How moving window kriging works

ArcGIS Pro 2.7 | Other versions| [Help archive](https://pro.arcgis.com/en/pro-app/latest/get-started/archived-arcgis-pro-help.htm)

Available with Geostatistical Analyst license.

Before performing moving window kriging, a geostatistical layer must be created from a kriging method other than cokriging and empirical Bayesian kriging.

The kriging parameters can be adjusted or left as the initial default values that are automatically determined by the kriging method. The rationale behind moving window kriging is to recalculate the range, nugget, and partial sill semivariogram parameters based on a smaller neighborhood.

When the data is nonstationary, you can estimate a heterogeneous semivariogram. In other words, use a moving window centered on the location to be predicted and create a semivariogram for each local neighborhood.

The prediction at each point in the study area can be mapped sequentially as the window moves through the study area (figure 1). In this example, the data is isotropic or invariant under rotations. To exhaustively map every location in the study area, semivariograms are calculated for each location to be predicted. Within each neighborhood, the data is assumed to be locally stationary so the assumptions of the kriging algorithm are not violated.

As the window moves through the study area, new semivariogram parameters are calculated using neighboring points. For location s1, the blue and green points are spatially correlated or within the range distance as indicated by the radius of the circle centered at that point. For location s2, the green and red points are spatially correlated, and for location sn, the yellow points are spatially correlated. This method allows you to see how the spatial structure of the data changes across the study area. If the semivariogram does not change much in different windows, this indicates that the data is close to stationary, and it is appropriate to use stationary kriging models. If, however, the semivariogram changes significantly between the moving windows, this indicates that the data is nonstationary, and it is not appropriate to use stationary kriging models.

如果数据不稳定，可以估计异类半变异函数。换句话说，使用位于待预测位置中心的移动窗口并为每个局部邻域创建半变异函数。

研究区域中每个点的预测值可按顺序映射为穿过研究区域的窗口（图 1）。此例中，数据在旋转时是各向同性的或是恒定的。为完全映射研究区域中的每个位置，会计算每个待预测位置的半变异函数。在每个邻域中，假定数据在局部是稳定的，所以不违反克里金算法的假设条件。

在窗口穿过研究区域时，使用邻近点计算新的半变异函数参数。对于位置 s1，蓝点和绿点在空间上是相关的，或在以该点为圆心的圆的半径所表示的变程距离以内。对于位置 s2，绿点和红点在空间上是相关的，而对于位置 sn，黄点在空间上是相关的。可使用该方法查看数据的空间结构是如何在研究区域内更改的。如果半变异函数在不同窗口中并未发生大量更改，则表示数据接近稳态，适合使用稳态的克里金模型。但是，如果半变异函数在移动窗口间发生了显著的更改，则表示数据并非处于稳态，不适合使用稳态的克里金模型。

