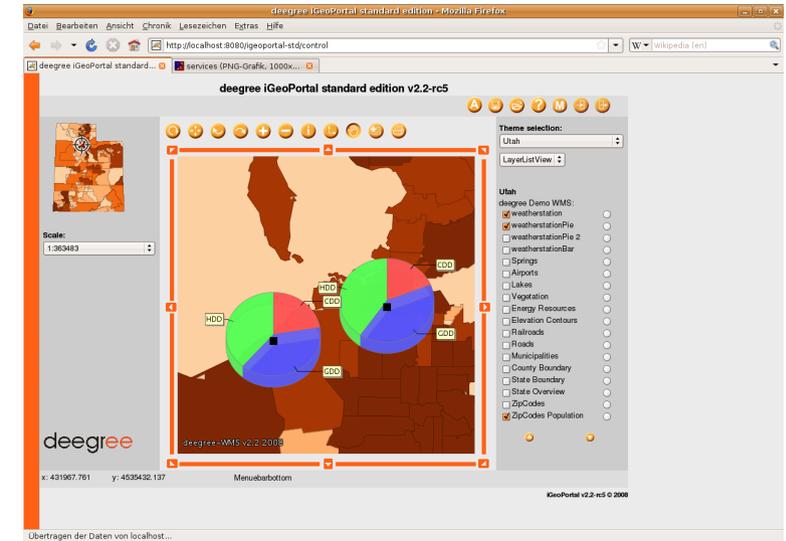


Using SLD definitions to display charts in a deegree WMS



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agenda

- short introduction
- aims & approach
- realisation
- some working examples
- outlook

deegree

.org

joint project between AG GIS, Dept. of Geography, Uni Bonn and lat/lon
free software in terms of FSF: LGPL

.aim

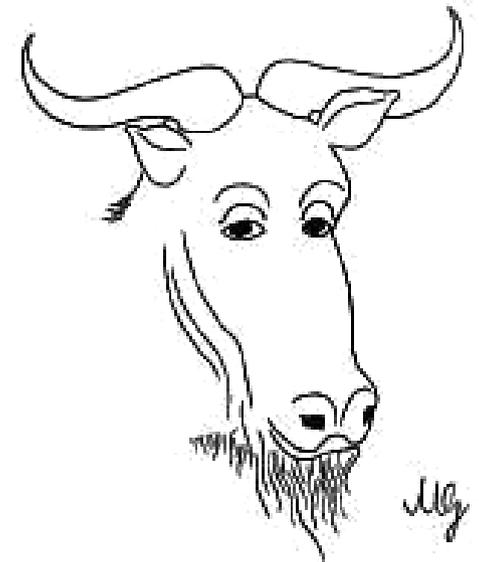
interoperability
management of geospatial data
setup of Spatial Data Infrastructure (SDI)

.how

ISO-models and OGC-interfaces
abstraction from data sources
~ 2000 classes

.now

most comprehensive implementation of OGC/ISO-standards in free software:
WMS & WCS (OGC reference implementations), WFS, CSW, WTS/WPVS, SLD, WPS



<http://www.deegree.org/>

aims & approach

thematic web maps (carto diagram)

deegree iGeoPortal standard edition v2.2-rc5

Scale: 1:363483

deegree

deegree-WMS v2.2 2008

x: 431967.761 y: 4535432.137 Menuebarbottom

OGC™ Associate Member

Theme selection:
Utah
LayerListView

Utah
deegree Demo WMS:
 weatherstation
 weatherstationPie
 weatherstationPie 2
 weatherstationBar
 Springs
 Airports
 Lakes
 Vegetation
 Energy Resources
 Elevation Contours
 Railroads
 Roads
 Municipalities
 County Boundary
 State Boundary
 State Overview
 ZipCodes
 ZipCodes Population

WMS:GetFeatureInfo

deegree WMS - Mozilla Firefox

http://localhost:8080/GWSMapService/services?VERSION=1.1.1&REQUEST=

deegree 2 Demo Feature Info

available time series

- CDD
- HDD
- GDD
- Minimum Temperature
- Maximum Temperature
- Precipitation
- Snow Fall
- Snow Depth

