

Ocean Carbon Biogeochemistry (OCB) Contributing to OCB Program Review

JULY 24, 2014
WOODS HOLE, MA

sustaina**ME**TRIX

Who We Are

- Our Work: Response to Ecosystem Change
- Our Methods:
 - Ecosystem Governance Baselines
 - Developmental Evaluation
 - High Quality Collaboration Across Disciplines, Sectors etc.
- Our Focus: Complex, Innovative, Adaptive Systems

Recent Project Partners



The Caribbean Landscape
Conservation Cooperative
Conservation science for a changing world



COASTAL RESOURCES CENTER
University of Rhode Island



SCRIPPS INSTITUTION OF
OCEANOGRAPHY
UC San Diego



UMBC
AN HONORS
UNIVERSITY
IN MARYLAND



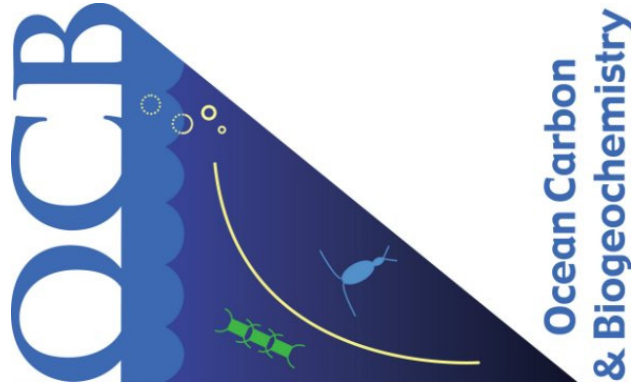
USAID
FROM THE AMERICAN PEOPLE



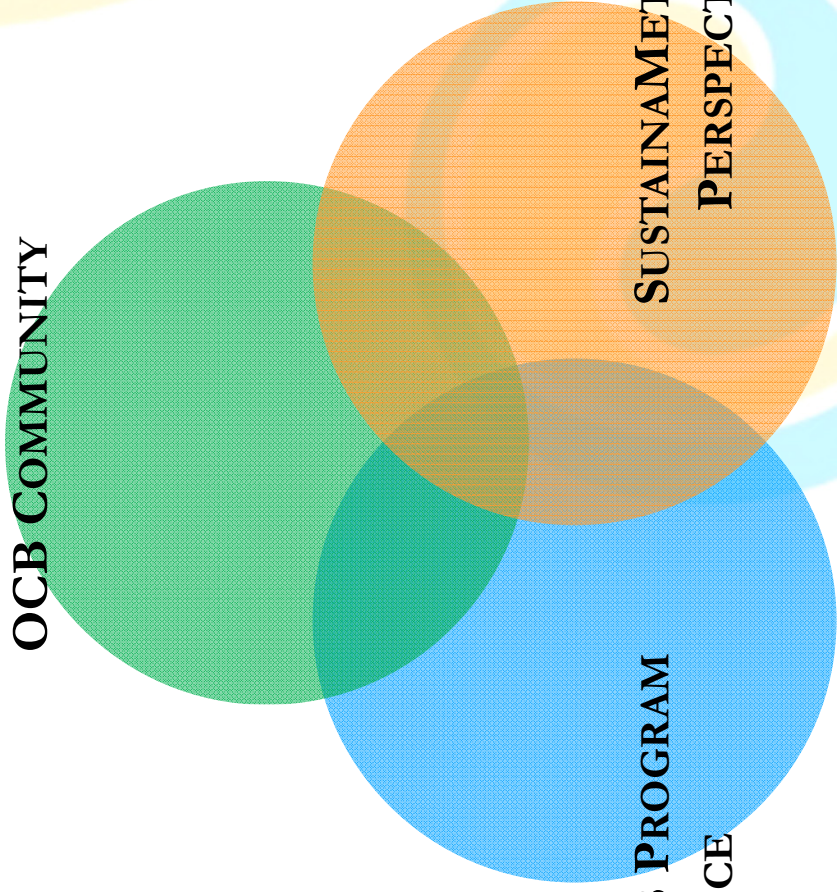
1865 THE UNIVERSITY OF
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sustaina**metrix**

Making Sense of OCB for Program Review



OCB COMMUNITY

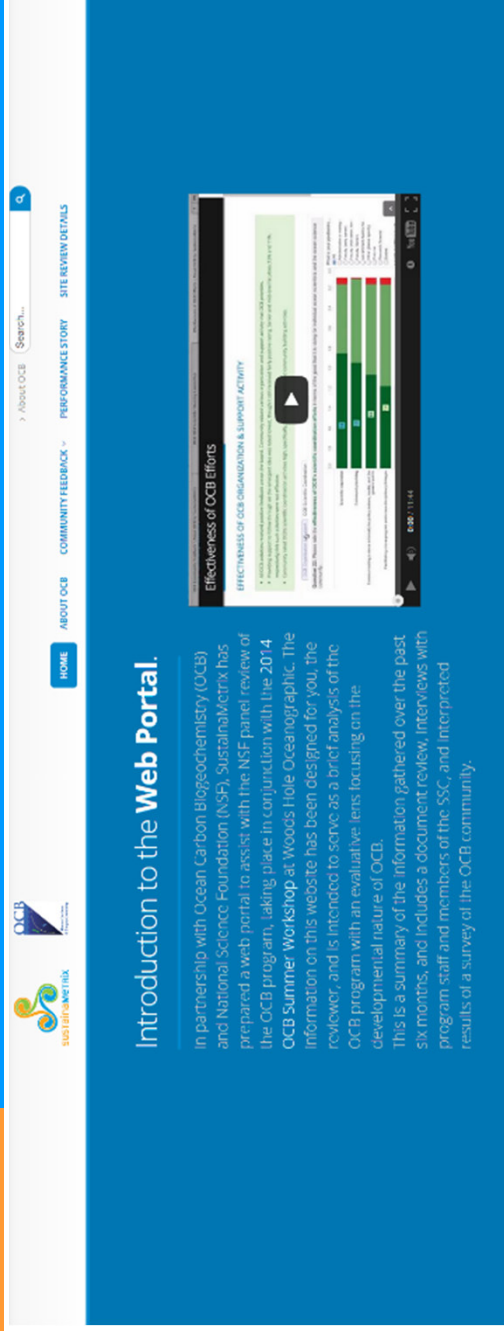


OCB PROGRAM OFFICE

SUSTAINAMETRIX PERSPECTIVE

SUSTAINAMETRIX

Website Developed to As Briefing For Review



The screenshot shows the top portion of a website. On the left is the logo for the Sustainable Link, featuring a stylized green and blue circular graphic. To its right is the OCB logo. The navigation menu includes links for HOME, ABOUT OCB, COMMUNITY FEEDBACK, PERFORMANCE STORY, and SITE REVIEW DETAILS. A search bar is located on the right side of the navigation bar. Below the navigation bar is a blue header section with the title "Introduction to the Web Portal." and a video player showing a presentation slide titled "Effectiveness of OCB Efforts".

Introduction to the Web Portal.

In partnership with Ocean Carbon Biogeochemistry (OCB) and National Science Foundation (NSF), SustainaMetrix has prepared a web portal to assist with the NSF panel review of the OCB program, taking place in conjunction with the 2014 OCB Summer Workshop at Woods Hole Oceanographic. The information on this website has been designed for you, the reviewer, and is intended to serve as a brief analysis of the OCB program with an evaluative lens focusing on the developmental nature of OCB. This is a summary of the information gathered over the past six months, and includes a document review, interviews with program staff and members of the SSC, and interpreted results of a survey of the OCB community.

View Edit Responses

Three Voices to Contribute to Panel Review of OCB

OCB PROGRAM OFFICE

The voice of the OCB Project Office provides an excellent nuts and bolts summary of OCB's work. We encourage you to start the briefing with a review of this information to familiarize yourself with the depth and breadth of the program, mainly from the voices of Heather Berney and Scott Doney.

OCB Program Office

OCB COMMUNITY

The next step of the briefing features the voice of the OCB community through a survey that was administered to them in January 2014. Its respondents provided a wider range of feedback. For example, over 90% indicate that over the next three years they want to either maintain or increase their perceived degree of integration with OCB. The survey section is interactive, so you are able to filter and "ask" questions of the data by clicking on certain categories and the data will be displayed.

Community feedback

SUSTAINAMETRIX

The final section of the website is an analytical summary of the OCB Program from the SustainaMetrix team. As a neutral third party, SustainaMetrix focus is on the performance and development of OCB. We begin with a brief summary of the theory of change, perceptions of OCB and a focus on the development of certain program elements. Links to key concepts provide more detailed information on the topics of your choice.

Performance Story by SustainaMetrix

After you have familiarized yourself with all three sections, please explore to your hearts content. If you have any questions regarding the use of this website, or content questions, please send a brief note and, if you choose, when you may be available for a phone call to discuss. Please send to Girmn Page.

Website

Home / Community Feedback /

Effectiveness of OCB Efforts

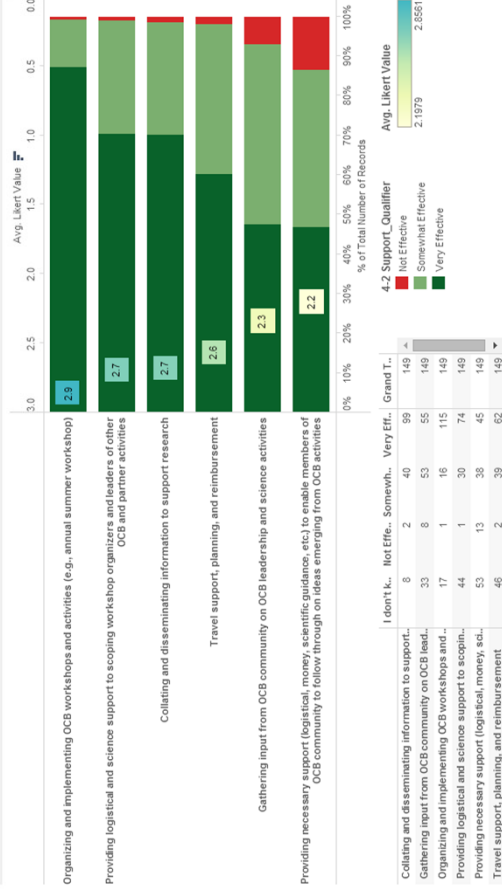
View Edit Revisions

EFFECTIVENESS OF OCB ORGANIZATION & SUPPORT ACTIVITY

- All OCB activities received positive feedback across the board. Respondents valued various organization and support activities that OCB provides.
- OCB's ability to provide support to follow through on an emergent idea was rated lowest, though it still received a fairly positive rating. Senior and mid-level faculty (13% and 11%, respectively) felt such activities were not effective.
- Respondents rated OCB's scientific coordination activities high, specifically for scientific inspiration and community-building activities.

OCB Organization & Support OCB Scientific Coordination

Question 22: Please rate the effectiveness of OCB's organization and support efforts.



Download

Share

What is your position/role?

