GDI+ based generating algorithm of smooth curve layer and its applications

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Smooth curve is widely used in meteorological operations and services, typically for contour map and streamline map drawing. Smooth curve layer, a new type of GIS line layer, is defined in MeteoGIS, a thematic GIS developed originally to meet the special needs of meteorological applications. A smooth curve layer is made up of a group of smooth curve objects, each of which is determined by a set of data points and smooth interpolation functions. It is easy to realize a smooth curve object by Object-Oriented Programming (OOP), treating the coordinate sequence of the data points as an attribute of the smooth curve class and the smooth interpolation functions as the methods of it. GDI+, the graphic class library of the Microsoft .NET Framework, facilitates the data organization and visualization of the smooth curve class. In MeteoGIS, a smooth curve layer can be generated automatically based on GDI+. This paper introduces the features of a smooth curve layer and its generating algorithm, with an application illustrated.