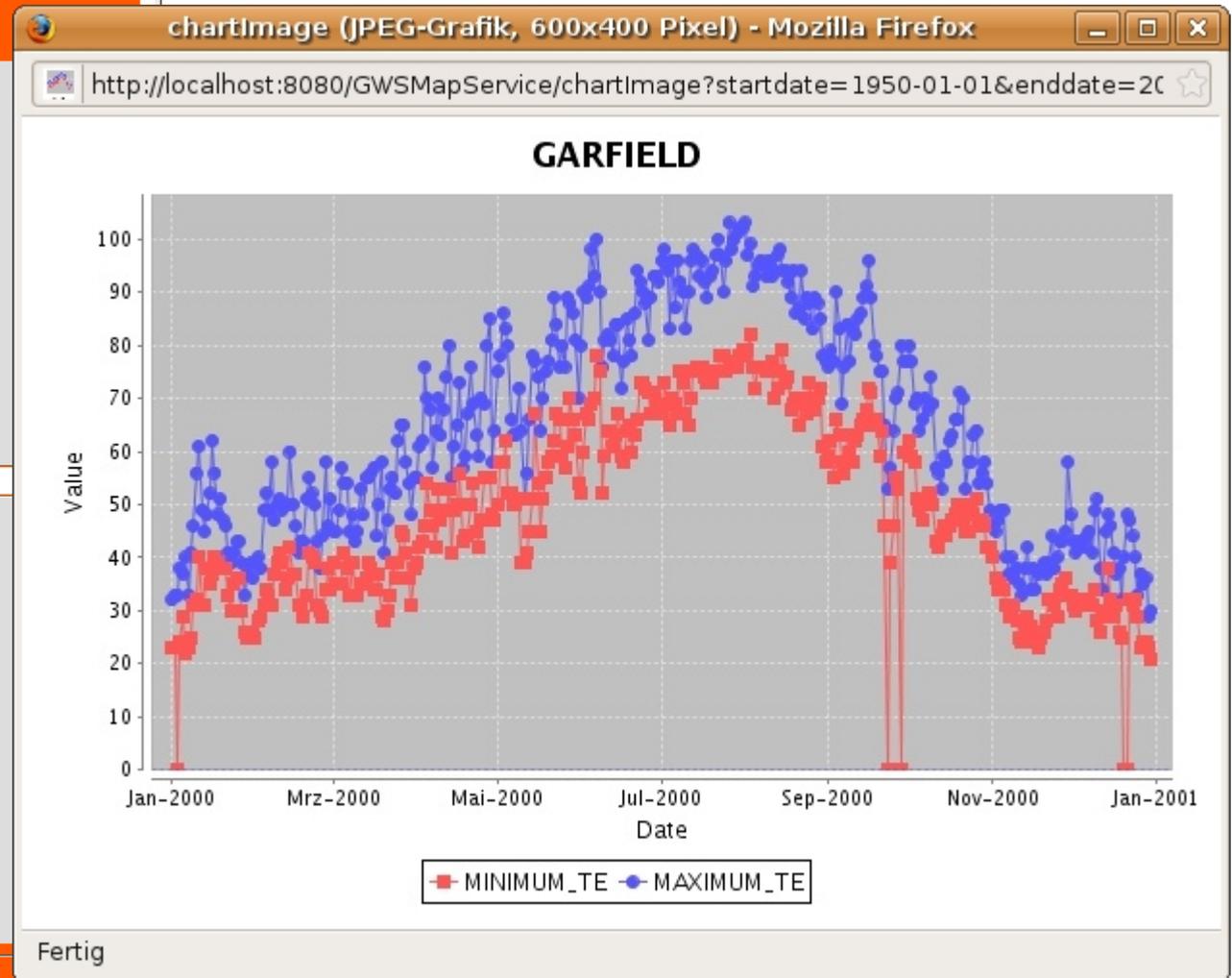
Start Date: 1950-01-01 End Date: 2000-12-31

display

name = GARFIELD
state = UT
elevation = 4314
maximum_Temperature = 1947
minimum_Temperature = 1946
observation_Temperature = 1947
precipitation = 454
snow_Fall = 87
snow_Depth = 259
GDD = 1232
HDD = 1232
CDD = 710

(c) deegree WMS 1.1.1 Fri Aug 15 2008 16:54:22 GMT+0200 (CEST)

Fertig



aims

- display charts in a WMS map

```
<?xml version="1.0" encoding="UTF-8"?>
<StyledLayerDescriptor xmlns="http://www.opengis.net/sld"
  xmlns:gml="http://www.opengis.net/gml" xmlns:ogc="http://www.opengis.net/ogc"
  xmlns:app="http://www.deegree.org/app" xmlns:xlink="http://www.w3.org/1999/xlink">
```

