Plan-it for the People

A Background Study for the *Science On a Sphere* Installation at the Amazonia Science Gallery at the National Zoological Park

Smithsonian Institution

Office of Policy and Analysis
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Preface

The Office of Policy and Analysis (OP&A) was pleased to conduct a baseline study of the Amazonia Building's Science Gallery, specifically of the geosphere's role in the room. The goal of this study was to understand visitors' experiences in the Science Gallery and their relation to the geosphere. Furthermore, the study aimed to gauge visitors' interests in the upcoming Science on a Sphere (SOS) installation and their preferences for future SOS presentations.

The National Zoological Park (NZP) provided excellent guidance to the study team. In particular, I would like to thank Miles Roberts, Wildlife Biologist and Curator of the Amazonia Science Gallery, who not only initiated the study, but helped at every step of the process. I would also like to thank Kairo Vivas, the Amazonian Science Gallery Coordinator, for his assistance in facilitating the interviewing. It was a pleasure working with them.

We appreciate visitors' willing participation in these studies. The time they provided in the midst of their summer visit is evidence of their affection for the Smithsonian and of their interest in improving the overall visitor experience.

Within OP&A, staff members, Zahava D. Doering, Andrew Pekarik, and intern Randal Lucas were responsible for designing and analyzing the questionnaires. Interns Patience Baach and Randal Lucas administered the survey, prepared the data sets, conducted the interviews and wrote the report. I thank everyone for their hard work and dedication, without which this report would not have been so thoughtful and thorough.

Carole M. P. Neves
Director, Office of Policy and Analysis

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Page 2, courtesy of the National Zoological Park's website, http://nationalzoo.si.edu.

Photos:

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Executive Summary

The Study

The Purpose: This study was conducted as part of planning for the installation of a Science on the Sphere (SOS) interactive facility in the Science Gallery of the Amazonia Building at the National Zoological Park (NZP). The goal was to help the staff select programs for presentations on the new SOS, gauge potential visitors' current thoughts, comments, and knowledge about the globe and global processes and to highlight common misconceptions that the SOS will address.

The Survey: Data for most of the analysis was collected in July 2008 by means of a survey. An interviewer-administered questionnaire was directed to a systematically selected sample of individuals over the age of 11. Eligible visitors were asked to participate in the study upon exiting the Science Gallery of the Amazonia Building. Interviewers approached 190 visitors, of whom 162 completed the interviews, for a cooperation rate of 87 percent.

Qualitative Interviews: In addition, open-ended discussions were conducted with 15 interviewee groups to gauge visitors' knowledge and interest in global processes.

Major Findings

Visitors: The majority of visitors (73%) were visiting the Amazonia Building for the first time. Nearly all (96%) of the visitors were visiting the National Zoo with others. The average size of a visiting group was 4.1.

Rating: Visitors were asked to rate their overall experience in the Science Gallery. The rating of visitors exiting (Poor 0%, Fair 6%, Good 23%, Excellent 49%, and Superior 22%) was about the same as the Smithsonian average.

Visitor Comments: Overall, visitors enjoyed their experience in the Science Gallery; however, when asked about the globe (the geosphere) few had any remarks. The majority of the visitors who had talked about the globe during their visit used it as a helpful mapping tool – identifying homelands, vacation spots, countries, oceans, and other geographical locations. In fact, two-fifths of all comments they had made about the globe were about the globe as a map.

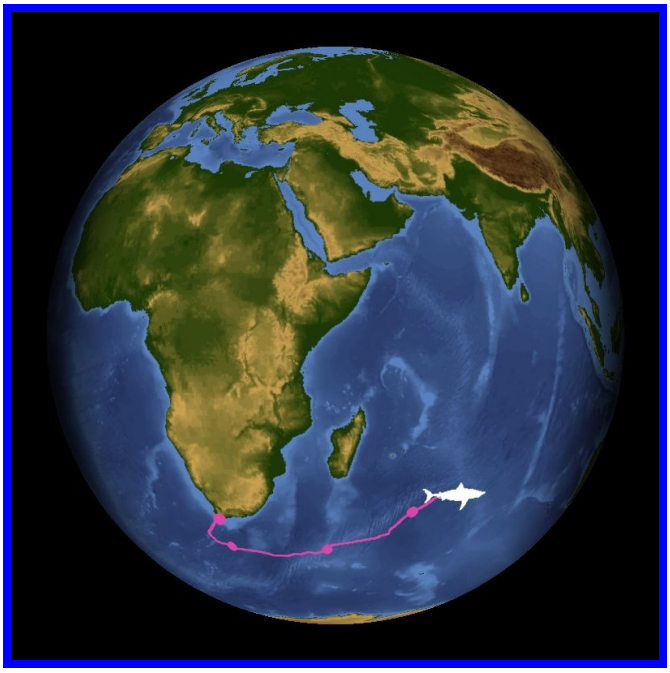
Future Presentations: Interviewees were asked to choose their top three choices from a list of possible presentations for the future dynamic geosphere installation, *Science on a Sphere* (SOS). Each of the presentations sparked some interest in visitors, though some more than others. The overall top choices were Animal Migrations -- from small birds to great white

sharks (13%), Oceans -- currents, tsunamis, El Nino, sea ice, etc. (13%), and Earthquakes and Volcanoes (12%).

