**Interpolating sediment samples from Lady Musgrave Island**

**Step 1: Create Three Interpolated layers**

(Note: You may need to turn on the Spatial Analyst extension before you are able to use this tool via *customise, extensions*).

Use the interpolation tools within the spatial analyst toolbox to apply the following three interpolations to the Musgrave\_SedimentGrabs dataset:

* Inverse distance weighting
* Spline
* Kriging

The Z value field (i.e. the value within the dataset that you wish to interpolate) is the proportion of sand that was measured in each sample, labelled “Sand2”. You may need to adjust the processing extent within the environments tab at the bottom of the tool so that the extent window says “same as layer Reef\_flat”. This means that your interpolated interpolated surface layer covers the entire reef platform.



Figure 1. Upper left: Lady Musgrave reef, showing the island on the west side, the blue lagoon in the centre and the reef flat around the periphery. Illustrative examples of the interpolated raster layers using IDW, spline and Kriging methods.

**Step 2: Adjust the visualisation properties of the interpolated layers**

*Clip the interpolated layer to the extent of Lady Musgrave Reef:*

One you have produced the three interpolated raster layers, you will need to clip them to the extent of the Musgrave reef flat (*Data Management, Raster, Raster Processing, Clip*). The clip function acts like a cookie-cutter to reduce the layer to the specific geographic area that you are interested in.

You will need to run the clip tool three times, each time setting the input raster to the interpolated raster layer you have produced, setting the output extent to that of the *Reef\_flat shapefile* and putting a tick in the box that says *“Use input features for Clipping Geometry”*

*Adjust the symbology of the clipped raster layer:*

Within the properties window of each clipped and interpolated raster dataset, apply the following symbology settings: Show = Stretched, select the color ramp that progresses from red to green (15th option from the bottom in the drop down menu), within the stretch options, select histogram equalize and then add a tick in the invert box.

**Step 3: Compare your output layers**

Use the questions below as a basis for comparing the interpolated outputs of the sediments dataset:

* What are the upper and lower values for the inverse distance weighting, spline and kriging interpolated layers? How do these values compare to the range of the input dataset?
* Which areas appear to be associated with the largest concentrations of sand?
* Adjust the symbology settings (try changing the colours or the stretch type applied to the layer). How does this affect the way you interpret the output dataset?