- OGC compliant
- valid against SLD schema
- based on feature properties

- display detailed charts via get feature info

- get measurements from SOS, data base or file

```
<MaxScaleDenominator>1.7976931348623157E308</MaxScaleDenominator>
<PointSymbolizer>
  <ExternalGraphic>
    <OnlineResource xmlns:xlink="http://www.w3.org/1999/xlink"
      xlink:type="simple" xlink:href="http://localhost:8080/deegree/chart?chart=Pie3D&title=&
      legend=false&width=250&height=220&format=image/png&GDD=$GDD&HDD=$HDD&CDD=$CDD"/>
    <Format>image/png</Format>
  </ExternalGraphic>
  <Size>250</Size>
  <Rotation>0</Rotation>
</Graphic>
</PointSymbolizer>
</Rule>
</FeatureTypeStyle>
</UserStyle>
```

approach

- deegree WMS
 - define layer
 - define user style with external graphic (SLD)
- deegree Charts
 - deegree library (deegree2.jar)
 - HTTP GET request with KVP
 - containing the data
 - containing info on where to get the data
- JFreeChart library
 - drawing the charts

realisation

deegree Charts

- provides simplified access to charting library
- responsible for generating carto diagrams
- currently supports seven configurable chart types:
 - pie (2D, 3D)
 - bar (2D, 3D)
 - line (2D, 3D),
 - XY-line
- OGC compliant by utilizing SLD specification
 - named layer -> user style -> external graphic
- benefits from great variety of deegree data sources

WMS - define style for layer

```
<UserStyle>
```

```
...
```

```
  <ExternalGraphic>
```

```
    <OnlineResource
```

```
      xmlns:xlink="http://www.w3.org/1999/xlink"
```

```
      xlink:type="simple"
```

```
      xlink:href="http://localhost:8080/deegree/chart?"
```

```
      chart=Pie3D&title=&legend=false&
```

```
      width=250&height=220&format=image/png&
```

```
      GDD=$GDD&HDD=$HDD&CDD=$CDD" />
```

```
    <Format>image/png</Format>
```

```
  </ExternalGraphic>
```

```
...
```

```
</UserStyle>
```

SLD - external graphic (URL)

```
http://localhost:8080/deegree/chart?
```

```
&chart=Pie3D
```

```
&title=
```

```
&legend=false
```

```
&width=250
```

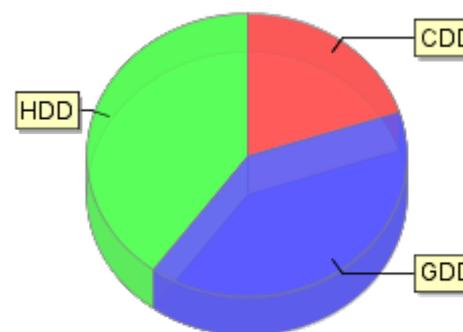
```
&height=220
```

```
&format=image/png
```

```
&HDD=$HDD$
```

```
&CDD=$CDD$
```

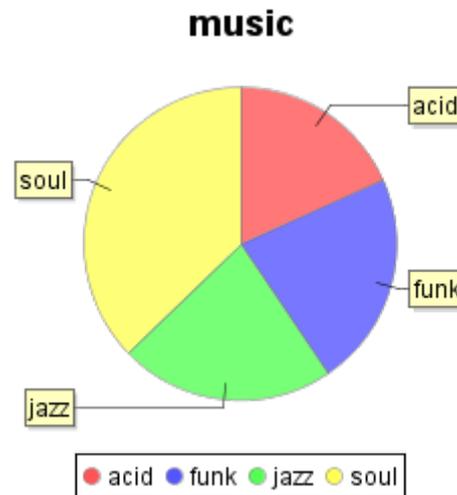
```
&GDD=$GDD$
```



some working examples

sample request (1)

```
http://localhost:8080/deegree/chart?chart=Pie&
title=music&legend=true&width=250&height=250&
format=image/png&acid=33&funk=40&jazz=40&soul=67
```



sample request (2)

```
http://localhost:8080/deegree/chartImage?  
columns=MINIMUM_TE,MAXIMUM_TE,
```

```
&id=423097
```

