
Let's start, because we are near Russia, let's start with Russia

I think it was unfortunate. That manifestation that we saw with that invasion of Georgia shows us some steps backwards that Russia has recently taken away from the race toward a more democratic nation with democratic ideals. That's why we have to keep an eye on Russia.

And, Charlie, you're in Alaska. We have that very narrow maritime border between the United States, and the 49th state, Alaska, and Russia. They are our next door neighbors.


What insight into Russian actions, particularly in the last couple of weeks, does the proximity of the state give you?


They're our next door neighbors and you can actually see Russia from land here in Alaska, from an island in Alaska.

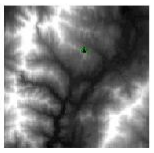
Can You See Russia from Alaska?

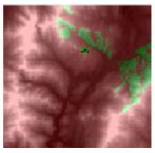
Viewshed Analysis

Why calculate viewshed?

Viewshed is useful when you want to know how visible objects might be—for example, From which locations on the landscape will the water towers be visible if they are placed in this location? or What will the view be from this road?

In the example below, the viewshed from an observation tower is identified. The elevation raster displays the height of the land (darker locations represent lower elevations), and the observation tower is marked as a green triangle. The height of the observation tower can be specified in the analysis. Cells in green are visible from the observation tower, while cells in red are not.



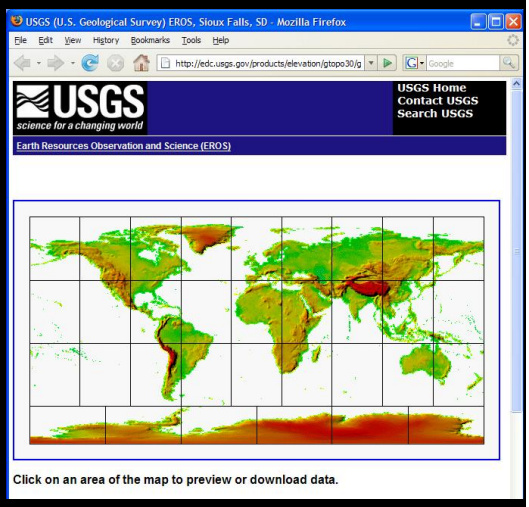


Viewshed Analysis is usually conducted from a few points (towers) or lines (roads)

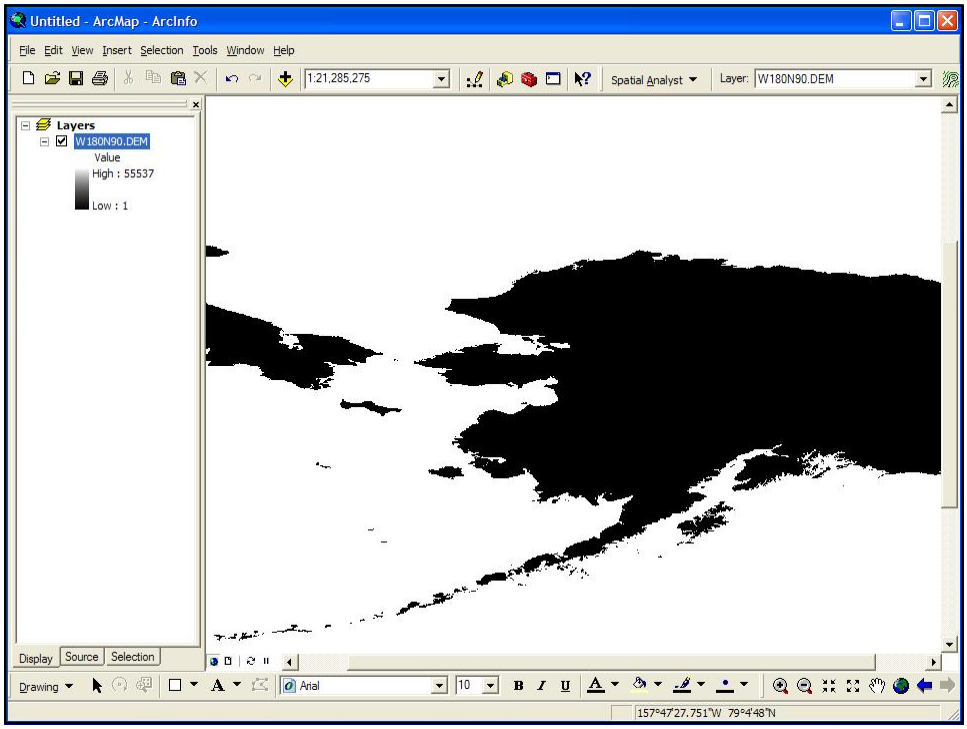
Data Source: USGS EROS Server

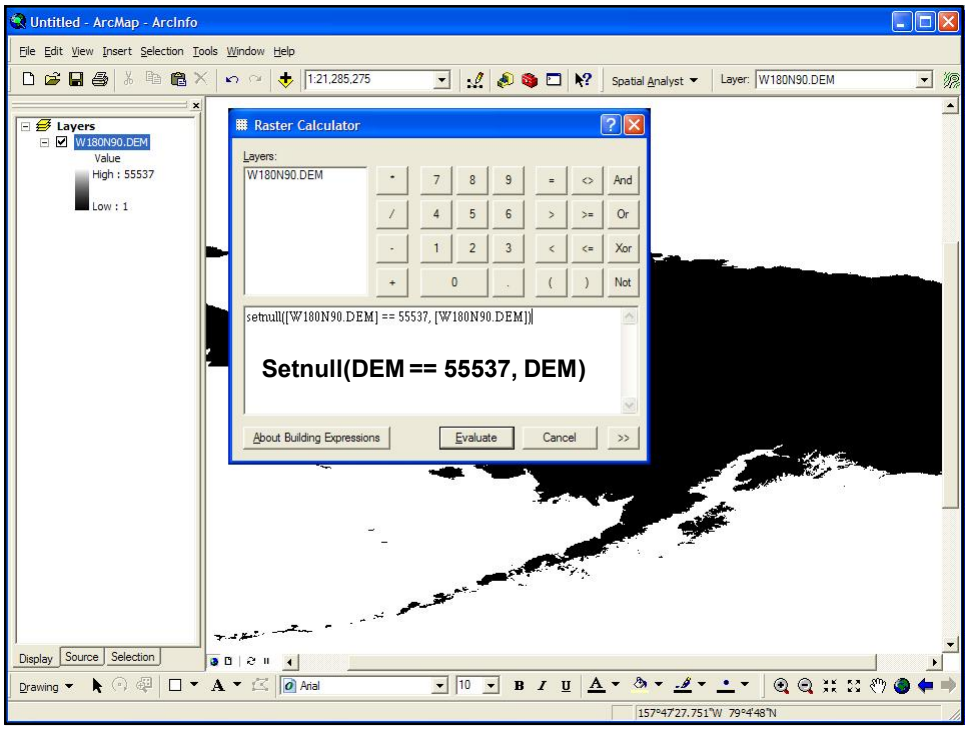
Earth Resources Observation and Science

http://edc.usgs.gov/products/elevation/gtopo30/gtopo30.html



"GTOPO30 is a global digital elevation model (DEM) with a horizontal grid spacing of 30 arc seconds (approximately 1 kilometer)."


