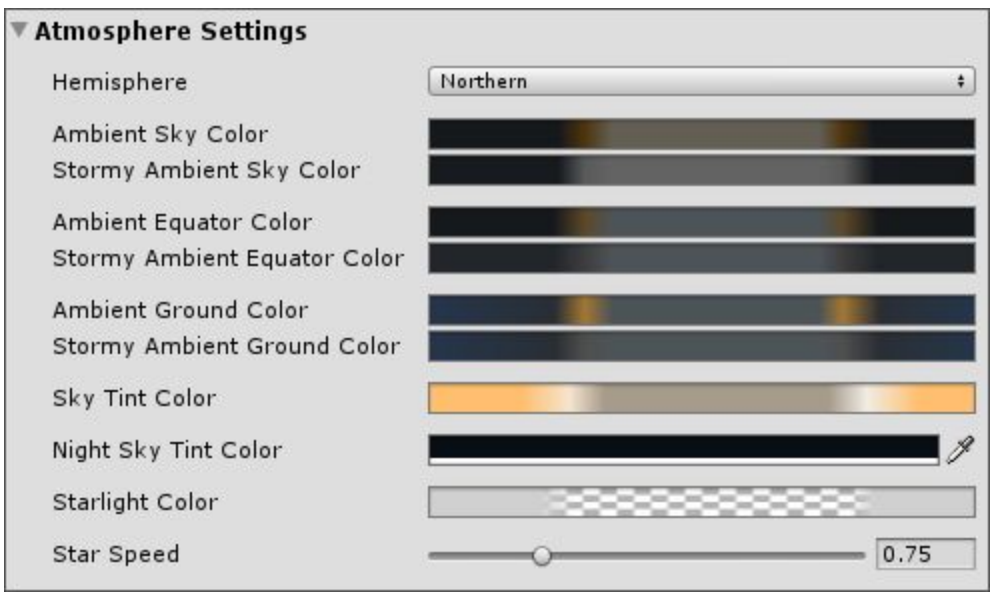
- **Sun Color** - A gradient that controls UniStorm's sun color during non-precipitation weather types. Each element is a transition into the next time of day.
- **Stormy Sun Color** - A gradient that controls UniStorm's sun color during precipitation weather types. Each element is a transition into the next time of day.
- **Sun Title Angle** - Controls the tilt angle of the Sun.
- **Sun Revolution** - Controls the direction in which UniStorm's sun sets and rise.
- **Sun Intensity Curve** - Controls the intensity of UniStorm's sun. X represents the hour and Y represents the intensity.
- **Sun Size Curve** - Controls the size of UniStorm's sun. X represents the hour and Y represents the size.

Moon Settings



- **Moon Color** - A gradient that controls UniStorm's moon color.
- **Moon Tilt Angle** - Controls the tilt angle of the Moon.
- **Moon Intensity Curve** - Controls the intensity of UniStorm's moon. X represents the hour and Y represents the intensity.
- **Moon Size Curve** - Controls the size of UniStorm's moon. X represents the hour and Y represents the size.
- **Moon Phase List** - A list of moon phase textures that UniStorm will use when creating UniStorm's moon. Each texture applied to the list will be used as a moon phase and be applied in order of the current moon phase. Each moon phase has an individual light intensity to allow each moon phase to give off different amounts of light.
- **Current Moon Phase** - Displays all moon phases by adjusting the slider. The Current Moon Phase also controls the moon phase UniStorm will start with.
- **Moon Phase Brightness** - Controls the brightness of all moon phase textures.

Atmosphere Settings



- **Hemisphere** - Controls whether UniStorm's seasons are calculated in either the

Northern or Southern Hemisphere.

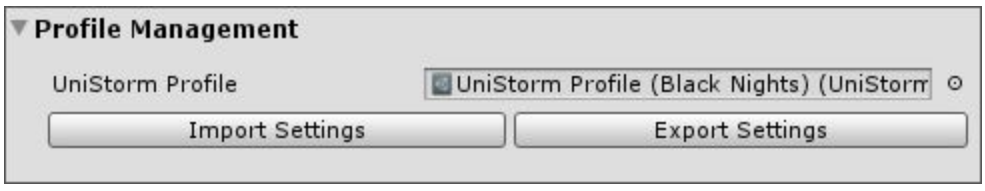
- **Ambient Sky Color** - A gradient that controls the Ambient Sky Color during non-precipitation weather types. Each element is a transition into the next time of day.
- **Stormy Ambient Sky Color** - A gradient that controls the Ambient Sky Color during precipitation weather types. Each element is a transition into the next time of day.
- **Ambient Equator Color** - A gradient that controls the Ambient Equator Color during non-precipitation weather types. Each element is a transition into the next time of day.
- **Stormy Ambient Equator Color** - A gradient that controls the Ambient Equator Color during precipitation weather types. Each element is a transition into the next time of day.
- **Ambient Ground Color** - A gradient that controls the Ambient Ground Color during non-precipitation weather types. Each element is a transition into the next time of day.
- **Stormy Ambient Ground Color** - A gradient that controls the Ambient Ground Color during precipitation weather types. Each element is a transition into the next time of day.
- **Sky Tint Color** - A gradient that controls the Sky Tint Color which controls the tint of UniStorm's Skybox. Each element is a transition into the next time of day.
- **Night Sky Tint Color** - The tint color of the night sky.
- **Starlight Color** - A gradient that controls the color and transparency of UniStorm's stars. Each element is a transition into the next time of day.
- **Star Speed** - Controls how fast the stars will move in the sky at night.