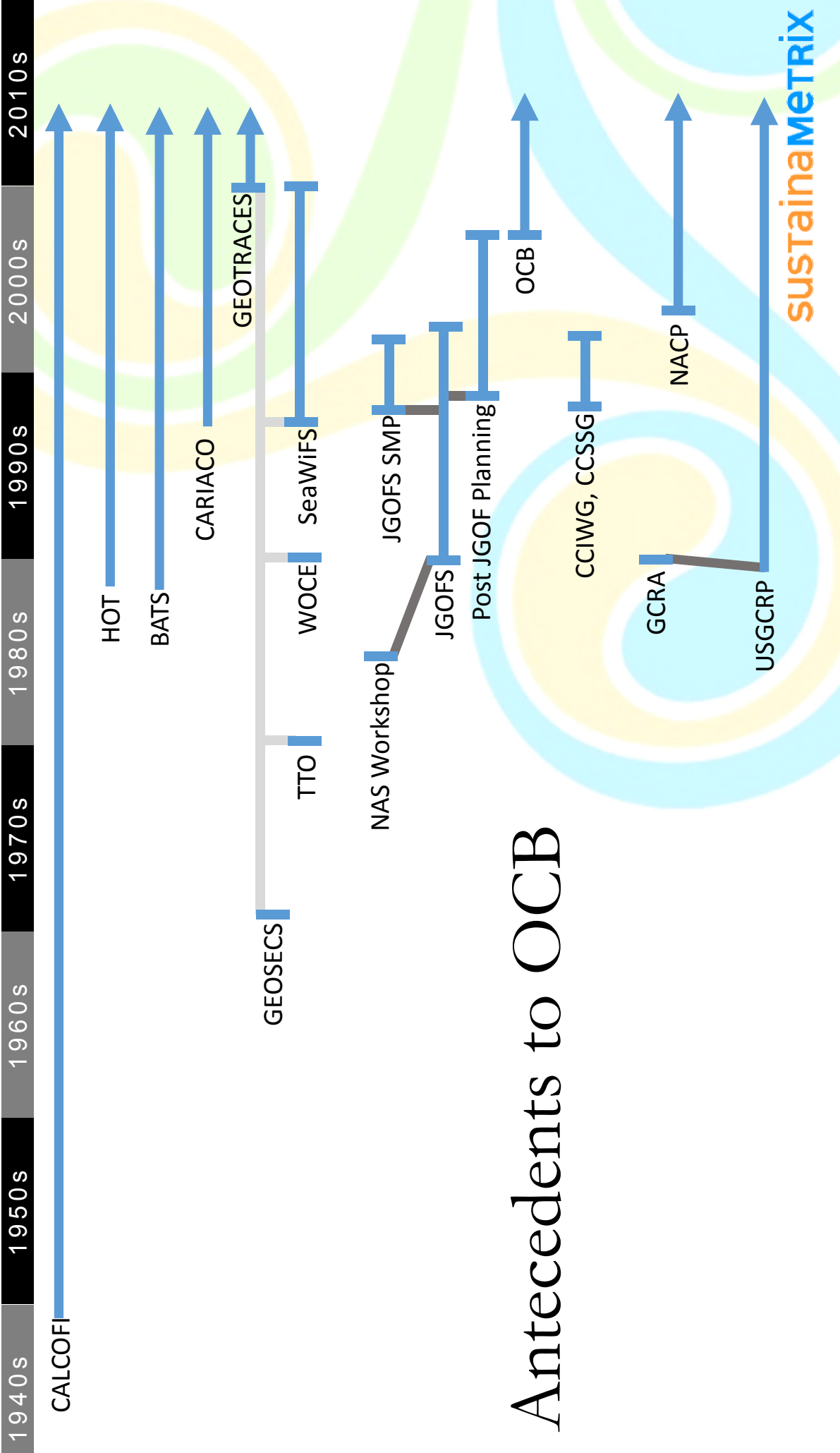
- (All)
- Administrative or management
- Faculty (early career)
- Faculty (mid-career, tenured)
- Faculty (Senior)
- Government Agency Repres...
- Other (please specify)
- Post-doc
- Research Scientist
- Student

Length of Affiliation with OCB

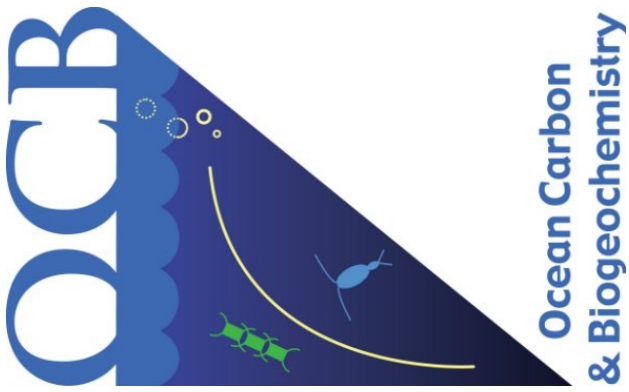
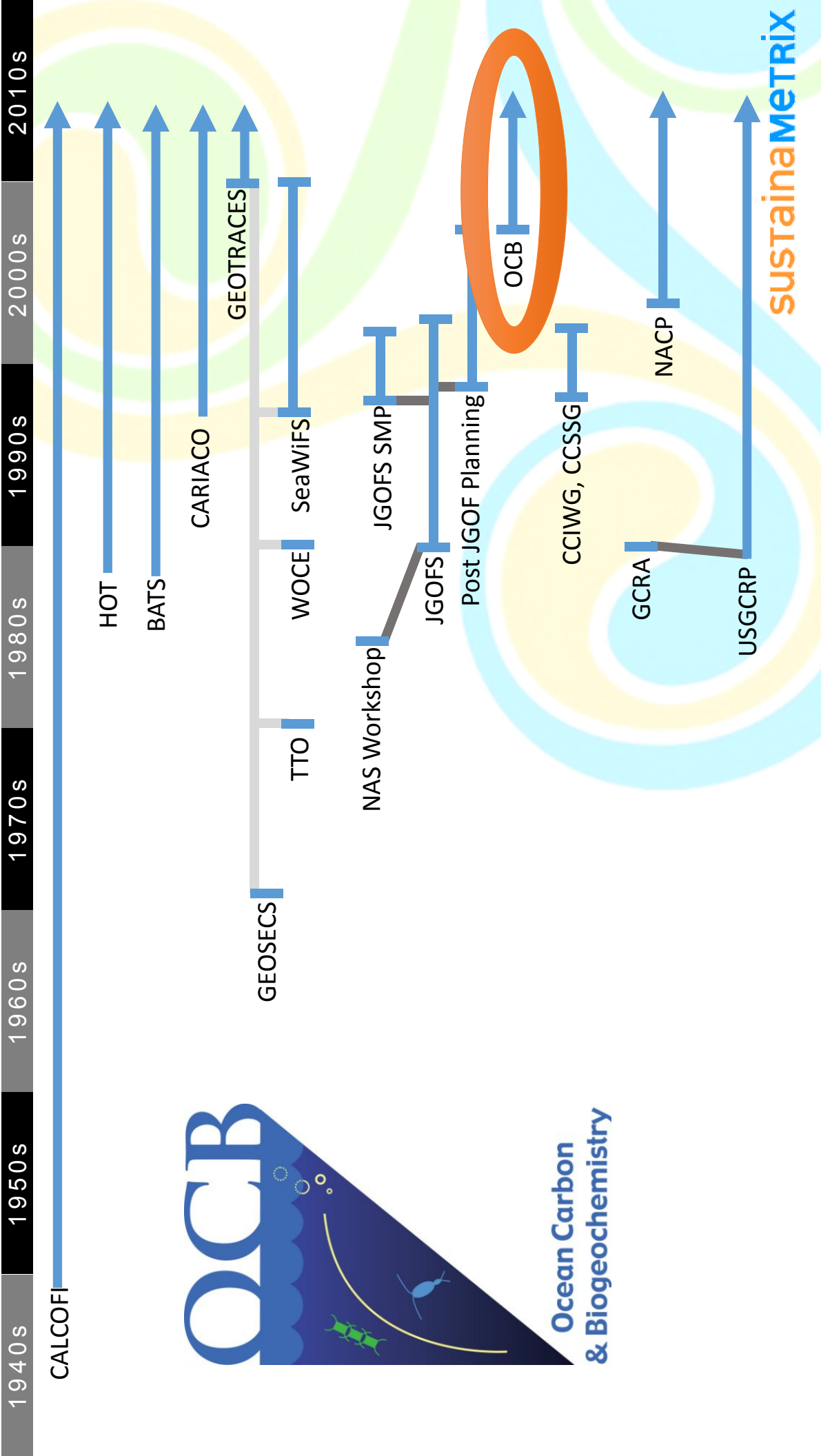
(All) [Slider]

In 3 years

- (All)
- Collaborating
- Cooperating
- Networking
- Partnering



Antecedents to OCB



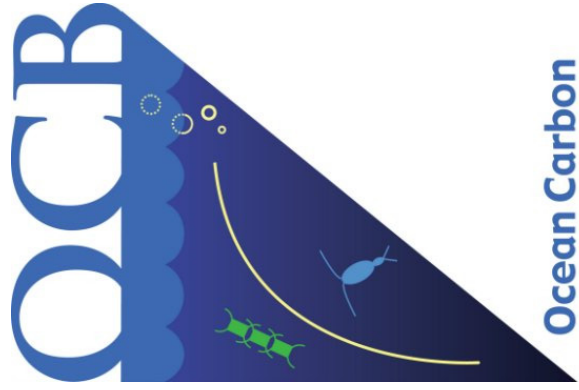


Draft OCB Timeline, Antecedents and Shifting Paradigms



OCB Pr
Antecedents
Shifting of Paradigms

Ocean Carbon and Biogeochemistry (OCB) Program

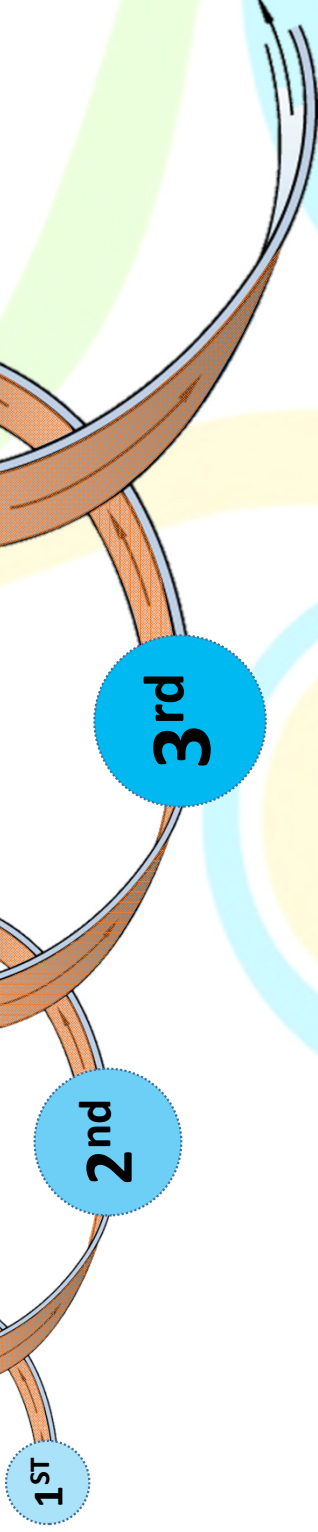


Ocean Carbon
& Biogeochemistry

Spinning
up

Integration and
Innovation

Reaching Capacity



The function of the OCB project office has evolved over the course of three generations... What's next?