Untitled - ArcMap - ArcInfo
File Edit View Insert Selection Tools Window Help
1:21,285,275
Spatial Analyst
Layer: W180N90.DEM
Layers
W180N90.DEM
Value
High : 55537
Low : 1
Display Source Selection
Drawing
Arial
10
157°47'27.751"W 79°4'48"N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Layers
W180N90.DEM
Value
High : 55537
Low : 1
Raster Calculator
Layers:
W180N90.DEM
And
Or
Xor
Not
setnull([W180N90.DEM] == 55537, [W180N90.DEM])
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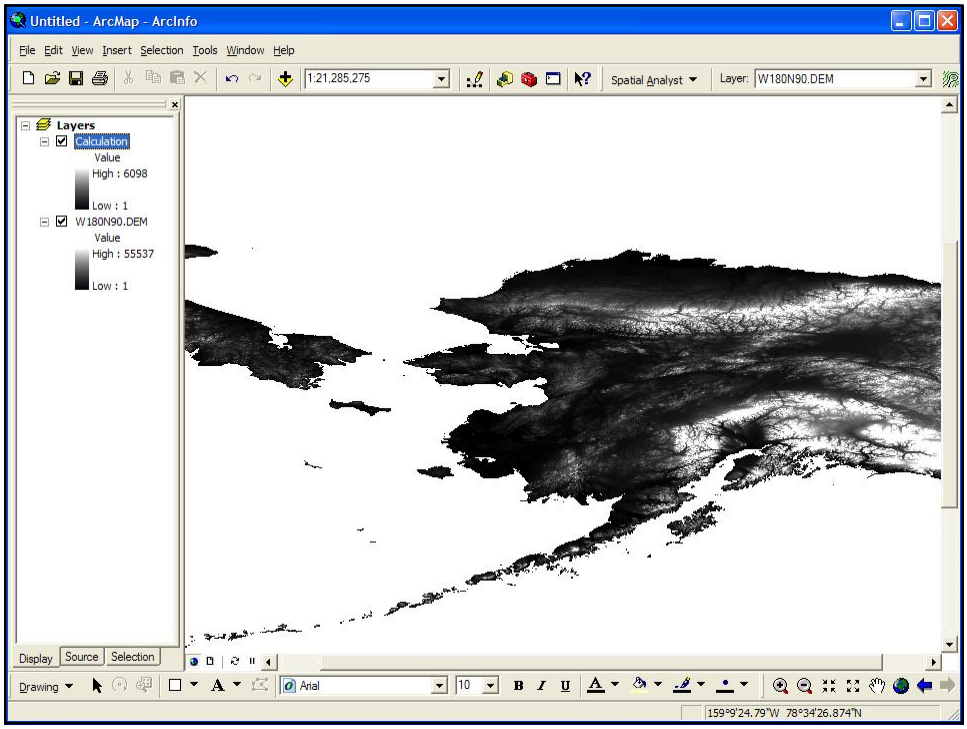
About Building Expressions
Evaluate
Cancel
Display Source Selection
Drawing
Arial
10
157°47'27.751"W 79°4'48"N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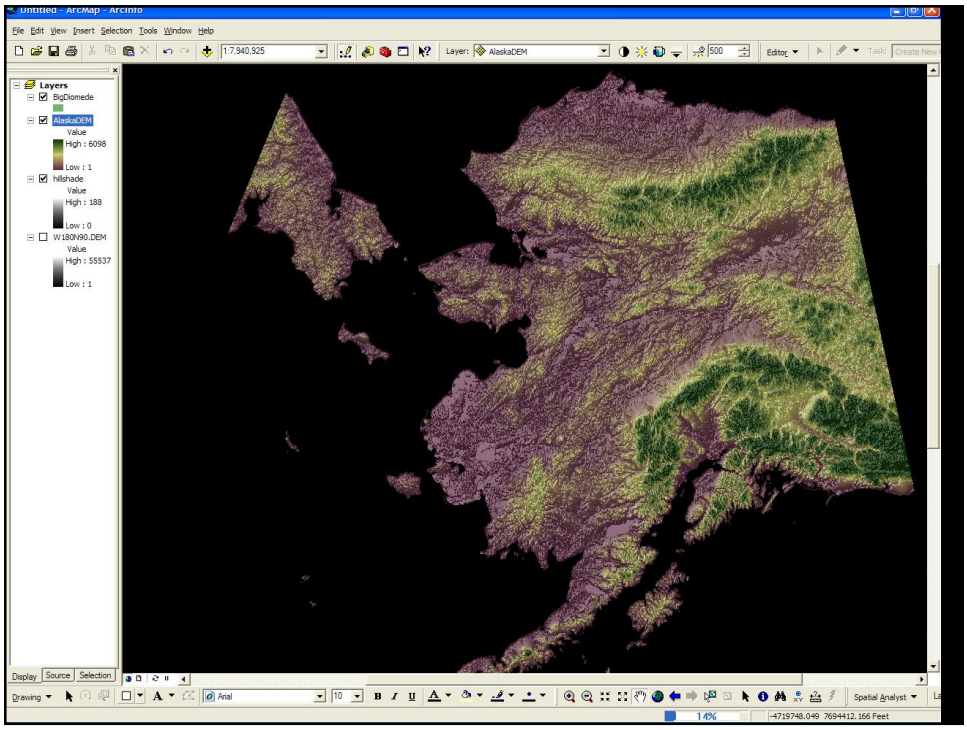
File Edit View Insert Selection Tools Window Help
1:21,285,275
Spatial Analyst
Layer: W180N90.DEM
Layers
Calculation
Value
High : 6098
Low : 1
W180N90.DEM
Value
High : 55537
Low : 1
Display Source Selection
Drawing
Arial
10
159°9'24.79"W 78°34'26.874"N


