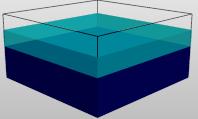
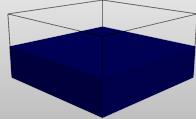


# Basic Depositions

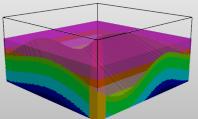
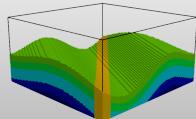
## Layer



**Layer(base,width,value):**

Add a horizontal layer with *value* rock type. The height of the *base* and the *width* are specified.

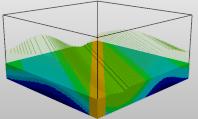
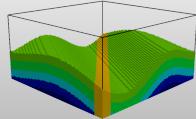
## Sedimentation



**Sedimentation(value\_list, thickness\_list, base):**

A sequence of horizontal layers are deposited. The number of values in *value\_list* indicates total layers, [1,2,2,1] is four layers. The values in *thickness\_list* are cycled through until all layers deposited. An optional *base* parameter indicates where to start from, if left empty, will deposit starting from lowest z-value rock.

## Unconformity

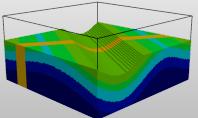
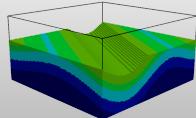


**UnconformityBase(base,value):**

**UnconformityDepth(depth,value):**

Replace rock with a new *value*, default is air. Two types of process, eroding upward to infinity from a *base*, or downward to an assigned *depth* from the highest rock point in the model.

## DikePlane

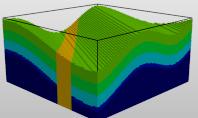
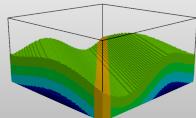


**DikePlane(strike, dip, width, origin, value):**

Replace existing rock along the plane specified by *strike*, and *dip* angles, as measured from an *origin* point coincident with the dike plane. The intrusion extends to either side of the plane for a total *width* of rock replaces with *value*.

# Basic Transforms

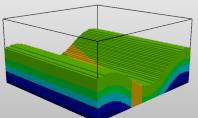
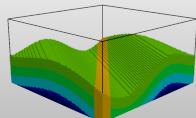
## Shift



**Shift(vector):**

Shift the entire model by some *vector*. Produces a translated model.

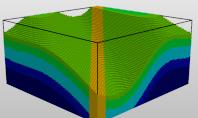
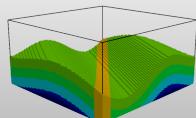
## Rotate



**Rotate(axis, angle):**

Rotate the entire model about a fixed *axis* represented by a 3d vector by a CCW rotation *angle* in degrees. Left hand rule rotation.

## Tilt

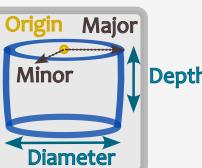
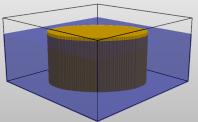
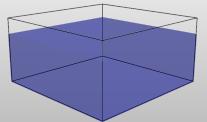


**Tilt(strike, dip, origin):**

A variation of Rotate that is specified by *strike* and *dip* angles. The *origin* is the reference point from which *strike* is measured.

# Intrusions

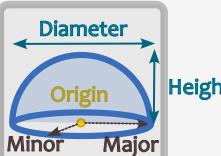
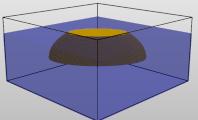
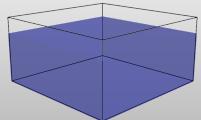
## DikeColumn



**DikeColumn**(origin, diam, depth, minor\_scale, rotation, value, clip):

An elliptical column extending downward from *origin* for distance *depth*. The major axis is rotated by *rotation* degrees with the ratio of minor to major axis of the ellipse given by *minor\_scale*. The rock is replaced by *value* and will not extend into the air if *clip* is True.

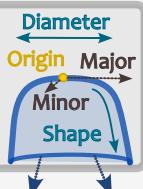
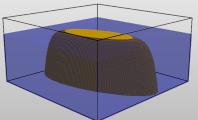
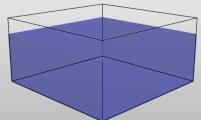
## DikeHemisphere



**DikeHemisphere**(origin,diam,height,minor\_scale, rotation,value,upper, clip):

A hemispherical elliptic deposit with *origin*, *diameter*, and *height*. The *rotation* determines the major axis direction, with the minor axis scaled by *minor\_scale*. A rock type *value* is assigned, and the *upper* boolean determines if upward or downward facing.

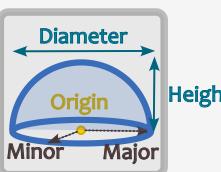
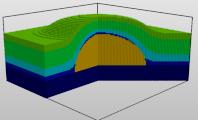
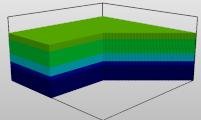
## DikePlug



**DikePlug**(origin,diam,shape,minor\_scale,rotation,value):

A polynomial profile elliptical intrusion with peak at *origin*, a scaled major *diameter* with a *minor\_scale* for the minor axis. Major axis direction can have *rotation*, and the elevation profile is adjusted with *shape*, which gives a steeper profile with high values. Extends infinitely downward.