2006

2007

2008

2009

2010

2011

2012

2013

2014

2015

GEN 1

GEN 2

GEN 3

2006

2007

2008

2009

2010

2011

2012

2013

2014

2015

GEN 1

GEN 2

GEN 3

OF SUBCOMMITTEE

NEWSLETTER

OA OUTREACH MATERIALS

OUTREACH

OTSAC

OA SHORT COURSE

OA SUBCOMMITTEE

SCOPING

WORKSHOP

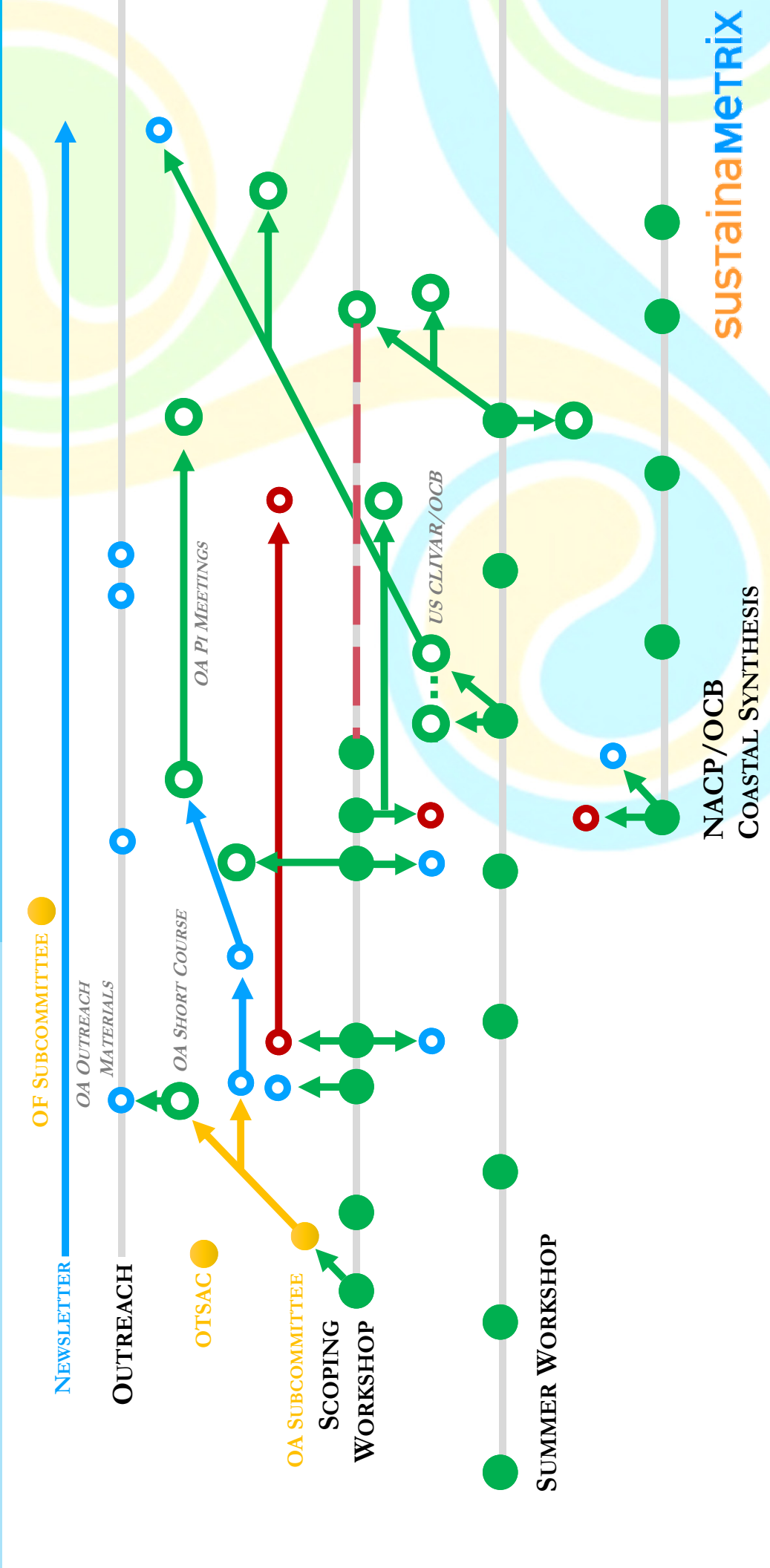
SUMMER WORKSHOP

OA PI MEETINGS

US CLIVAR/OCB

NACP/OCB
COASTAL SYNTHESIS

sustainaMETRIX



2006

2007

2008

2009

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2011

2012

2013

2014

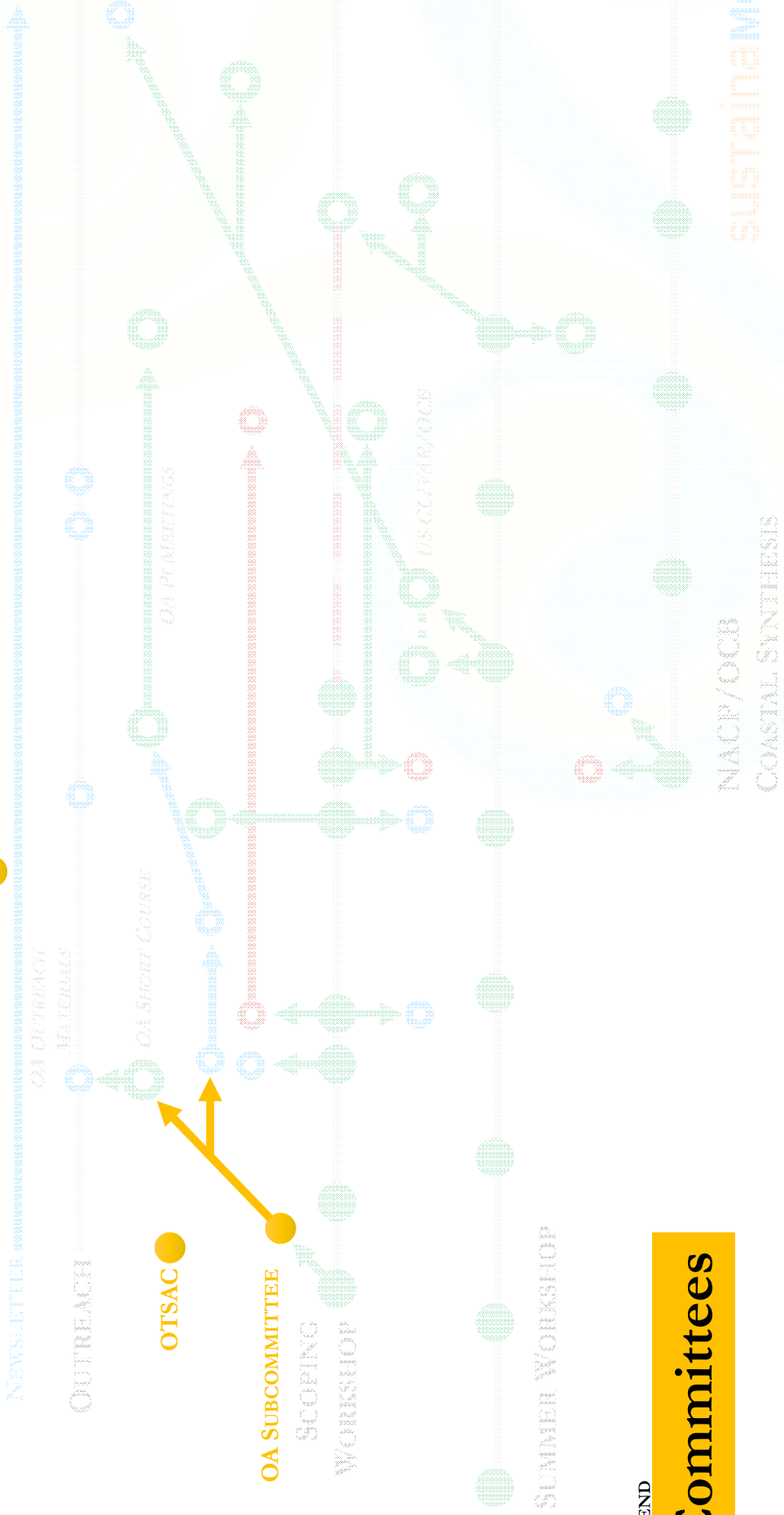
2015

GEN 1

GEN 2

GEN 3

OF SUBCOMMITTEE



LEGEND

Committees

2006

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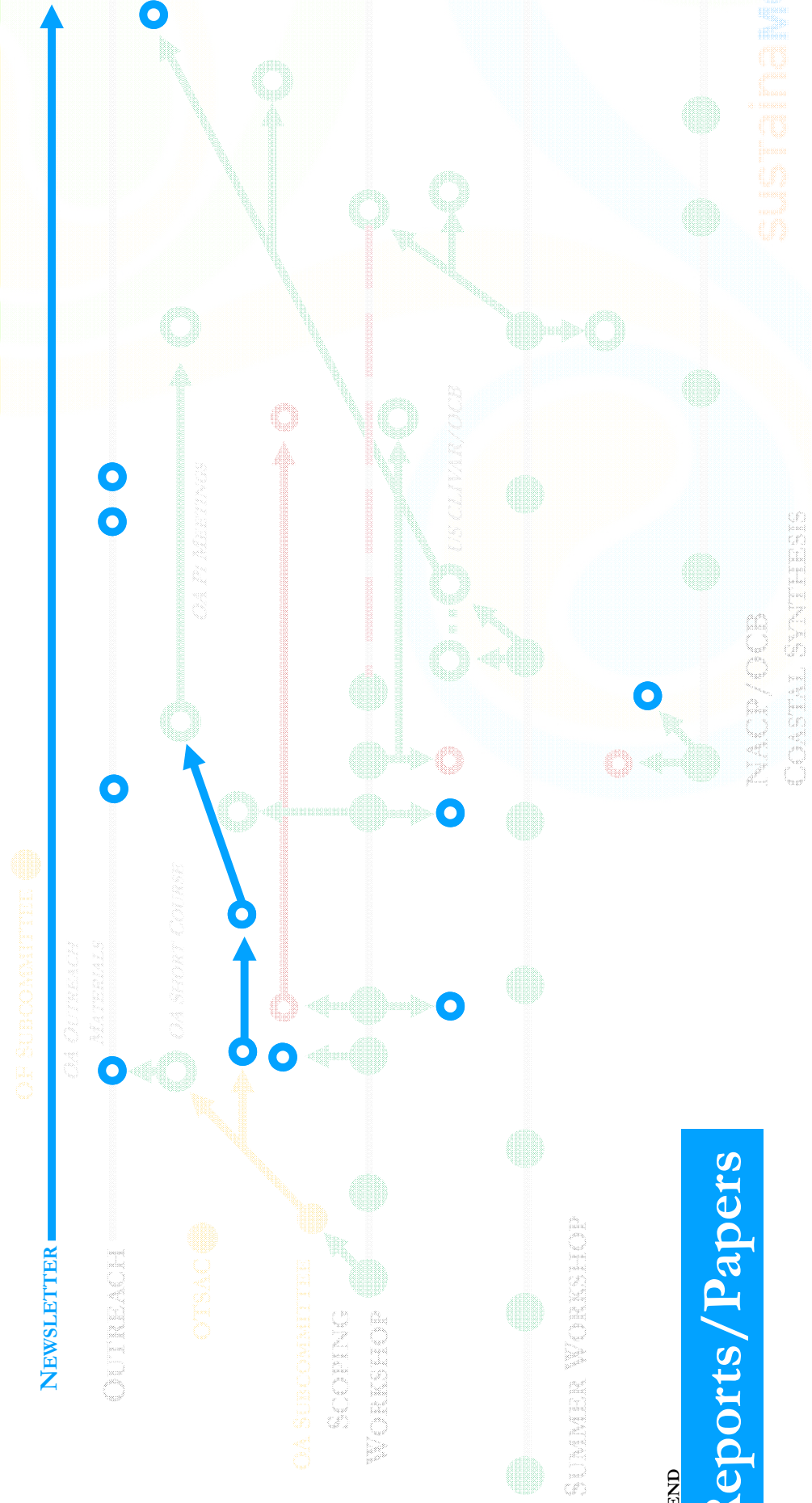
2014