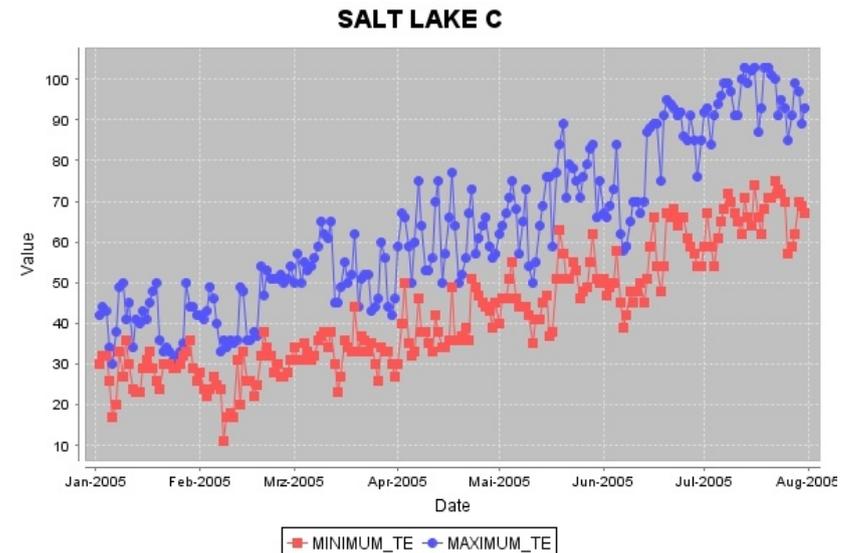
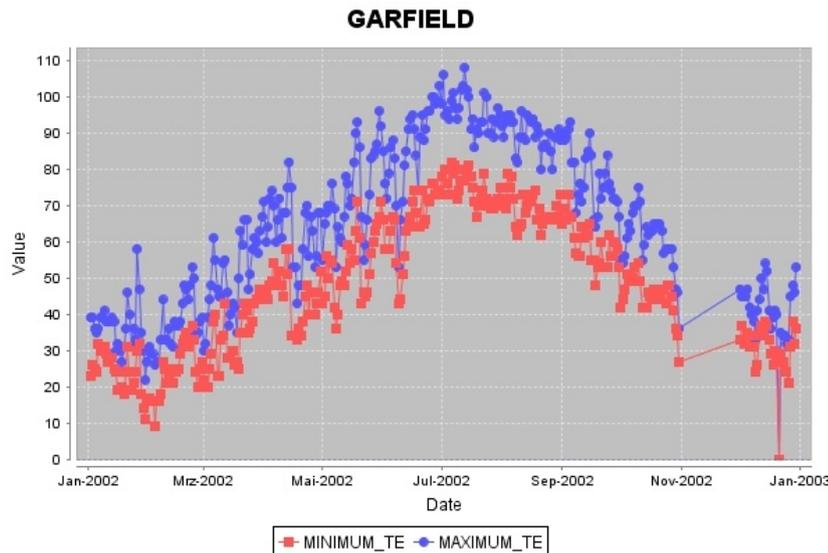
```
&startdate=2002-01-01
```

```
&enddate=2002-12-31
```