Settings

The Settings tab allows you to control various global UniStorm settings. Currently, the only available section here is Profile Management.

Profile Management

The Profile Management feature allows users to export or import UniStorm settings to a UniStorm Profile. A UniStorm Profile is a scriptableobject that stores UniStorm’s color and light intensity variables.



- **Import Profile** - Imports the settings from the currently applied UniStorm Profile. This will overwrite all of your UniStorm color values as well as the Sun and Moon Intensity curves.
- **Export Profile** - Exports the settings from your current UniStorm system to a UniStorm Profile. After pressing the Export Settings button, you will have the option to choose where to save your UniStorm Profile.

Scripting

UniStorm offers tons of useful API to make customizing and altering UniStorm easy. UniStorm's API is accessible from 2 different scripts. Be sure to use the proper instance when accessing the API.

Weather

```
//Changes UniStorm's weather, regardless of conditions, with the transition
speed to the weather type parameter.
UniStormManager.Instance.ChangeWeatherWithTransition(WeatherType
weatherType);

//Changes UniStorm's weather instantly, regardless of conditions, to the
weather type parameter.
UniStormManager.Instance.ChangeWeatherInstantly(WeatherType weatherType);

//Generates a random weather type, regardless of conditions, from
UniStorm's All Weather Type list
UniStormManager.Instance.RandomWeather();

//Get the name of the current weather type
string CurrentWeatherTypeName =
UniStormSystem.Instance.CurrentWeatherType.WeatherTypeName;

//Gets the forecasted weather type's name
string WeatherForecastName =
UniStormManager.Instance.GetWeatherForecastName();

//Gets the hour that the forecasted weather will change
string WeatherForecastName =
UniStormManager.Instance.GetWeatherForecastHour();

//Disables or enables all UniStorm particle effects depending on the
ActiveState bool, , but does not affect their emission amount.
UniStormManager.Instance.ChangeWeatherEffectsState(bool ActiveState);

//Disables or enables all UniStorm weather sounds depending on the
ActiveState bool, but does not affect their current volume.
UniStormManager.Instance.ChangeWeatherSoundsState(bool ActiveState);

//Get the current UniStorm temperature
int CurrentTemperature = UniStormSystem.Instance.Temperature;
```

Time

```
//Get the current UniStorm Minute
int CurrentMinute = UniStormSystem.Instance.Minute;

//Get the current UniStorm Hour
int CurrentHour = UniStormSystem.Instance.Hour;

//Sets UniStorm's Date
UniStormManager.Instance.SetDate(int Year, int Month, int Day);

//Sets UniStorm's Time
UniStormManager.Instance.SetTime (int Hour, int Minute);

//Get the current time of day state
UniStormSystem.CurrentTimeOfDayEnum CurrentTimeOfDayState =
UniStormSystem.Instance.CurrentTimeOfDay;

//Sets the length, in minutes, of UniStorm's days
UniStormManager.Instance.SetDayLength(int MinuteLength);
```

```
//Sets the length, in minutes, of UniStorm's nights
UniStormManager.Instance.SetNightLength(int MinuteLength);

//Gets the current UniStorm day of the week
System.DayOfWeek CurrentDayOfWeek =
UniStormManager.Instance.GetDate().DayOfWeek;

//Gets the current UniStorm date
System.DayOfWeek CurrentDayOfWeek =
UniStormManager.Instance.GetDate().DayOfWeek;
```

Volume

```
//Set UniStorm's Music volume using a value from 0 (Fully muted) to 1 (Full
volume).
UniStormManager.Instance.SetMusicVolume(float Volume);

//Set UniStorm's Ambience volume using a value from 0 (Fully muted) to 1
(Full volume).
UniStormManager.Instance.SetAmbienceVolume(float Volume);

//Set UniStorm's Weather volume using a value from 0 (Fully muted) to 1
(Full volume).
UniStormManager.Instance.SetWeatherVolume(float Volume);
```

Seasons

```
//Get the current season
UniStormSystem.CurrentSeasonEnum currentSeason =
UniStormSystem.Instance.CurrentSeason;
```

System

```
//Change the player transform and player camera to UniStorm, if they need
to be changed or updated.
UniStormManager.Instance.ChangePlayerComponents(Transform PlayerTransform,
Camera CameraSource);
```

Other

```
//Changes UniStorm's moon phase color. The updated color will be applied at
noon when UniStorm's moon is updated.
UniStormManager.Instance.ChangeMoonPhaseColor(Color MoonPhaseColor)
```