

Open Access to Geospatial Analysis Tools for Better Collaboration

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Geographic data and information systems have increasingly become integrated with the Web and consumer facing tools. Through the advent and adoption of mobile phones users are creating and engaging with constant geolocated media, decision making, and awareness.

However the depth and capability of these tools for meaningful inquiry and investigation remain limited. Simplified navigation or cartographic visualization provide rudimentary conveyance of data with an onus on the viewer to understand and assimilate the data. Advanced projects where public users submit data tend to keep the contributor community separated from the research and scientific users of the data that is gathered.

There is a dramatic potential to more closely integrate these disparate communities together in gathering, disseminating, analyzing, and understanding scientific data. Tools and technologies are able to accommodate appropriate interfaces to enable effective input and communication through a spectrum of technical and scientific background. There is more to community that volunteering data and we must look at and consider the insights and knowledge that members of a community can provide.

Practical Applications

The United Nations Environment Programme at Grid-Arendal has launched OCEANIDS¹, a portal to allow anyone to access marine data and build their own maps and analyses. These can be shared directly with scientists with the goal to enable insight and collaboration between researchers, government and citizens to understand changing climate and its effect on ocean conditions and biodiversity.

The US Government is utilizing volunteered geographic data in order to identify and respond to disasters. During Hurricane Irene in the fall of 2011 the National Geospatial Intelligence Agency (NGA) utilized social network streams to observe and analyze reports of flooding and conditions in order to manage their response.

More generally GeoCommons² is a public online resource that provides for open data sharing, visualization and analytics that includes over 120,000 public datasets and 80,000 users per month. Through user contributions of data as well as community analysis there is the potential for rapid innovation in identifying and answering important geospatial questions by the insight of volunteers and citizens.

Open Questions

¹ UNEP Grid-Arendal OCEANIDS <http://oceanids.geoiq.grida.no/home>

² GeoCommons <http://geocommons.com/>

The tools exist for rapidly publishing and analyzing data through the web and mobile devices are prevalent. What is missing are the techniques for engaging with users through appropriate interfaces to leverage their specific expertise and insights. Projects such as SwiftRiver³ have been developing algorithms to measure user contributions and determination of authority, veracity, bias, accuracy, and impact⁴.

How can we provide both explicit and implicit measures of quality as they pertain to data. Through every usage, interaction and comment on a map we can gather information on the potential accuracy or errors that can flow back into the data and models for improvement. Would traditional learning algorithms such as back-propagation neural network work within the context of volunteered data and information. Can we leverage social networks as a quality measure for garnering feedback on scientific outputs?

³ iRevolution: Developing SwiftRiver

<http://irevolution.net/2009/04/10/developing-swift-river-to-validate-crowdsourcing/>

⁴ Swiftly.org: Subjectivity, Veracity, and Truth

<http://blog.swiftly.org/post/4066524948/subjectivity-veracity-and-truth>