1.Software Environment

1.1 Program language

Microsoft Visual studio C# 2019.

When running the program code, you must set “OGIS.UI” as the startup project.

1.2 Software required

ArcGIS10.2 DotNet SDK, Microsoft DotNet Framework3.5,Microsoft DotNet Framework4.0.

2.Main functions of the software

2.1 Generating the equidistant lines between two point on Earth ellipsoid

Step 1: Load ArcGIS Map document:*.mxd.

Note: *The file coordinates system should be WGS-84.*

Step 2*: Choose the geodetic type:Vincenty or Karney. For example,choose the Karney method.*

Step 3: Input point P by clicking the map with the left mouse key.

Step 4: Input point Q by clicking the map with the left mouse key..

Step 5: Input point A by clicking the map with the left mouse key.

Step 6: Input ratio value between OP and OQ. For example, 1:1.

Step 7: Input the shortest distance and the longest distance of OP.

Note: *The minimum OP is half of the geodesic distance which is the minor arc between point P and point Q on Earth ellipsoid, and the maximum OP cannot exceed the half of the geodesic distance which is the major arc between two points.*

Step 8: Input the distance, which is the approximate interval between adjacent equidistant points.

Step 9: Click the button “OK”, and the results displayed in the list below and map window on the right.

Step 10: Click the button “Export SHP”， and the results can be saved to SHP files.

Step 11: Click the button “Export Excel”, and the results can be saved to Excel files.

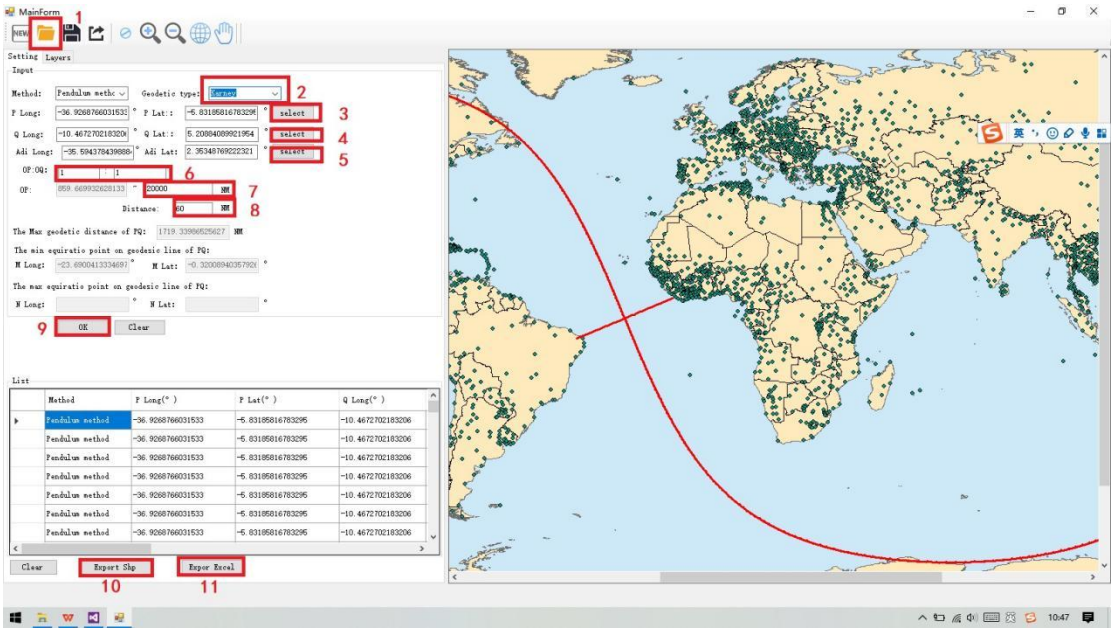

Fig.1 The equidistant lines between two point on Earth ellipsoid

2.2. Generating the equiratio lines between two point on Earth ellipsoid

Step 1: Load ArcGIS Map document:*.mxd.

Note: *The file coordinates system should be WGS-84.*

Step 2*: Choose the geodetic type:Vincenty or Karney. For example,choose the Karney method.*

Step 3: Input point P by clicking the map with the left mouse key.

Step 4: Input point Q by clicking the map with the left mouse key..

Step 5: Input point A by clicking the map with the left mouse key.

Step 6: Input ratio value between OP and OQ. For example, setting the ratio to 3:2, then the OP shortest distance and longest distance are automatically calculated.

Note: *When selecting new points on the map, you need to re-enter the ratio, otherwise the maximum OP cannot be automatically calculated. When the updating the* equiratio value, the OP shortest distance and longest distance are automatically recalculated.

Step 7: Input the distance, which is the approximate interval between adjacent equiratio points.

Step 8: Click the button "OK", and the results displayed in the list below and map window on the right.

Step 9: Click the button "Export SHP"， and the results can be saved to SHP files.

Step 10: Click the button "Export Excel", and the results can be saved to Excel files.

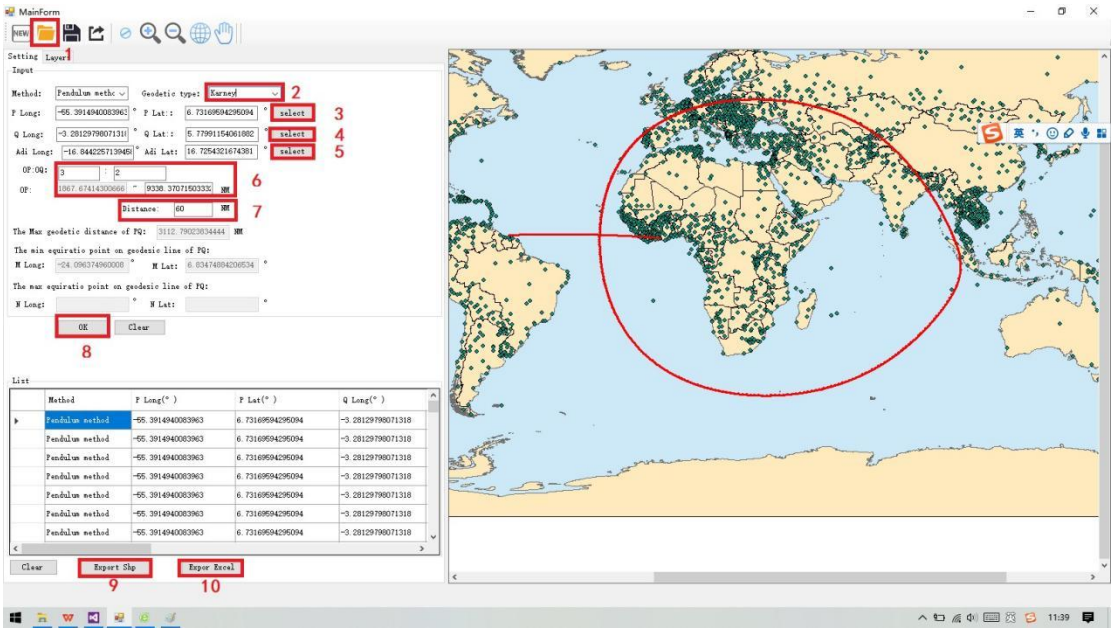

Fig.2 The eqiratio lines between two point on Earth ellipsoid