Dissemination of PS-InSAR Results for Improved Interpretation and Analysis

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Outline

• Problems in PS data interpretation
• Bridging the gap between scientists and decision makers
• WebGIS presentation of PS data
• Web Map Server in PS data analysis using,
  • Basic client (internet explorer)
  • Freely available viewer interfaces
  • Freely available advanced clients (Google Earth etc.)
• Concluding remarks
Problems in PS data interpretation

- Communication gap between Radar Scientists and End users, decision makers

- Interpretation of non-linear quantities adds on ambiguity
  - Under interpretation (more trust on model)
  - Over interpretation (more trust on observations)
Problems in PS data interpretation

- Analysis of oddly behaving points
Bridging the gap between scientists and decision makers

- Interactive visualization combining local geo-data
- Correlation with local phenomena
- Local authorities using the results for decision making

Underground metro tunnel needs to be repaired? Or closed?
WebGIS presentation of PS data

• Advantages
  • Platform independent
  • Independent of database type
  • Data storage, processing, manipulation, transformation etc. at a dedicated server
  • No computational load at the users end
  • Open source utilities can be included

• Data from various online spatial data networks are readily available to numerous users
  • Local input can be solicited
Data fusion via the Web

Integrated View

Catalog View

PS data points
Building edges
Infrastructural boundaries
Water boundaries
Gas extraction data

Internet

Water
PS data
Infrastr. Works
Gas/oil/salt extraction data
Building boundaries
Rivers
Roads
Topography

Soils, Vegetation
Weather
Soils, Vegetation
Images

Framework (Clearinghouse)
Web Map Server (WMS)

Client @ anywhere

Apache or any
web server with
‘MapServer’ CGI
= WMS

Response- Map (JPG, GIF)

User

GIS, CAD
Oracle,
Postgres Data

Server @ anywhere

Get map - request
Pan-Zoom-Identify (PZI) functionality with layer combination: example

Query Layer PS: Persistent Scatterer Attributes

<table>
<thead>
<tr>
<th>Latitude (decimal degrees)</th>
<th>Longitude (decimal degrees)</th>
<th>Relative Topographic Height (m)</th>
<th>Deformation Velocity (millimeter/year)</th>
<th>Ensemble Coherence</th>
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</table>
Web Map Server in PS data analysis

Using freely available viewers
e.g. Jump workbench, Gaia viewer, Arc-explorer etc.

geo-data@ server anywhere

WMS

PS data@ myserver or anywhere

WMS

Integrated Visualization via the client
Data layer combination with PS using Gaia viewer

- PS wms + Demis wms (rivers, coastal boundaries)
- PS wms + Globe wms (bathymetry, rivers, coasts)
- PS wms + JPL wms (Global mosaic - pan sharpened)
- PS wms + JPL wms (SRTM reflectance magnitude - 30 m)
Web Map Server in PS data analysis

Using projected geodata client Google Earth™

- Connecting WMS of PS data to Google Earth™ via XML
- Additional layers are added in Google Earth™ in temporary places
- Tags to PS information are attached as legends
- The PS data can also be shared with the Google Earth™ community
Concluding Remarks

- With the increasing availability of free data servers, the local geo-information is increasing manifolds.
- The open source WebGIS utilities provide a relatively straightforward platform of data sharing.
- Combined interactive visualization may lead to a favorable tradeoff between under and over-interpretation.
- With easy access and data sharing of PS information, more expertise can be integrated to assist interpretation.
Interesting links

- Play with the web based PS visualization of Rotterdam city at [http://www.enterprise.lr.tudelft.nl/~swati](http://www.enterprise.lr.tudelft.nl/~swati)

- [www.mapserver.umn.edu](http://www.mapserver.umn.edu)

- [www.earth.google.com](http://www.earth.google.com)