File Edit View Insert Selection Tools Window Help
Layers
BigDiomede
AlaskaDEM
Value
High : 6098
Low : 1
hillshade
Value
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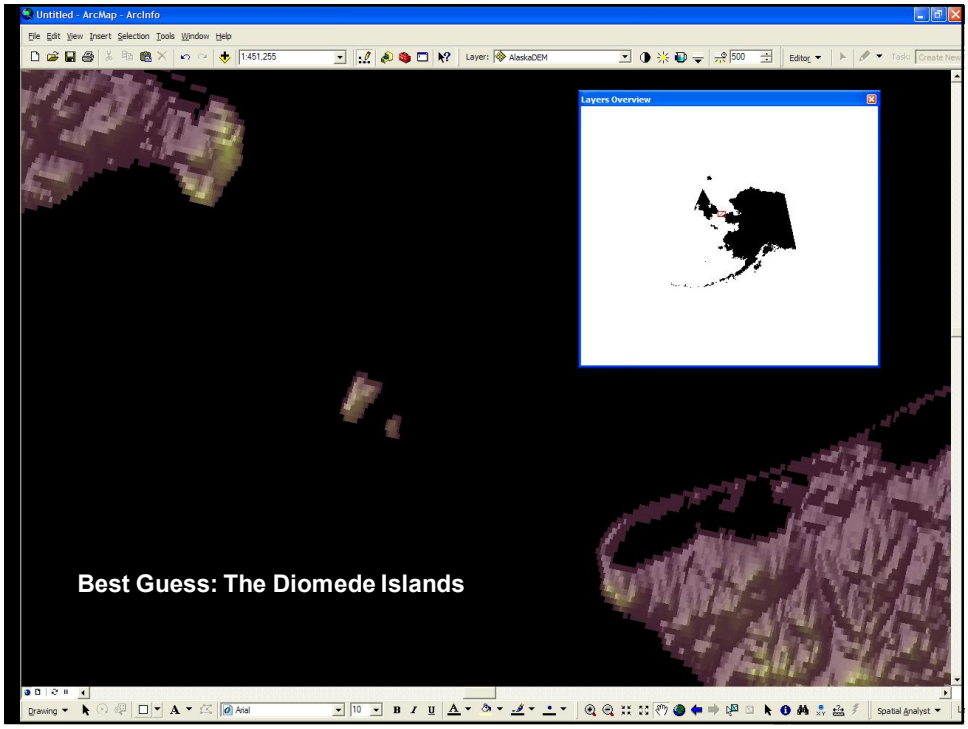
Low : 0
W180N90.DEM
Value
High : 55537
Low : 1
Display Source Selection
Drawing
Arial
10
Spatial Analyst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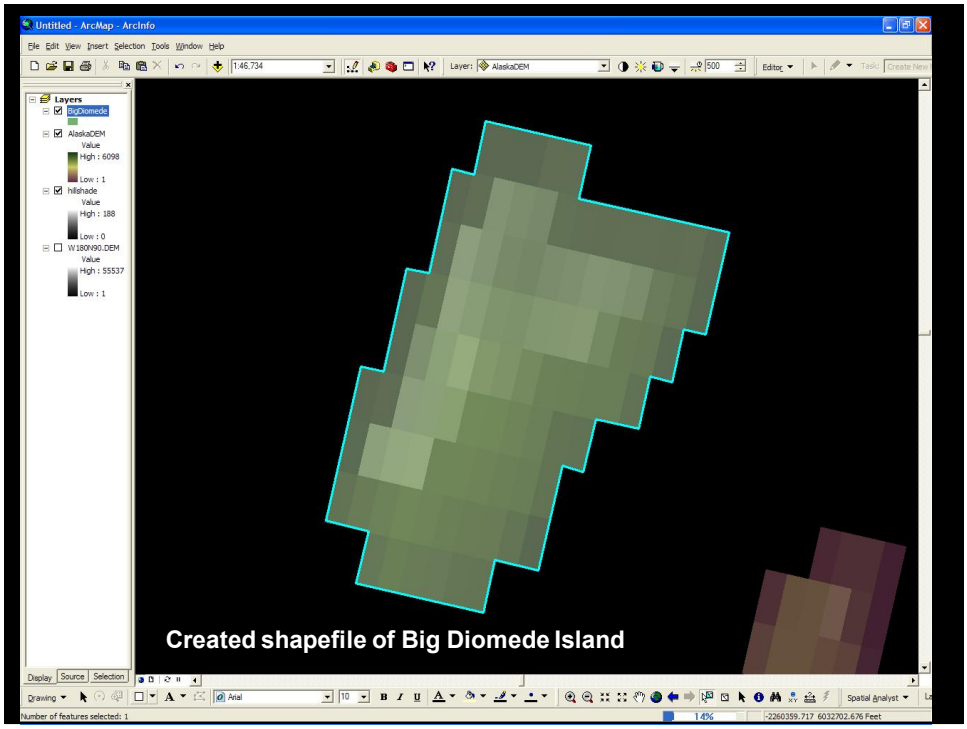
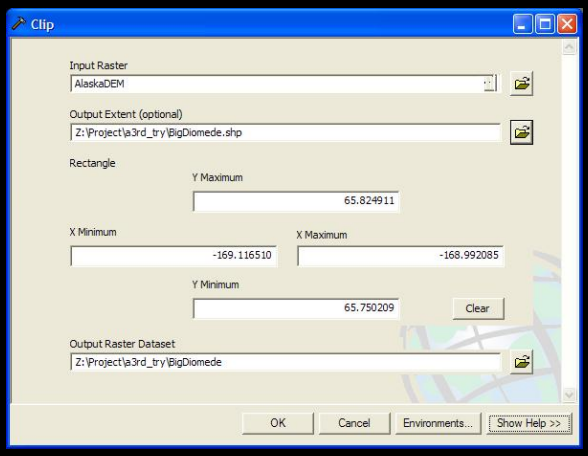
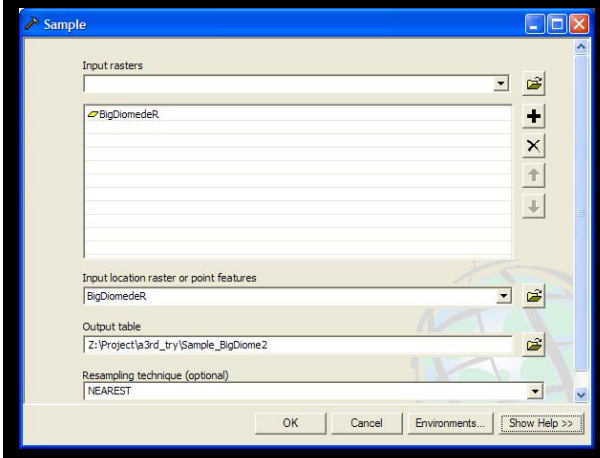
Layers Overview
Best Guess: The Diomede Islands

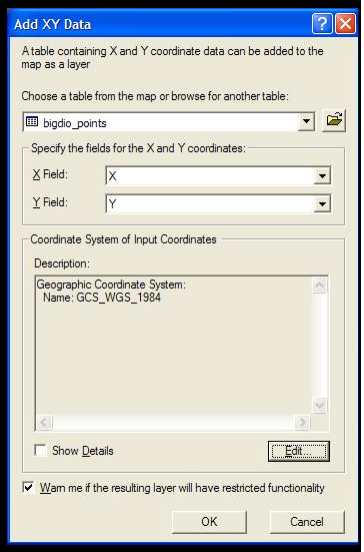

Untitled - ArcMap - ArcInfo
Layers
BigDiomede
AlaskaDEM
hillshade
W180N90.DEM
Created shapefile of Big Diomede Island



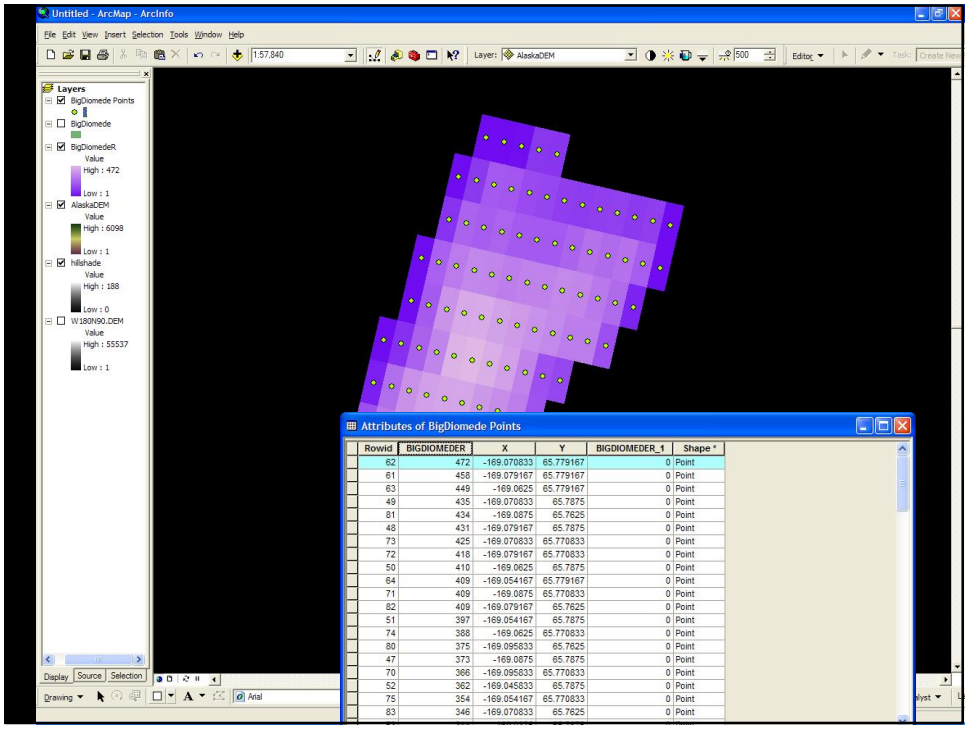
Clipped Alaska raster to extent of Big Diomede Island



