1. Forest and Grass Ecospatial Network basic Data Processing Process

The 2020 land use data, based on the 2020 Landsat8 remote sensing image dataset. Then the remote sensing image fusion, geometric correction, image enhancement, stitching and other processing are completed after manual visual interpretation, and the data include 6 primary land types and 25 secondary land types of arable land, grassland, forest land, water area, residential area and unused land.

2020 road network density data and water network density data, download the study area vector data in Open Street Map, and perform line density analysis on the road network vector data and water network vector data based on ArcGIS 10.4 software to obtain the road network density and water network density.

NDVI and NDWI data in 2020 were screened in Google Earth Engine platform to obtain Landsat 8OLI remote sensing images with less than 10% cloudiness. The remote sensing images were preprocessed in ENVI5.3.1 software (radiometric calibration, atmospheric correction, geometric correction), and the NDVI and NDWI of the study area were obtained by using the band calculation tool in ENVI5.3.1 software. the NDVI and NDWI band calculation equations are as follows.

$$NDVI = \frac{(B5 - B4)}{(B5 + B4)} \tag{S1}$$

$$NDWI = \frac{(B3 - B5)}{(B3 + B5)} \tag{S2}$$

Where $B3$ represents green surface reflectance, $B4$ represents red surface reflectance, and $B5$ represents near infrared surface reflectance [1].

2020 roughness data, based on the 3D Analyst tool in AcrGIS 10.4 software, slope analysis was performed on the DEM data to obtain slope data. Then the roughness was calculated based on the raster calculator in the ArcGIS 10.4 software [2], and the roughness calculation formula was as follows.

$$R = \frac{1}{\cos\left([Slope] \times \frac{3.14159}{180}\right)} \tag{S3}$$

Where R represents roughness.

Soil data for 2020, the spatial distribution of soil texture data is based on the 1:1 million soil type map and the soil planing data obtained from the second soil census, and is based on the classification of soil texture by sand, powder and clay content. The data are divided into three categories: Sand, Silt and Clay; the spatial distribution data of soil types are digitally generated according to the 1:1 million soil map of the People's Republic of China prepared and published by the National Soil Census Office in 1995. The basic mapping unit is the pressure class, with 12 soil classes, 61 subclasses, and 227 subclasses; both data on soil texture and soil type are from the Resource and Environment Science and Data Center database.

2. Ecosystem Service Base Data Processing Process

For the 2020 NPP data, the MOD17 product in MODIS, which provides annual NPP information at 500m resolution, was downloaded in the Google Earth Engine platform. The acquired raw products were mosaicked and defined projections in ArcGIS 10.4 software. Then the fill value of remote sensing image was removed (fill value range 32761-32767), and the obtained raster data was converted to coefficients, and the raster value was multiplied by 0.1 to get the NPP unit g.Cm-2.year-1 needed in the article, and finally the 2020 NPP data was obtained.

The 2020 precipitation data and potential evapotranspiration data, the 2020 average and month-by-month precipitation data, and the potential evapotranspiration data were obtained directly from products in the National Earth System Science Data Center website.

2020 slope data, based on the 3D Analyst tool in AcrGIS 10.4 software, slope analysis was performed on the DEM data to obtain slope data.

The 2020 slope length data, based on the slope calculated above and then obtained according to the raster calculator in ArcGIS 10.4 software [3], is calculated as follows.

$$L = \frac{DEM}{\sin\left(\frac{slope * \pi}{180}\right)} \quad \text{(S4)}$$

Where L stands for slope length and DEM stands for elevation.

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