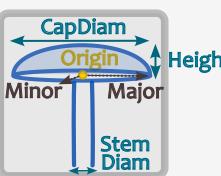
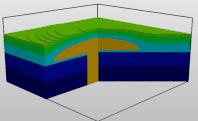
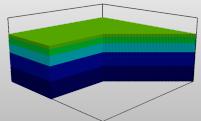
## DikeHemispherePushed



**DikeHemispherePushed()**:

The same effect as DikeHemisphere but with additional rock layer displacement from the intrusion. Parameter selection is the same as the previous process.

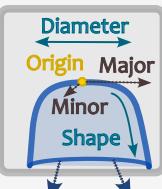
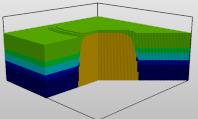
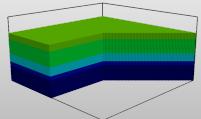
## Laccolith



**Laccolith**(origin, cap\_diam, stem\_diam, height, minor\_scale, rotation, value, upper):

Intrusion formed of a column and cap with the junction at *origin*, a *cap* and *stem* diameter, specified *cap height*, and an elliptical cross section determined by the ratio *minor\_scale* and *rotation*. Setting *upper* to false creates a Lopolith instead.

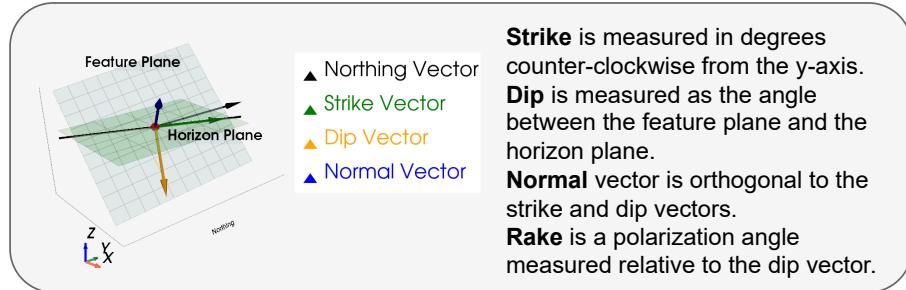
## DikePlugPushed



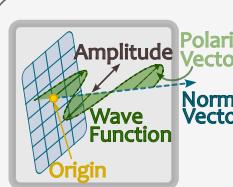
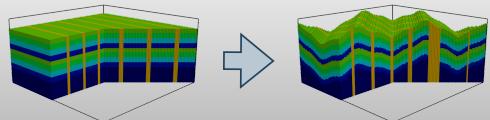
**DikePlugPushed()**:

A DikePlug with additional displacement effects on the surrounding rock layers. Parameter selection is the same as the previous process.

# Tectonic Transforms

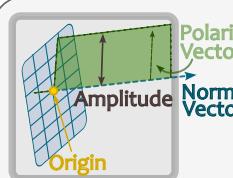
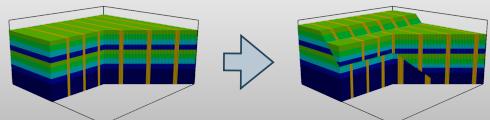


## Fold



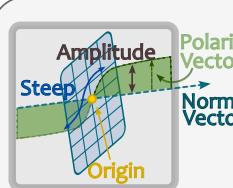
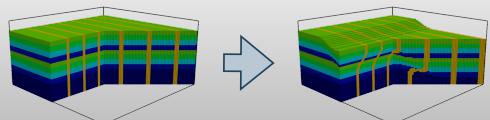
**Fold**(strike,dip,rake,period,amplitude,phase,shape,origin,func): A periodic transverse plane wave along normal direction and polarization indicated by *slip,dip*, and *rake*. *Period*, *phase* and *amplitude* modulate an underlying 1D *wave func*, normalized to unit amplitude. Default *func* is cosine with *shape* controlling a harmonic frequency.

## Fault



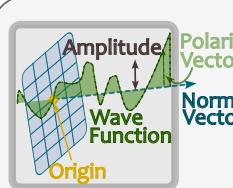
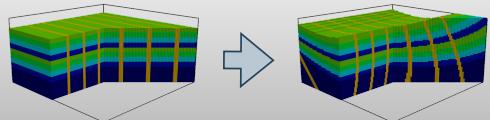
**Fault**(strike,dip,rake,amplitude,origin): A step function displacement occurring along a fault plane determined by the *strike*, *dip*, and *rake*. The plane is coincident with a specified *origin*, with a net displacement of *amplitude* along the slip vector direction as measured by *rake*.

## Shear



**Shear**(strike,dip,rake,amplitude, steepness, origin): A sigmoid function displacement occurring along a plane determined by the *strike*, *dip*, and *rake*. The plane is coincident with a specified *origin*, with a maximum displacement given by *amplitude* and a steepness modulated by *steepness*.

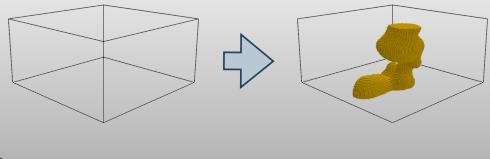
## Slip



**Slip**(displacement\_func, strike,dip,rake,amplitude,origin): A generalization of transverse plane wave deformations. Requires a 1D *function* that maps the amplitude of displacement along the plane wave. Shown to the left is a parabolic displacement. Fault, Fold, and Shear are all variations of the more general Slip process.

# Procedural Deposition

## MetaBall



### MetaBall(balls, threshold, value, clip):

A process that forms a deposit using a surface potential generated by a list of Balls and a *threshold* potential. Each ball has an *origin*, *radius*, and *goo-factor*. Governing its contribution to the potential. A Ball list procedural generator is provided.