SERVER IMPLEMENTED GEOGRAPHIC INFORMATION SYSTEM WITH GRAPHICAL INTERFACE

TECHNICAL FIELD

The subject matter disclosed herein generally relates to machines configured to process data. Specifically, example embodiments relate to a server implemented geographic information system.

BACKGROUND

A geographic information system (GIS) is a system designed to capture, store, manipulate, analyze, manage, and present geospatial data. Typically, a GIS uses a spatio-temporal location as the key index variable for all other information and calculations. A GIS can relate otherwise unrelated information (e.g., geographic data) by using location as the key index variable. Thus, any variable that can be located spatially can be referenced using a GIS. Locations in Earth space-time may be recorded as dates/times of occurrence, and x, y, and z coordinates representing longitude, latitude, and elevation, respectively.

BRIEF DESCRIPTION OF THE DRAWINGS

Various ones of the appended drawings merely illustrate example embodiments of the present inventive subject matter and cannot be considered as limiting its scope.

FIG. **1** is a network diagram illustrating a network environment suitable for generating and presenting a tile cache based on geospatial data, according to some example embodiments.

FIG. **2** is a block diagram illustrating components of a geographic information system suitable to receive geospatial data usable to generate and display a tile cache, according to some example embodiments.

FIG. **3** is a flowchart illustrating operations of the geographic information system in performing a method of obtaining geospatial data in order to generate and display a tile cache, according to some example embodiments.

FIG. **4** is a flowchart illustrating operations of the geographic information system in performing a method for determining and assigning a projection and coordinate system to the obtained geospatial data, according to some example embodiments.

FIG. **5** is a flowchart illustrating operations of the geographic information system in performing a method for determining and assigning a projection and coordinate system to the obtained geospatial data, according to some example embodiments.

FIG. **6** is an interaction diagram illustrating various example interactions between the geographic information system, third party servers, and a client device, according to some example embodiments.

FIG. **7** is a diagram illustrating a user interface for presenting a geospatial data usable by the geographic information system to generate and display a tile cache, according to some example embodiments.

FIG. **8** is a diagram illustrating a user interface for presenting a base map usable by the geographic information system as a reference to determine a projection and coordinate system to apply to the obtained geospatial data, according to some example embodiments.

FIG. **9** is a diagram illustrating a user interface configured to receive user inputs defining common landmarks of the geospatial data and the base map in order to determine a projection and coordinate system, according to some example embodiments.

FIG. **10** is a diagram illustrating a user interface configured to receive user inputs adjusting a position of the geospatial data in relative to the base map in order to determine a projection and coordinate system, according to some example embodiments.

FIG. **11** is a block diagram illustrating components of a machine, according to some example embodiments, able to read instructions from a machine-readable medium and perform any one or more of the methodologies discussed herein.

DETAILED DESCRIPTION

Example embodiments described herein pertain to a geographic information system (GIS) configured to receive geospatial data from a multitude of sources, and use the geospatial data to generate and display a tile cache. The GIS may be or include a group of one or more server machines configured to provide one or more GIS services. A client device may accordingly request and receive, from the GIS, a tile cache based on multiple geospatial data inputs, as well as through geospatial data submitted via scripts or external applications. The GIS may then determine an accurate corresponding projection and coordinate system of the geospatial data based on a user input, and in some example embodiments may apply a transformation to the geospatial data. Examples merely typify possible variations. Unless explicitly stated otherwise, components and functions are optional and may be combined or subdivided, and operations may vary in sequence or be combined or subdivided. In the following description, for purposes of explanation, numerous specific details are set forth to provide a thorough understanding of example embodiments. It will be evident to one skilled in the art, however, that the present subject matter may be practiced without these specific details.

The GIS is configured (e.g., by one or more suitable modules that include one or more processors) to obtain geospatial data (e.g., images captured via satellite and aerial sources), determine a projection and coordinate system of the geospatial data based on user inputs and a base map or corresponding metadata (e.g., a default projection and coordinate system), apply transformations to the geospatial data, and generate a tile cache useable by any conventional mapping system, based on at least the geospatial data. A tile cache is a collection of images made from geospatial data, comprising images of the geospatial data at several different scales. For example, based on the source data, and either corresponding metadata (e.g., which includes a projection and coordinate system) or a user input (e.g., defining the projection and coordinate system), a determination may be made regarding what "scales" are needed for the tile cache, and the size of the tiles comprising the tile cache. The GIS may obtain the geospatial data from a third party source, or directly from a client device.

In some example embodiments, the GIS automatically determines a projection and coordinate system of the geospatial data based on corresponding metadata of the geospatial data. Metadata is information about digital data. Numerous metadata standards have been developed in the area of geographic information systems, including at least Federal Geographic Data Committee standard (FGDC), Machine-Readable Cataloging record (MARC), and Dublin Core. For example, the geospatial data may include metadata representing a longitude, latitude, and elevation values