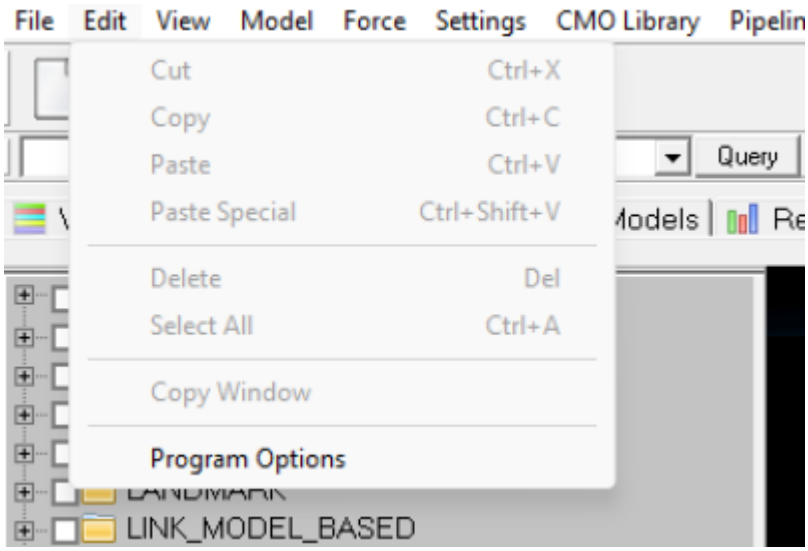
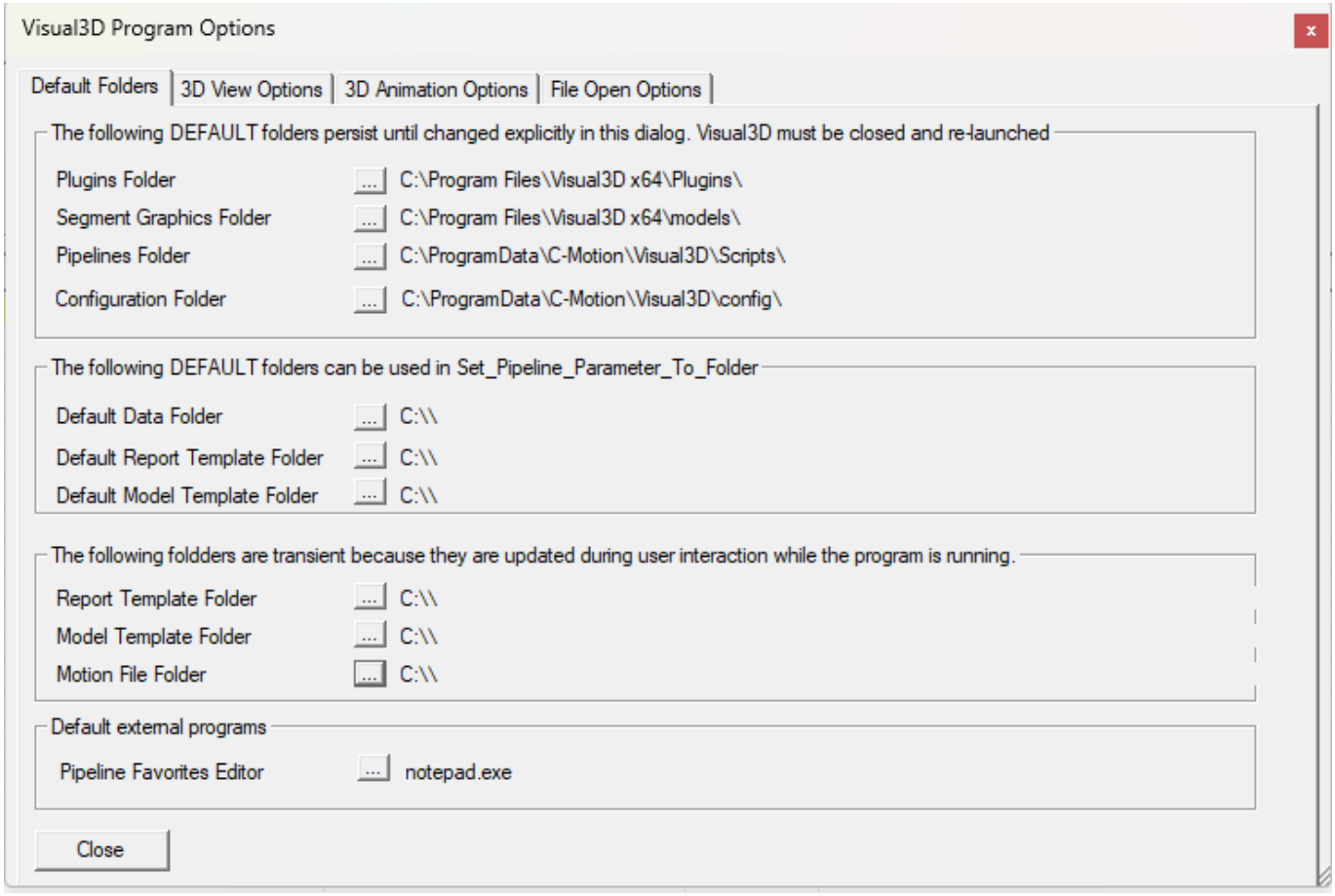
Program Options

There are many options for controlling the default settings for Visual3D and for controlling the viewing options. The Program Options dialog can be accessed from the **Edit Menu item** and contains 3 tabbed property pages: Default Folders, 3D Animation Options, and 3D View Options.



Default Folders



Visual3D has 3 categories of folders.

- Folders that are identified when Visual3D is launched, and which are rarely modified.
- Default folders that are convenient for may pipelines that specify generic folders
- Folders that change dynamically as the pipeline executes.

Persistent Default Folders	
Plugin Folder	Visual3D searches this folder for Visual3D Plugins. These plugins may be processing plugins that will appear in the list of Pipeline commands, or they may be Real_Time plugins that will appear in the options for Real-Time Streaming.
Segment Graphics Folder	The animation models associated with the model segments are stored in. If no path to an object file is selected in the Segment Properties dialog, Visual3D searches hear for the file.
Pipelines Folder	Default folder for Pipelines. Used mainly for the Pipeline Favorites. Can be referred to as *VISUAL3D_DEFAULT_PIPELINE_FOLDER*.
Pipeline-related Default Folders	
Default Data Folder	Can be referred to as *VISUAL3D_DEFAULT_FOLDER* or *VISUAL3D_DEFAULT_DATA_FOLDER*.
Default Report Template Folder	Current default FOLDER for the report template. Can be referred to as *VISUAL3D_DEFAULT_REPORT_FOLDER*.
Default Model Template Folder	Current default FOLDER for the standing trial. Can be referred to as *VISUAL3D_DEFAULT_MODEL_FOLDER*.
User-interaction Folders	
Motion File Folder	Current FOLDER for the motion trial. Reset every time a movement file is opened.
Report Template Folder	Current FOLDER for the report template. Reset every time a Report Template is opened.
Model Template Folder	Current default FOLDER for the standing trial. Reset every time a Hybrid Model is created.