Sampled Big Diomede raster cells to points



Added the point event data to the map using the Add X Y Data tool


Untitled - ArcMap - ArcInfo
File Edit View Insert Selection Tools Window Help
Layers
BigDiomede Points
BigDiomede
BigDiomedeR
AlaskaDEM
hillshade
W180N90.DEM
Attributes of BigDiomede Points
Rowid BIGDIOMEDER X Y BIGDIOMEDER_1 Shape *
62 472 -169.070833 65.779167 0 Point
61 458 -169.079167 65.779167 0 Point
63 449 -169.0625 65.779167 0 Point
49 435 -169.070833 65.7875 0 Point
81 434 -169.0875 65.7625 0 Point
48 431 -169.079167 65.7875 0 Point
73 425 -169.070833 65.770833 0 Point
72 418 -169.079167 65.770833 0 Point
50 410 -169.0625 65.7875 0 Point
64 409 -169.054167 65.779167 0 Point
71 409 -169.0875 65.770833 0 Point
82 409 -169.079167 65.7625 0 Point
51 397 -169.054167 65.7875 0 Point
74 388 -169.0625 65.770833 0 Point
80 375 -169.095833 65.7625 0 Point
47 373 -169.0875 65.7875 0 Point
70 366 -169.095833 65.770833 0 Point
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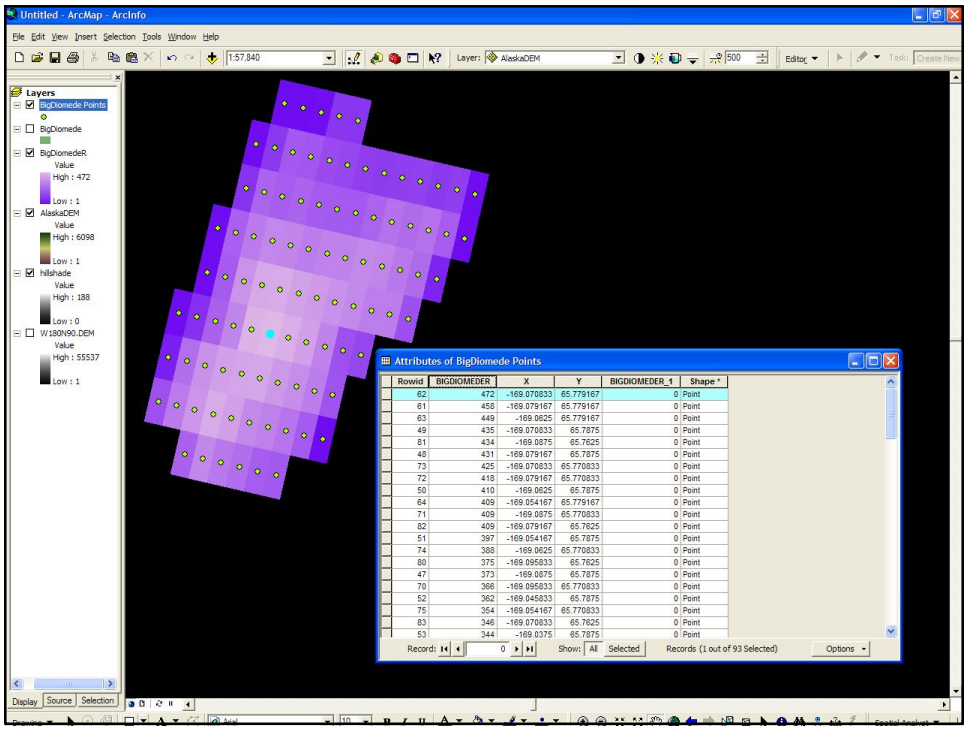
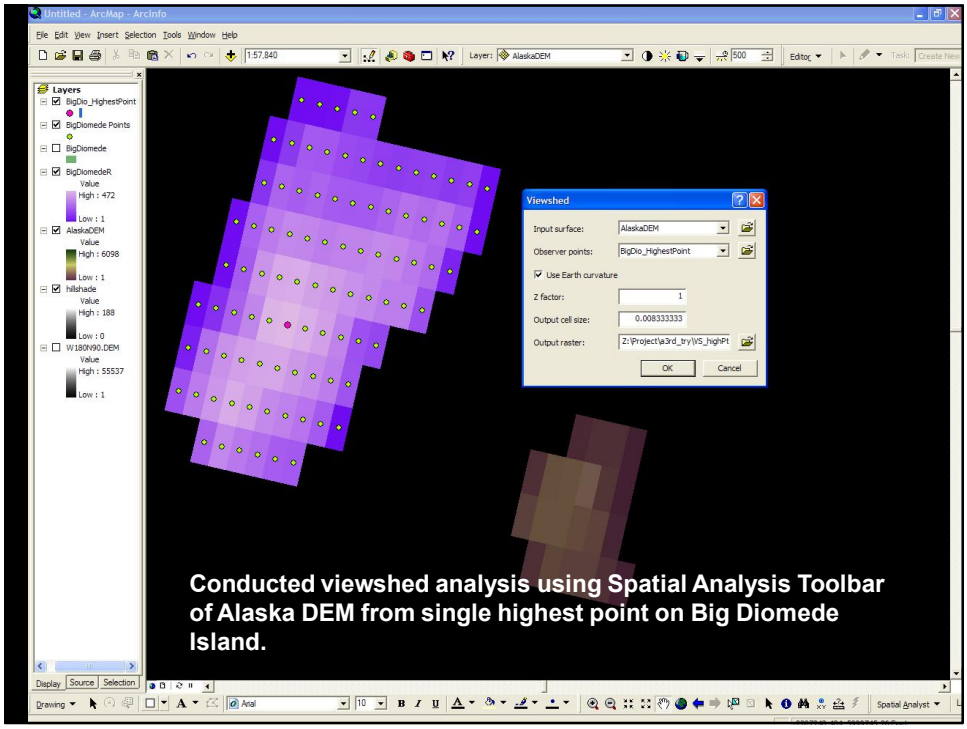
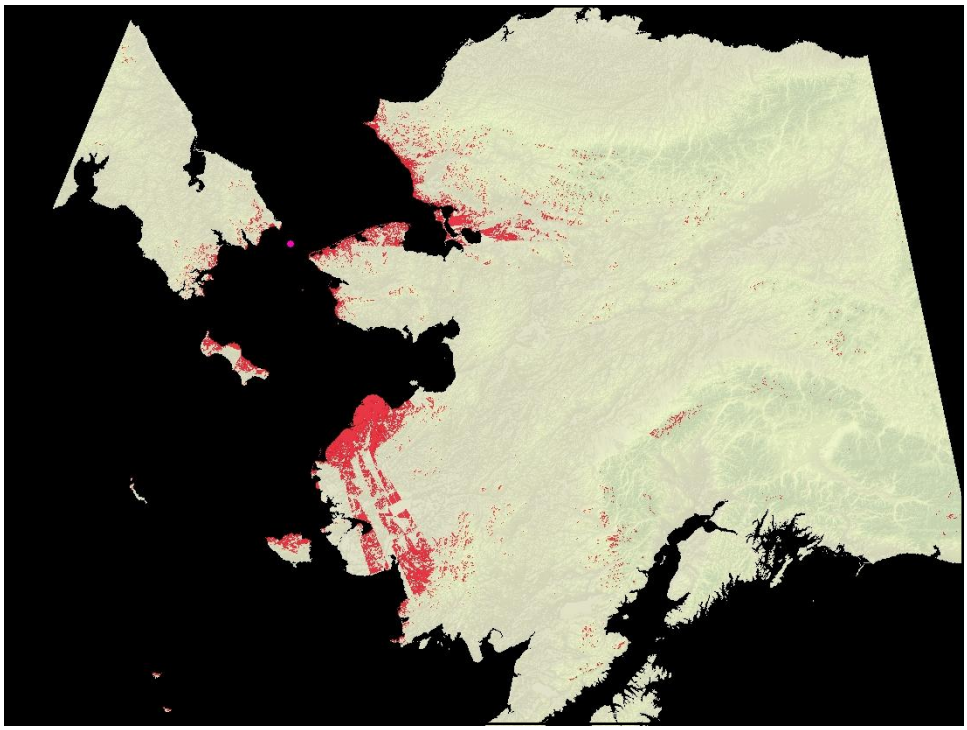
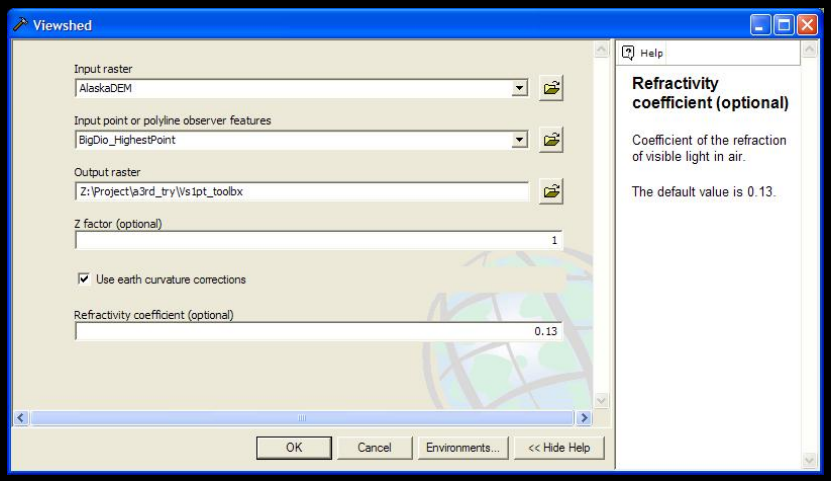
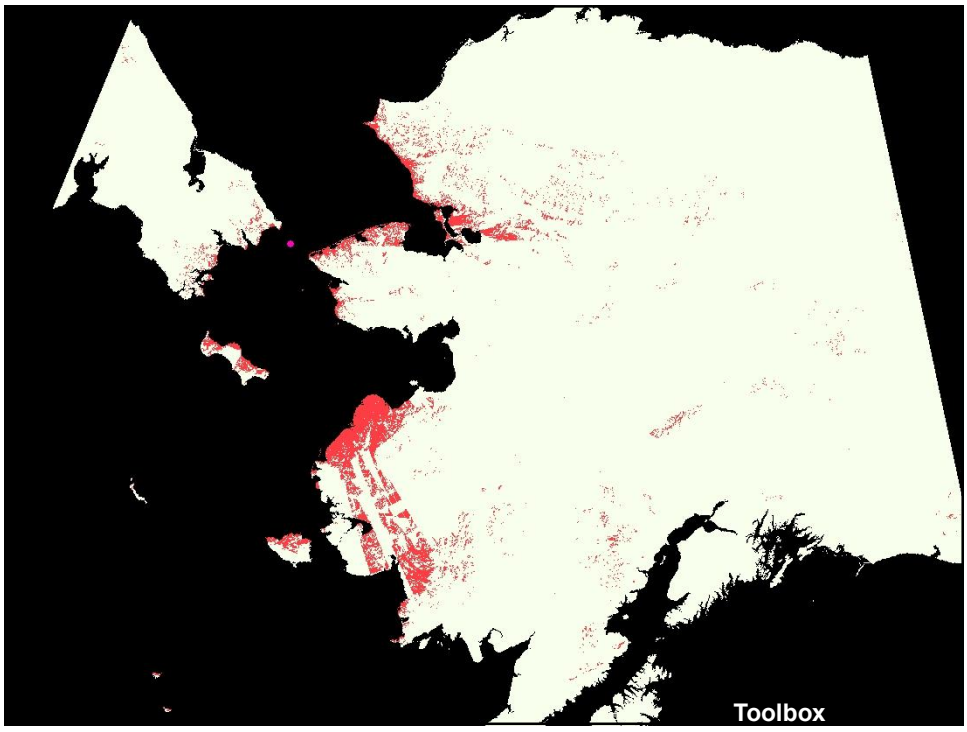

