

CODATA

Newsletter Special Issue

Committee on Data for Science and Technology

The importance of data sharing within the Global Earth Observation System of Systems- CODATA speaks to José Achache, Director Geo Secretariat.

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From time to time the CODATA Newsletter publishes a Special Issue focussing on a topic it believes of importance both for the science and data communities. The issue of data sharing within the Global Earth Observation Systems of Systems is one such topic. This Special Issue of the CODATA Newsletter is dedicated to an interview with José Achache where data sharing issues are discussed in detail.

The Committee on Data for Science and Technology (CODATA) was established in 1966 by the International Council for Science (ICSU). The mission of CODATA is to strengthen international science for the benefit of society by promoting improved scientific and technical data management and use.
<http://www.codata.org>
<http://dsj.codataweb.org>

Background

In 2006, the Group on Earth Observations (GEO) established Task DA-06-01, "Furthering the Practical Application of the Agreed GEOSS Data Sharing Principles," and invited GEO Members and Participating Organizations to help implement the task. The International Council for Science (ICSU), working through its interdisciplinary Committee on Data for Science and Technology (CODATA), agreed to lead this task under the auspices of the GEO Architecture and Data Committee and to draft a "white paper" recommending data sharing principles for GEO and guidelines for implementation them.



Director: José Achache

In Bucharest last November, the GEO Plenary took another step forward by agreeing on the "Establishment of a Data Sharing Principles Task Force comprising GEO Members and including the current Task team". The first meeting of the Task Force will take place in Geneva at the end of May. This Special Issue of the CODATA Newsletter carries an interview with José Achache, Director of the GEO Secretariat. He discusses the issue of data sharing within the GEOSS context and looks forward to the activities of the new Task Force in the period leading up to the next GEO Ministerial Summit in 2010.



CODATA: *The GEOSS 10-Year Implementation Plan as adopted in 2005 explicitly acknowledges the importance of data sharing in achieving the GEOSS vision and anticipated societal benefits. Almost 5 years later do you think data sharing is still critically important, and what is your assessment of the importance of data sharing in the GEOSS vision and its successful implementation?*

José Achache: The two questions are interrelated. Data sharing is undoubtedly important because the successful implementation of GEOSS fully depends on it. It is important because GEOSS is a shared facility that must ultimately benefit the entire world, including the 190-plus member countries of the UN, of which 77 are part of GEO today. If we want GEOSS to be a facility for the whole world, including not just wealthy countries and companies but countries with limited resources, then data sharing will be critical. Although its ultimate goal is to facilitate informed decision making, GEOSS is also a vital tool for scientific research and, as you know, research communities cannot usually afford to pay for data. Therefore, the need for data sharing and for the free and open access to data are of paramount importance to the success of GEOSS. This includes the extent to which information to which value has been added will be made available on a non-commercial basis; this will be the critical issue.

CODATA: *When GEO established Task DA-06-01 in 2006, did you expect the scientific community to be interested in this activity and to take a leadership role?*

José Achache: Yes and no. I was expecting the scientific community to be interested, but I did not expect the scientific community to take the leadership role. It is not a bad thing, but it came as something of a surprise. I thought instead that people who are more, shall I say, "defensive" on data policy would take the leadership role. I was definitely expecting the scientific community to be interested in this activity, but I was expecting them to be interested in the whole range of GEOSS implementation issues. In this respect I have been a little disappointed. In many other areas of GEOSS, where we do need the scientific community, their involvement has been rather limited. I guess they felt some disappointment that GEO was created as a new coordination mechanism rather than as a new funding mechanism, and at first that may have discouraged the scientific community from becoming directly involved in GEOSS implementation. However, I believe that the scientific community is beginning to discover that GEO can be an excellent mechanism for leveraging access to funding and support. For example, in Europe the European Commission has created a number of Calls for Proposals that specifically request that the connection and contribution to GEOSS be emphasised. In short, the contribution of the proposed activity to GEOSS is critical in order to receive funding for proposed new research.

But going back to the "leadership" role raised in your question, I see two points of view on the data policy issue, that of the users and that of the providers. I should say here that I consider the scientific community to be primarily a user of GEOSS, although of course it also contributes to building and improving GEOSS. But because of the time-scale of most Earth observations and because of the close connection between the processes of environmental change

and of political decision making, it turns out that that both communities—the scientific community and the decision making community—do need the same information base. I think that is one of the beauties of GEOSS. So, returning to the leadership issue, I suppose I was expecting the providers of observations to take the leadership role, but they adopted a "wait and see" attitude and allowed the scientific community and the users to take the leadership role. This is where we are now.

CODATA: *Why do you think the providers took this approach?*

José Achache: I would say the dynamics were against them. The trend now is towards more and more openness and gradually moving towards adding value to the data. They adopted a more defensive approach. It really is a classic football strategy—when you are playing defence you wait and see and then you adapt to the other team's strategy!!!

