Projection results: (See diagrams below:)

Definition for Equidistant Map Projection: A map projection in which the distances between one or two points and every other point on the map differ from the corresponding distances on the sphere by only a constant scaling factor (Snyder 1987, p. 4). (mathworld.wolram.com)

4 different mapping projection methods are tried here: **Cylindrical Equidistant Projection, Azimuthal Equidistant Projection, Conic Equidistant Projection and Polyconic Projection.**

It turns out that Conic Equidistant Projection and Polyconic Projection give best Equidistant transformation of geographic coordinates within China. Under these two methods, the correlation coefficient between the Great Circle distance and transformed plan distance is 0.9999. These transforms are especially good within 500km distance, which is the correlation length of precipitation process and meaningful for interpolation.

The Polyconic Projection is of special interest, because it gives good result, and it is also the projection method for many maps of China.

Below shows the result of each projection method: (The Matlab formatted distance can be easily transformed into KM.)

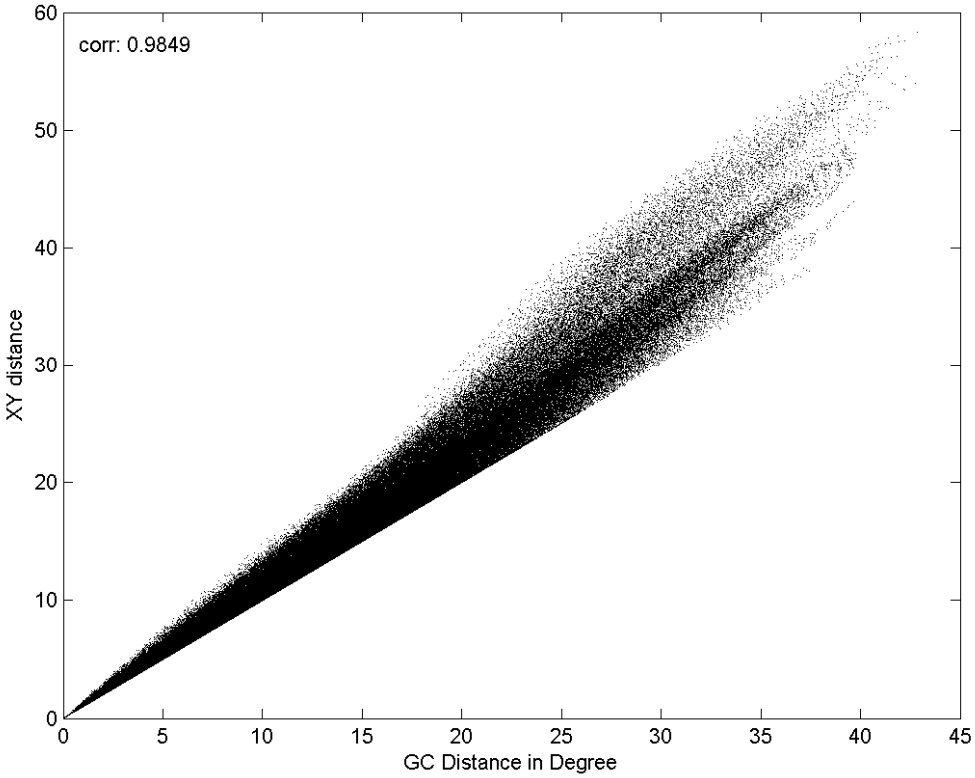

Figure 1: Before transform

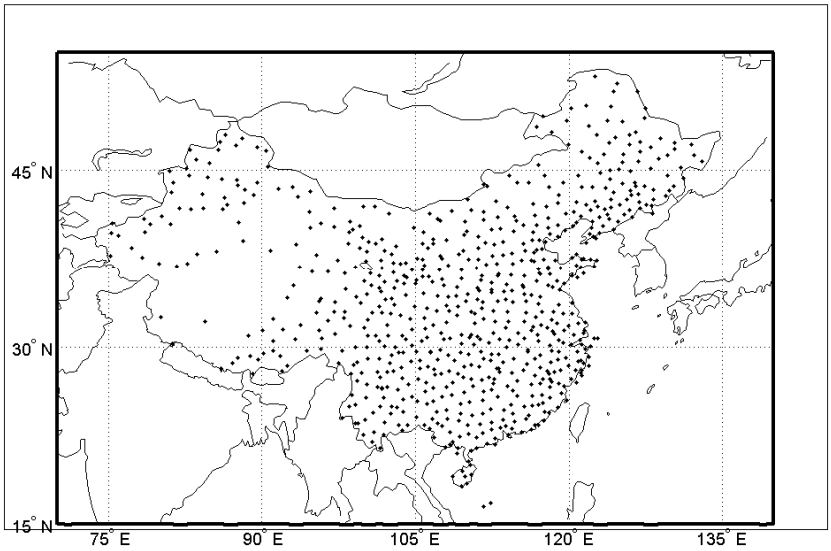

Figure 2: Cylindrical Equidistant Projection

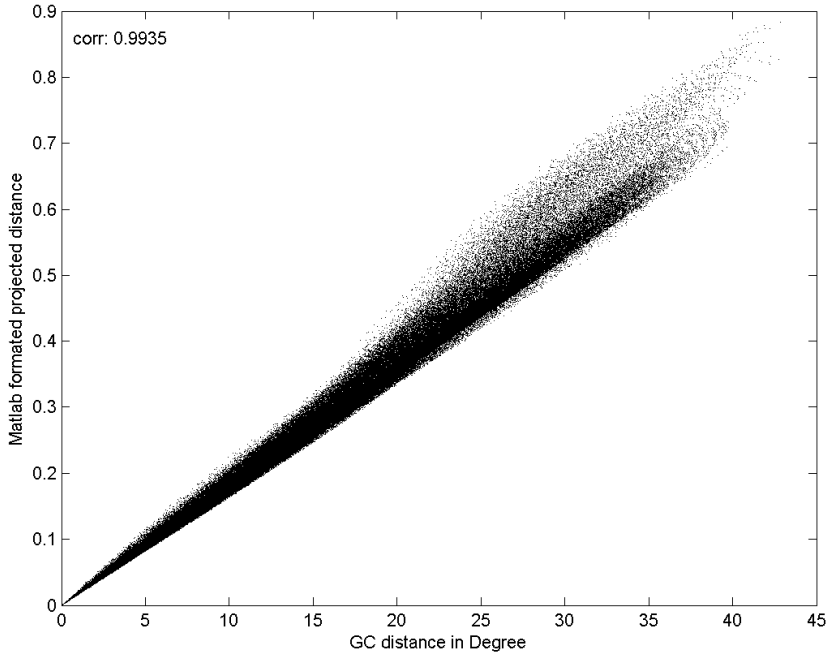

Figure 3: Cylindrical Equidistant Projection

