

Using MySQL's Spatial Extensions (with Ruby)



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MySQL Spatial Extensions

GeoRuby

MySQL Spatial Extensions + GeoRuby

What's the problem?

Storing Spatial Data

Where does this data
come from?

What is this data?

Raster Data

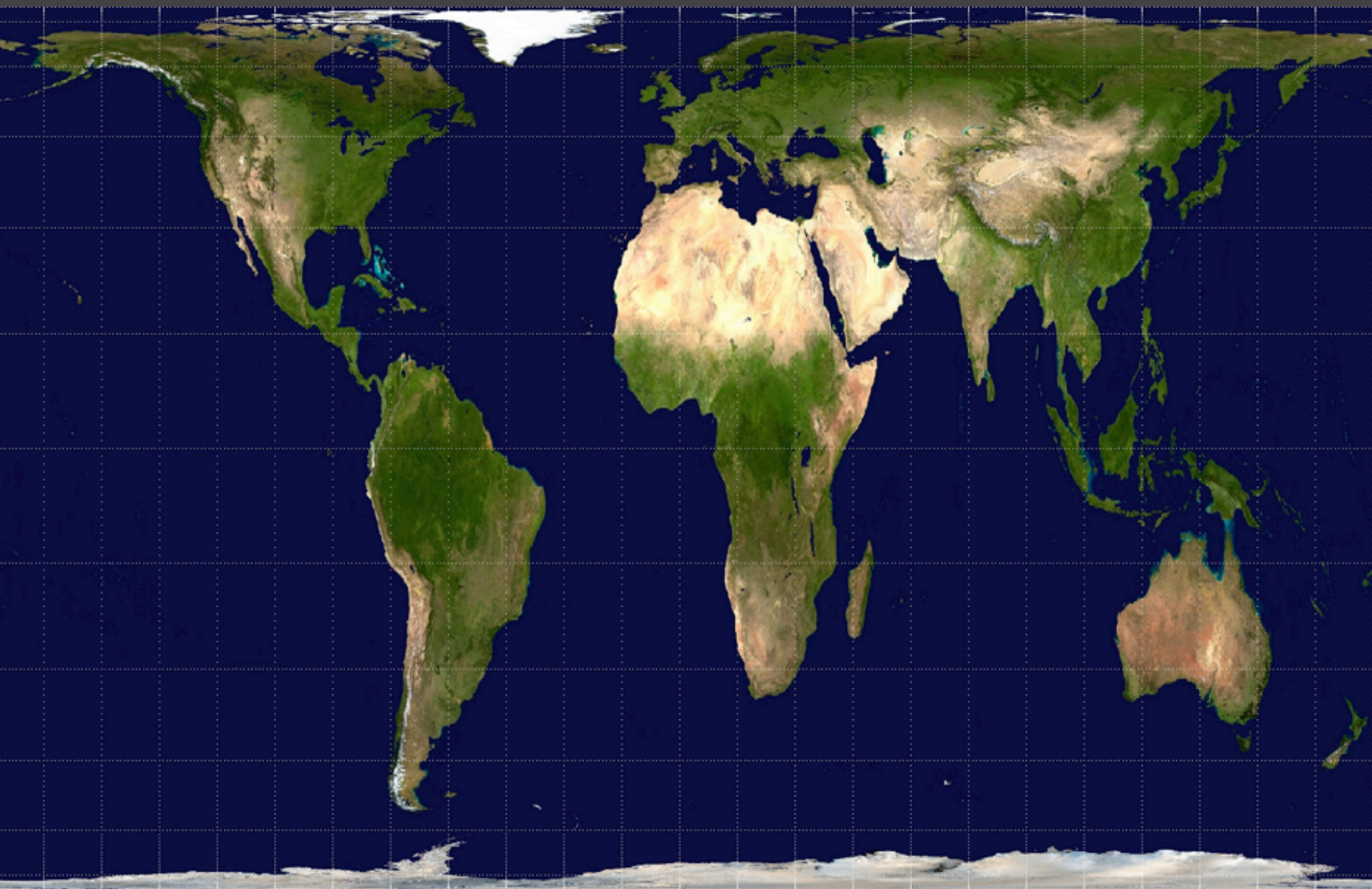
Vector Data

Earthly Complications



Latitude & Longitude

Projections

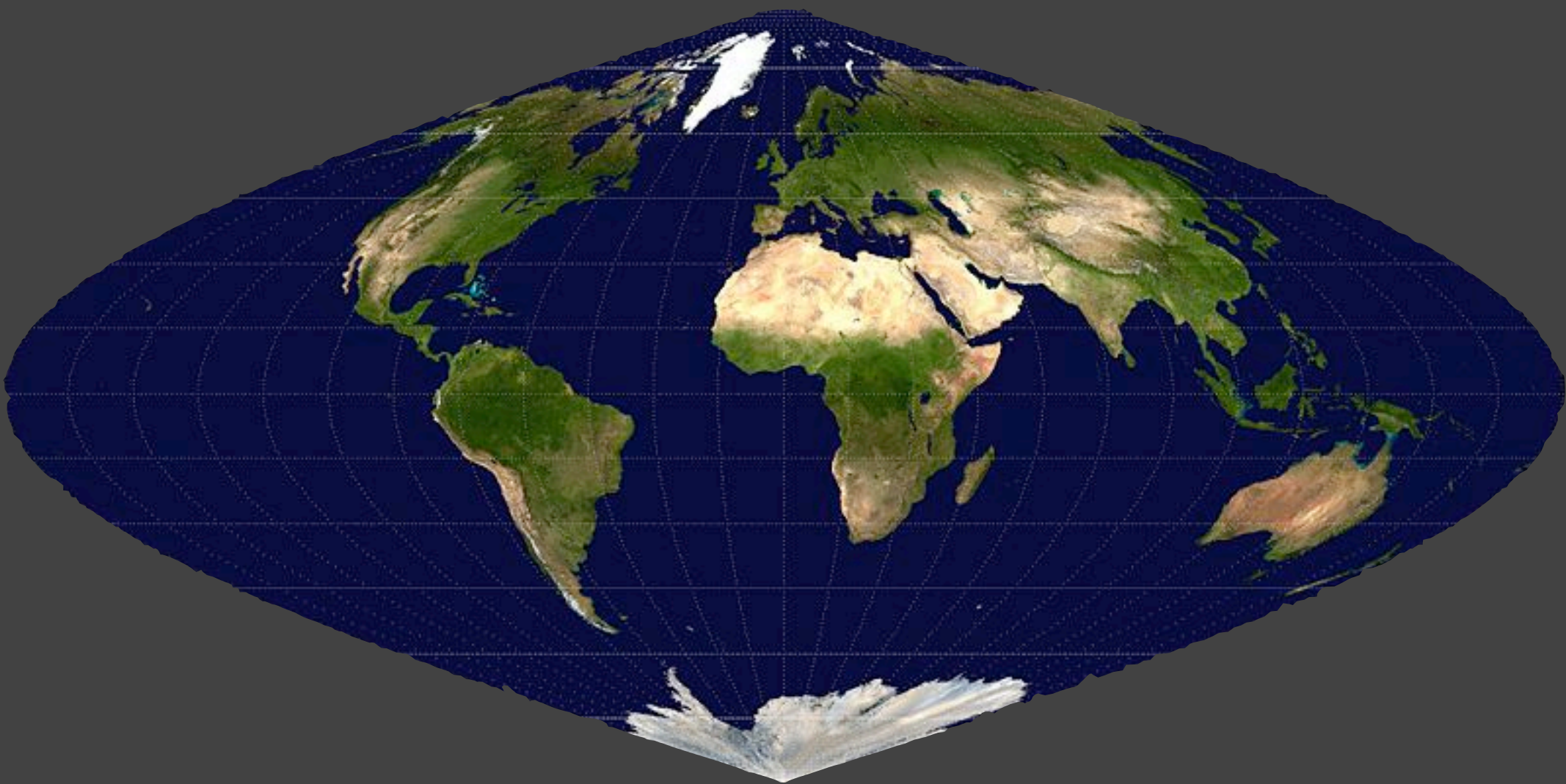




I



maps



SRIDs

File Types

Simpler Formats

Google Earth

qgis

GRASS

OGR

MapServer /
GeoServer

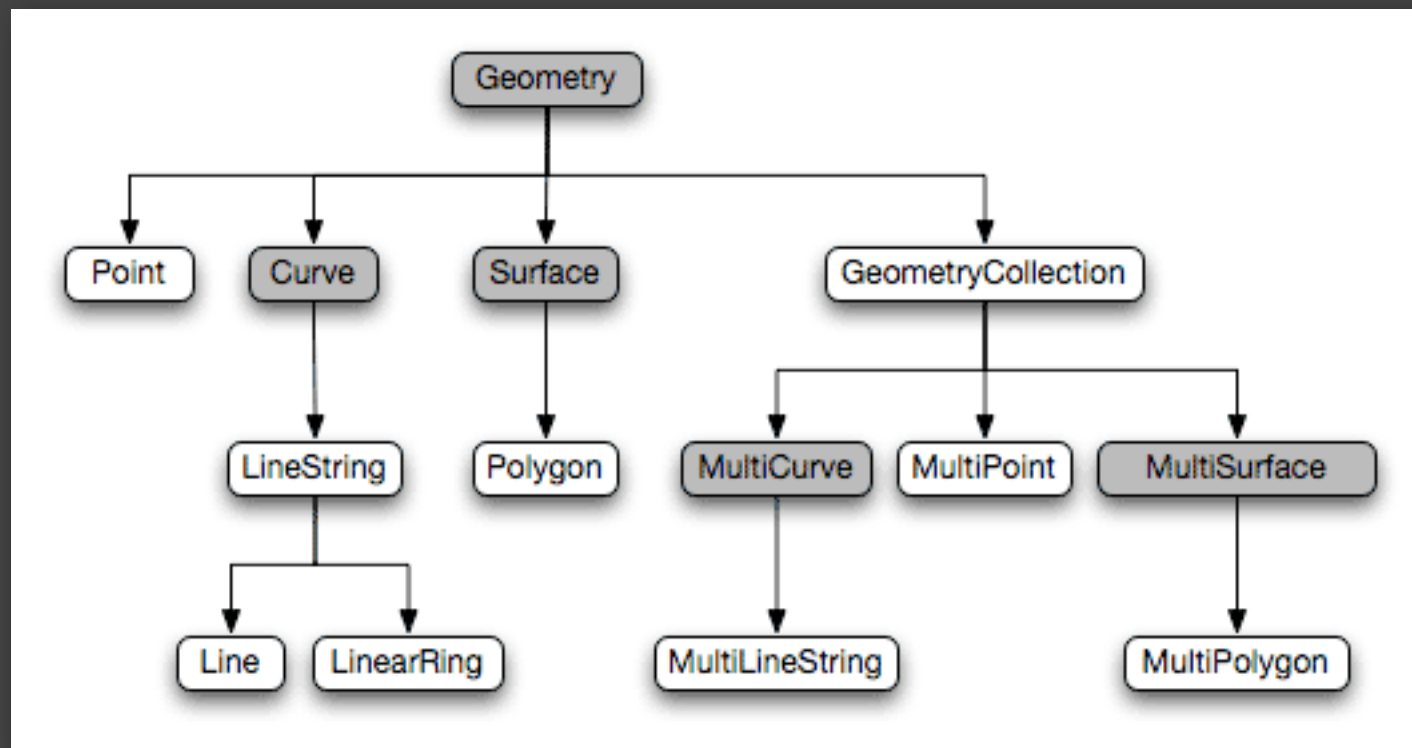
WMS / WFS

Geocoding

Reverse Geocoding

How is this data
represented in
MySQL?

OGC Simple Features for SQL



MySQL-specifics

How is this data
queried?

- ◉ Dimension(g)
- ◉ Envelope(g)
- ◉ GeometryType(g)
- ◉ SRID(g)
- ◉ X(g)
- ◉ Y(g)