Default folder paths can be set using the Set_Default_Folders pipeline command.

Setting Pipeline Parameters

These default folder paths can also be used in pipeline scripts as parameters.

```
Set_Pipeline_Parameter_To_Folder_Path
/PARAMETER_NAME=DATA_FOLDER
/PARAMETER_VALUE=VISUAL3D_DEFAULT_FOLDER
;

Set_Pipeline_Parameter_To_Folder_Path
/PARAMETER_NAME=MODEL_FOLDER
/PARAMETER_VALUE=VISUAL3D_DEFAULT_MODEL_FOLDER
;
```

To use these parameter in a command:

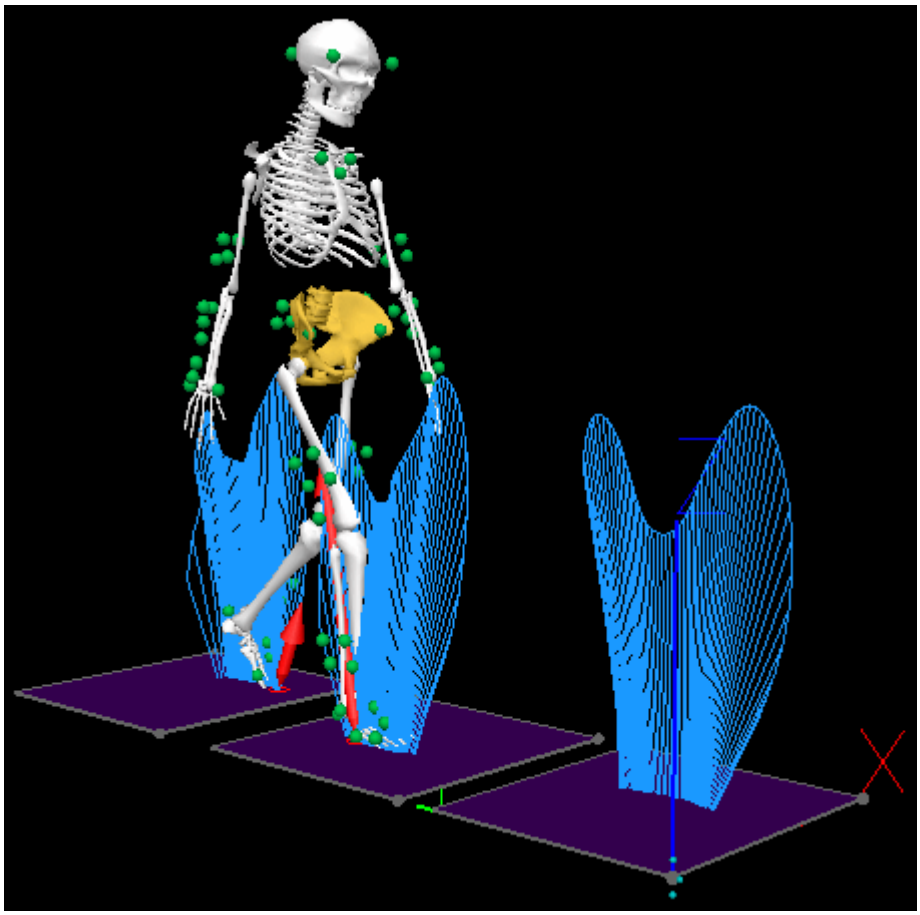
```
!Open all of the c3d files in a folder within the default folder
File_Open
/File_Name= ::DATA_FOLDER&/SUBJECT1/*walk*.c3d
;

! Create a hybrid model and assign a model template from the default model
folder
Create_Hybrid_Model
/CALIBRATION_FILE=::DATA_FOLDER&/SUBJECT1/*static.c3d
;

Apply_Model_Template
/MODEL_TEMPLATE=::MODEL_FOLDER&GaitModel.mdh
/CALIBRATION_FILE=::DATA_FOLDER&/SUBJECT1/*static.c3d
;
```

3D Animation Options

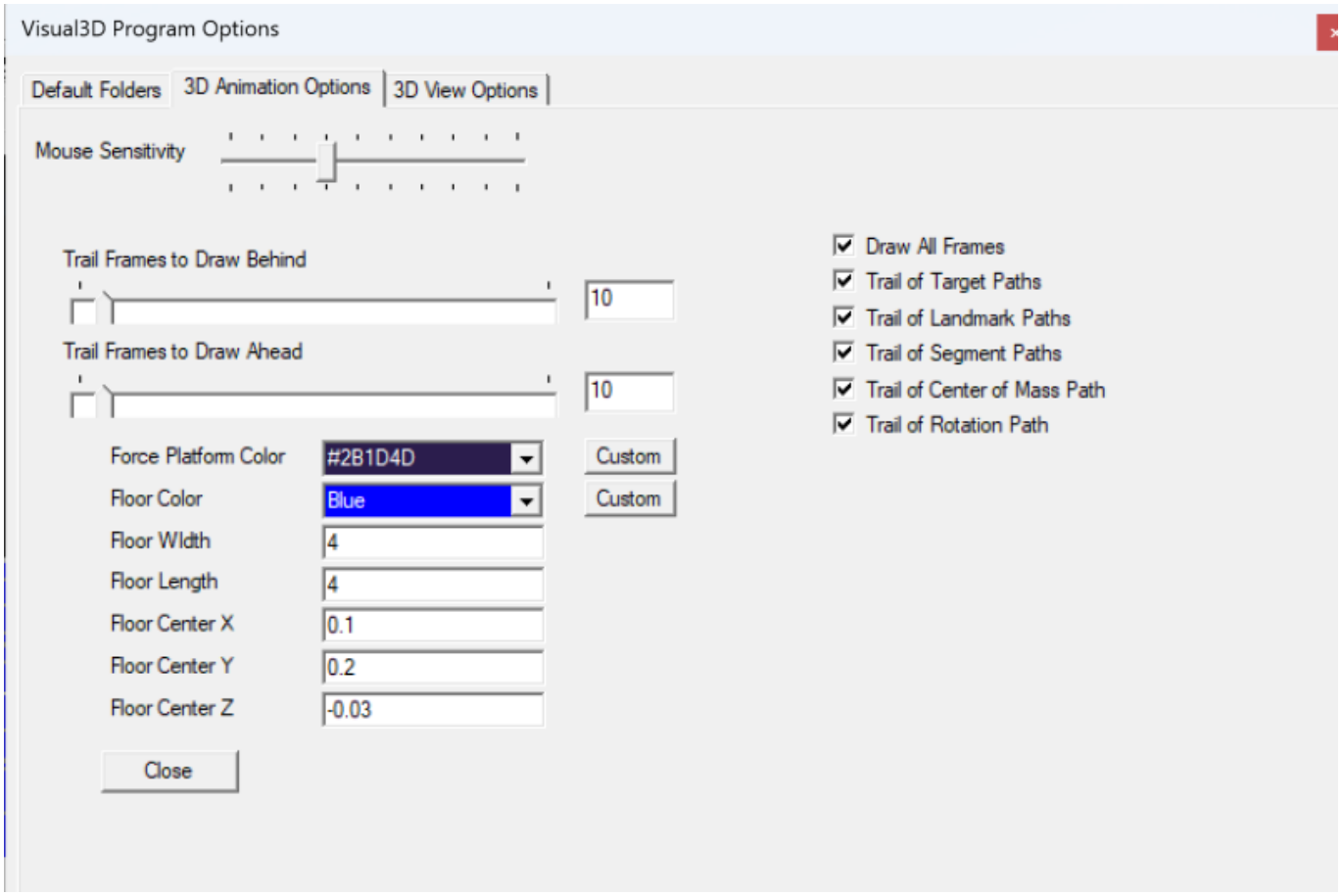
The Visual3D animation display, pictured below, allows you to visualize the movement of target markers, model segments (if defined), and other time-dependent phenomena such as ground reaction force (GRF) measured by force platforms.