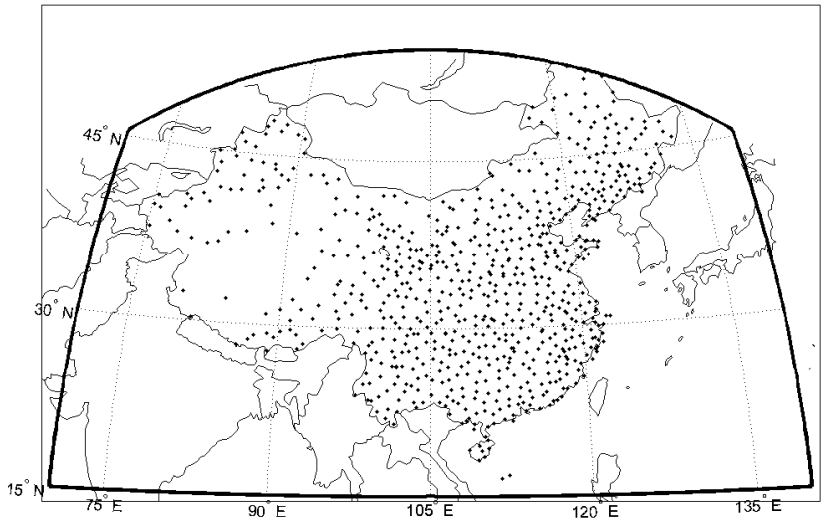

Figure 4: Azimuthal Equidistant Projection

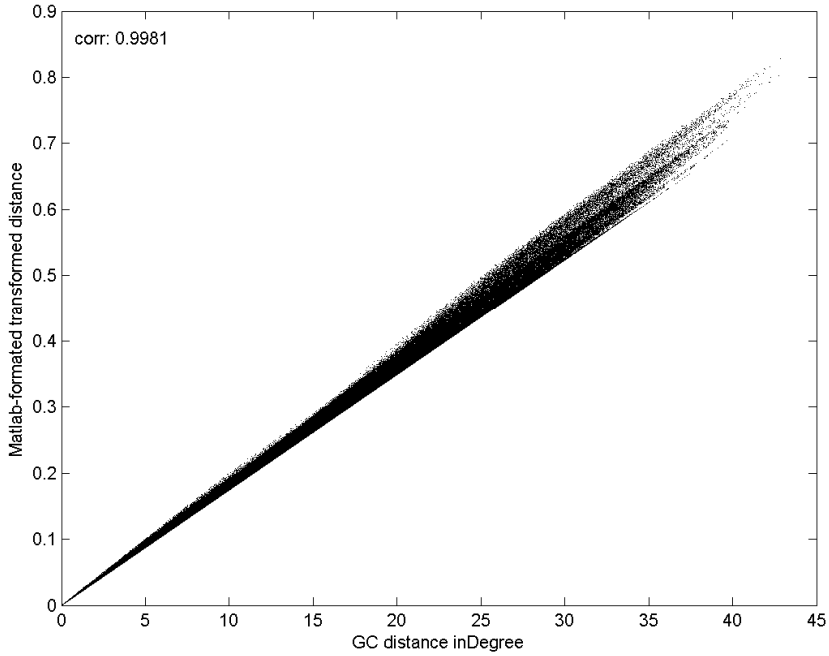

Figure 5: Azimuthal Equidistant Projection

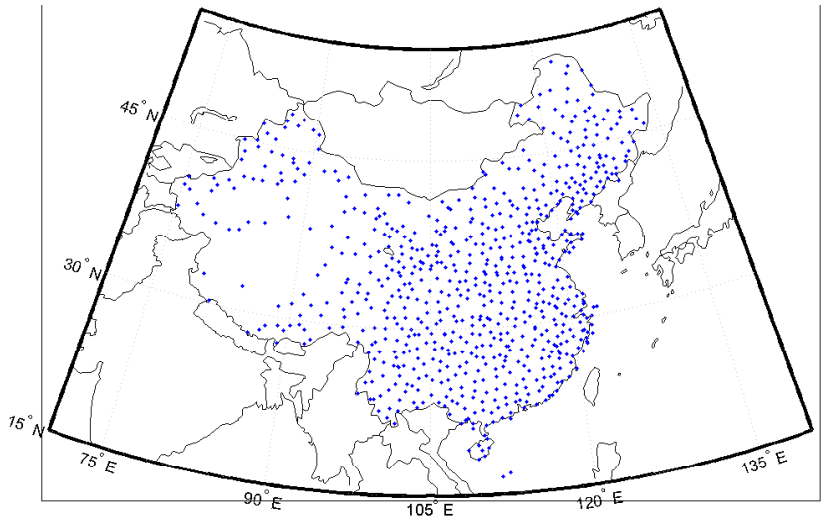

Figure 6: Conic Equidistant Projection

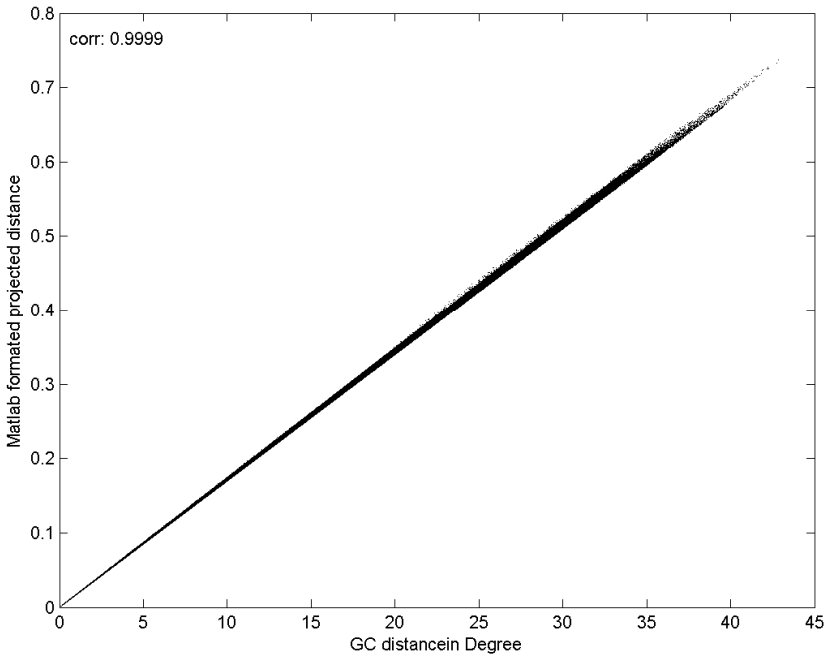

Figure 7: Conic Equidistant Projection

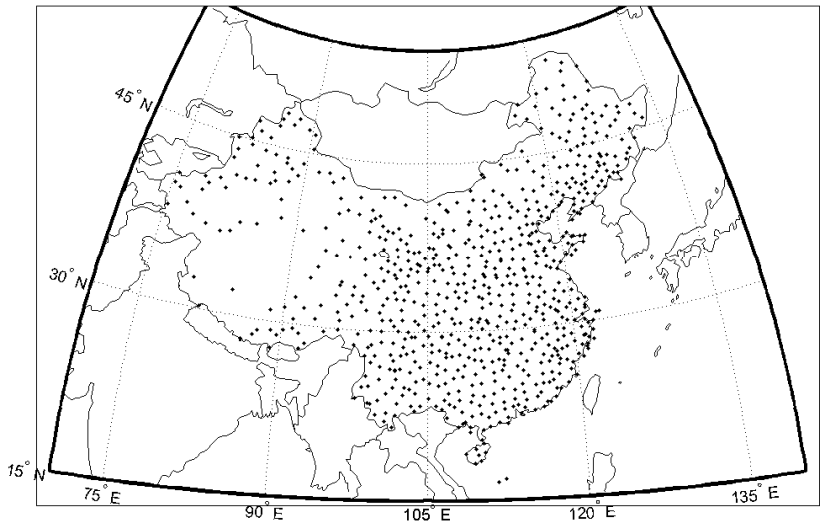

Figure 8: Polyconic Projection

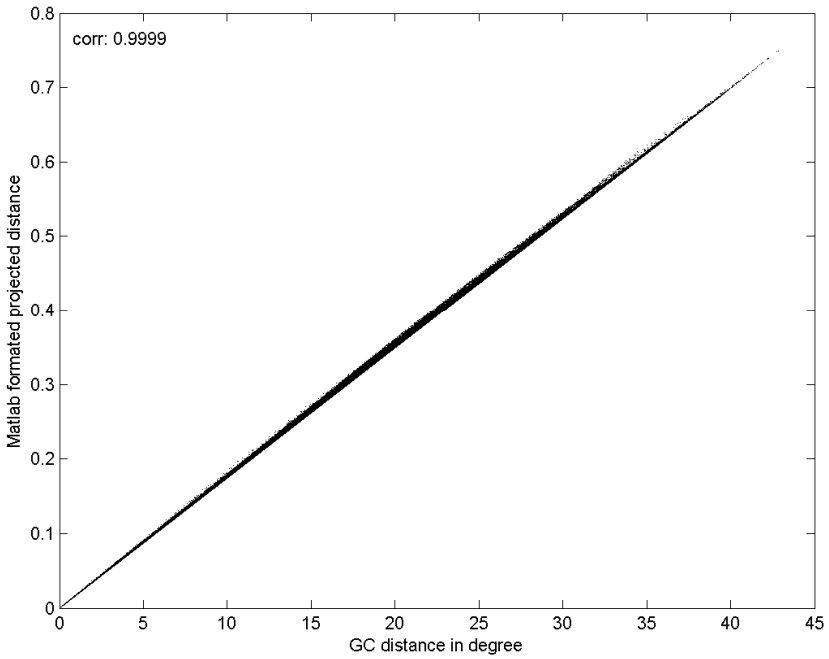

Figure 9: Polyconic Projection