Untitled - ArcMap - ArcInfo
File Edit View Insert Selection Tools Window Help
Layers
BigDiomede Points
BigDiomede
BigDiomedeR
AlaskaDEM
hillshade
W180N90.DEM
Attributes of BigDiomede Points
Rowid BIGDIOMEDER X Y BIGDIOMEDER_1 Shape *
62 472 -169.070833 65.779167 0 Point
61 458 -169.079167 65.779167 0 Point
63 449 -169.0625 65.779167 0 Point
49 435 -169.070833 65.7875 0 Point
81 434 -169.0875 65.7625 0 Point
48 431 -169.079167 65.7875 0 Point
73 425 -169.070833 65.770833 0 Point
72 418 -169.079167 65.770833 0 Point
50 410 -169.0625 65.7875 0 Point
64 409 -169.054167 65.779167 0 Point
71 409 -169.0875 65.770833 0 Point
82 409 -169.079167 65.7625 0 Point
51 397 -169.054167 65.7875 0 Point
74 388 -169.0625 65.770833 0 Point
80 375 -169.095833 65.7625 0 Point
47 373 -169.0875 65.7875 0 Point
70 366 -169.095833 65.770833 0 Point
52 362 -169.045833 65.7875 0 Point
75 354 -169.054167 65.770833 0 Point
83 346 -169.070833 65.7625 0 Point
53 344 -169.0375 65.7875 0 Point
Record: 0 Show: All Selected Records (1 out of 93 Selected) Options

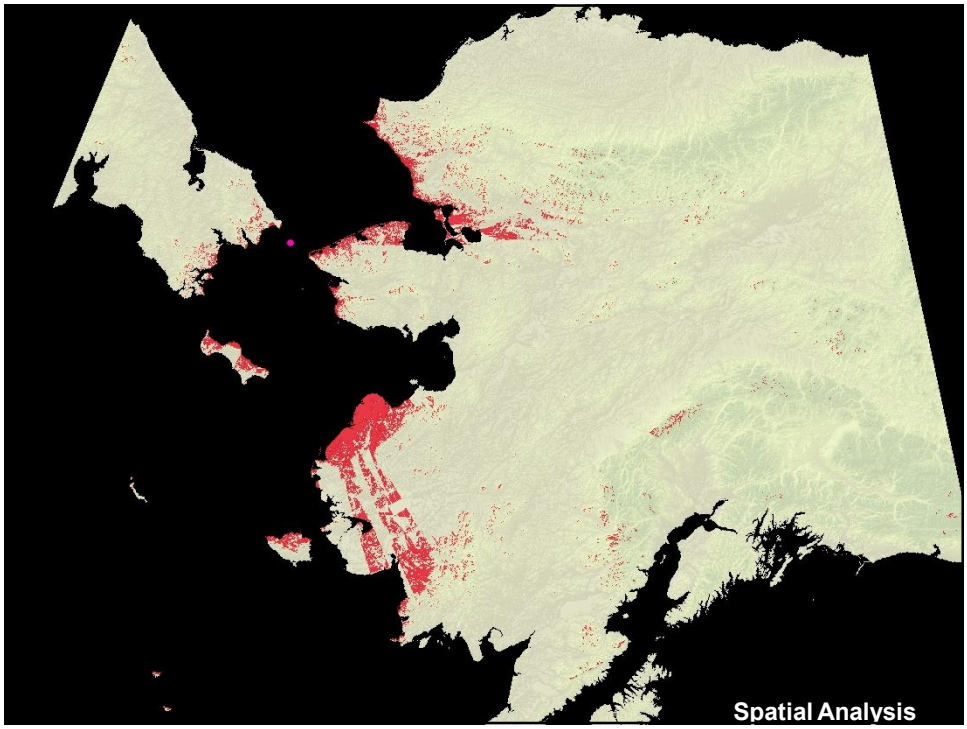

Untitled - ArcMap - ArcInfo
File Edit View Insert Selection Tools Window Help
Layers
BigDio_HighestPoint
BigDiomede Points
BigDiomede
BigDiomedeR
AlaskaDEM
hillshade
W180N90.DEM
Viewshed
Input surface:
AlaskaDEM
Observer points:
BigDio_HighestPoint
Use Earth curvature
Z factor:
Output cell size:
Output raster:
OK
Cancel
Conducted viewshed analysis using Spatial Analysis Toolbar of Alaska DEM from single highest point on Big Diomede Island.