2015

GEN 1

GEN 2

GEN 3



2006

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2012

2013

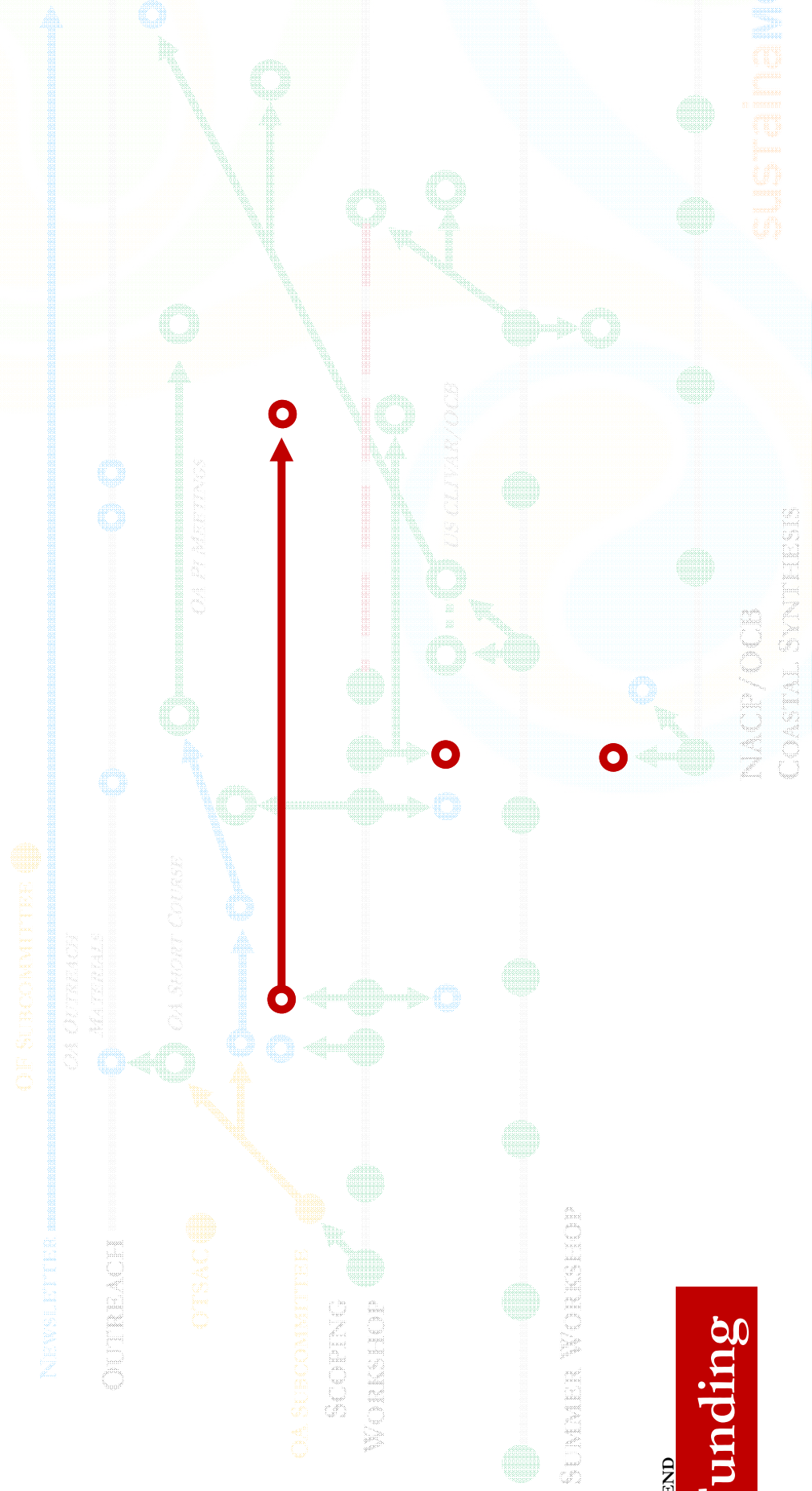
2014

2015

GEN 1

GEN 2

GEN 3



LEGEND

Funding

NACP/OCB
COASTAL SYNTHESIS

SUSTAINAMETRIX

2006

2007

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2011

2012

2013

2014

2015

GEN 1

GEN 2

GEN 3

OP SUBCOMMITTEE

NEWSLETTER

OA OUTREACH • TEACHING LAB

MATERIALS • OA FAQs

OA SHORT COURSE

OTSAC

OA SUBCOMMITTEE SCOPING WORKSHOP

OA SCOPING WORKSHOP

RESPONSE TO EPA CALL FOR ACTION

US CLJIA/OCB

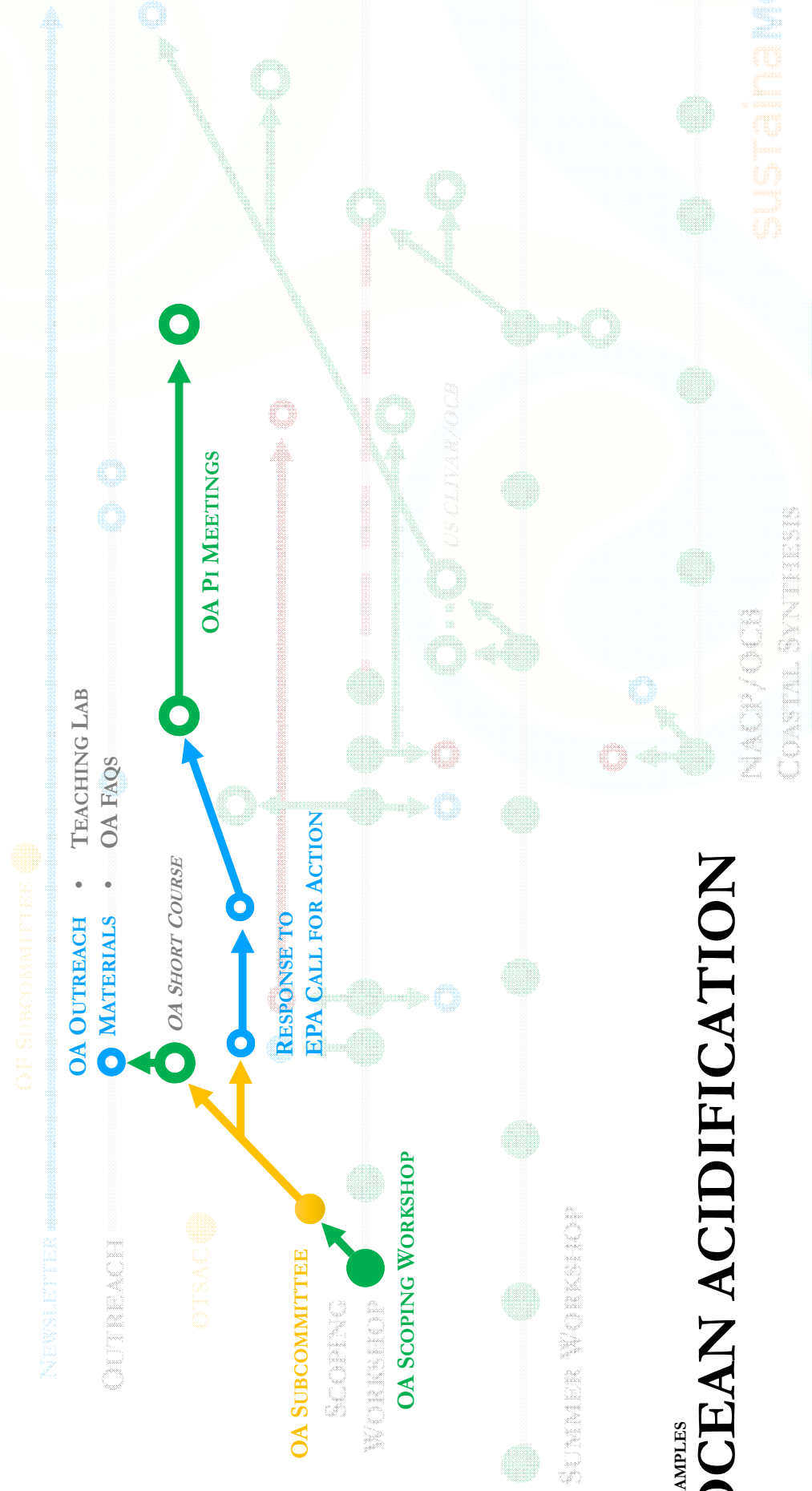
SUMMER WORKSHOP

EXAMPLES

OCEAN ACIDIFICATION

NACP/OCB
COASTAL SYNTHESIS

sustainaMETRIX



2006

2007

2008

2009

2010

2011

2012

2013

2014

2015

GEN 1

GEN 2

GEN 3

NEWSLETTER OF SUBCOMMITTEE

OUTREACH

OA OUTREACH MATERIALS

OA Short Course

OTSAC

OA SUBCOMMITTEE

SCOPING WORKSHOP

OA PLANNING

US CLIVAR/OCB WORKING GROUPS

OCEANIC CARBON UPTAKE IN THE CMIP5 MODELS

2011 SUMMER WORKSHOP

HEAT AND CARBON UPTAKE BY THE SOUTHERN OCEAN

COMMUNITY WORKSHOP

THE OCEAN'S ROLE IN CLIMATE: CARBON, HEAT, AND NUTRIENTS

INTERCOMPARISON RUNS

PUBLICATION

RESULT ON OBSERVATIONAL METRICS FOR HEAT AND CARBON UPTAKE AND PERFORMED A SERIES OF MODEL

INTERCOMPARISON RUNS

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SUSTAINAMETRIX

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OF SUBCOMMITTEE

NEWSLETTER

OA OUTREACH MATERIALS

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OA SUBCOMMITTEE

SCOPING

WORKSHOP

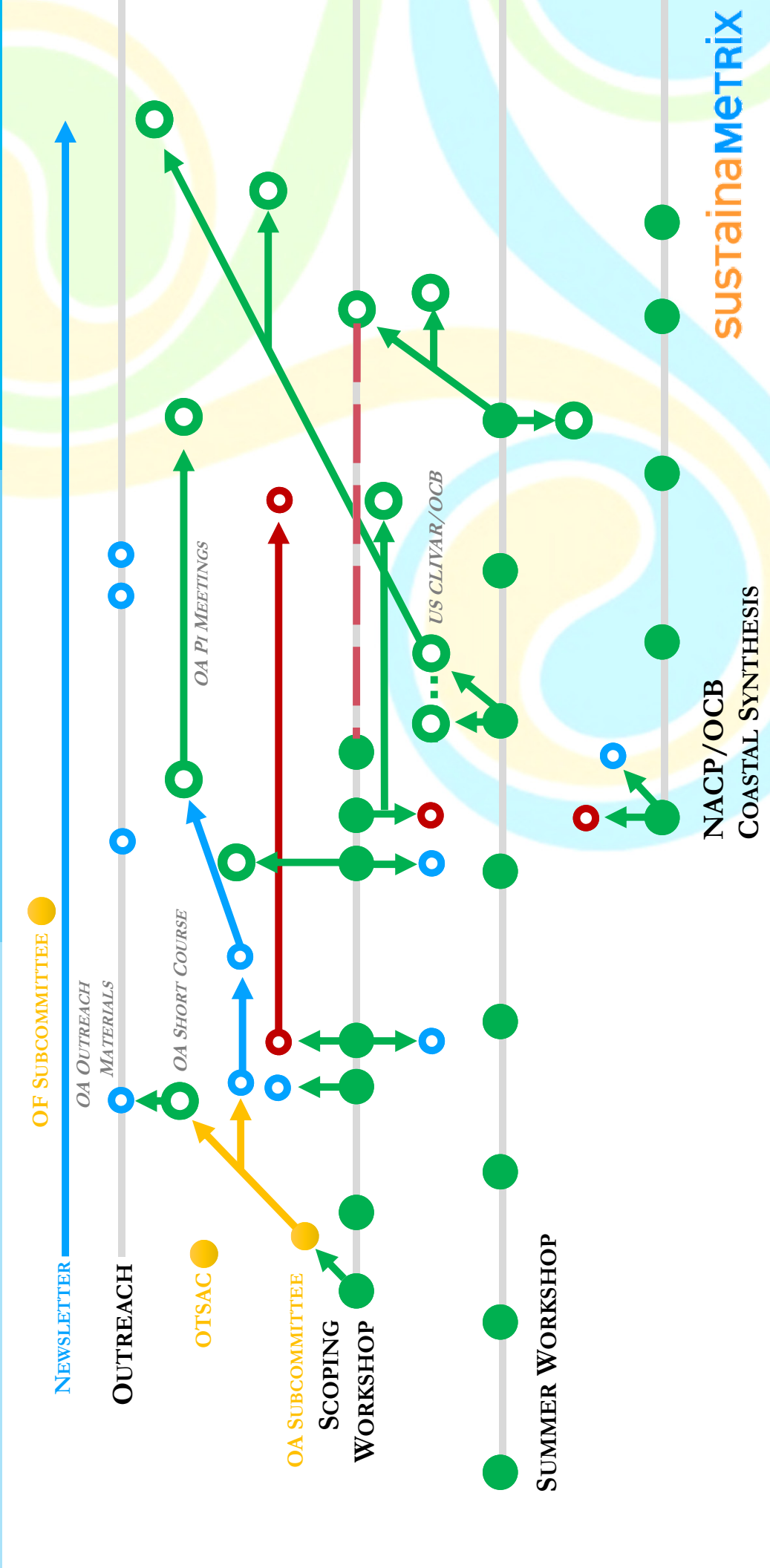
SUMMER WORKSHOP

OA PI MEETINGS

US CLIVAR/OCB

NACP/OCB
COASTAL SYNTHESIS

sustainaMETRIX



2006

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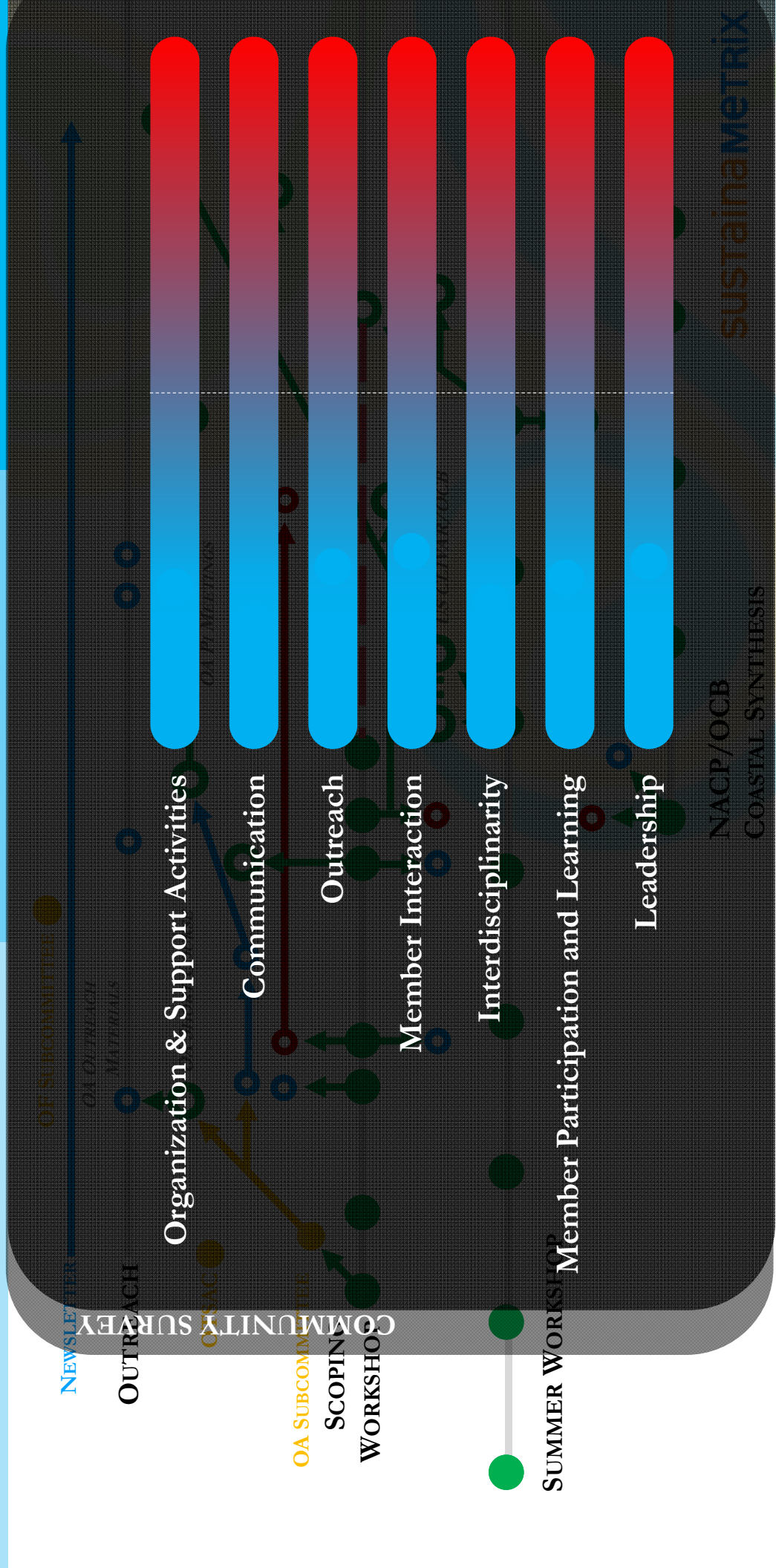
2014