CODATA: *Have the activities of the Task evolved in ways that you expected, and are there areas that still need more attention?*

José Achache: Yes, there are areas that require more attention. Going back to the football analogy, this is not just a football game where there is a win/lose ending: instead, there has to be a win/win situation for both users and providers. I think what is needed are proposals that address the concerns of the data providers. In short, I think what we need is a more practical approach that tries to picture what the world could look like with different data sharing arrangements in place and how the needs and requirements of all stakeholders could be taken into consideration. In some cases, encouraging the release of data may suffice in realizing this objective. If we take the Landsat archive, for example, this is a case where no profit is involved. It is a government-supported initiative. However, it is an absolutely major breakthrough for both GEO scientists and decision makers around the world that there will be unrestricted access at no charge to the Landsat archive. I will dwell on this in greater detail later.

There is also GMES (Global Monitoring for Environment and Security), a European initiative for the implementation of information services dealing with environment and security. This Initiative already has a number of satellites and is developing the core downstream services. Therefore the production chain which leads from observation to producing information is already well identified in this European example. It would be an interesting test case to see how this will all fit together. Therefore, moving away from principles and looking at practical implementation rules using concrete examples is, I believe, the way forward. I anticipate that this practical approach will be a focus of the new Task Force, and the contribution of the scientific community will be critical to this next phase.

CODATA: *The G8 Declaration on Climate Change, issued last year in Japan, explicitly recognized the importance of data sharing issues in GEOSS: ".....To respond to the growing demand for Earth observation data, we will accelerate*



efforts within the Global Earth Observation System of Systems (GEOSS), which builds on the work of UN specialized agencies and programs, in priority areas, inter alia, climate change and water resources management, by strengthening observation, prediction and data sharing". How does such a statement contribute to realizing the vision of GEO, especially with regard to data sharing?

José Achache: Such a statement is really useful. One of the recognized values of GEO is its political visibility and backing. This is not the first time that a mechanism like this was attempted; CEOS was one for space, GCOS was one for climate, but they have focused in large part on technical issues. Political backing for GEO has been maintained through the involvement of the US, South Africa, the European Commission, China and other key countries. Having a statement in the G8 Final Declaration reiterates the political support that exists for GEOSS implementation, and having this backing helps us a lot with a number of discussions that are currently taking place with potential stakeholders. You will recall the Declaration that came from the Ministerial in Cape Town in 2007 also stated that data sharing is a key issue, which was also a good way of reminding developed countries that GEOSS is also for developing countries.

CODATA: *What are your thoughts on the role of commercial stakeholders in GEOSS and ways of encouraging them to embrace the underlying open access vision of GEOSS?*

José Achache: I think that we are about to see a transformation in earth observation and its uses. The production and use of earth observations has been gradually growing over the last 30 years, slowly at times but already we have popular applications like Google Earth. This has created more demand for commercial and spatial imagery. Now, I would say that in the last three years, because of GEO no doubt, but also because of the growing profile of environmental issues such as climate change, earth observation has gradually become more important. Earth observation is being transformed into something of an entirely different nature. Given this, I believe that the commercial sector will have to play a critical role in this ongoing transformation. It started with discussions amongst the data-providing countries, which restricted data distribution for security or other reasons. I am thinking for example of water data, oceanography data from specific sensitive areas, as well as the commercial providers of spatial imagery data. Perhaps a third group that placed restrictions on data distribution are the meteorological offices, which were both producing a public service and delivering value-added services by further manipulating the data. These are the three main groups I believe that have somewhat restricted data policies.

On the distribution side, we know that Google is gradually moving from using earth observation as a pretext for posting on-line advertisements to delivering information based on earth observations and supporting the development of information systems through the provision of a data base environment. Recently CISCO Systems announced that they would also be moving in this direction. Microsoft Virtual Earth has also been developing such capabilities. These are some of the main distributors so far. Other companies that will enter this market are the providers of value-added services. Some companies, for example, are using the national weather service information to provide customized

weather forecasts in the US, which may now develop from weather forecasts into information to support climate adaptation. So these commercial stakeholders will play a major role in transforming the use of earth observations.

The reason I think this is good news and these companies should be encouraged is that the more value that is added, the less monetary value will be placed on the underlying raw data. When you transfer the value from the raw data to the value-added services, then there is no obstacle to releasing the underlying data free of charge. This has been my claim for the last ten years. If we start by releasing the data, then we provide access to the scientific community on the one hand but also to a larger base of value adding companies and potential innovators on the other, and that would facilitate this transfer of value from data to information. This is critical to making data freely available.

An example of this is the release of the Landsat archive data. This was for me a very moving event. This is something I have been publicly advocating for some 10 to 15 years. I am not sure if you have seen the figures, but on average Landsat use to be distributing 20,000 scenes per year— and the month following the announcement of the release, it went up to 200,000. 10 times more in one month than in one year! Since then, this number has continued to grow, and now up to 600,000 scenes have been distributed. If there was ever a need to demonstrate that the moment you make data available free of charge you massively increase the number of users and the benefits, the Landsat experience bears this out. This indeed was a great moment for Earth observation.

