

COMMUNICATING SCIENTIFIC BUZZ WITH GEORSS

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Introduction

Buzz words such as “RSS” and “GeoRSS” are rapidly gaining momentum on the Web. In an effort to discover what they mean and how to use the technologies behind them, we are exploring Geographically Encoded Objects for RSS feeds (GeoRSS), since this technology captures the basics of Really Simple Syndication (RSS) but adds a geographic component. After the initial time investment of learning both RSS and GeoRSS, it became evident that GeoRSS would be an optimal way of disseminating many news items from the NOAA-funded data management program at the National Snow and Ice Data Center (NOAA@NSIDC) to those using RSS and GeoRSS map readers.

This GeoRSS feed will distribute content about new scientific data sets and updates to existing data products, as well as other NOAA@NSIDC news. The advantage of adding a GeoRSS feed to the “NOAA@NSIDC News” frame on our Web site is that GeoRSS adds a spatial context to the presentation of news. GeoRSS users can potentially browse for data using spatial keywords, and see data product or event locations on a map.

For example, users could be alerted when additions are made to the popular Online Glacier Photograph Database (NSIDC/WDC for Glaciology, 2006). Over 50,000 unique users have viewed the photographs online, and over 300 users have registered in order to learn of additions or other changes to the collection. Currently we send those users an email. With GeoRSS, interested users subscribing to a NOAA@NSIDC feed would see a map showing where newly added glaciers are located, without the need for NSIDC to maintain a mailing list.

Common terms used in discussing RSS and GeoRSS include “feeds” and “readers” (or “aggregators”). A feed is basically an Extensible Markup Language (XML) file with RSS or GeoRSS tags included. A reader (oftentimes used interchangeably with the term aggregator) is used to interpret the feed and allowing the reader to view contents from the feed. Most news sites publish RSS feeds. This section describes RSS and provides further details on GeoRSS.

RSS overview

RSS feeds provide access to news articles without having to visit numerous Web sites or blogs to get the latest news on a topic of interest. One can read news headlines in an organized way, usually displayed on one page, to discover the latest developments. Many media outlets provide RSS feeds. For example, the New York Times home page is available as an RSS feed. The New York Times also supplies a separate RSS feed of environmental news and for other topics. An RSS reader is needed to make user-selected feeds viewable through an interface. There are desktop readers, mobile readers, and Web readers. Recent versions of Mozilla Firefox have a built-in RSS reader through the Web browser. Another example is the Google Reader that accompanies a Google Account. The interface includes the ability to search using keywords to find all related RSS feeds. Subscribing to a feed allows new content from that feed to be viewed in the Google Reader page.

A RSS reader provides access to news articles and blogs without much effort from the user. Users can control what content to view and can organize content into different folders. Information is updated frequently. A researcher, for example, might wish to know what is in each new issue of Science magazine. Without subscribing, one can review the headlines: simply paste the URL (<http://www.sciencemag.org>) into a search screen in a RSS reader. Many climate researchers like to know what their colleagues are saying on the realclimate.org blog. RSS provides an easy way to browse and read this content at the same time. Other popular blogs available as RSS are the Ogle Earth blog (<http://www.ogleearth.com>) and the Google Earth blog (<http://www.gearthblog.com>).

GeoRSS basics

At present, GeoRSS is not officially part of the Open Geospatial Consortium (OGC), even though several of the GeoRSS inventors are associated with the OGC and an OGC paper was written on GeoRSS (OGC White Paper, 2006). This OGC paper offers a solid reference explaining how GeoRSS emerged. The GeoRSS home page (<http://www.georss.org/>) includes an overview along with some sample GeoRSS syntax.

GeoRSS is basically an extension of RSS and the extension relates to geography. It is analogous to TIFF and GeoTIFF image formats, in that readers for RSS will also read GeoRSS, and the geolocation tags only come into play when certain applications are used. In the case of GeoRSS, these applications are map interfaces called aggregators. For example, to view content using the ACME aggregator (ACME GeoRSS Map Viewer, 2007), add the URL of the GeoRSS feed to the search line in ACME and an interactive map will appear with information contained in the feed. This gives the user an idea of where something is happening. For instance, if the NOAA@NSIDC team comes out with a new Arctic sea ice data set, we can add in the bounding box coordinates of this data set in a GeoRSS feed so that users can see the geographical region covered.

There are two main versions of GeoRSS: GeoRSS Simple and GeoRSS GML (<http://www.georss.org>). The simple version contains very basic information and allows one to enter coordinates using the WGS84 datum and a geographic (equidistant cylindrical or latitude/longitude) projection. With GeoRSS GML, information from

different projections can be entered and one is not restricted to a particular geographic coordinate system.

Many people and organizations are starting to create GeoRSS feeds for what formerly might have been email subscription services. The U.S. Geological Survey (USGS), for example, produces a GeoRSS feed for earthquakes. Pasting the feed link (<http://earthquake.usgs.gov/recenteqsww/eqs7day-M2.5.xml>) into the Google Maps search field (<http://maps.google.com/maps>) results in an up-to-the-minute view of recent earthquakes on a 2-D map.

Another GeoRSS aggregator is mapufacture (<http://mapufacture.com/>). This site allows the user to combine multiple GeoRSS feeds and run a geographic search based on GeoRSS feed entries that others have submitted. We expect that more and more GeoRSS feeds and aggregators will emerge in the near future.

Virtual globes can show location using a three-dimensional view. By using available GeoRSS aggregators, such as mapufacture or ACME, those interested can view our news content in a 2-D space. With tools that convert from RSS to GeoRSS to KML, with the Geonames RSS to KML converter (Geonames RSS to GeoRSS converter, 2007), users have the option of viewing information on a 3-D virtual globe.