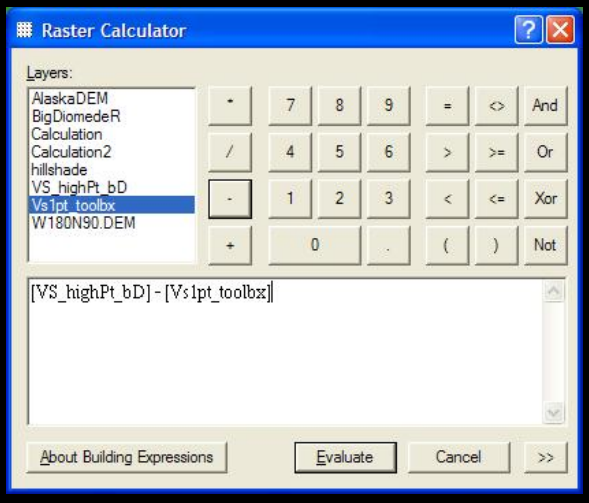
Conducted same viewshed analysis from single point to Alaska DEM using Spatial Analyst Tools> Surface> Viewshed. Earth's curvature was used in both analyses, a Refractivity Coefficient of 0.13 was used this time







There looks to be no difference between the two. To test this we subtracted one raster from the other using Raster Calculator

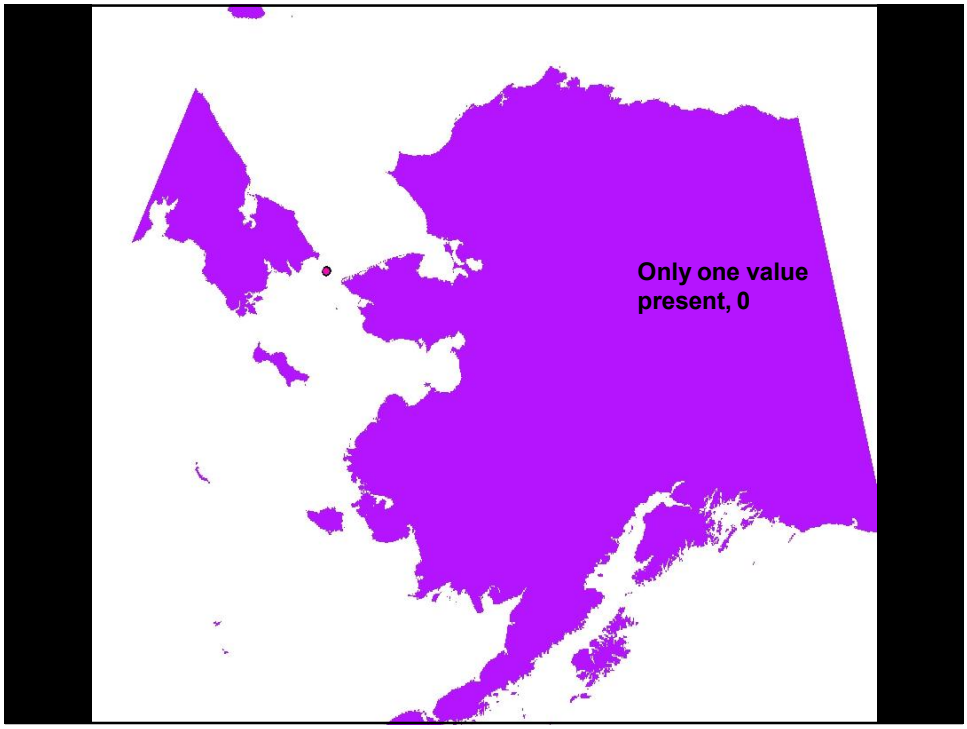


If there is a difference between the two rasters, values of 0, 1, and -1 should be present on the resulting raster.