2015

GEN 1

GEN 2

GEN 3



OCB Community Survey: January 2014

11-14% RESPONSE RATE

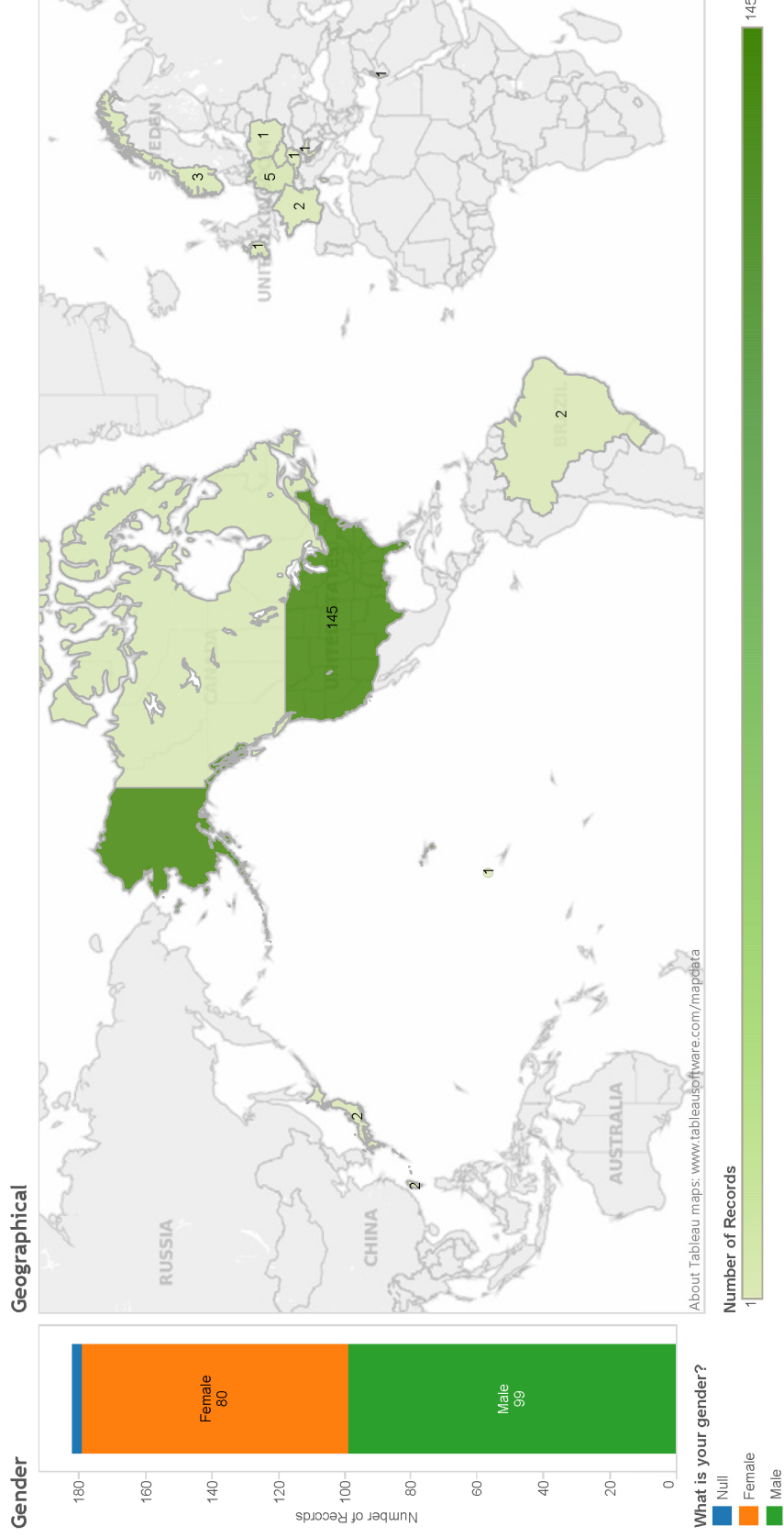
FULLY COMPLETED **144**

OPENED **736**

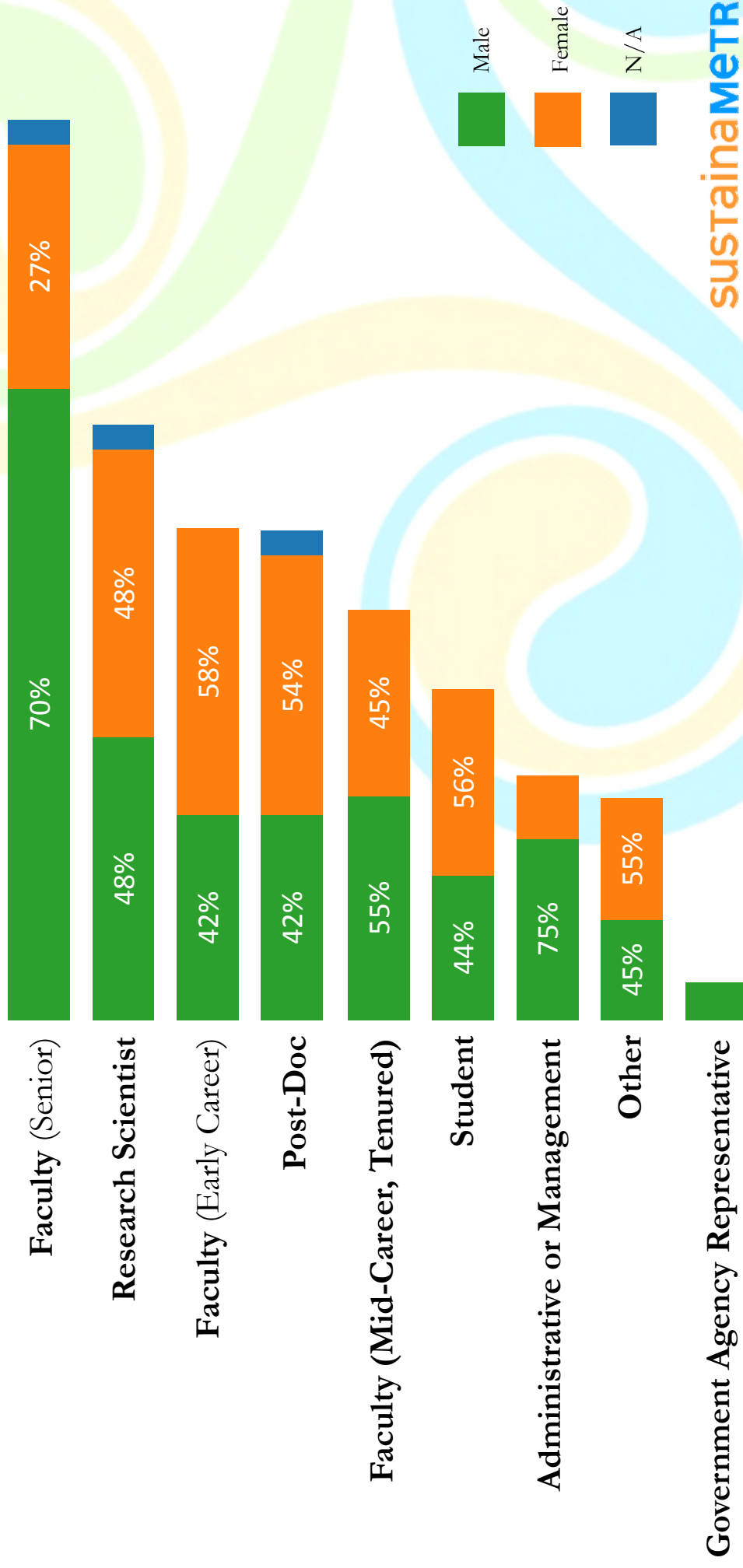
SENT **1353**

MOSTLY COMPLETED **184**

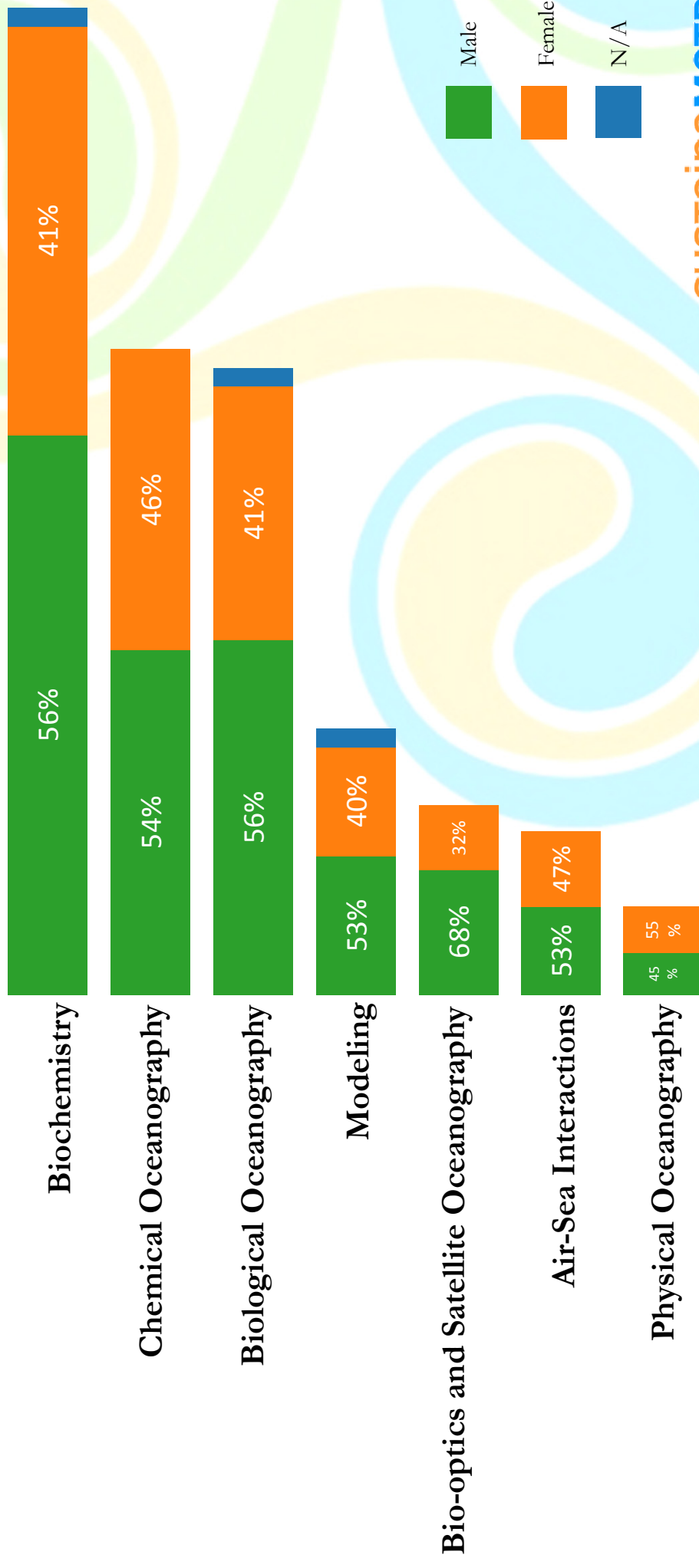
Demographics of Respondents



Survey Demographic – Current Position



Survey Demographic – Scientific Expertise



Degree of Integration of OCB Community

Using the Collaboration Evaluation and Improvement
Framework (CEIF), Woodland and Hutton 2012

NOW

Shaping direction of program

16

PARTNERING

Highly engaged with in research initiatives and OCB community building efforts

38

COLLABORATING

Participates in OCB activities and in specific topics of interest

56

COOPERATING

Values the OCB network, communicates importance, but rarely participates in activities

