Dynamic Weather Pack  
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1. ***Introduction***

Thank you for purchasing my second pack for Torque 3D MIT, the Dynamic Weather Pack. I have had a great time building this pack off of my own passion in the scientific world, meteorology. This pack adds new environmental hazards to your game, including a grouping of new precipitation types and upgrades, cloud updates, and a new class of weather, the Tornado. While I wasn’t able to complete all of the items I wanted to add in this pack, I was able to complete a large majority of them, and added some additional precipitation types I wasn’t originally planning on adding to the pack to compensate for this.

I thank you again for purchasing this pack, and I hope you enjoy the new and awesome features this pack will provide your game!

1. ***Pack License***

You are free to use this pack’s assets and source code in any of your projects without needing the prior written consent of Phantom Games Development or Robert Fritzen. You are also not required in any means or forms to credit Phantom Games Development or Robert Fritzen in your game if you use this pack. You are entitled to one copy and one backup of the pack. You are not permitted to re-distribute any source within the pack that is herein not required by your game (IE: Art Assets) without prior consent of Robert Fritzen. Phantom Games Development provides no warranty for this product and is not responsible for any damage it may cause to you, your computer, or any other properties you own.

1. ***Installation***

Installation of this pack is very straight forward. Included in here are an Engine folder and a game folder. Copy the contents of the Engine folder to your engine folder; replace the two files relating to the cloud class. Copy the contents of the game folder to your project’s game folder. Add the new source code files to your C++ solution:

*T3D/fx/hazardPrecipitation.cpp  
T3D/fx/hazardPrecipitation.h  
T3D/fx/Tornado.cpp  
T3D/fx/Tornado.h*

Once you add these files to your solution, rebuild your project and you will be all set.

1. ***New Class Info***

The Dynamic Weather Pack adds two new classes and updates an existing class in the Torque 3D Engine. This section documents these adjustments and new classes.

The CloudLayer class has been updated to support a new numeric factor, named mRotationFactor, which applies a sine/cosine rotational adjustment to the texture scroll.

This pack adds two new classes, the HazardPrecipitation and Tornado classes. HazardPrecipitation is a child of the Precipitation class. The special feature to this class is the bounded box raycast testing of Players and Vehicles (defined as sHitCheckMask, see hazardPrecipiation.cpp). This then applies a console callback that is yours to do whatever you please with: function HazardPrecipitation::onHitObject( %this, %hitPosition, %hitObject );

The Tornado class bases from the ParticleEmiterNode and thus shares its properties with applying different emitters. There are three new fields of importance to the tornado’s properties: mStrength, mTornadoRadius, and mEdgeRadius. These three are parameters to the Rankine Vortex Model and RadiusContainerSearch respectively. The tornado applies forces to objects defined in the sTornadoMask in the Tornado.cpp file. The Tornado class adds two new callbacks to the engine. function Tornado::onEnterOuterZone( %this, %hitObject ); is called when %hitObject enters the mEdgeRadius of the tornado and function Tornado::onEnterInnerZone( %this, %hitObject ); is called when %hitObject enters the mTornadoRadius. How the force to objects is applied is handled by void Tornado::applyForces() located in Tornado.cpp, you may adjust this method as you please.

There are also a new group of Precipitation types you may use in your game. I have provided the environment.cs file that contains all of the definitions to these new precipitation types as well as the declaration of the tornado emitter I used in my demo, you may use this as you wish and I recommend it as a base to learn from.

This pack will likely receive regular updates, so be sure to visit the PGD forums from time to time to provide your own input to the direction this pack moves from here. Thank you again for supporting PGD and I hope you enjoy the Dynamic Weather Pack.