Qualitative Analysis: Five major themes emerged from the qualitative interviews: the size of the planet, human diversity, humans' impact on the environment, global processes, and the influence of religious beliefs.

Discussion

This study, conducted as a baseline prior to the installation of a *Science on a Sphere* (SOS), shows that visitors to the Amazonia Science Gallery are enjoying their experience and gaining some understanding from exposure to the current geosphere. However, the results indicate that the installation of a SOS has the potential of greatly increasing their appreciation of the natural world and global processes.



Great White Shark Migration

I. Introduction

The Amazonia Building is a 15,000-square-foot facility at the National Zoological Park (NPZ) that houses two main exhibitions. The first is a tropical rainforest, located in a greenhouse, complete with animals native to the Amazon. The second area of the building is an interactive Science Gallery. The usual path traversed by visitors starts with the rainforest and ends in the Science Gallery.

The Science Gallery occupies 8,000-square-feet and houses four scientific laboratories that are visible to the visitors. Visitors can read books and magazines, and work with artifacts, materials, and computers that relate to the scientists' work. The geosphere is a 6-foot-diameter, high-resolution globe that rotates on its axis. It is placed near the center of the room. Three multimedia interactive stations nearby are related to geography and the earth's surface. Additionally there are continuous video loops on television monitors that enhance visitors' experiences with the globe. Just below the globe, as a part of the supporting table, is a video screen sequentially depicting earthquakes and volcanic eruptions around the world over the last sixty years, thus identifying the boundaries of the tectonic plates of the earth's crust.

Within the next year, the National Oceanic and Atmospheric Association (NOAA), in partnership with the NZP and the Amazonia Building Team, will install a new, interactive globe called *Science on a Sphere* (SOS) [1] in the Science Gallery. This new technology will allow video programming to be shown across the sphere. Furthermore, the new SOS globe installation will be designed and aided by the NZP educational department in its distance-learning programs.

This study was conducted as the first phase of a larger inquiry into the clarity and usability of interpretive material that will be provided to visitors as part of the SOS. It is a baseline study of the effectiveness of the existing geosphere and the experiences of visitors prior to the installation of SOS. This study was also designed to help the staff select programs for presentation on the new SOS, since interviewees were asked to give their top three thematic choices from a list of possible subjects. Interviews were conducted to gauge visitors' current thoughts, comments, and knowledge about the globe and global processes and to highlight common misconceptions that the SOS could address.

The study was conducted in two parts, a sample survey and qualitative interviews. Not all Amazonia visitors were eligible for the study, since it is possible for visitors to exit the Amazonia Building after the rainforest exhibit, but before they enter the Science Gallery portion. This study conducted interviews with those visitors who visited the entire Amazonia Building and exited after passing through the Science Gallery. Two interviewers and a designated counter stood outside of the Science Gallery. The counter tallied the total number of visitors who exited, not including large school groups or children under the age of 12. Once an interviewer was ready, the counter identified the next interviewee, on the basis of a predetermined interval who the interviewer should intercept.

If the intercepted person refused to take the survey, the interviewer asked for their zip code and marked it as a refusal. If the intercepted person did not speak English, and did not have a translator present, the questionnaire was marked as ineligible. If the intercepted person was under the age of 12, the survey was also deemed as ineligible. Over four days, the interviewers approached 190 visitors, and 162 completed the interviews, for a cooperation rate of 87 percent.

However, this study is not entirely comprehensive. No interviews were conducted with children under the age of 12 even though they are one of the main target audiences for the SOS display. The study also did not cover those who left the Amazonia Building before reaching the Science

[1] For more information, visit NOAA's website: http://sos.noaa.gov/

Gallery and did not ask them why they did not continue downstairs. Additionally, one cannot predict how dramatically the atmosphere of the Science Gallery will change with an illuminated globe and how that will affect visitors' experiences with the other activities in the room. The next section of the report presents the findings from the survey portion of the study.

Science Gallery Globe

II. Amazonia Science Gallery Exit Survey: Findings

Demographics/Characteristics of Visitors[2]

This visit was the first visit to the Amazonia Building for the majority of visitors (73%). However, those who had been to the building before the day of the interview had visited it on average 4.3 times before. Those who had previously visited the Amazonia Building were asked "*Have you spent time in the Science Gallery before today?"* [3] and 41% responded that they had not. This means that while 27% of all visitors had been to the Amazonia Building before the interview, only 16% of all visitors had previously spent time in the Science Gallery.

