

The Directional / Automatic solid modeling algorithm is used to interpolate a linearly-biased model by performing the following steps;

1. The “weighted centroid” for the control points is automatically computed. This is a point that represents the “center” by taking into account both the positions and the assigned weights (i.e., g-values) of the control points.
2. A Normalized Direction Vector (NDV) passing through the weighted centroid is computed. This is an infinite-length line that represents a form of “best-fit” of the weighted control points. In the case of a linear groundwater plume, this would be the axis of the plume.
3. An inverse-distance-squared (IDW2) algorithm is then used to compute voxel values based on the distances from the voxel midpoint to the control points plus the distance to the NDV. The influence of the NDV may be adjusted by changing the Axis Weighting Factor (AWF). For example, if the AWF is set to zero, the distance from the voxel midpoint to the NDV will not be considered and the result is the same as the Inverse-Distance Anisotropic algorithm. Conversely, if the AWF is set to 32, the NDV will influence 32 percent of the voxel interpolation. As a consequence, the final model will be more biased along the NDV axis.

The diagrams within Figure 1 depict the effects of the Axis Weighting Factor upon the model interpolation. The blue isosurfaces represent the same cutoff value for each model.

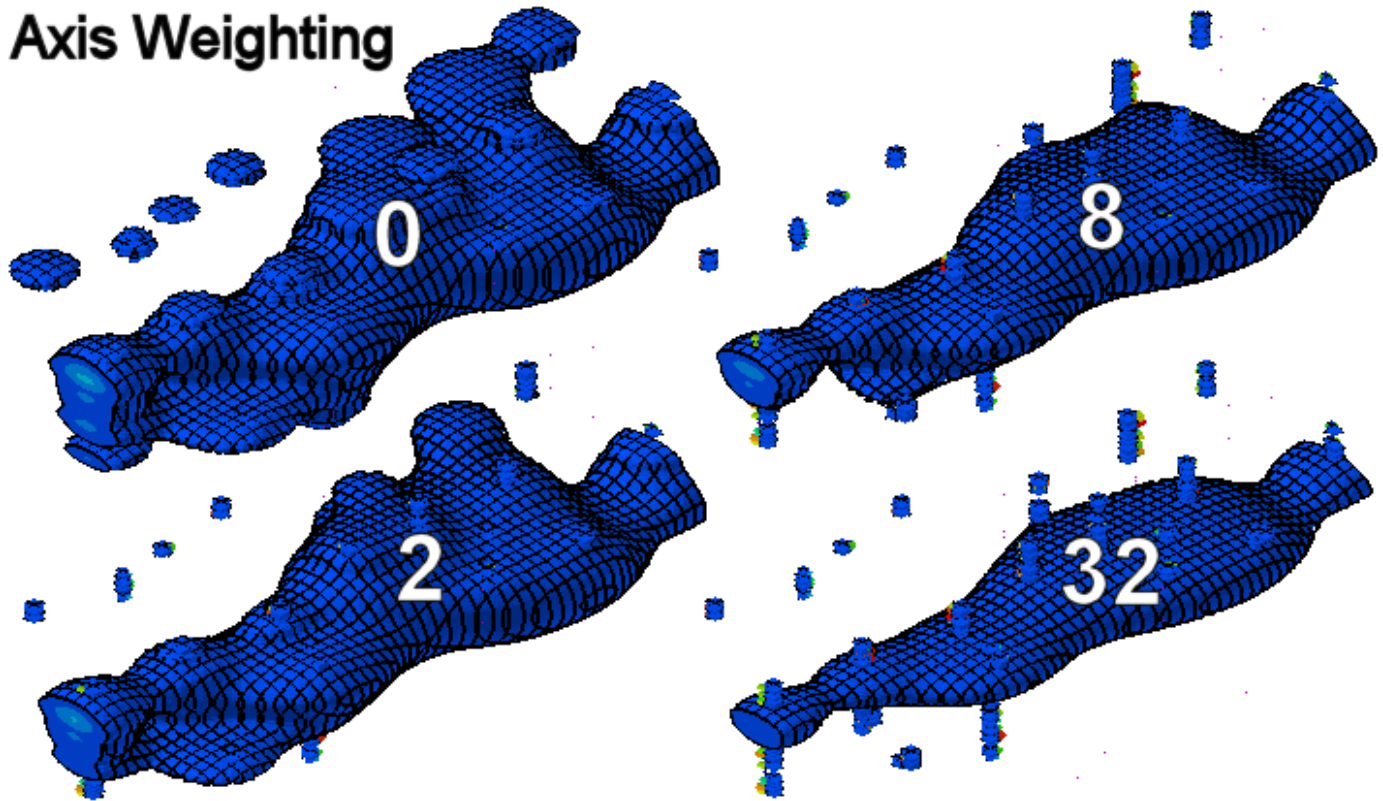


Figure 1