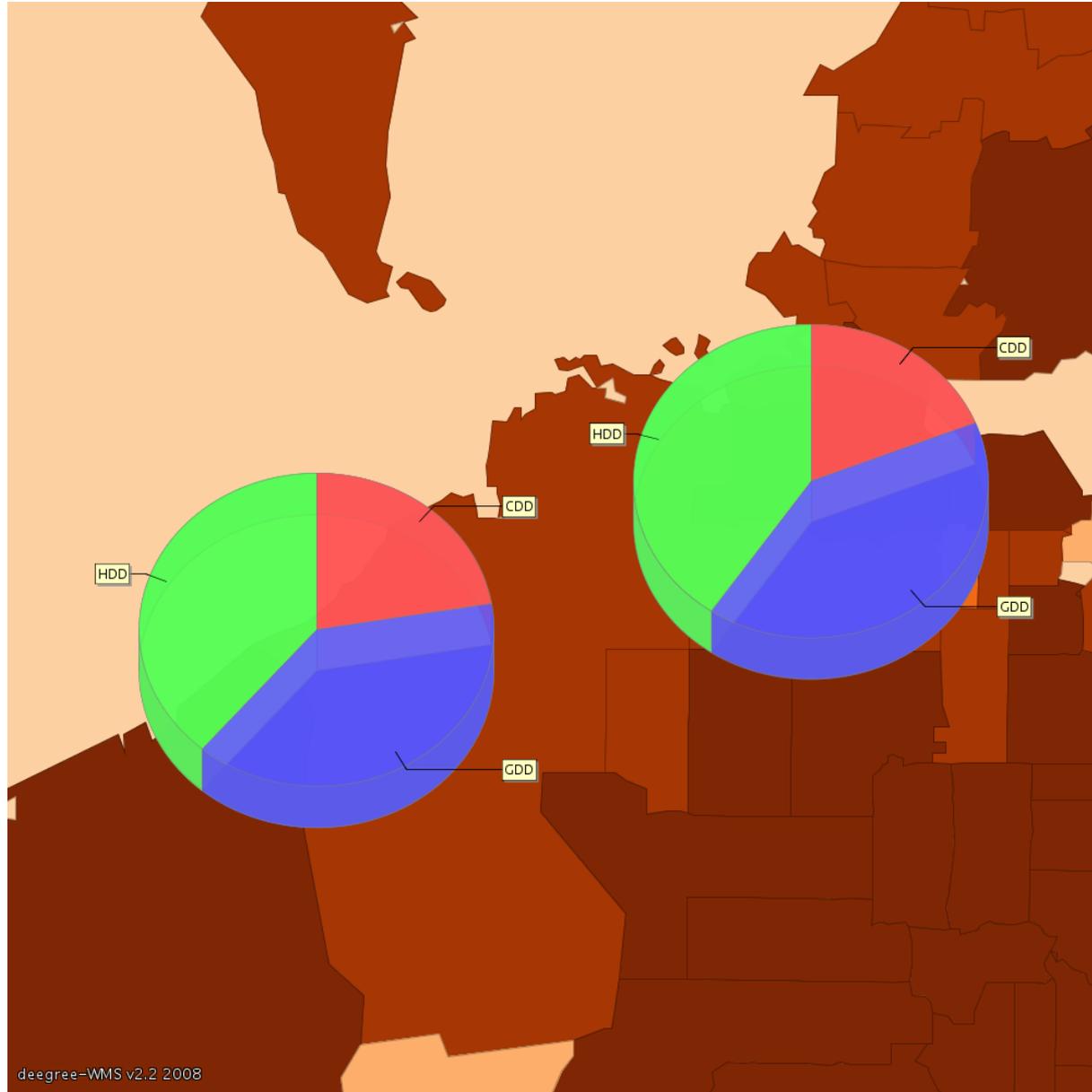
```
| &id=427598
```

```
| &startdate=2005-01-01
```