A large percentage of the visitors (92%) were from the United States; a slim majority (57%) lived farther than 40 miles away from the National Mall; and 37% of visitors lived within 40 miles of the National Mall. Most people (96%) came with others, and, on average, 3.1 people accompanied the interviewee. Women were a clear majority of the visitors (61%). The average age of the interviewees was 37.[4]

Rating

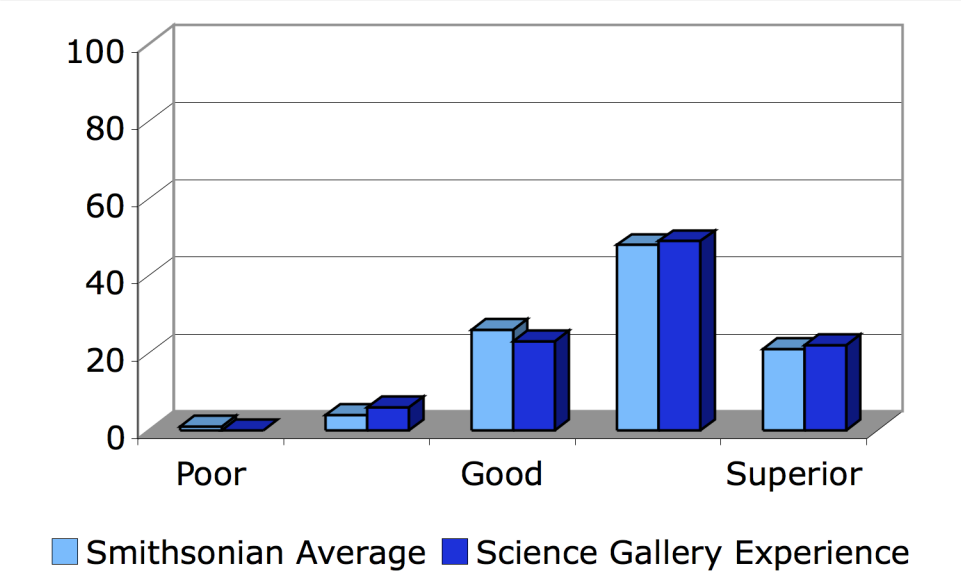
During the interview interviewees were shown a card with possible ratings[5] and were asked, "*How would you rate your overall experience in the Science Gallery today*?" The card included the letters A through E, which corresponded to possible ratings. The letters were utilized to allow the respondent to feel more comfortable in giving the Science Gallery a low rating.

Overall, visitors rated the Science Gallery positively. Forty-nine percent (49%) rated their Science Gallery experiences as Excellent and 22% as Superior. Only 29% described the exhibit as Good and Fair (23%, Good; 6%, Fair). None of the respondents indicated that the Science Gallery was Poor.

This is very close to the Smithsonian Institution's average of exhibition ratings from studies conducted over the past four years. The average Smithsonian rating from these studies is: Superior 21%, Excellent 48%, Good 26%, Fair 4%, Poor 1%. (See Figure 1).

[2] For detailed data, see Appendix A
[3] For a sample questionnaire, see Appendix B
[4] The average age does not include members of organized school groups, or children under 12.
[5] For a sample card, see Appendix C

Figure 1. Comparison between Smithsonian's Average Exhibition Rating and Science Gallery Experience Rating



Activities

Visitors were asked what they did in the Science Gallery. Their responses were recorded within 19 pre-coded activity categories. On average, visitors reported 2.6 activities. The five most frequently noted activities are listed below:

Reported Activities	Percent
Live Animal Displays	69
Microscope Displays	42
Bones	24
Computer Interactive Station	23
Globe	22

Because interviews were conducted directly outside of the Science Gallery, it's likely that visitors mentioned what they remembered doing or what was most interesting to them. Since interviewers were instructed to use only general probes, it is possible that visitors did not state all of their activities either because of faulty memory or because they did not think the activities were important enough to mention.

Visitors were also asked, "*What was the most interesting thing you did in the Science Gallery?*" "Live Animal Displays" was the most interesting for 41% of the visitors. Seventeen percent (17%) of people thought that the "Microscope Displays" was most interesting. The Globe, which 22% of visitors reported as an activity, was ranked most interesting by 6%.

Activities and Ratings

There was a strong correlation between the number of activities the visitors did and their ratings of their overall experience in the Science Gallery. Thirty-one percent (31%) of visitors who participated in three or more activities (i.e. above average) rated the Science Gallery as Superior, 51% rated it as Excellent, and 18% rated it as Fair/Good. This is a dramatic increase from those who participated in two or fewer activities of which only 12% of these individuals rated the exhibit as Superior, 40% as Excellent, and 40% as Fair/Good. See Figure 2.