Visual3D's extensive animation capabilities allow you to choose which of many elements are included

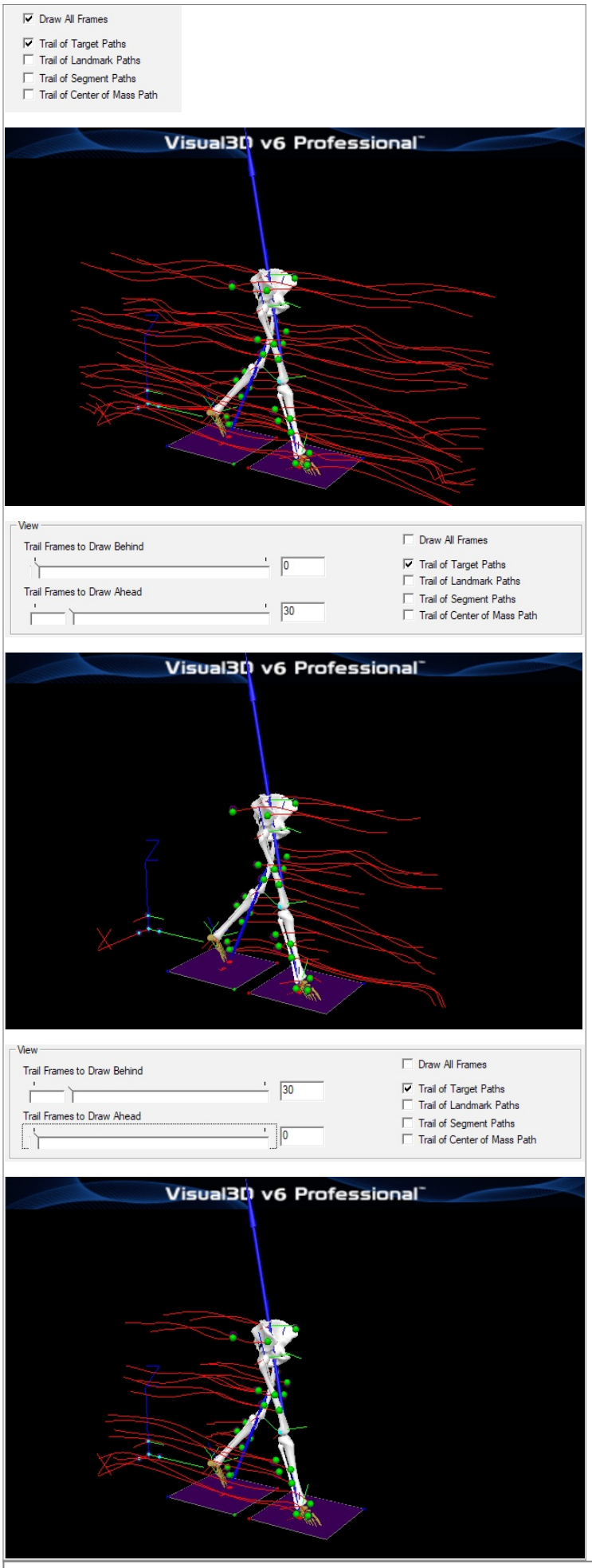
in the display. The illustration shows a typical combination: global coordinate system (GCS) axes, force platforms, instantaneous GRF vector and butterfly showing how the GRF evolves through time, target markers, and the instantaneous pose of the model (represented in this case by the major bone structures corresponding to each of the modeled body segments). You can interact with the animation display to zoom, pan, and rotate it to any perspective you choose. Note that the skeleton (representing the model) is the only part of the animation display pictured above, which will not appear if you have not yet associated the movement trial with a model. If all you do is open one movement trial, you can watch the markers move through space, observe their relationship to the position of any force platforms and the GRF they measure. This alone is a very useful tool for data quality control—if the animation doesn't look right, your motion-capture data may be invalid.

The 3D Animation Viewer is based on the OpenGL Graphics Library and its settings can be modified in the 3D Animation Options tab.