- ◉ EndPoint(ls)
- ◉ GLength(ls)
- ◉ NumPoints(ls)
- ◉ StartPoint(ls)
- ◉ IsClosed(mls)
- ◉ Area(poly)
- ◉ ExteriorRing(poly)
- ◉ InteriorRingN(poly,N)
- ◉ NumInteriorRings(poly)
- ◉ GeometryN(gc,N)
- ◉ NumGeometries(gc)
- ◉ MBRContains(g1,g2)
- ◉ MBRDisjoint(g1,g2)
- ◉ MBREqual(g1,g2)
- ◉ MBRIntersects(g1,g2)
- ◉ MBROverlaps(g1,g2)
- ◉ MBRTouches(g1,g2)
- ◉ MBRWithin(g1,g2)

More MySQL-specifics

WKT,
WKB,
WTF?

ActiveRecord with GeoRuby

```
loc = Location.find(:first)
loc.geom.x      # => point's x coordinate
loc.geom.y      # => point's y coordinate
loc.geom.srid   # => point's SRID
loc.geom.as_kml # => KML representation

loc.geom.ellipsoidal_distance(loc2) # => ellipsoidal distance from loc2
loc.geom.euclidian_distance(loc2)   # => euclidean distance from loc2
loc.geom.spherical_distance(loc2)   # => spherical distance from loc2

loc.geom.x = -43.2253 # set location's longitude
loc.save!

state = State.find(:first)
state.geom.envelope # => bounding box
state.geom.rings.first.points # => points making up the outer LinearRing
state.geom.as_georss # => GeoRSS representation
```

```
create_table "locations", :options => 'ENGINE=MyISAM' do |t|
  t.string "name"
  t.column "geom", :geometry, :null => false
  t.datetime "created_at"
  t.datetime "updated_at"
end

add_index "locations", ["geom"], :name => "geom", :spatial => true
```

Exposure

Links

- <http://georuby.rubyforge.org/>
- <http://geokit.rubyforge.org/>
- <http://ym4r.rubyforge.org/>
- http://forge.mysql.com/wiki/GIS_Functions
- http://rails.nomad-labs.com/?page_id=7
- <http://www.mass.gov/mgis/>
- <http://www.usgs.gov/ngpo/>
- <http://teczno.com/faumaxion-II/>