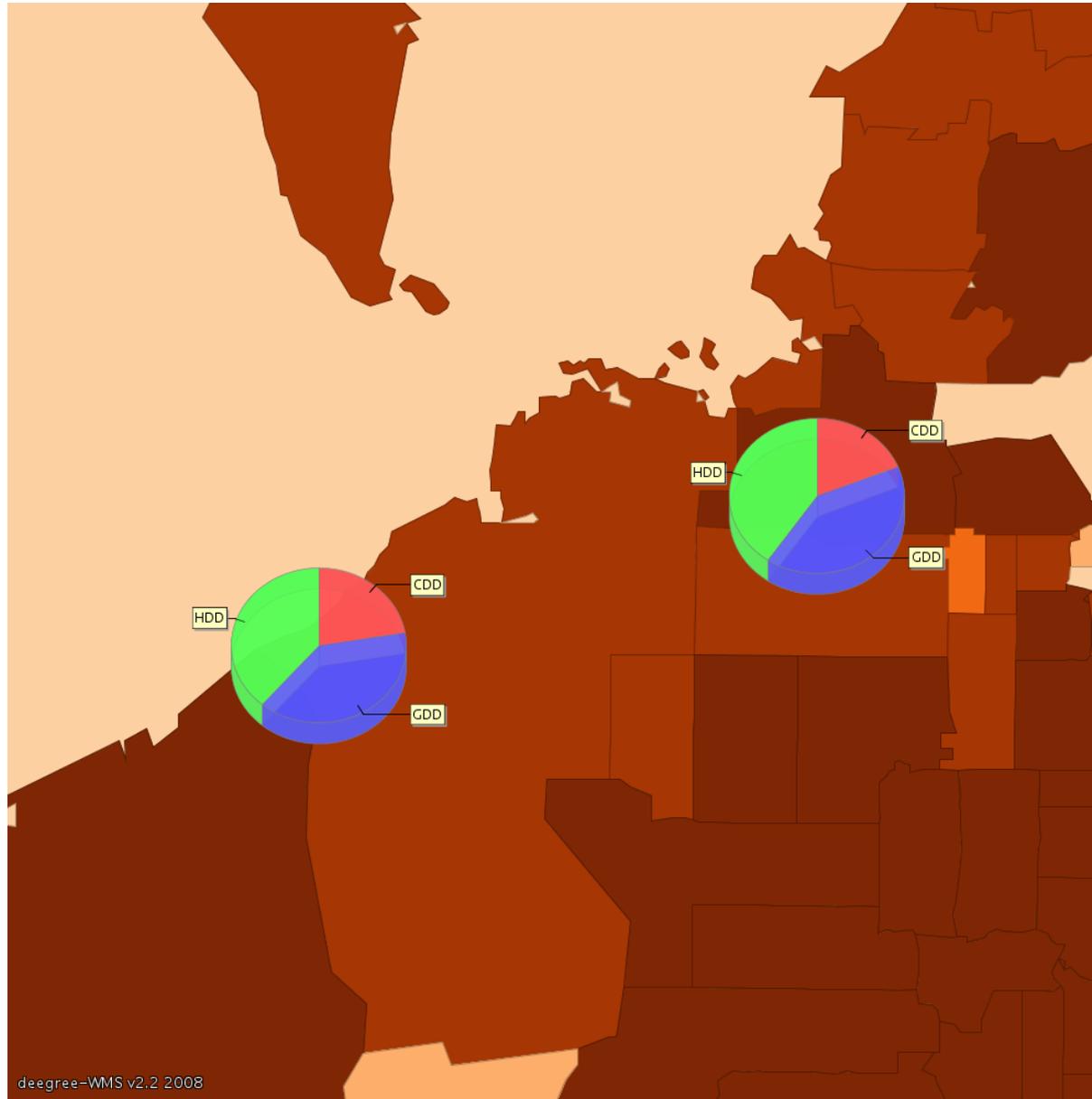
```
| &enddate=2005-12-31
```



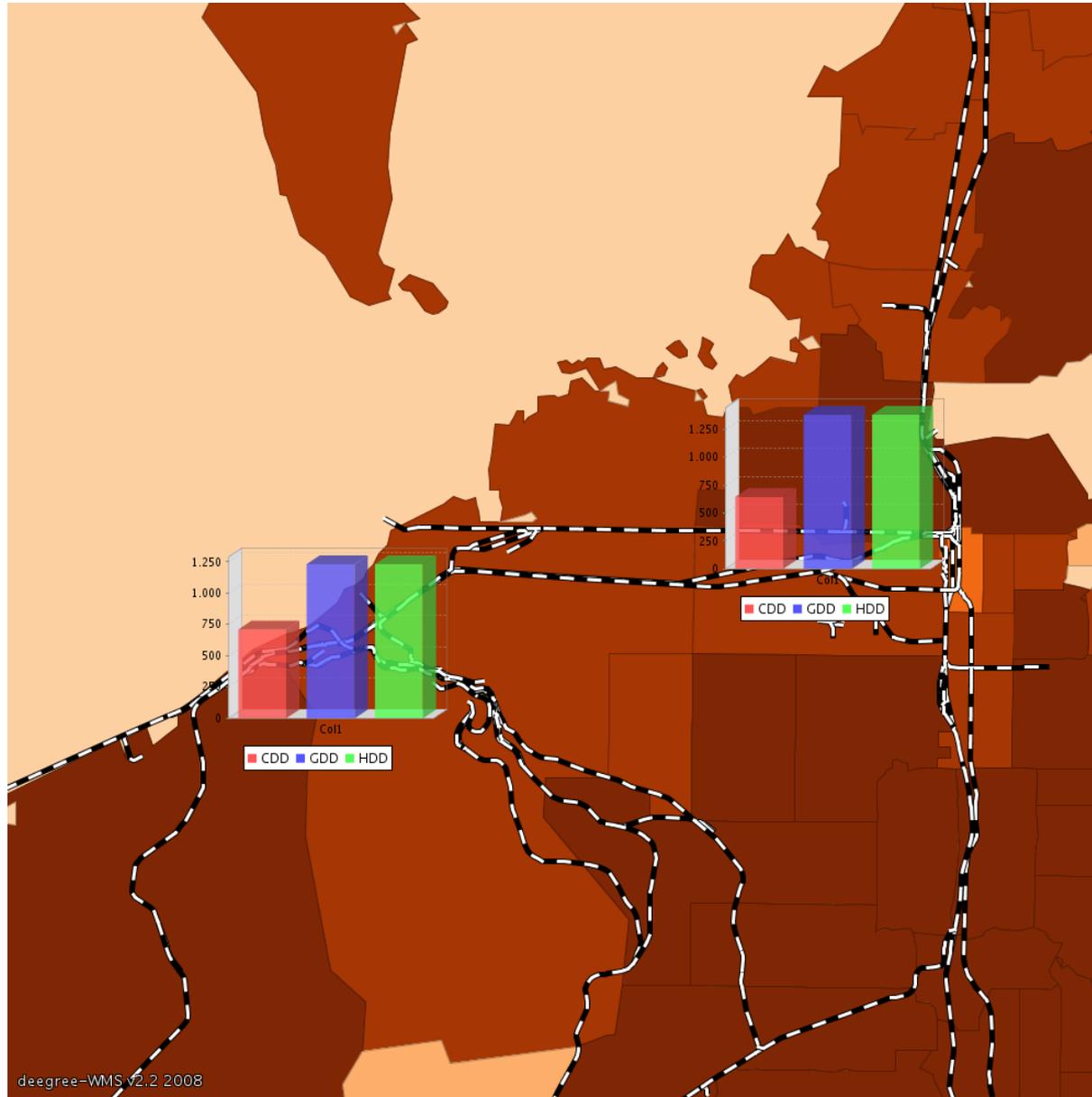
large pie chart



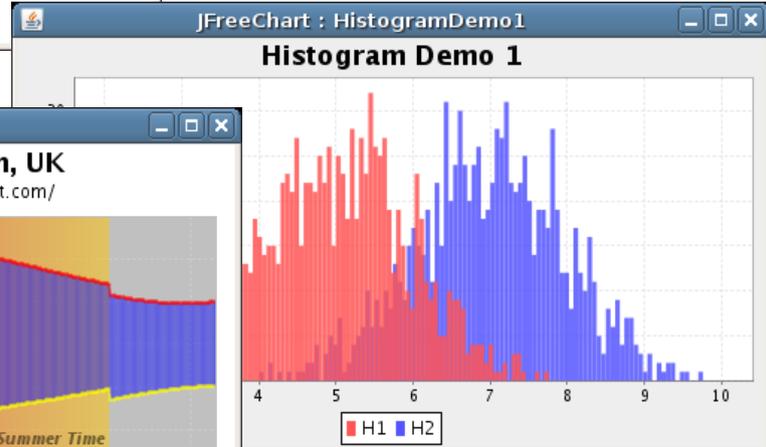
