Intended function of xml-defined piecewise functions in AWIPS II

This example is for where the maximum display range is one byte (256 discrete values).

DEFINED: Let A be a one-dimensional array containing byte values, including the minimum (0) and maximum (255) value in ascending order – Example (0 10 50 255)
DEFINED: Let B be a one-dimensional array containing float (or similar) values, including the minimum and maximum value (any real) – Example (65.0 77.7 90.9 100.1)
USED: Let C be an integer counter value
PRODUCED: Let D be a one-dimensional array containing float values, with elements numbering one more than maximum value in array A (256)

A and B must
    be the same size and
    contain at least two elements each

For linear case (default)

```
X=0,Y=0 (Assuming array element 0 is first element in array)
C=0
For each element index Y in array D except last element, do
 If Y is greater than or equal to value A(X)
  X++
  C=0
 End if
 D(Y) = B(X) + (B(X+1)-B(X))/(A(X+1)-A(X))*C
 C++
End for
D(Y+1)=B(X+1) # last element in array D
```

For logarithmic (ln) case

```
X=0,Y=0 (Assuming array element 0 is first element in array)
C=0
For each element index Y in array D except last element, do
 If Y is greater than or equal to value A(X)
  X++
  C=0
 End if
 D(Y) = B(X) + ln(1+(B(X+1)-B(X))/(A(X+1)-A(X)))*C
 C++
End for
D(Y+1)=B(X+1) # last element in array D
```

The resulting generic element index Y in array D corresponds to float value D(Y) as defined by piecewise float points in array B and their corresponding break point byte value in array A

Last modification by Jordan Gerth, CIMSS, September 27, 2011