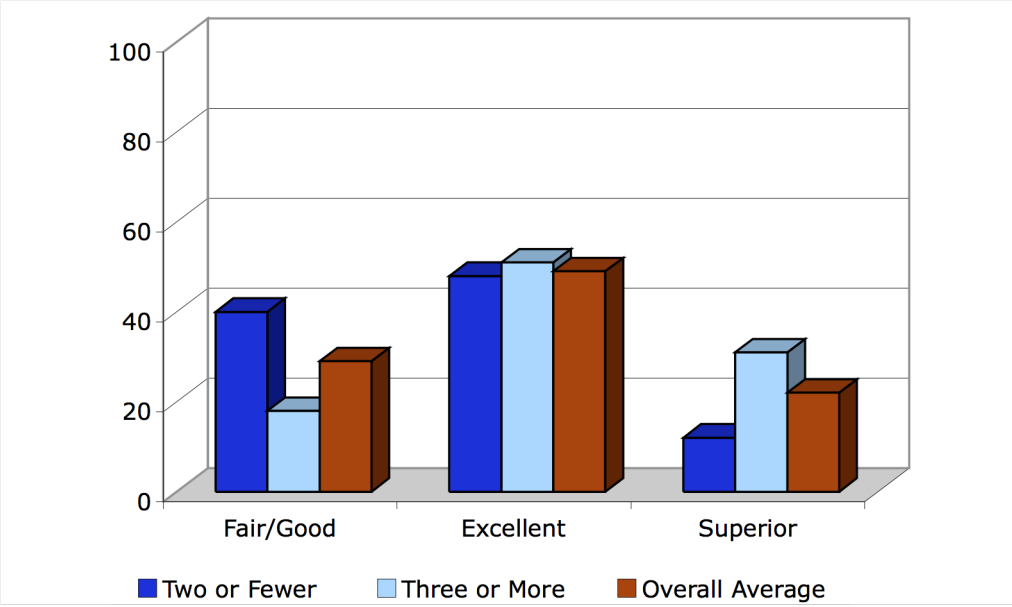


Figure 2. Comparison between Number of Activities Completed and Overall Rating

Furthermore, there is a relationship between what people did in the room and their ratings. Those who did **not** mention "Live Animal Displays" or "Microscopes" were more likely to have rated the Science Gallery as Fair/Good. However, there was no statistically significant relationship between the rating of the Gallery and those who spent time at the Globe.

Discussion about the Globe

Only 22% of the population mentioned the Globe when asked what they had done in the Science Gallery, but when asked, "*Did you see the Globe?*," 87% of the respondents said that they had. This indicates that the majority of the people did not view the globe as an activity, even though they did notice it. The globe was better understood as something one 'saw' rather than something one 'did.' Perhaps they did not interact with the globe or any of the interactive stations surrounding the Globe. Or perhaps they did not find it as memorable as the other stations and displays.

When asked if they had talked to anyone about the Globe, a large majority (73%) responded that they did not talk to anyone in their group or in the Science Gallery about it. Among the 27% who said that they had discussed the Globe, 37% (10% of all visitors) said that they had made comments pertaining to the size of the object rather than the content of the display. The majority of visitors who talked about the Globe used it as a mapping tool. People from abroad looked for their native lands, and people returning from or setting off on vacations searched for their destinations. In fact, two-fifths of all comments made were about the Globe as a map. At first, when asked what they had said about the Globe, many interviewees recalled little. They often remarked about the size, the axis, and very little else. But further probed, visitors who had talked about it in the gallery usually could recall more that they had said about it.

Families with smaller children, pre-school aged and a little older, appreciated the Globe. One woman remarked that she enjoyed that it "wasn't a TV. He's not allowed to watch TV until he is two, so I liked having something to do that wasn't a video." Many children liked watching it spin and finding their homelands, and parents enjoyed the chance to talk with their younger children about the earth.

Introduction to SOS and Presentation Choices

After questions about the Globe, the interviewers described the SOS and explained that the current Globe will soon be replaced "with a new active Globe that shows images moving across it." Visitors were then given a set of 12 possible presentation topics, listed in alphabetical order.[6] They were asked to give first, second and third choices of which they would prefer to see on the new dynamic globe.

Presentation	1st Choice	2nd Choice	3rd Choice	Overall Percentage[7]
Animal Migrations	19	12	9	13
Astronomy	15	7	7	11
Earthquakes &Volcanoes	11	16	8	12
Oceans	10	13	17	13
Global Climate Change	10	8	16	10

The overall percentage for each choice does not take into account differences between 1st, 2nd, or 3rd, choices. The five most popular choices occur within the top 3 at some point, either among 1st, 2nd, or 3rd choices.

[6] To see the list of choices, see Appendix D
[7] To see the complete data on all 12 choices, see Appendix E

III. Qualitative Interviews with Amazonia Building Visitors

Introduction

As part of the effort to understand what approaches might be most effective in presenting SOS materials, visitors were interviewed on the topic of global processes. The interviews were in-depth, informal discussions. Open-ended questioning encouraged 15 visitors to share their basic familiarity, understanding, and thoughts about global systems.