CODATA: *How do you envision the proposed data sharing guidelines being incorporated into the development of the working GEOSS architecture and implemented in specific GEOSS activities and data services as they evolve in the next few years?*

José Achache: My expectation is that the new Task Force, on which principals from GEO member governments will be represented, will build on the guidelines and develop some practical recommendations including, perhaps, for individual Societal Benefit Areas. These recommendations may directly relate to the Work Plan and move to a very task-specific approach to data sharing. If we look at some of GEO's work, for example what we are doing on forest monitoring in support of the Climate Change Convention, space observation data will be critical to this. The space agencies in CEOS have agreed to guarantee the provision of data to support the GEO Global Forest Carbon Monitoring system that we are building. Specific arrangements and recommendations will have to be made concerning data access for this task. The same applies to disaster management, where we are now seeing the Charter on Space and Major Disasters adopting the principal of universal access. So I think the next 12 months should be dedicated to making custom tailored data policy recommendations for specific tasks in the GEO Work Plan or for specific areas. Between now and the 2010 Ministerial Summit, we should be able to synthesize all of this work and make more global recommendations.



CODATA: *The delegates at the GEO Ministerial meeting in Cape Town in 2007 "support the establishment of a process with the objective to reach a consensus on the implementation of the Data Sharing Principles for GEOSS to be presented to the next GEO Ministerial Summit. The success of GEOSS will depend on a commitment by all GEO partners to work together to ensure timely, global and open access to data and products". At the 2008 plenary, a new Task Force on Data Sharing was established. What are the main challenges facing this Task Force in trying to reach consensus on the implementation of the data sharing principles? Do you think consensus is realistic by 2010?*

José Achache: Yes I do think consensus is possible, so long as we do this exercise by going SBA by SBA or Task by Task. We can then see what the implications are. Once we have done this ground work—which will be more work than we have done thus far, but I think we have the resources—then consensus will emerge as people see the reality of a new data policy and its consequences for the potential achievements of GEOSS. This is what Ministers will be interested in, and by this process I truly believe that consensus is possible.

CODATA: *In 2015- by the end of the 10 year Implementation Plan- what indicators would you use to measure the success of the implementation of the GEOSS Data Sharing Principles?*

José Achache: Well, as I said earlier, the success of GEOSS depends on the successful implementation of the data sharing principles. The 10 year Implementation Plan states that "The vision for GEOSS is to realize a future wherein decisions and actions for the benefit of humankind are informed by coordinated, comprehensive and sustained Earth observations and information". This will not be realized if we are hindered by limited data access. It will mean that people are still putting more value on data than on anything else. In short, if this happens, it means that we will not have succeeded in transferring value into the information and developing information that adds value to the data. If this happens, the whole effort will have failed. The implementation of the data sharing principles is both a condition for success and an indicator of the successful implementation of GEOSS.

CODATA: *Finally, Jose, do you have any closing message to the CODATA community, the main recipients of this Newsletter?*

José Achache: We are going to need more ground work, more basic research on mechanisms for producing information and analyzing the value chain and how data sharing affects the production of information in various areas. That is going to require a significant workforce and resources from various communities. I do hope that CODATA will continue its leadership in making sure that the whole scientific community is involved in developing this. It is almost like a research project which will require knowledgeable people, and I hope that CODATA will continue to bring this expertise on board as it has been successfully doing up to now.

CODATA: *Many thanks Jose.*

Acknowledgements

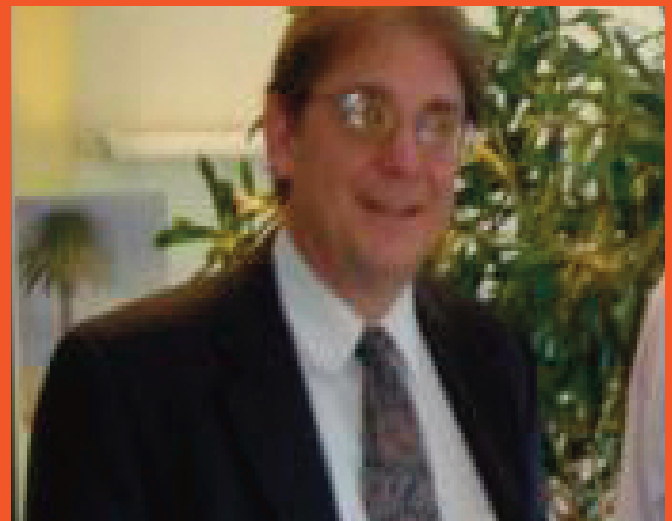
The work on GEO Task DA-06-01 referred to in the interview with José Achache was led by ICSU/CO-DATA. Read more on this on http://www.earthobservations.org/geoss_dsp.shtml

The White paper on the GEOSS Data Sharing Principles can and the draft Implementation Guidelines can be found on <http://www.earthobservations.org>

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We look forward to working with GEO Task Force leading to the GEO Ministerial in 2010.

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