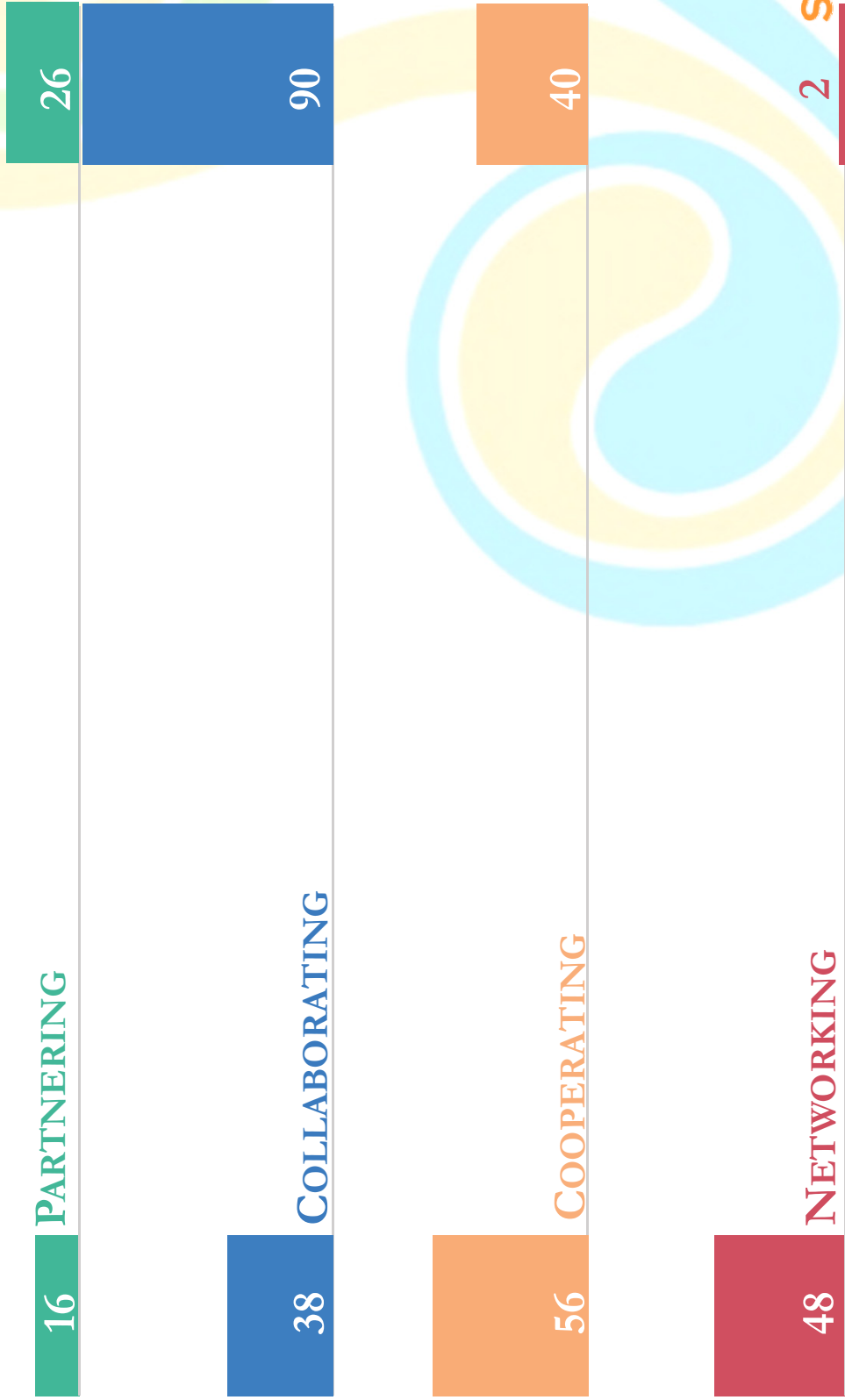
48

NETWORKING

SUSTAINaMETRIX

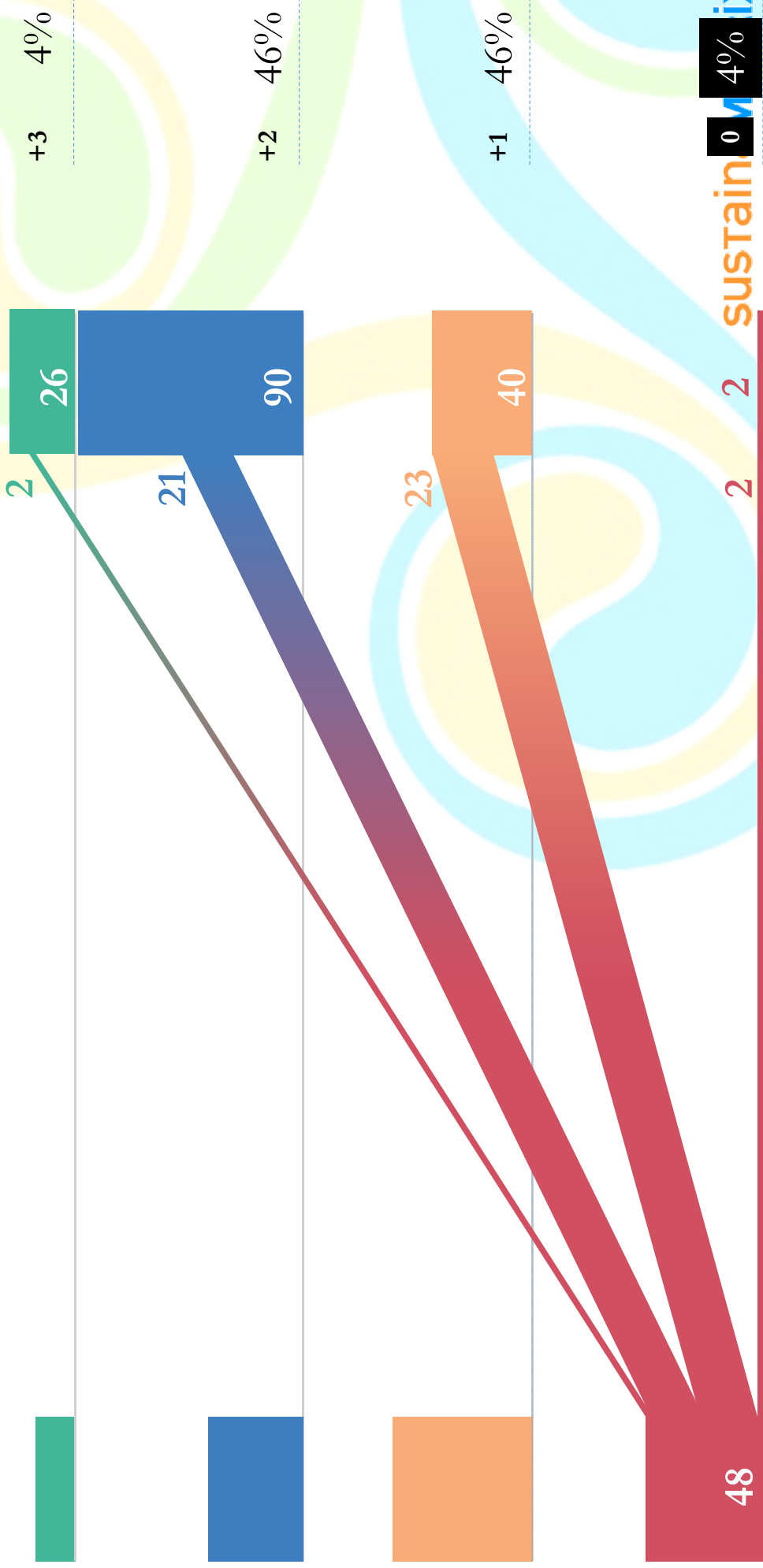
NOW

In 3 Years

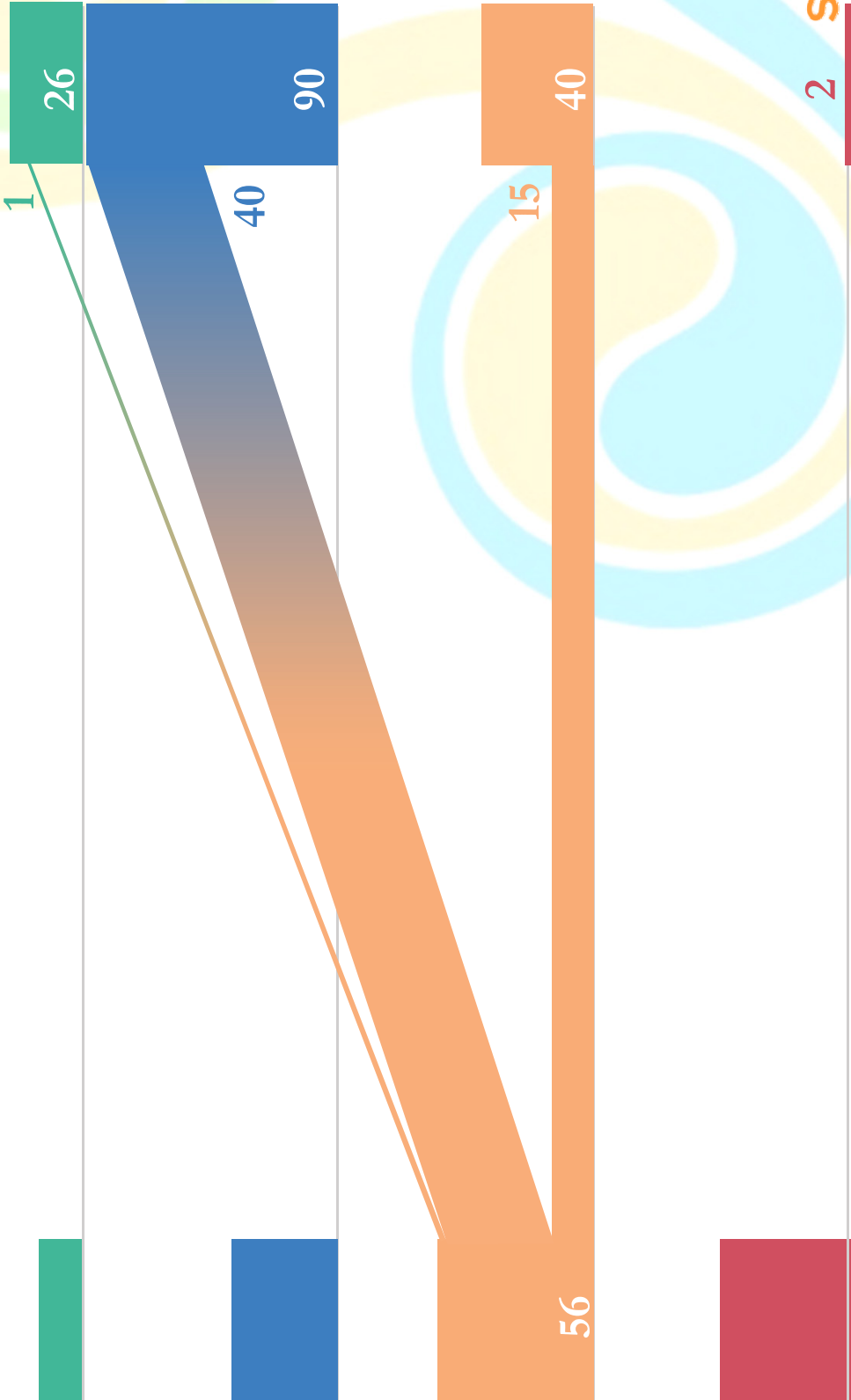


2 **sustainaMETRIX**

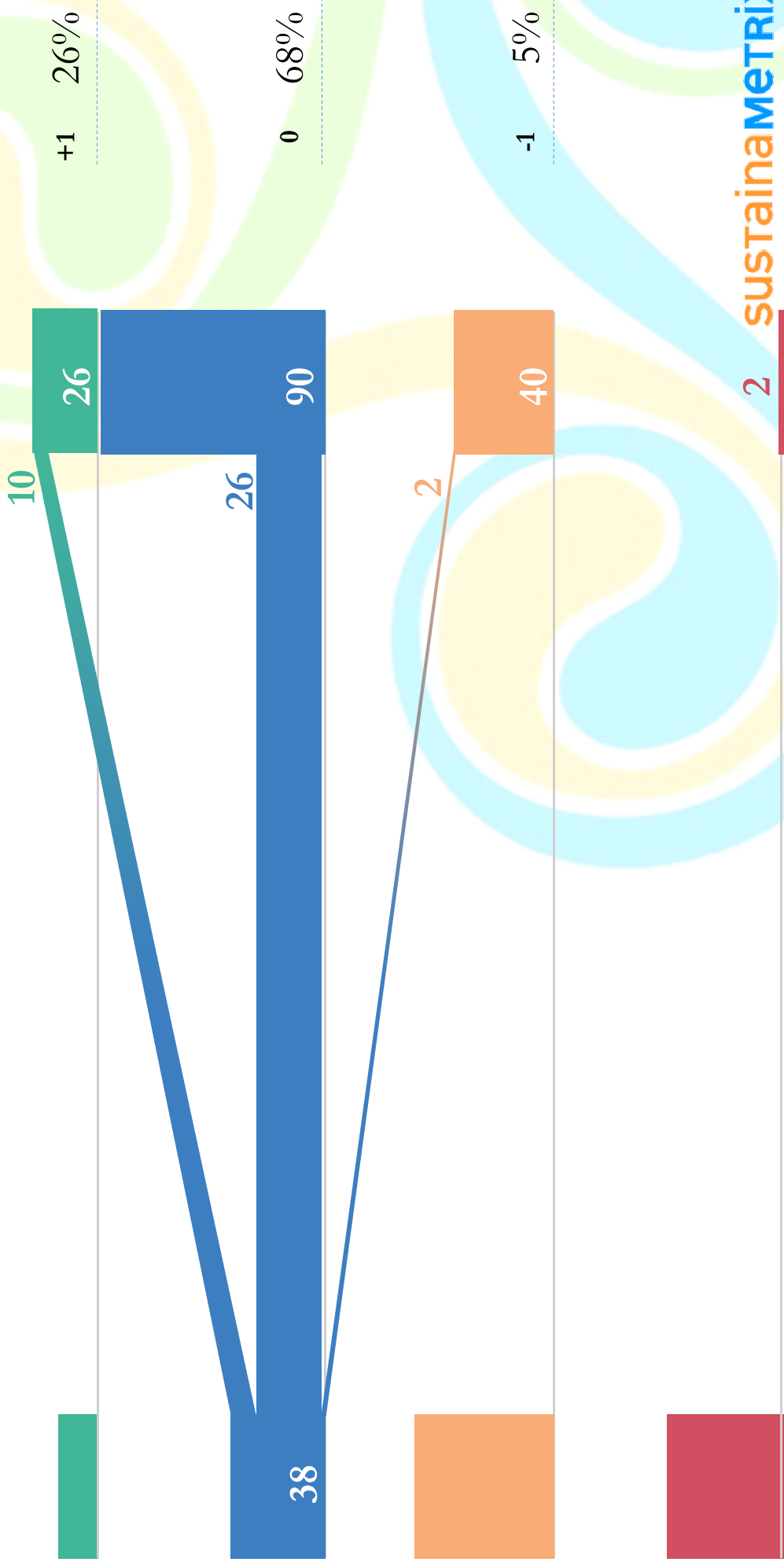
NETWORKING



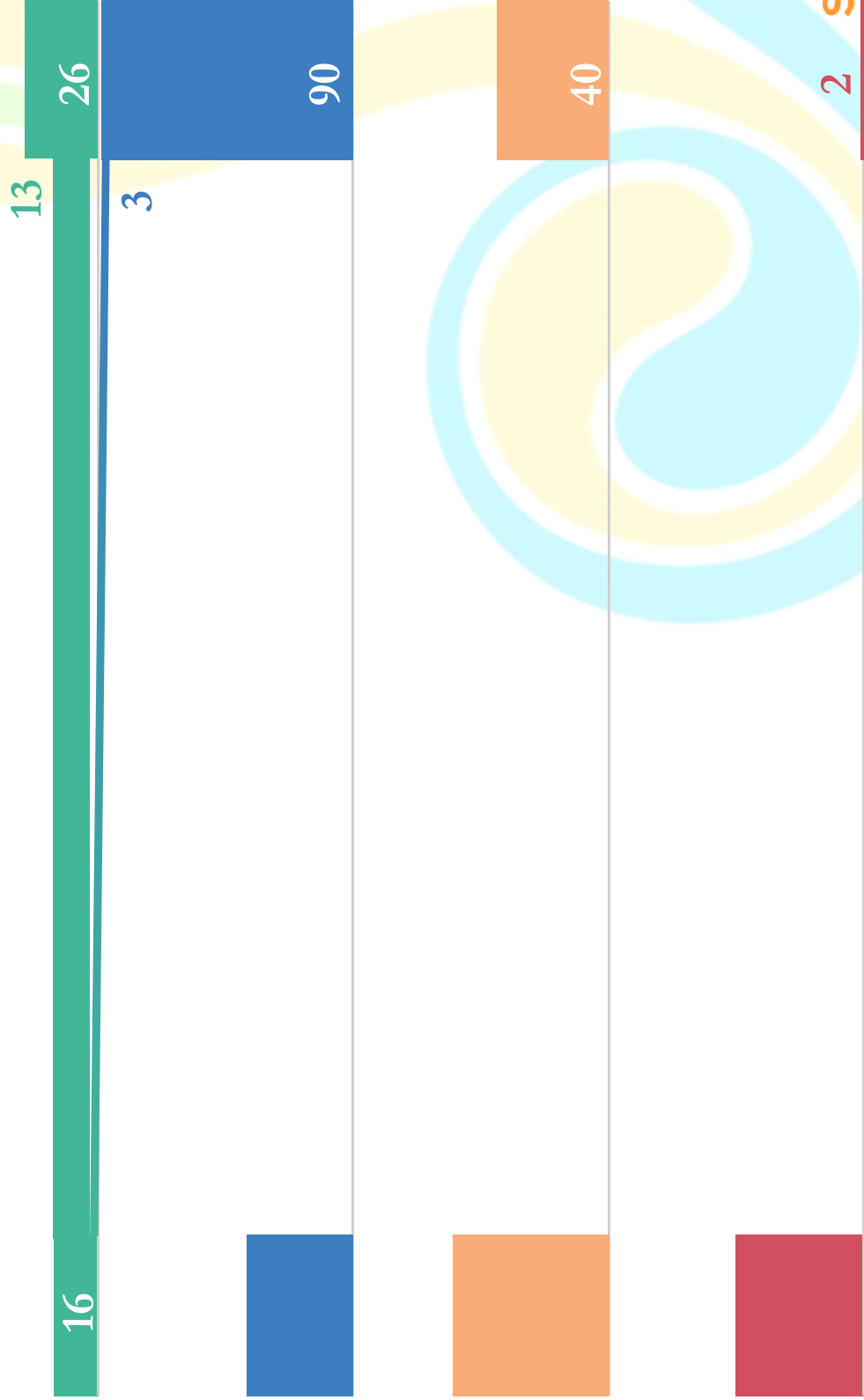
COOPERATING

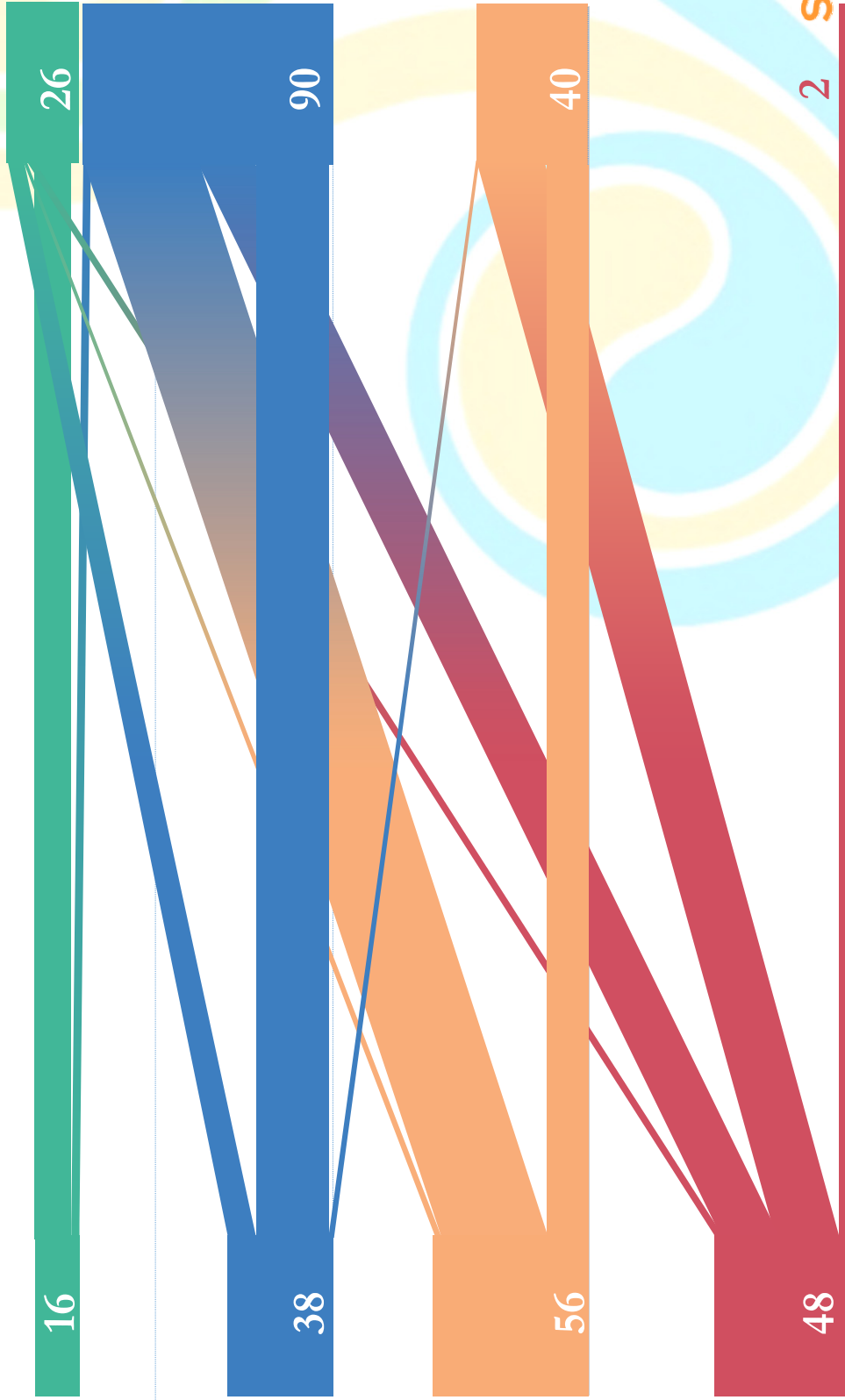


COLLABORATING



PARTNERING





+3 1%

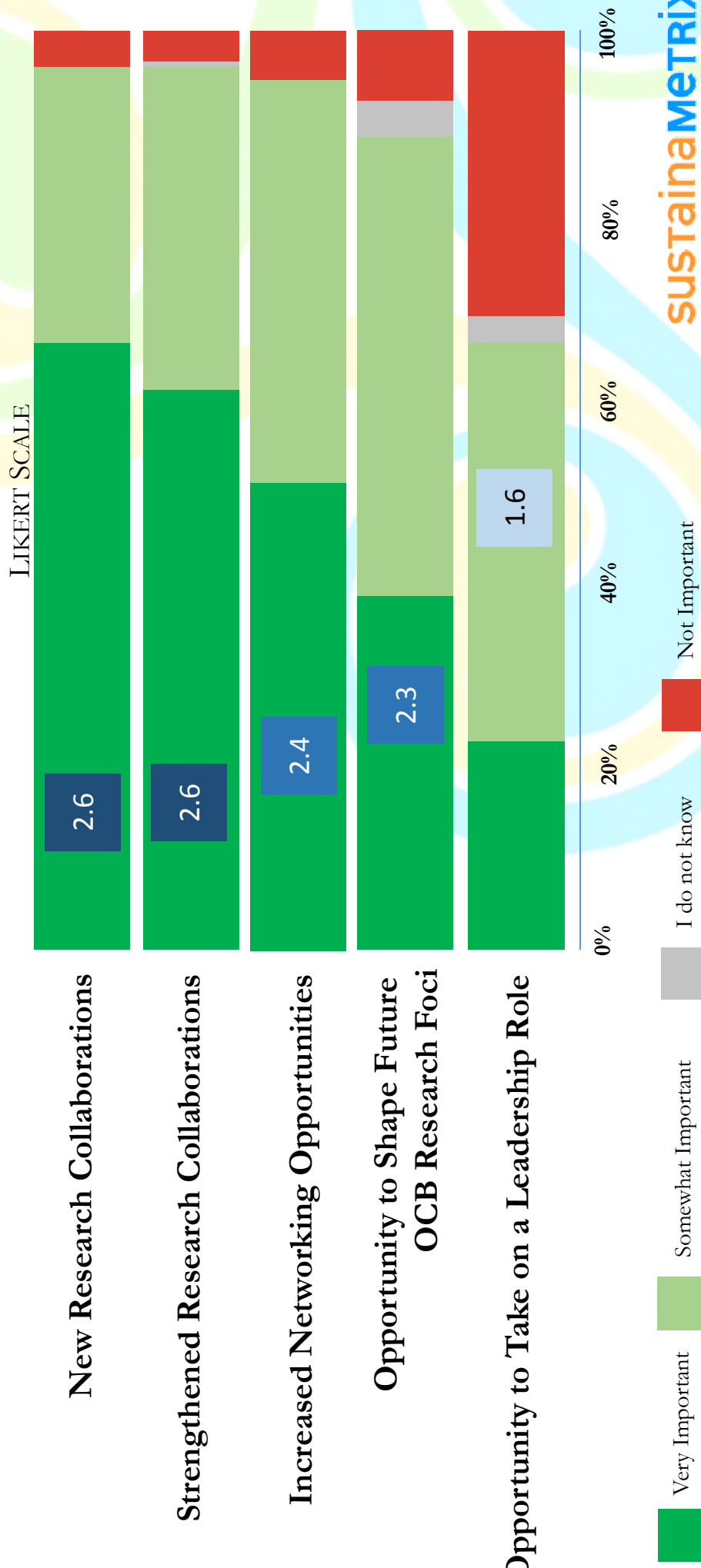
+2 15%

+1 46%

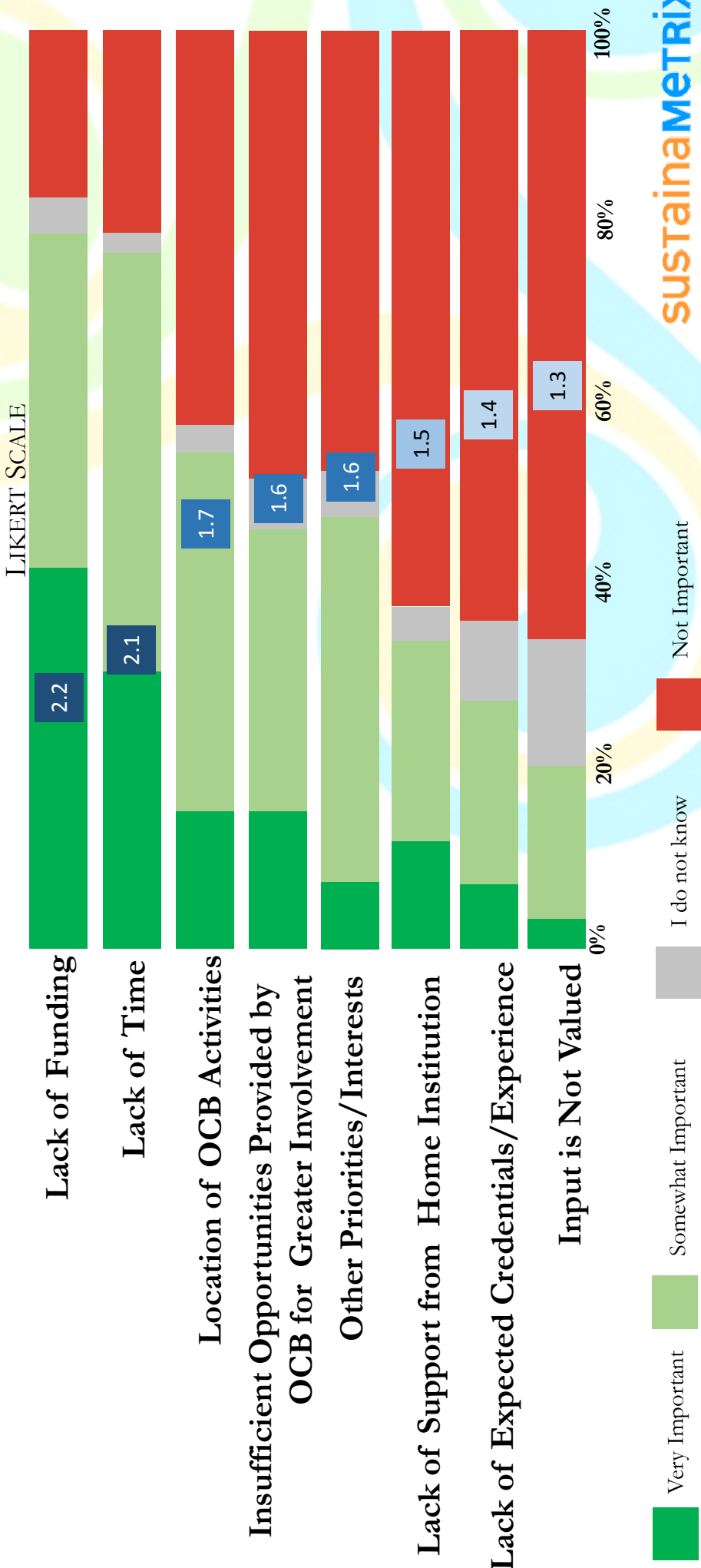
0 34%

-1 3%

Benefits for Involvement

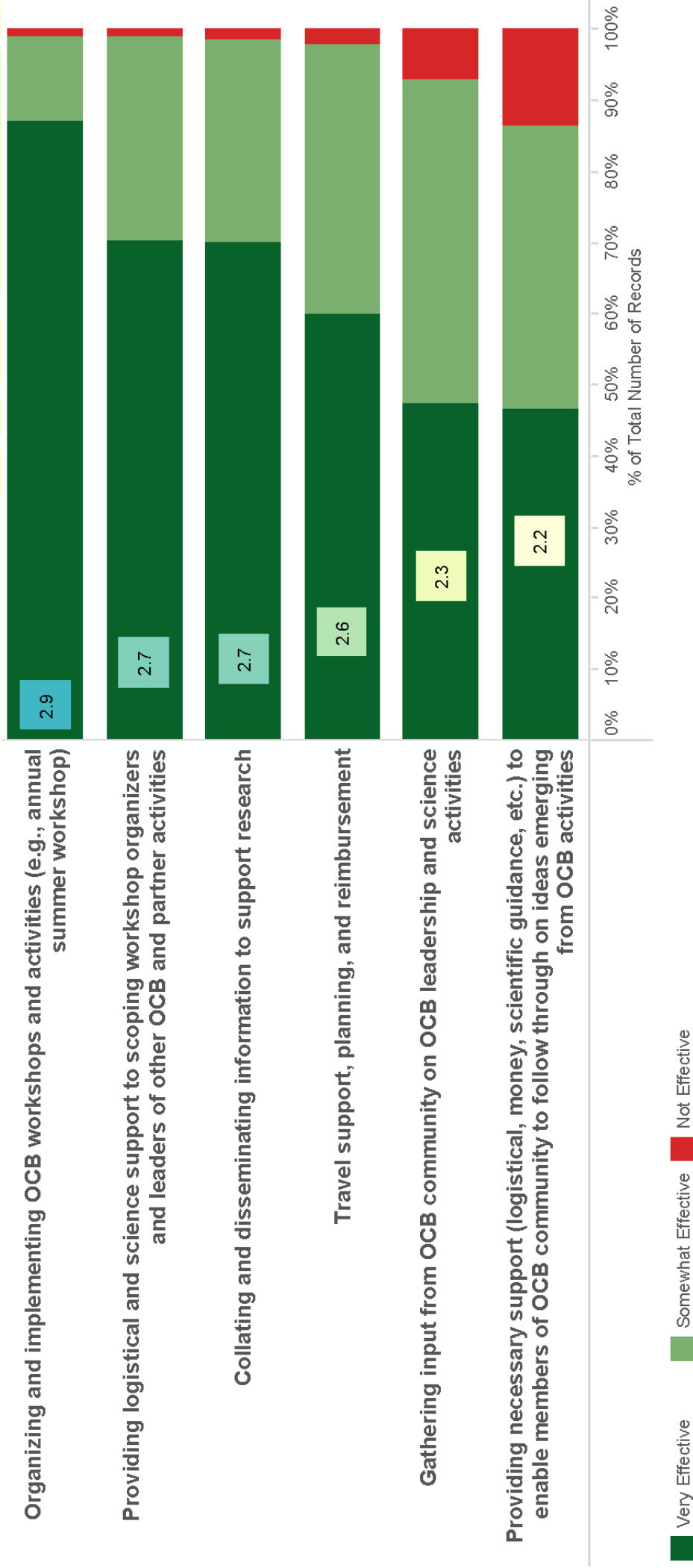


Barriers to Involvement

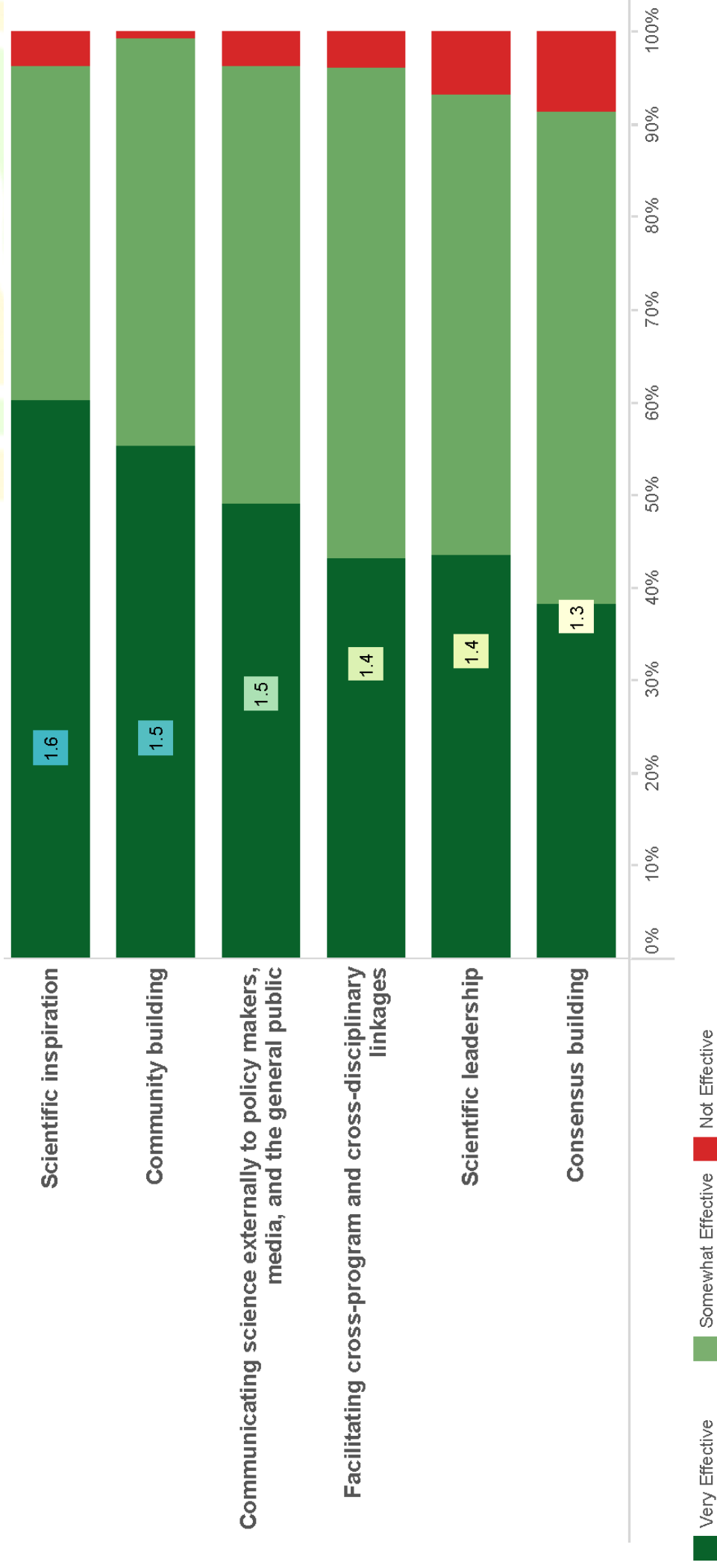


Effectiveness of OCB Effort

Effectiveness of OCB's Organization & Support



Effectiveness of OCB's Scientific Coordination Effort



Community Response

One of the greatest things about OCB is that... It allows scientist who may not be in the old boy's network to be able to hear the scientific news, network, etc