Interviews ranged in length from 6 to 30 minutes and averaged 16 minutes in length. Most visitors in the Science Gallery were interviewed near the geosphere; a few were interviewed elsewhere in the zoo.

Visitors who were interviewed in the Science Gallery were asked what they thought of when they looked at the geosphere. Five themes emerged: the size of the planet, human diversity, humans' impact on the environment, global processes, and the influence of religious beliefs. After these topics are discussed individually, general observations on visitors' comments will conclude this section of the report.

The Size of Planet Earth

When asked what they think of in relation to the current globe in the Science Gallery, and to the planet in general, many of the respondents first spoke about the size of the Earth. Specifically, they mentioned how looking at the globe increased their awareness of how small they are relative to the rest of the world.

> *[I think about] just how small we are and how big the [world] actually is… We are just a small speck on this giant mass.*

Many of the interviewees in the Science Gallery had not considered the globe or the idea of the planet before being prompted, but the Earth's size was usually what they thought of first.

> *I never really thought about the world before. What do I think about? What a huge world it is, I guess.*

A possible explanation for visitors' thoughts first turning to the size of the planet may be, in part, due to the size of the geosphere. Many visitors had never seen a globe of that size, and so its girth may have helped conjure thoughts of the Earth's size relative to the visitors'.

Human Diversity

Another main theme visitors raised was human life. They thought of different countries around the world, the different peoples that inhabit them, and the many different ways of life. One gentleman emphasized this idea of diversity.

Interviewer: When you look at the globe and then think about the planet, what do you generally think of?

Visitor: Life.

Interviewer: What aspect of life?

Visitor: Just different people living different places, different cultures, different ways of life, different foods… just life…I also [think of] how long life has been here. Take Asia for example, I think people have been there since dirt.

Interviewer: So for you, human life is intrinsically connected with the planet Earth. Can you tell me more about that connection?

Visitor: It's just what I think. I think about the discoveries people have made, the travels they've made, like Lewis and Clarke. Nobody was here except the Natives, and the excitement they must have had discovering new places and new peoples, new ways of life, new fields, new shelters.

One lady spoke about the first globe she remembered seeing when she was a child and her thoughts at the time.

Visitor: [I thought about how] there were other people there, on other parts of the [world]. If I lived here, then there are people in every one of the countries that I touched. People were actually living there!

Interviewer: And what did you think about these other people living in these other areas? Did you think that they were the same as you? Or different?

Visitor: I really didn't give that much thought, I just thought: people; that there were people in different places. And if they're in different places, then they probably speak different languages, they possibly look different.

Thinking about human diversity was a recurring theme. Several people mentioned that the first time they were shown a globe was to demonstrate the spatial relationships of countries throughout the world. This perhaps explains why some people first think about countries and people when they look at the geosphere; they have been taught this association since their childhood.

Human Impact on the Environment

Several people spoke about the environmental damage that humans are inflicting on the planet. Nearly all interviewees were aware of issues such as global climate change, pollution, and environmental degradation; however, visitors' understandings regarding why these things are happening varied widely.

For example, it was clear that the following visitor had heard all the big "buzz-words," but did not give in-depth explanations of these issues.

Visitor: I think we better get smart. Ecology and so forth, or we are going to be in deep trouble.

Interviewer: And why is that?

Visitor: It appears that we are using resources and not replenishing, and you know, global warming-- that whole deal. And the gas crisis. And food, there's a crisis with food. We'd better start conserving.

Interviewer: So this is a big concern for you.

Visitor: Yeah, well yeah, probably not as much for me, as my children and grandchildren. It'll affect them way more than me.

Interviewer: In terms of the food crisis, why do you think there is a food crisis?

Visitor: Why? I don't know why. I know that they are trying to make fuel out of corn, so the prices of corn have gone up, as far as I understand, and I know there are plenty of places, even in our own country, where people are starving; you see that on T.V. all the time.

In contrast, another visitor had an extensive knowledge and understanding about the problems the planet is currently facing. This gentleman worked for the Peace Corps in Fiji for a number of years, and is currently employed at a fish hatchery in the state of Washington. He was keenly aware of, and spoke at length on, the environmental makeup and problems in Fiji. Particularly, he talked about causes and effects of invasive species, as well as the different ecosystems on the islands of Fiji. He also discussed environmental damage in the Great Lakes, in terms of both causes and possible fixes.

There was a notable difference between the two visitors' expressed knowledge of the human impact on the environment, and what that means for plants, animals, humans, and the Earth itself. The knowledge and understanding of other visitors who were interviewed varied, but fell somewhere between these two extremes.