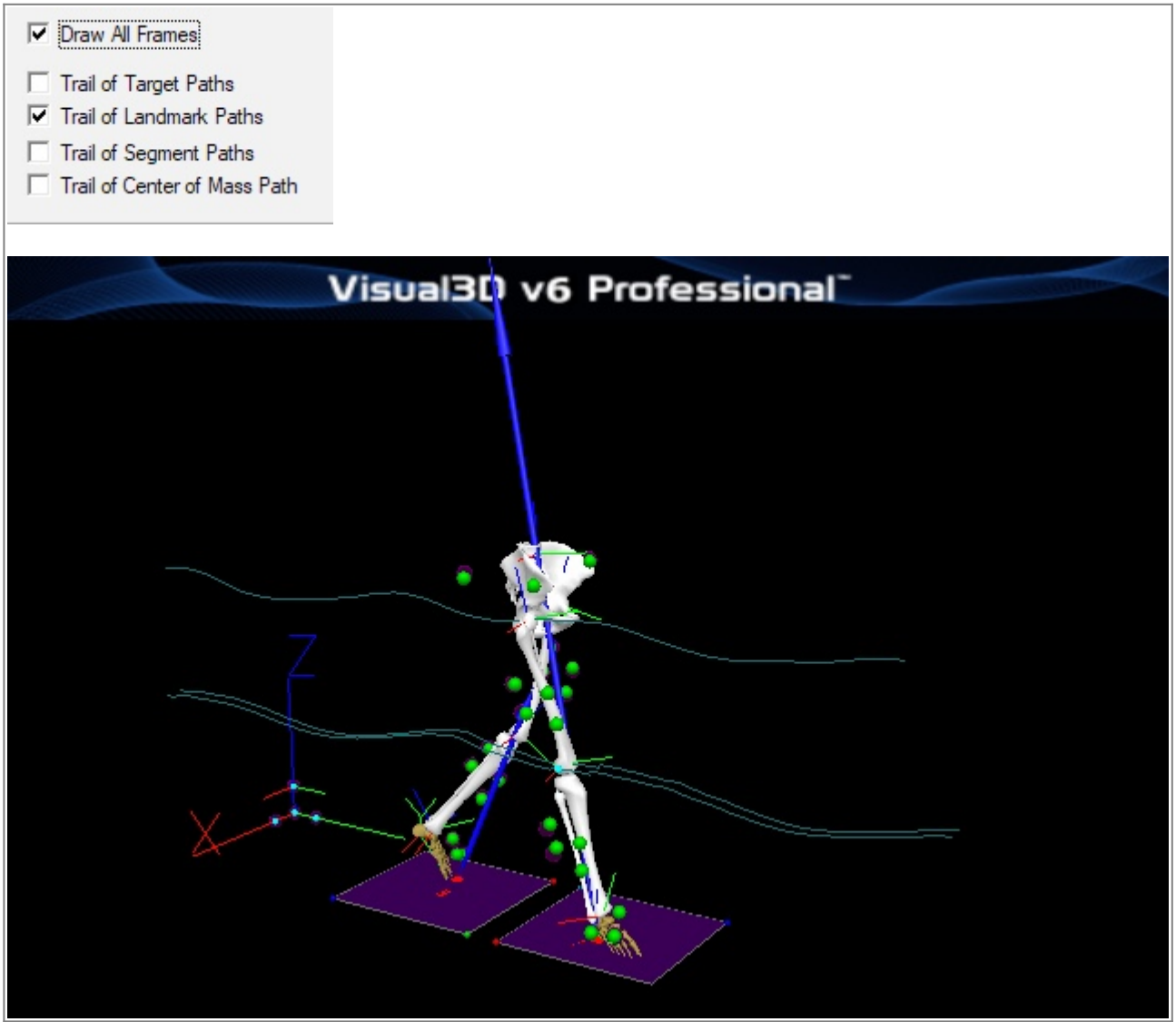


Define the sensitivity of the mouse; e.g. the responsiveness of the mouse in the 3D viewer.

The trail of markers, landmarks, or segments (including the length of the trail in frames) can be set explicitly.

