

## DO SATELLITE DATA PORTALS TODAY REACH OUT TO DIVERSE END USERS AROUND THE WORLD?

BY FAISAL HOSSAIN

The space-based vantage of Earth-observing satellites to solve some of the world's otherwise fundamentally intractable problems is well known. For example, from understanding the global distribution of precipitation, energy, and water cycling to predicting transboundary water fluxes, satellites have been promoted as the only means available for our sparsely instrumented Earth. While most Earth-observing satellite missions have a science-oriented goal, the applied-science value for decision making at tactical or strategic time scales is equally convincing. However, Internet data portals for satellite missions available today do not seem to be making an impact on diverse end users as large as that already made on the scientific community. In a recent end-user training workshop titled "Environmental Applications of Remote Sensing for Water Resources" [held in December 2012 in Bangladesh to introduce existing and emerging satellite missions such as the Global Precipitation Measurement (GPM) and Surface Water and Ocean Topography (SWOT) missions], end users were found unaware of the many highly evolved satellite data portals already in existence because these Internet portals were not as highly visible in the Google search engine as the archaic ones.

### GLOBAL IMPACT ON STAKEHOLDERS OF TODAY'S SATELLITE WEB PORTALS.

Today's satellite data web-based portals, or web portals, have evolved to a stage where it is quite unlikely that the diverse end users around the world—such as

a semi-skilled farmer with access to a smart phone in Bangladesh, or the healthcare field worker in Malawi, or a local disaster manager in the United States—would have prior knowledge of keywords to search for on the Internet and locate the satellite data portals. A good example of the global impact of today's satellite web portals is the GIOVANNI data portal of NASA's Goddard Earth Sciences Data and Information Services Center (GES DISC, <http://disc.sci.gsfc.nasa.gov/giovanni/overview/index.html>). This web portal provides perhaps one of the most user-friendly interfaces to download and independently apply NASA satellite-derived geophysical data without the need for any additional training. However, the GIOVANNI portal does not show up in the initial listing (first 20 hits) of a Google search if one types keywords such as "satellite data" or the specific geophysical variable (such as "satellite rainfall," "land use," "water bodies," etc.). Other examples of such highly user-friendly data portals that were not easily identifiable in a Google search were the NASA Jet Propulsion Lab (JPL)'s Genesis and Rapid Intensification Processes (GRIP) Hurricane portal, the Moderate Resolution Imaging Spectroradiometer (MODIS) portal for land cover and water bodies, and the European Space Agency (ESA) portals on inland water levels from altimetry.

### A CALL TO MAKE SATELLITE DATA PORTALS MORE VISIBLE ON THE INTERNET.

Web-based data portals for satellite missions need to be made more visible on the Internet so that diverse end users around the world, with no prior knowledge of the mission details, can locate them easily. One potential solution to improve visibility is search engine optimization (SEO). In information technology lingo, SEO is defined as the process that improves the visibility of websites using the natural algorithmic structure of the search results. Most search engines "spider" the Internet using the meta-data information embedded in the first few lines of the hypertext markup language (HTML) files, such as the title of the web page. The index page of HTML for GIOVANNI has the title "Giovanni-GES


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DISC: Goddard Earth Sciences, Data & Information Services Center.” A typical end user without advanced training on satellite remote sensing is unlikely to “guess” some or all of these keywords embedded in the GIOVANNI index page. End users are more likely to type names of the geophysical variable of interest, “satellite,” or at best the name of a satellite mission.

Using a “conventional” Internet search by a layman, many resourceful satellite data portals do not appear in the initial series of hits that users are likely to check during their attention span. Thus, most of the currently available outstanding satellite data portals continue to remain visible in isolated pockets within the scientific community. Yet, using SEO, for which there are numerous methods, these data portals, which otherwise seem to provide access in isolated pockets to the more initiated and knowledgeable users, can improve their visibility to global users. Tools such as social networking or working closely with search engine providers could be another way forward.

**CONCLUSION.** Today, there are many satellites circling the globe that serve as a continuous and very important “eye” on the state of the world. These satellites have the unique potential to improve the lives of millions of people. While space agencies should focus on making the satellite missions a technical success, others benefactors, such as the scientific community, need to focus on making satellites a success among the masses of people through better information delivery. The satellite data portals available on the Internet have a responsibility to deliver the information to users of diverse backgrounds in a comprehensible, timely, affordable, and impactful way. Globalizing satellite information for the billions of potential end users around the world, rather than allowing it to remain in isolated pockets or systems due to a lack of visibility on the Internet, as is the case now, needs to be given some actionable attention by the scientific community.