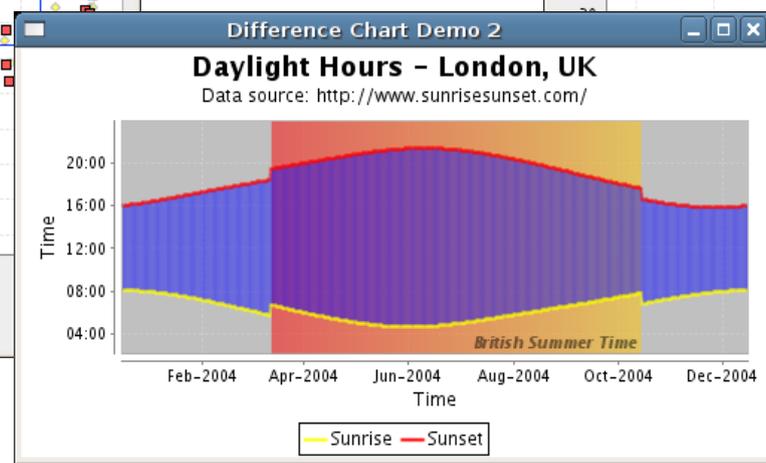
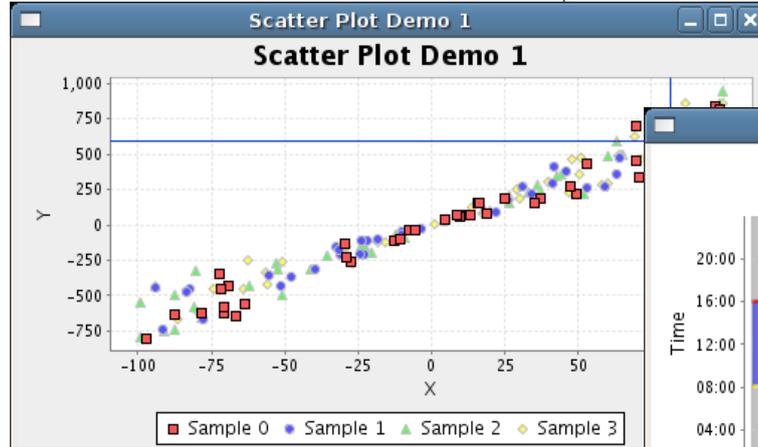
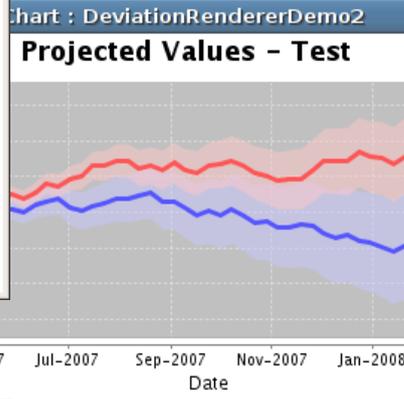
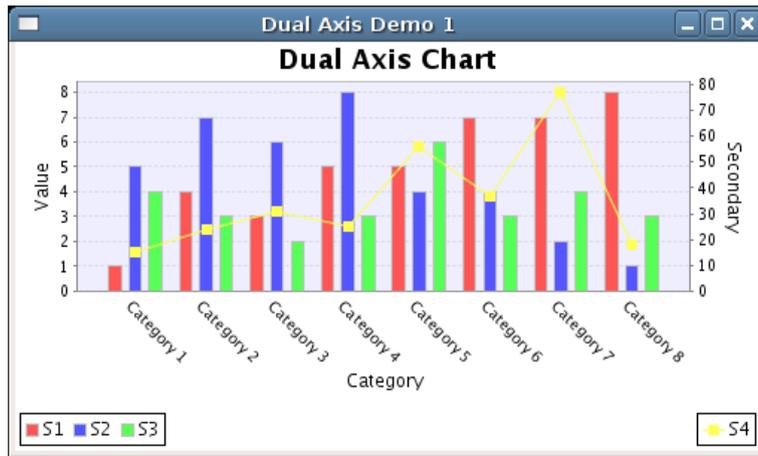
small pie chart