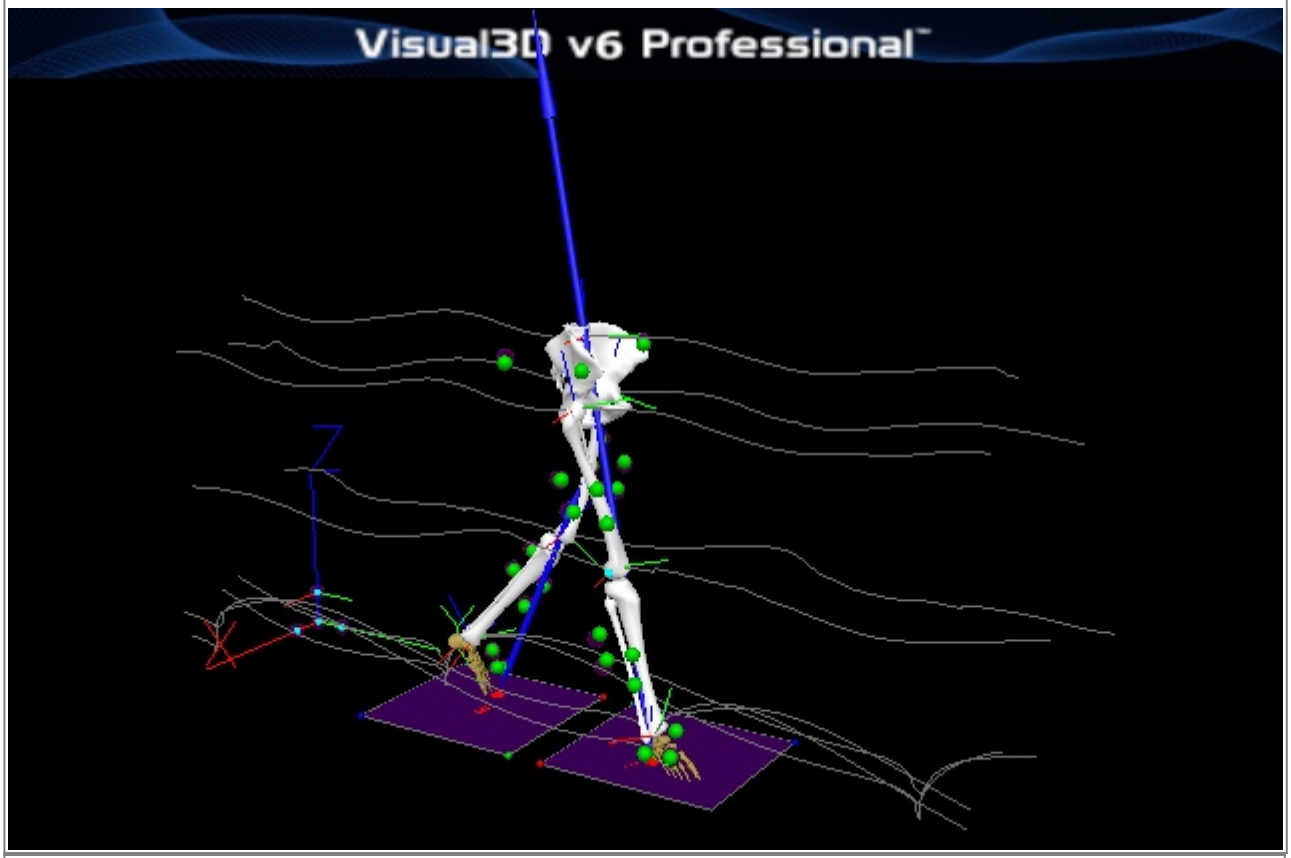


Draw Trajectory Trail of Landmarks



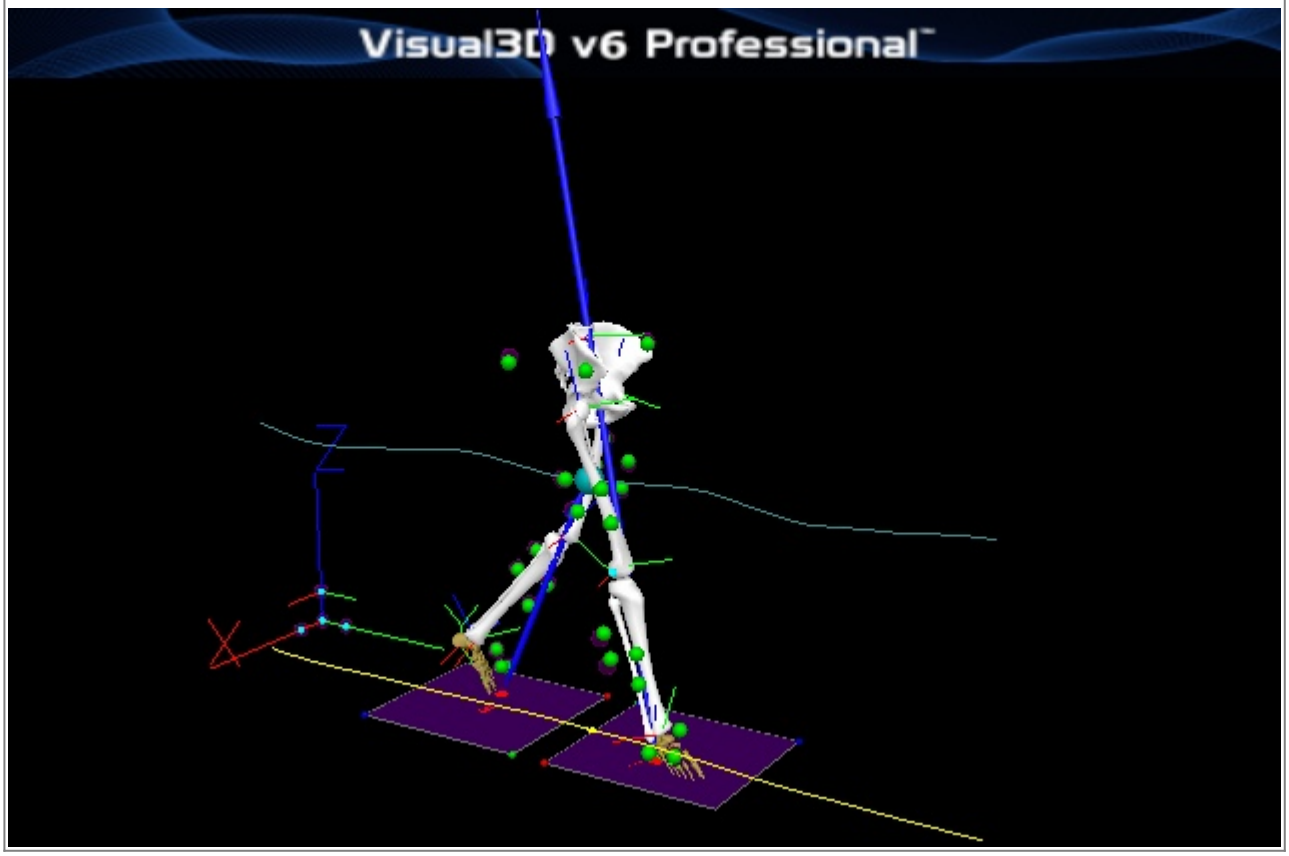
Draw Trajectory Trail of Segments

Draw a trajectory trail that follows the Origin (e.g. Proximal end) of the segments