Global Processes

A few interviewees had some level of comprehension of global processes. The gentleman previously referenced was keenly aware of the myriad of processes that exist within the world. Some of the examples he was the most familiar with was how the invasive species were out-competing different native species, which was impacting other animals on the islands; another example he gave was how the different types of salmon spawn at regular intervals, at very specific times of year, in specific streams. He also described how the salmon's predators know when these cycles occur so that the predators' migratory habits put them at the right streams at the right times.

The majority of interviewees did not give animals much thought when looking at the globe in the Science Gallery. Only after some prompting would people begin to talk about living organisms besides humans on the planet.

> *Interviewer: What do you think about animal migrations?*
>
> *Interviewee: I think animals do migrate. Um, [there are] species that migrate on a regular basis: migratory birds, whales, things that I'm just thinking of just off the top of my head.*

In terms of migration patterns, most of these interviewees did not realize how animal migrations affect their lives. Some even doubted that animals still migrate today. One conversation with a visitor is particularly revealing with respect to how this visitor approaches a topic such as animal migrations.

> *Interviewer: Do you ever think about current animal migrations, like the Canadian Geese?*
>
> *Visitor: No, I can't say that I do. …I just don't think that happens much anymore.*
>
> *Interviewer: Animal migrations?*
>
> *Visitor: Well, from one continent to another. …Ah, I don't see how they do it, unless there's a landmass, yes.*
>
> *Interviewer: What about marine life? Do you think that those animals migrate?*
>
> *Visitor: I'm sure they do.*
>
> *Interviewer: Is it only marine wildlife that has migration patterns [today]?*
>
> *Visitor: Uh, well no. I guess animals that live up North and come down with the seasons. Are you talking about that? Sure, they come down for the summer and then they go back to hibernate, and whatever.*
>
> *Interviewer: Why do you think they do that?*
>
> *Visitor: They know where the food is, uh, water.*
>
> *Interviewer: So is there not water and food in the places that they are leaving?*
>
> *Visitor: Uh, dunno. I haven't been there. But yeah, they migrate.*

Another topic that was specifically raised by interviewers was the effect of the Earth's rotation around the sun, and the moon's rotation around the Earth. Everyone knew that the rotation around the axis created day and night, but few connected the rotation around the sun to the change in seasons. One person concluded that gravity is a result of the Earth's rotation, and listed that as the principal effect of the planet on living things.

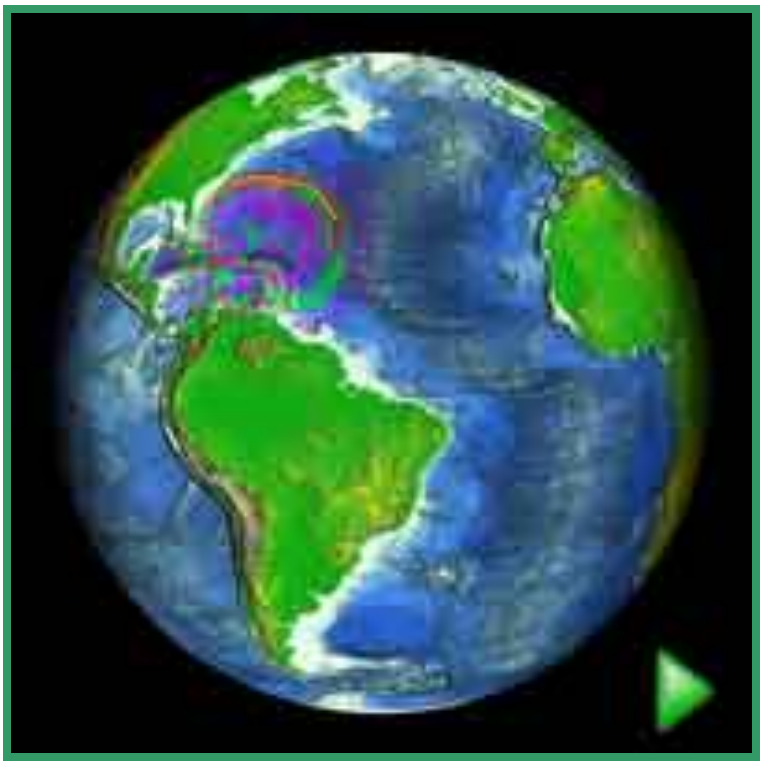
An Explanation from Religious Beliefs

In an attempt to elicit responses related to global processes, visitors were asked questions such as why certain animals live in certain areas, why some migrate and some do not, and why landscapes are the way they are and not uniform throughout the world. Some individuals responded to the questions by expressing a belief in a 'master plan' of a religious creator.