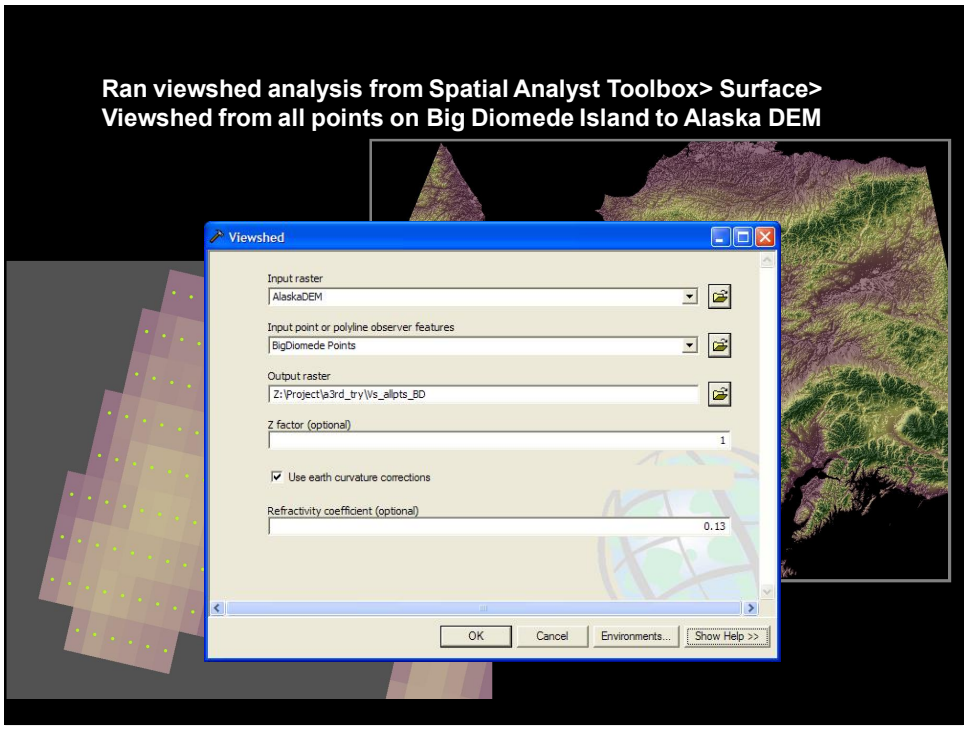
1-1= 0

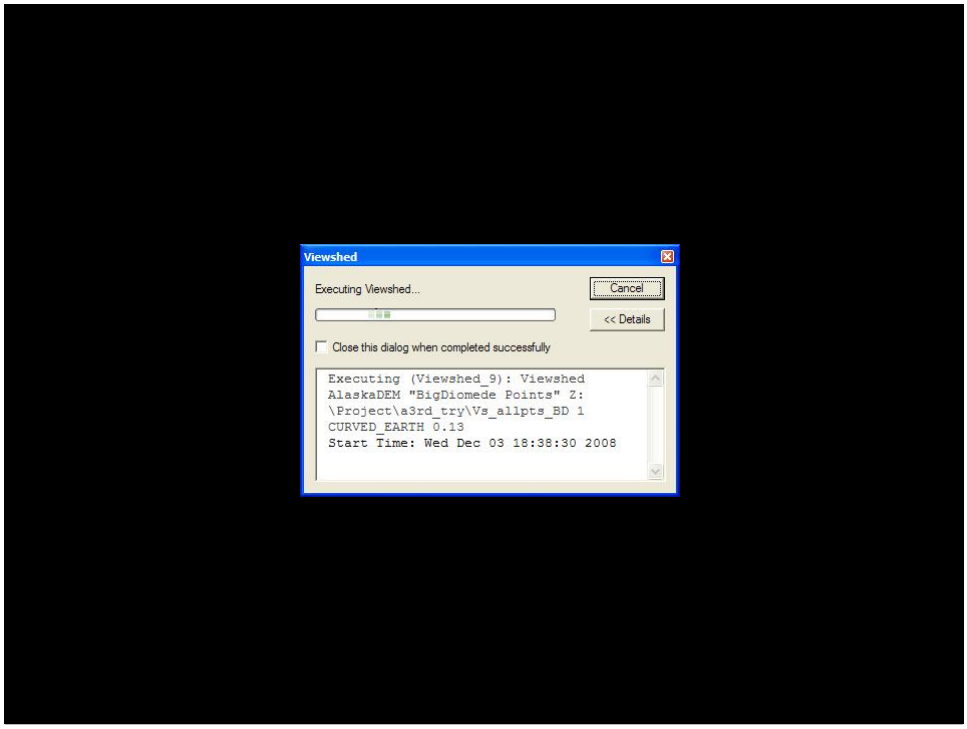
1-0= 1

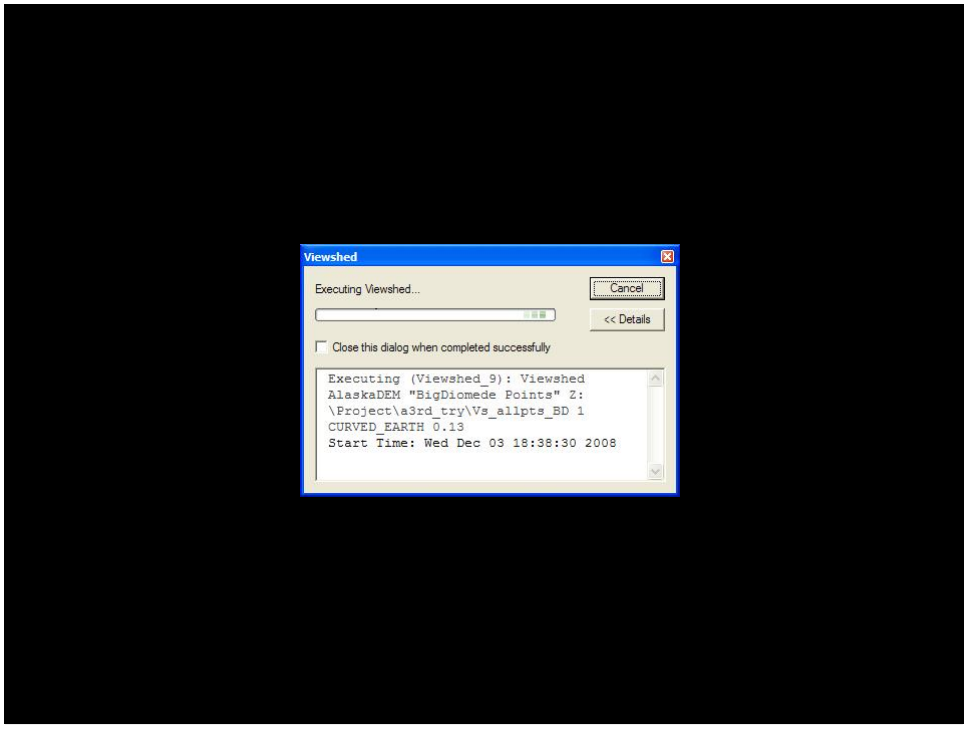
0-1= -1



Ran viewshed analysis from Spatial Analyst Toolbox> Surface> Viewshed from all points on Big Diomede Island to Alaska DEM