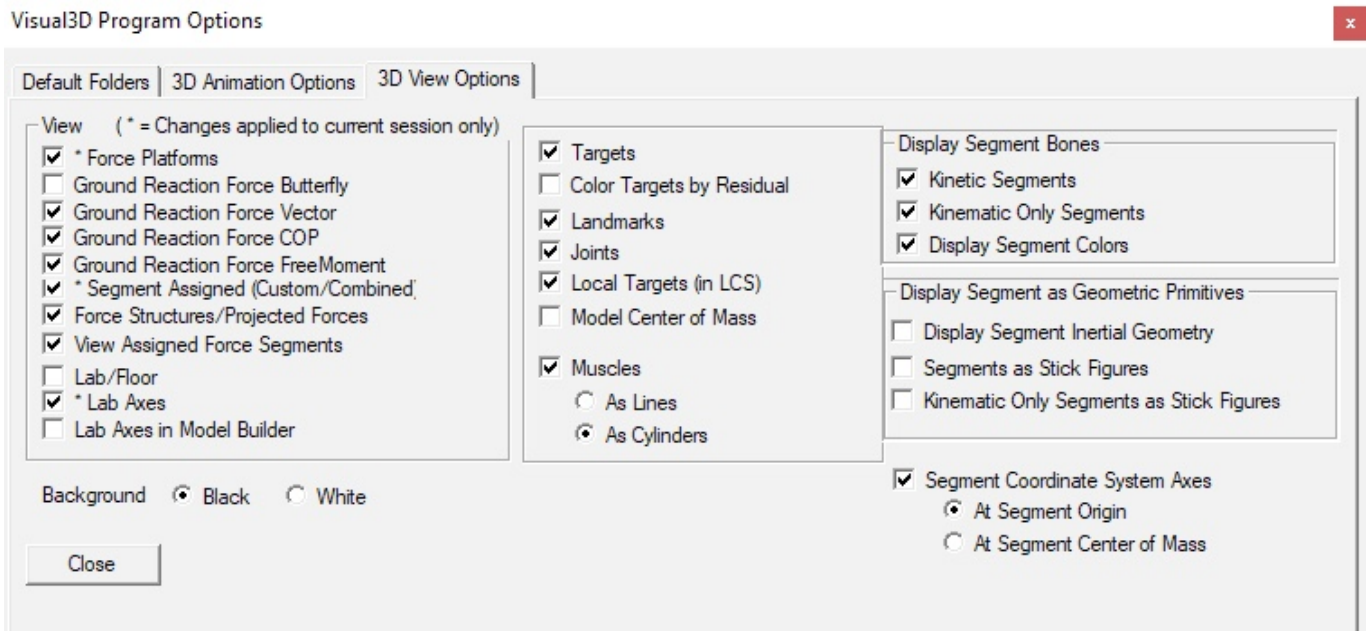


Draw Trajectory Trail of Model Center of Mass

Note that the trail will only be drawn if the COM is drawn

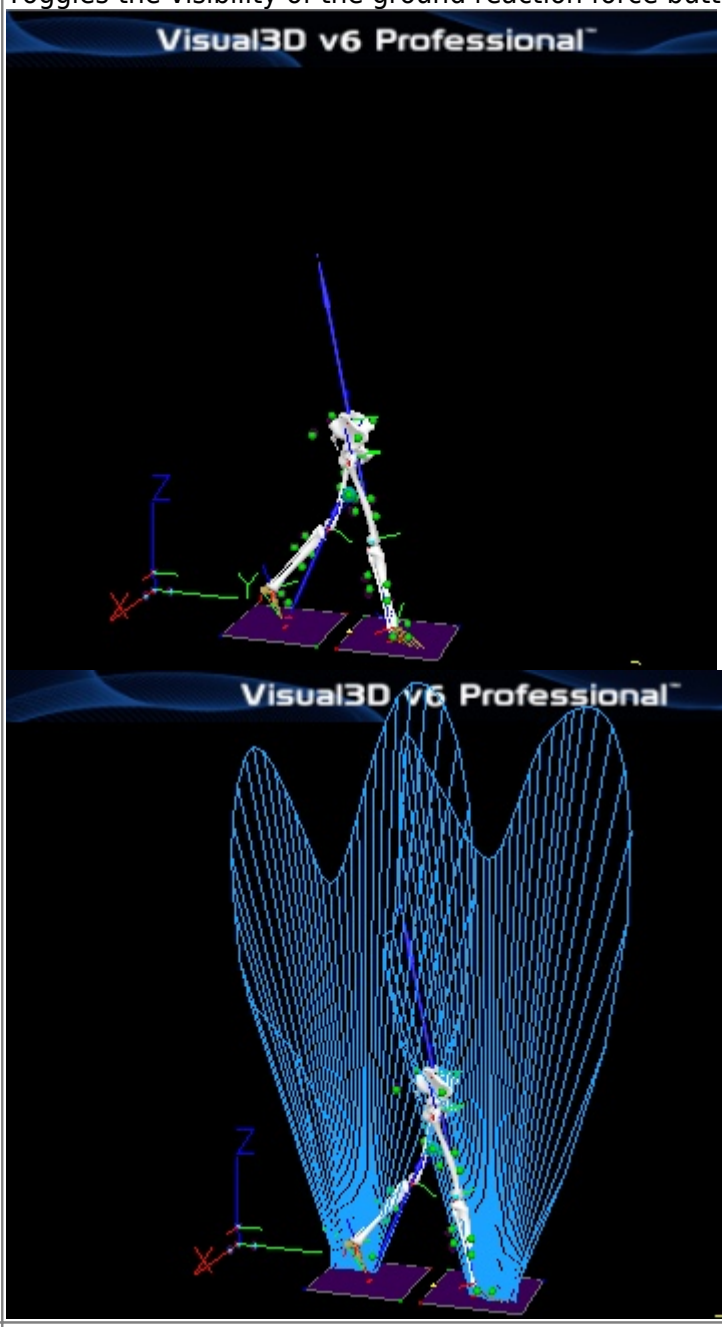


3D View Options



This property pages contains a number of toggle settings for different view options in the animation window.

3D View Options	
Force Platforms	Toggles the visibility of the force platforms

Ground Reaction Force Butterfly	Toggles the visibility of the ground reaction force butterfly 
Ground Reaction Force Vector	Toggles the visibility of the ground reaction force vector.
Ground Reaction Force COP	Toggles the visibility of the ground reaction force Center of Pressure.
Ground Reaction Force Free Moment	Toggles the visibility of the ground reaction force Free Moment.
***Segment Assigned (Custom/Combined)**	Displays Assigned Forces.
Force Structures/Projected Forces	Displays Force Structures.
View Assigned Force Segments	Colors all segments that have been assigned to a force.
Lab/Floor	Toggles the visibility of the laboratory and floor.
Lab Axes	Toggles drawing the laboratory coordinate system axes.

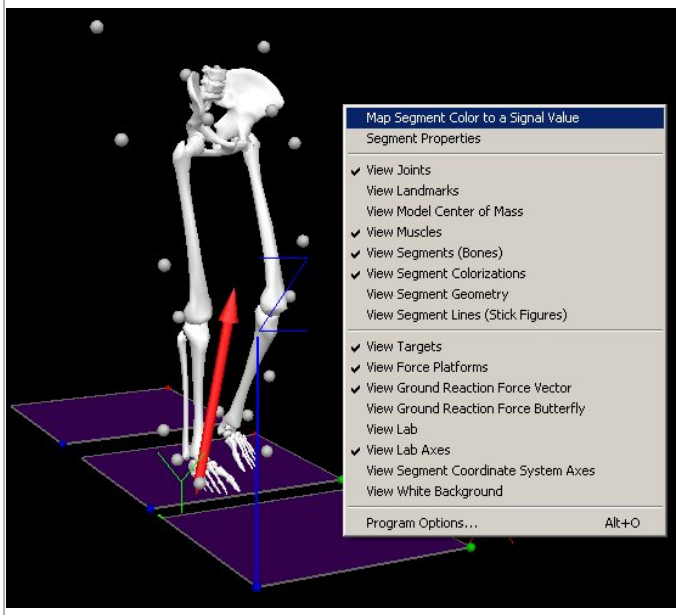
Lab Axes in Model Builder	Toggles drawing the laboratory coordinate system axes in Model Builder Mode.
Background Black/White	Draws the 3D animation with either a black or white background.
Targets	Toggles drawing of targets.
Color Targets by Residual	Color Targets by the magnitude of the Residual component.
Landmarks	Toggles drawing of Landmarks.
Joints	Toggles drawing the “Joints” used for the Inverse Dynamics.
Local Targets (in LCS)	Toggles drawing the expected location of the markers as defined by the model.
Model Center of Mass	Toggles drawing the Center of Mass of the Model.
Muscles	Toggles drawing Muscles. Muscles can be drawn as lines or cylinders.
Kinetic Segments	Toggles drawing Kinetic Segments.
Kinematic Only Segments	Toggles drawing Kinematic Only Segments.
Display Segment Colors	Toggles the color of segment based on an assigned signal.
Display Segment Inertial Geometry	Toggles drawing the Segment Geometry.
Segments as Stick Figures	Toggles drawing Kinetic Segments as Stick Figures.
Kinematic Only Segments as Stick Figures	Toggles drawing Kinematic Only Segments as Stick Figures.
Segment Coordinate System Axes	Toggles the visibility of the SCS. Specifies the location to draw the axis as origin or center of mass