bar chart



variety of chart types

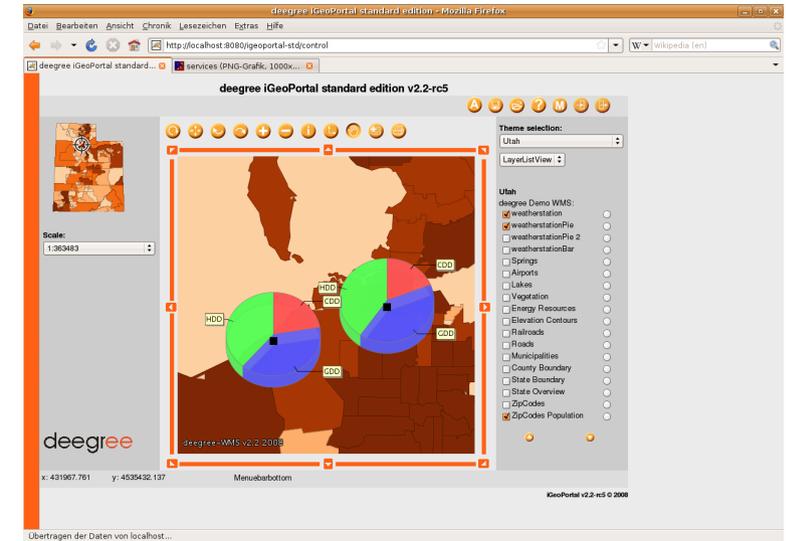


outlook

- consider generalisation matters
- enhance documentation
- support greater variety of chart types
 - restricted to types offered in JFreeChart library:
 - JFreeChart supports pie charts (2D and 3D), bar charts (horizontal and vertical, regular and stacked), line charts, scatter plots, time series charts, high-low-open-close charts, candlestick plots, Gantt charts, combined plots, thermometers, dials and more.

any questions?

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