> *Interviewer: Why is it that different [areas of the world] have different…quantities of minerals and resources?*
>
> *Visitor: I'm going to give you an answer you probably don't get a lot: that's the way it was made by God, the Creator.*
>
> *Interviewer: Why do you think He made different areas of the world different?*
>
> *Visitor: Diversity. …Just, diversity for the sake of diversity.*

What *versus* Why

After speaking with a number of visitors, it was clear that nearly all of the individuals interviewed were more concerned with *what*, rather than *why.* That is to say, when asked *why* certain things are the way they are (e.g., animal migrations, land formations, seasonal changes, etc.), these visitors found it difficult to respond. The zoo is a place that highlights specific objects and there are few places where visitors are asked to deal with and encouraged to think about the more involved question of 'why.' These visitors seemed much more comfortable talking about particular animals, areas of the world, or phenomena in the world-- talking about *what* rather than *why*.



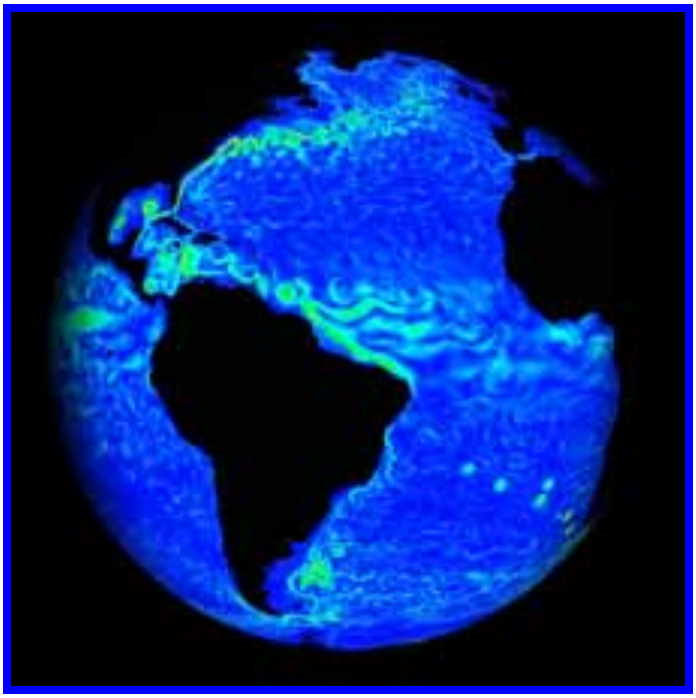
IV. Conclusion and Discussion about the Globe and SOS

This baseline study documents visitors' experiences of the Amazonia Science Gallery and, in particular, the Globe. The current globe, while seen by most visitors, is a focus of activity for only a small group of people. Other areas of the room, including the live animal displays, the computer stations, and the artifacts, drew more attention. Hopefully, the new *Science on a Sphere* (SOS) globe will provide visitors with a more visually and intellectually stimulating experience. All respondents easily provided their top three options for future SOS programs.

The data also indicated that in future presentations, when talking about such abstractions as the interrelationships of global processes, the use of specific, concrete, and clearly defined details in the presentation will appeal to those currently seeking specificity as well as encourage the exploration of explanations.

Many interviewees remarked that they would enjoy this new installation and look forward to coming back. Furthermore, since more people might stop to see this active globe, the average number of activities and time spent in the Gallery might increase per visitor. This, in turn, might lead to a higher overall rating of the Science Gallery.

This study achieves its goal as a baseline analysis of current conditions in the Amazonia Building's Science Gallery, especially with respect to the existing geosphere. Once the installation of the NOAA-sponsored SOS is complete, another study will be carried out and the data, which will be generated from that study, will be compared with this initial data.



NASA Sea Currents

Appendix A. Survey Frequencies

Science on a Sphere (SOS) Baseline Survey

Is today your first visit to this Amazonia building?

Yes	73
No	27
Total	100

How many times have you been here before today?

Average	4.3
Median	3

Have you spent time in the Science Gallery before today?

Yes	16
No	84
Total	100

How would you rate your overall experience in the Science Gallery in Amazonia?

Poor	0
Fair	6
Good	23
Excellent	49
Superior	22
Total	100

What did you do in the Science Gallery?

Live Animal Displays	69
Microscope Displays	42
Bones	24
Computer Interactive Station	23
Globe	22
Video	19
Bathrooms	17
Books	14
Pictures, Posters, Art on Walls	8
GIS Materials (Transparencies)	8
Interaction with Lab Staff	7
Maps	7
Earthquake/volcano Display	6
Panels	3
Objects in Display Case	3
Animal Diets	3
Discussed Gallery's Subject Matter	0
Other	3

Which of those activities was most interesting to you?

Live Animal Displays	41
Microscope Displays	17
Computer Interactive Station	8
Bones	7
Video	6
Globe	6
Earthquake/volcano Display	3
Interaction with Lab Staff	2
Books	2
Bathrooms	1
Pictures, Posters, Art on Walls	1
GIS Materials (Transparencies)	1
Panels	1
Maps	1
Objects in Display Case	1
Animal Diets	0
Discussed Gallery's Subject Matter	0
Other	2
Total	100

(Number of Activities)

Average	2.6
Median	3

Did you see the globe?