Segment Colorization

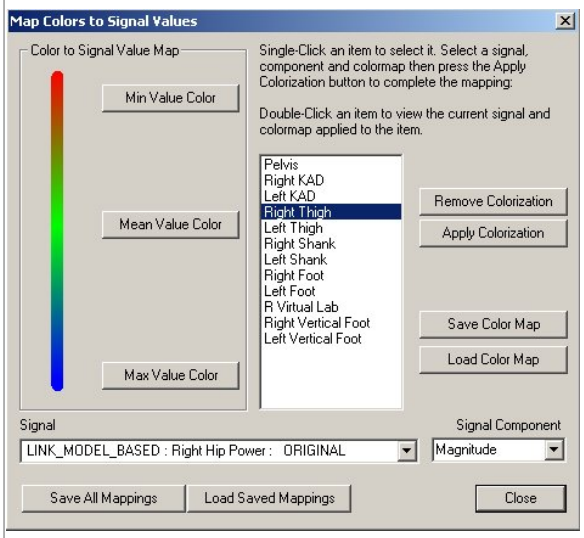
It is possible to color a segment model or a muscle object based on a signal value.

Segment Colorization

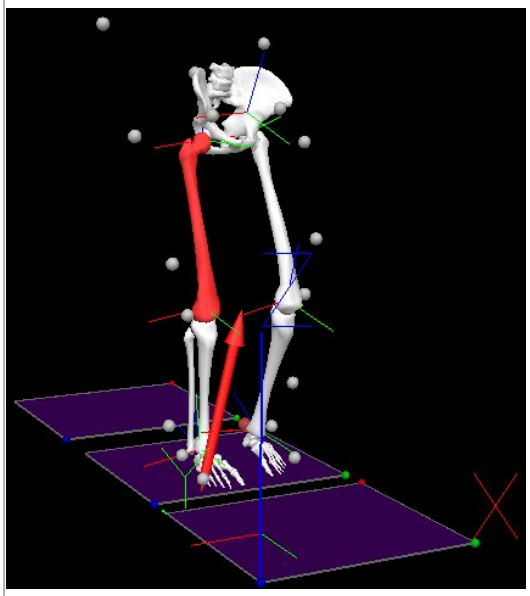
A right mouse click in the animation window will cause the following popup to appear. Select **Map Segment Color to a Signal Value**



The following dialog allows the selection of a Visual3D model object and the associated signal



In the above dialog the magnitude of the **Right Hip Power** signal is used to color the **Right Thigh Segment.** Note that it is important to select the **Apply Colorization** button after the segment and signal have been selected.



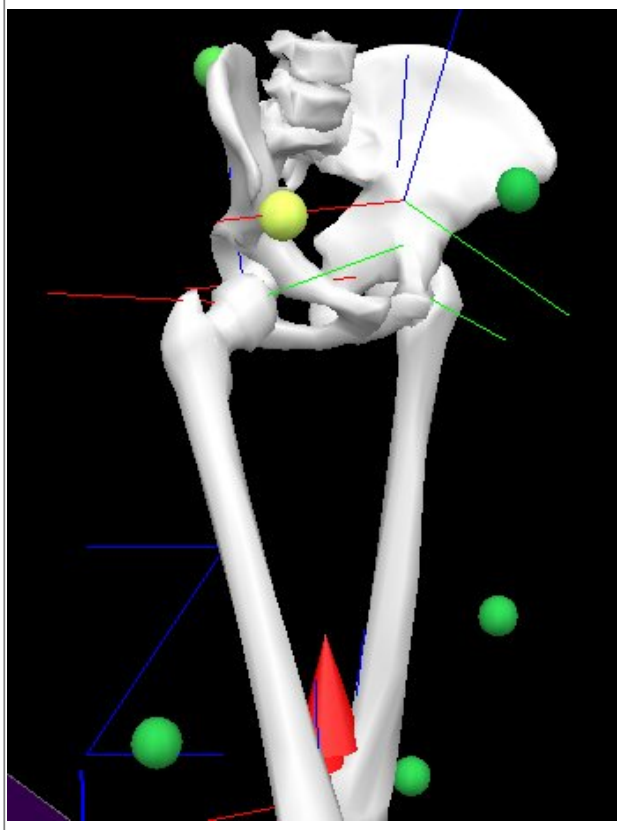
The animation shows the colored right thigh.

Target Colorization

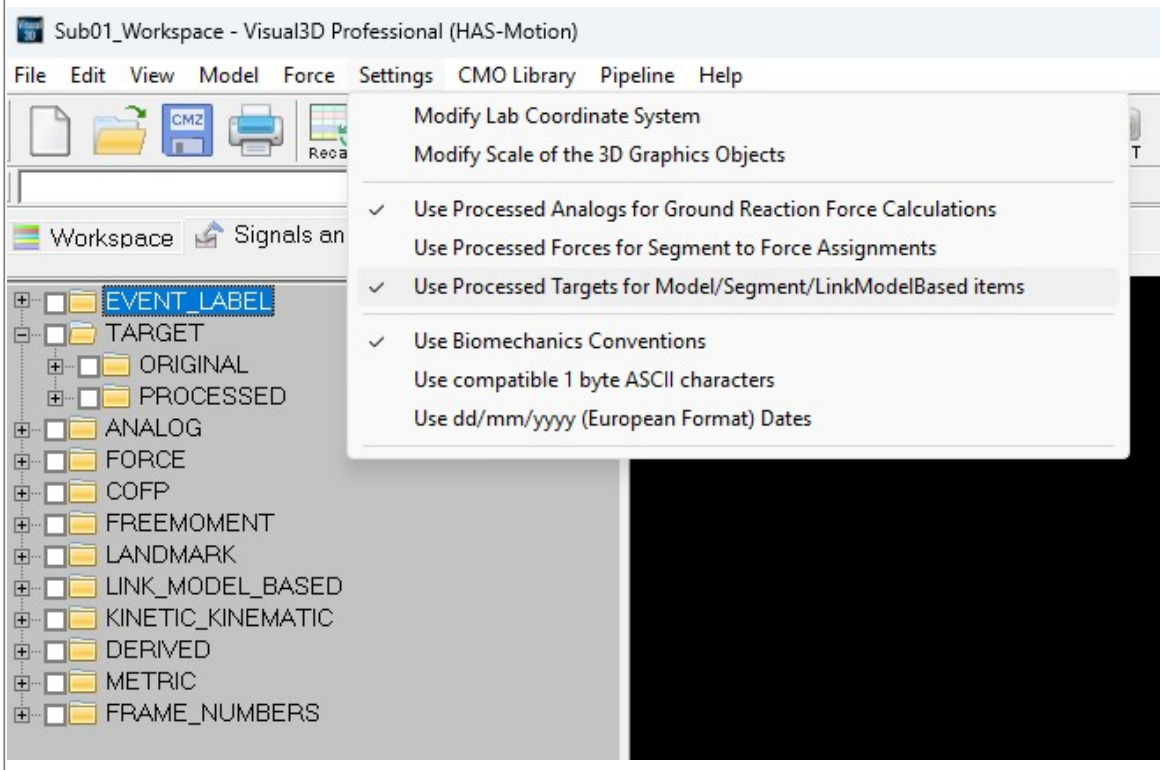
The motion capture markers are colored based on the TARGET residual value.