GeoRSS at NSIDC

NSIDC specializes in data products from the polar regions of the Earth. Since polar data are best represented using a polar projection, we have implemented GeoRSS GML, rather than GeoRSS Simple. The GML extension allows us to provide projection information. This is important in terms of 3-D visualization of the content as well.

A new Web site at NSIDC explains how to use the GeoRSS feeds. Ongoing work will expand the number of feeds available; currently the technology is used only for disseminating news from the NOAA@NSIDC product team. Subscribers can browse through product news and view the location associated with any news item using their GeoRSS aggregator. Figure 1 is an early example of the implementation of the feed; the polar projection has yet to be implemented.

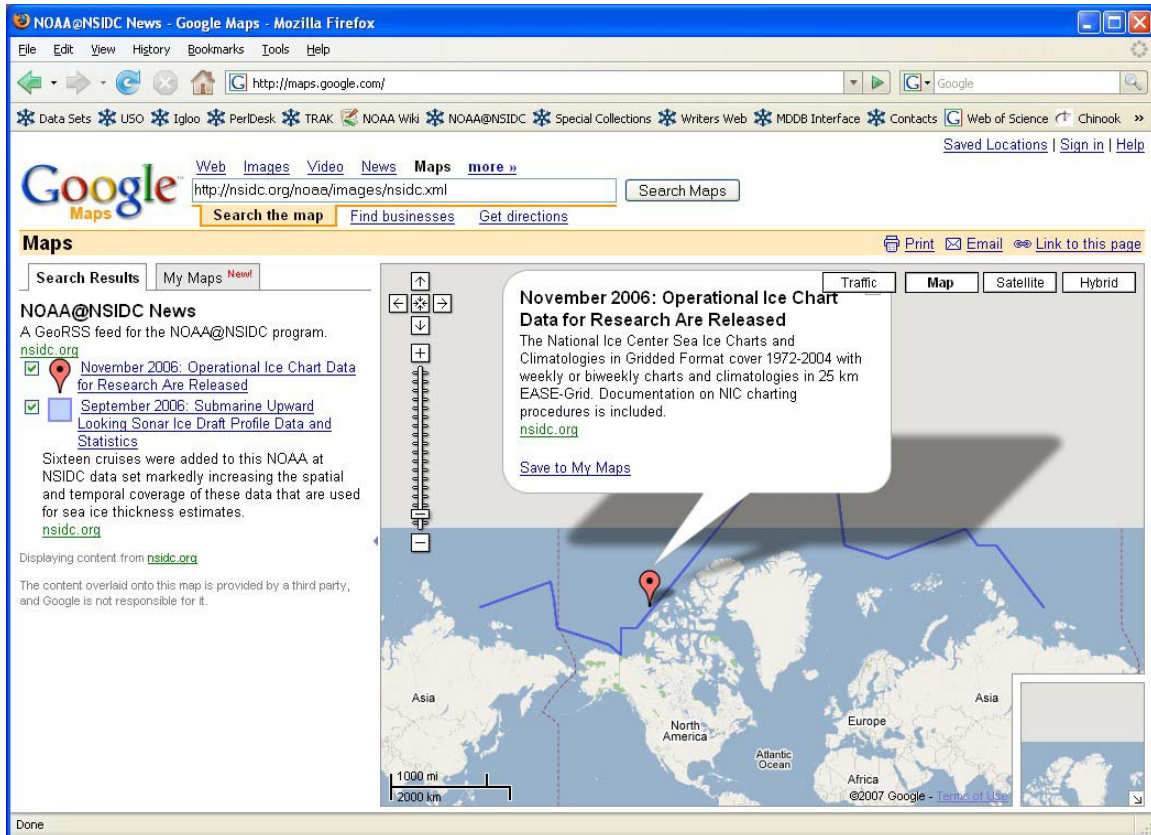


Figure 1. Screen shot of an early version of the [NOAA@NSIDC](http://nsidc.org) News GeoRSS feed, as it appears using the Google aggregator. News about new data products, in this case two sea ice data sets, appears with a map of where the data are located.

Summary

NSIDC is exploring the potential benefits of using GeoRSS in a scientific data center setting. With the proliferation of new technology and applications, our GeoRSS feed provides an efficient way to learn of and to access cryospheric news and data within a geographic framework. There are many ways to learn more about GeoRSS, including through blogs and Web pages. The official GeoRSS home page presents a suitable overview of GeoRSS by providing a good overview and includes the basics along with some sample GeoRSS syntax. Our perspective is that GeoRSS contributes value to currently available content. News stories are enhanced by adding a geographic dimension to the content.

Working with GeoRSS was an experiment to see how feasible the process is of setting up a GeoRSS feed, determining potential scientific value and researching existing GeoRSS aggregators, and feeds. We envision GeoRSS being incorporated in an increasing number of applications and becoming more widespread. Virtual globes are becoming a ubiquitous method of sharing information... why not add news and geographic searches to this phenomenon? Geographic searches allow one to search on a topic by area. We look forward to up and coming applications that allow geographic search, specifically in a 3D context. Imagine the Web of Science, but accessible through geographic searches in a 3D

setting and expanded to include publications, conference proceedings, new data sets, upcoming conferences, and more. For example, say a researcher is interested in Antarctic climate research. Type in Antarctic climate research in a search, and become informed of new data sets, publications, and news related to this topic. The possibilities with GeoRSS are endless.

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