Yes, I did	87
No, I did not	13
Total	100

Did you talk to anyone in your group about the globe?

Yes	27
No	73
Total	100

Within six months this globe will be replaced with a new active globe, that shows images moving across it. We are considering projecting projecting the following images on the new globe.
Which of these is most interesting to you?

Animal Migrations	19
Astronomy	15
Changing Global Landscapes	4
Earth at Night	6
Earth's Biodiversity	5
Earth's Landscapes	7
Earthquakes and Volcanoes	11
Fires around the Globe	3
Frog/amphibian Crisis	4
Global Climate Change	10
Global Weather	6
Oceans	10
Total	100

What would be your second choice?

Animal Migrations	12
Astronomy	7
Changing Global Landscapes	4
Earth at Night	8
Earth's Biodiversity	8
Earth's Landscapes	9
Earthquakes and Volcanoes	16
Fires around the Globe	4
Frog/amphibian Crisis	5
Global Climate Change	8
Global Weather	7
Oceans	13
Total	101

What would be your third choice?

Animal Migrations	9
Astronomy	7
Changing Global Landscapes	5
Earth at Night	6
Earth's Biodiversity	8
Earth's Landscapes	9
Earthquakes and Volcanoes	8
Fires around the Globe	1
Frog/amphibian Crisis	4
Global Climate Change	16
Global Weather	8
Oceans	17
Total	

(Combined choices)

Animal Migrations	13
Oceans	13
Earthquakes and Volcanoes	12
Global Climate Change	11
Astronomy	10
Earth's Landscapes	8
Earth's Biodiversity	7
Global Weather	7
Earth at Night	7
Changing Global Landscapes	4
Frog/amphibian Crisis	4
Fires around the Globe	3
Total	100

Where do you live?

United States	92
Other Country	8
Total	100

Who are you here with?

Alone	4
With Others	96
Total	100

(Group size)	
Average	4.1
Median	3
What is your age?	
Average	37
Median	37
Gender	
Male	39
Female	61
Total	100
(Distance of Home Residence from National Mall)	
Within 5 miles	4
5-10 miles	8
10-20 miles	14
20-40 miles	11
40-100 miles	13
100-250 miles	10
Other U.S.	34
International	8
Total	102
(Residence by Region)	
Metropolitan Washington DC	19
Southeast	26
Mid-Atlantic	22
Midwest	4
New England	4
Mountain Plains	9
West	7
Other U.S.	1
International	8
Total	100
(Respondent Age Grouped by Generations)	
Postwar (Born 1925-1945)	5
Leading Edge Boomers (Born 1946-1955)	8
Trailing Edge Boomers (Born 1956-1964)	17
Generation X (Born 1965-1981)	46
Generation Y (Born 1982-2001)	24
Total	100

(Respondent Age)	
12 to 29	33
30 to 54	55
55 and older	12
Total	100

(Respondent Age)	
12 to 19	12
20 to 24	10
25 to 29	11
30 to 34	11
35 to 39	12
40 to 44	16
45 to 49	10
50 to 54	6
55 to 59	6
60 to 64	2
65 to 69	3
70 or older	1
Total	100

Appendix B. Questionnaire

Baseline Study of the Amazonia Science Gallery at the National Zoological Park

Appendix C. Ratings Card Shown to Survey Respondents

A	B	C	D	E
Poor	Fair	Good	Excellent	Superior

Appendix D. Presentation List Shown to Survey Respondents

Possible Science on a Sphere (SOS) Presentations

A. Animal migrations -- from small birds to great white sharks
B. Astronomy -- sun, moon, planets and how Earth fits in
C. Changing global landscapes – from deforestation to urbanization
D. Earth at night
E. Earth's biodiversity – what, where, how it's changing
F. Earth's landscapes -- tropical rainforests, deserts, ice sheets, mountains, etc
G. Earth's temperature, change in sea ice, etc.
H. Earthquakes and volcanoes
I. Fires around the globe
J. Frog/amphibian extinction crisis around the globe
K. Global climate change
L. Global weather -- cloud movements, hurricanes, lightening, etc
M. Oceans -- currents, tsunamis, El Nino, sea ice, etc.

Appendix E. Complete Result for the Top 3 Choices of Presentations in the Survey

(In Percent)

Presentation	1st Choice	2nd Choice	3rd Choice	Overall Percentage
Animal Migrations	19	12	9	13
Astronomy	15	7	7	11
Earthquakes and Volcanoes	11	16	8	12
Oceans	10	13	17	13
Global Climate Change	10	8	16	10
Earth's Landscape	7	9	9	8
Earth's Biodiversity	5	8	8	7
Global Weather	6	7	8	7
Earth at Night	6	8	6	7
Changing Global Landscapes	4	4	5	4
Frog/Amphibian Crisis	4	5	4	4
Fires around the Globe	3	4	1	3