Viewshed
Executing Viewshed...
Cancel
<< Details
Close this dialog when completed successfully
Executing (Viewshed_9): Viewshed
AlaskaDEM "BigDiomede Points" Z:
\Project\a3rd_try\Vs_allpts_BD 1
CURVED_EARTH 0.13
Start Time: Wed Dec 03 18:38:30 2008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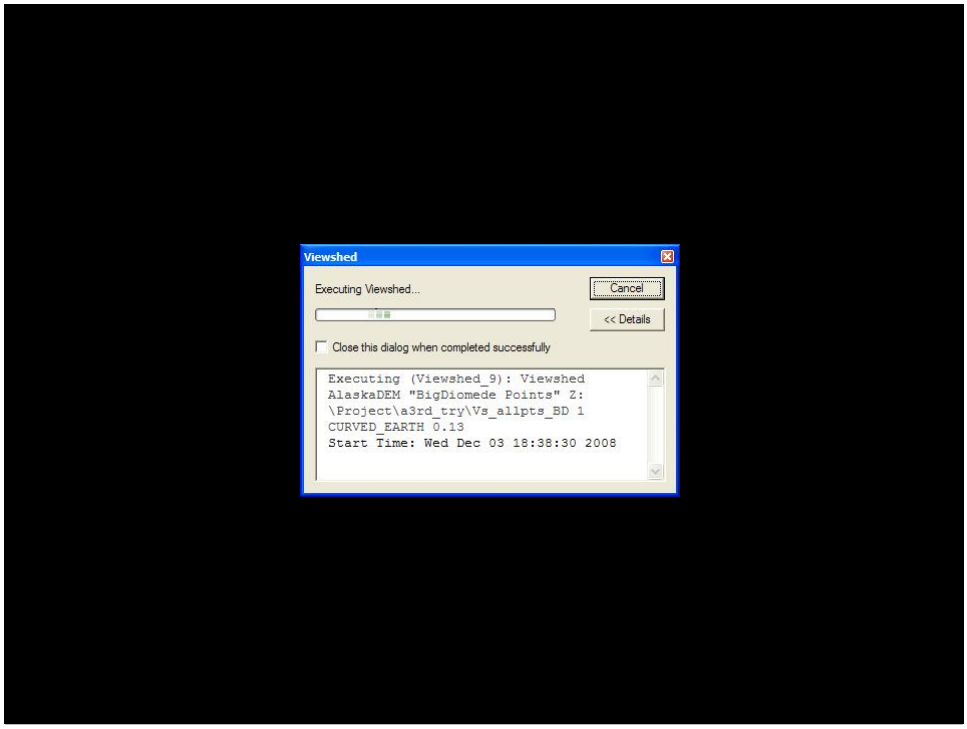
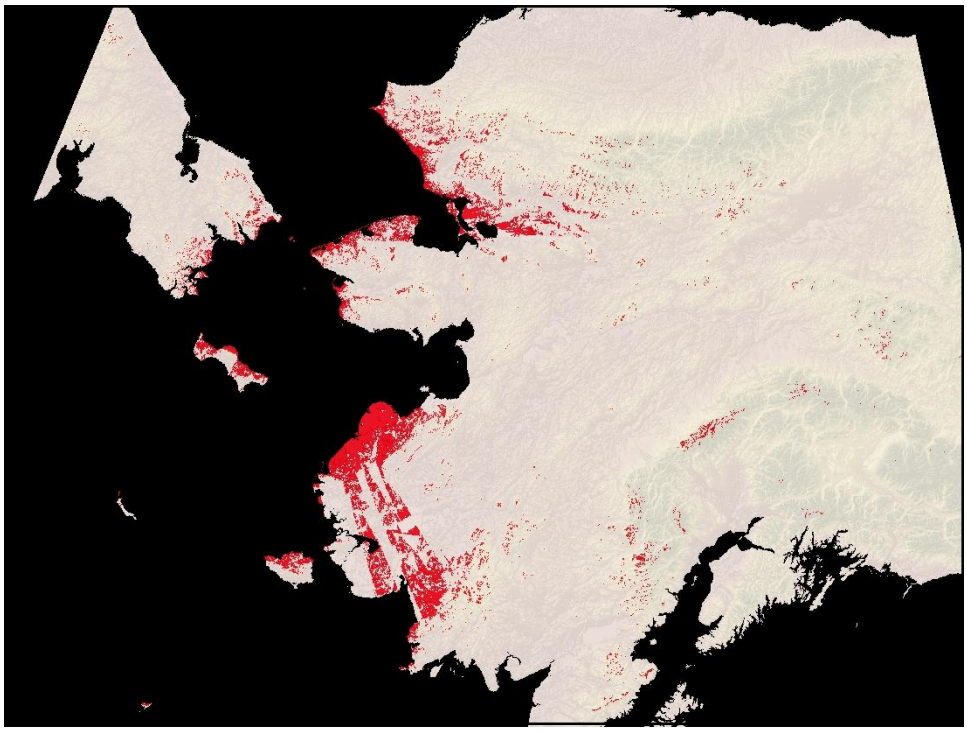
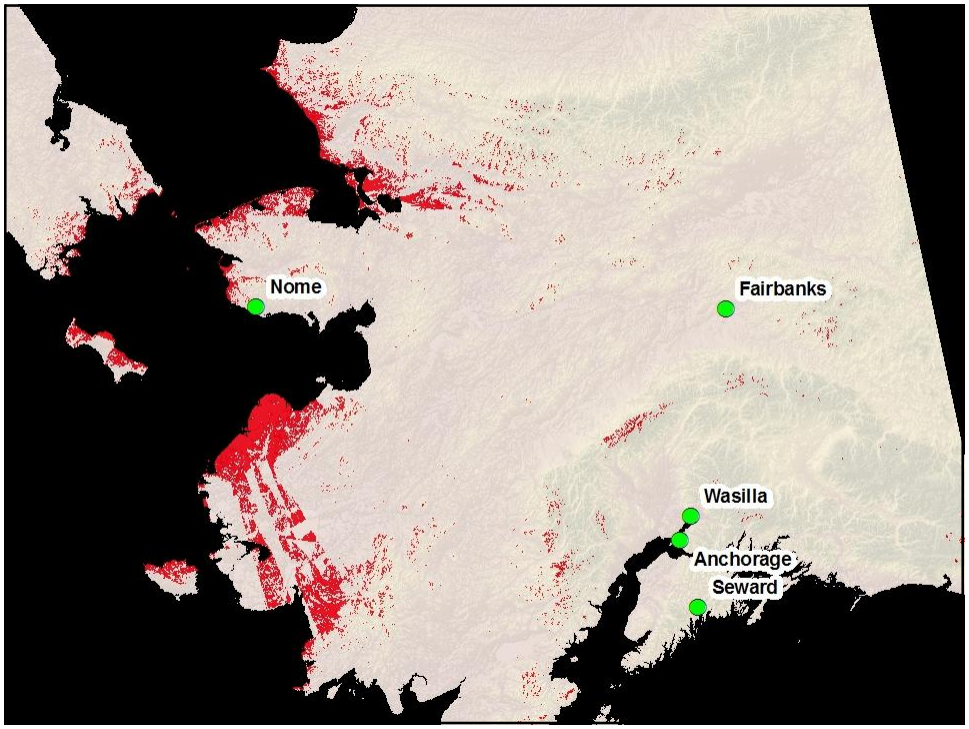
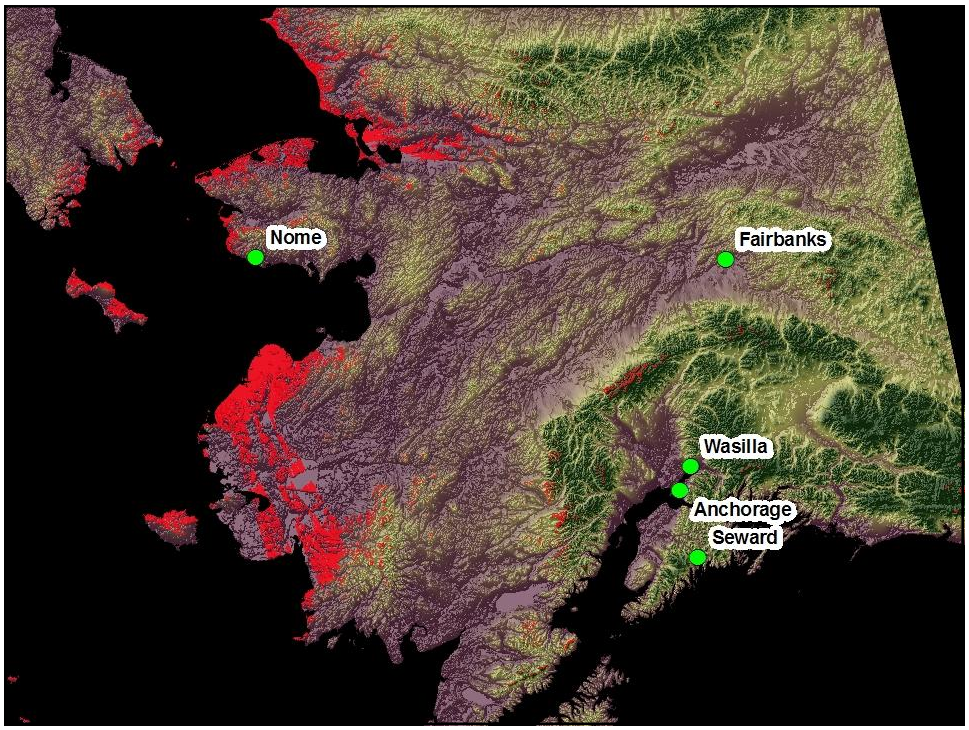
Executing Viewshed...
Cancel
<< Details
Close this dialog when completed successfully
Executing (Viewshed_9): Viewshed
AlaskaDEM "BigDiomede Points" Z:
\Project\a3rd_try\Vs_allpts_BD 1
CURVED_EARTH 0.13
Start Time: Wed Dec 03 18:38:30 2008

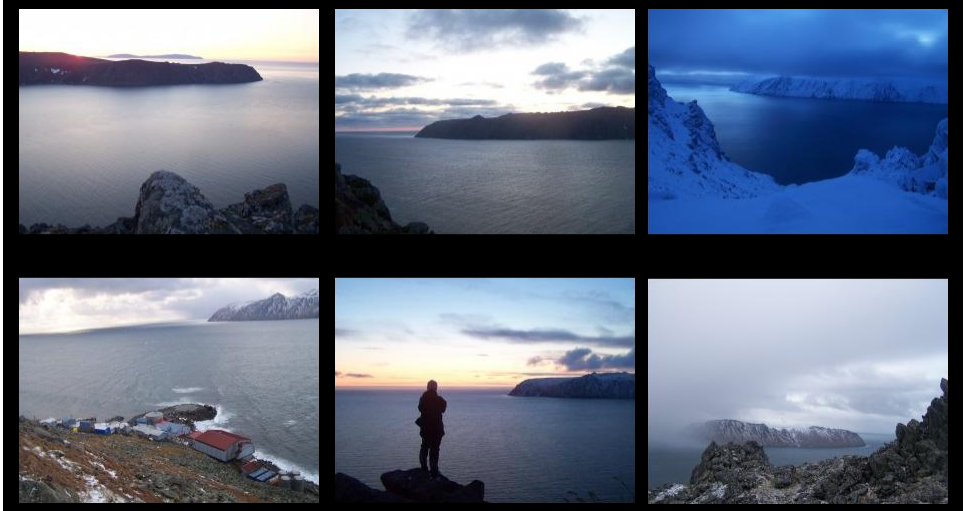

Viewshed
Executing Viewshed...
Cancel
<< Details
Close this dialog when completed successfully
Executing (Viewshed_9): Viewshed
AlaskaDEM "BigDiomede Points" Z:
\Project\a3rd_try\Vs_allpts_BD 1
CURVED_EARTH 0.13
Start Time: Wed Dec 03 18:38:30 2008




Nome
Fairbanks
Wasilla
Anchorage
Seward


Nome
Fairbanks
Wasilla
Anchorage
Seward

Source: http://en.wikipedia.org/wiki/Image:Diomede_Islands_Bering_Sea_Jul_2006.jpg



http://blog.bssd.org/mu/littleisland/?page_id=10

Live webcam
http://www.bssd.org/index.php?option=com_content&task=view&id=105