Target Colorization

Residual= 0 ⇒ Red
Maximum Residual in the file ⇒ Yellow
Minimum Residual in the file ⇒ Green



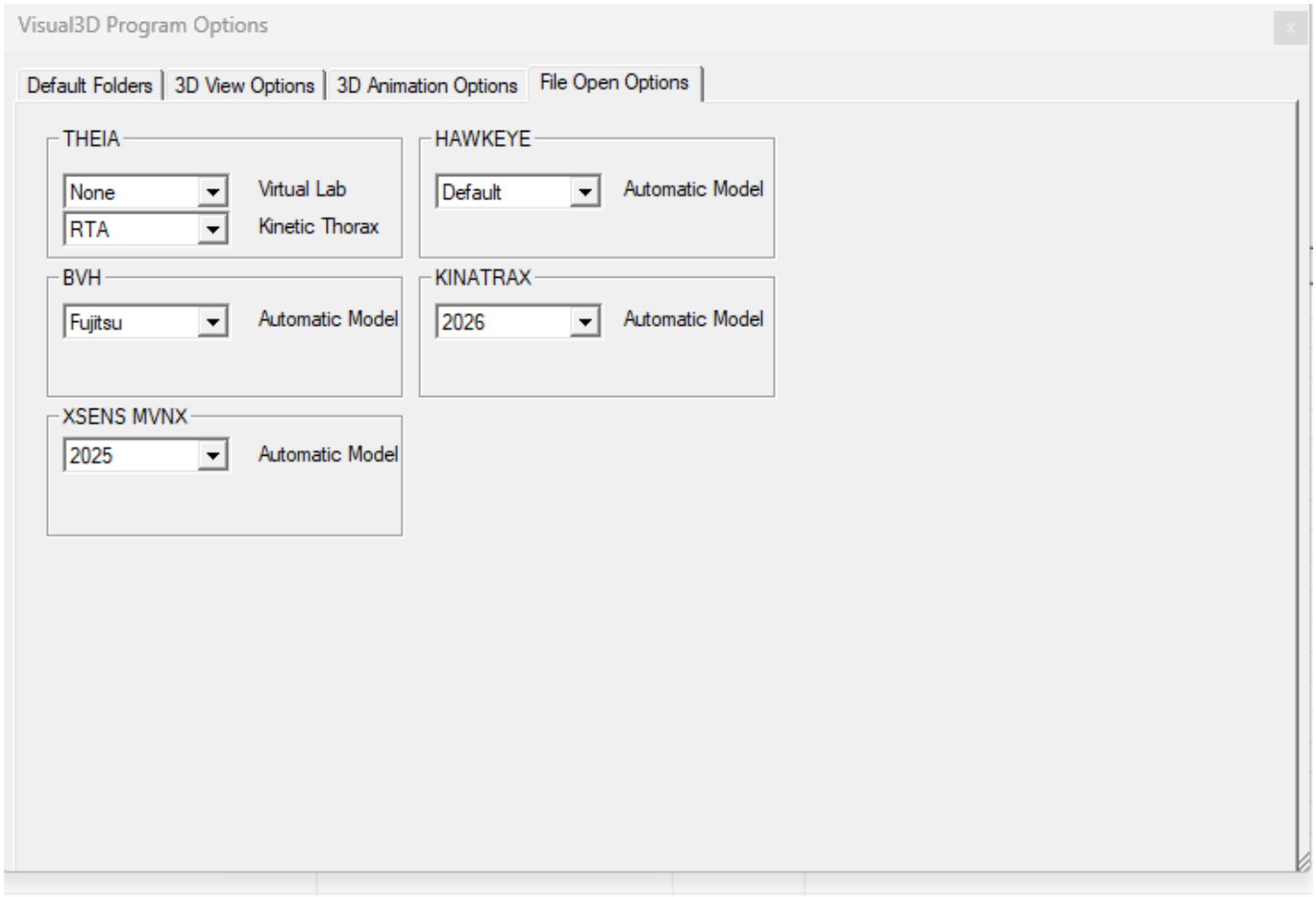
Note that if the TARGETS have been processed, the color of the markers will always be green because the residual has no meaning for a PROCESSED signal.



Note that an exception is when the option to **Use ProcessTargets for Model/Segment/LinkModeBased Items** is unselected because this results in the ORIGINAL signals being used for the animation as well as the computations.

File Open Options

Visual3D's File_Open command supports data files from multiple vendors, including Theia, Fujitsu, XSENS, Kinatrax, and **Hawkeye**.



Theia	**Options**	**Description**
Virtual Lab	Basic Gait or None	If “Basic Gait” is selected, a virtual lab (VLB) will be generated for the model. Note, this VLB segment will only be suitable for walking and running. If you have different movements, the VLB might be meaningless.
Kinetic Thorax	RTA or RTX	The selected segment will be set to 'kinetic', while the other as 'kinematic only' in the model definition

BVH	**Options**	**Description**
Automatic Model	Fujitsu	The default model will follow the Fujitsu definition

XSENS	**Options**	**Description**
Automatic Model	Legacy or 2025	The default model that will automatically be built can be specified as the 'legacy' model or '2025' version

Hawkeye	**Options**	**Description**
Automatic Model	Default	The default model will follow the Hawkeye definition

Kinatrax	**Options**	**Description**
Automatic Model	Legacy or 2026	The default model that will automatically be built can be specified as the 'legacy' model or '2025' version