It make me feel like it is our network.

The e-mail list is my primary source of info and has been very useful for me. Thank you for it!

I met my current PhD advisor at the 2011 OCB Summer Workshop at WHOI, and am now very **happily pursuing research I would not be otherwise.** I'm grateful for that, and it's because of OCB.

Keep doing what you are doing.

Talking to people at my posters at OCB-supported workshops has given me research ideas.

Knowledge from attending OCB meetings and reading OCB generated literature has helped focus background for proposal writing

OCB is the only source of information on these topics

(I) use these materials (outreach products) in my own teaching

The outreach material is very useful for introducing a related subject to undergrad students, during lectures.

Access to funding for travel/courses is a great benefit of OCB.

Keep myself abreast with the latest research.

I have learned how others view my specialty, and thus what areas they feel offer synergies.

Community Response

Location of most meetings in East Coast and in the summer a barrier to attend

A less US-Centric View

A more effective focus on science support, particularly assistance with learning about research methodology...**Additional Short Courses**

Somehow make things more open, and make sure - for things that are open - there is **widespread outreach and advertising**.

Get additional funding from NSF to **hire specialists in these areas (outreach & marketing)**

Ecology has **not been as well incorporated as other disciplines**

Still too biologically / eco-system focused. **Must collaborate more with physical oceanographers, atmospheric scientists and climate dynamics community**

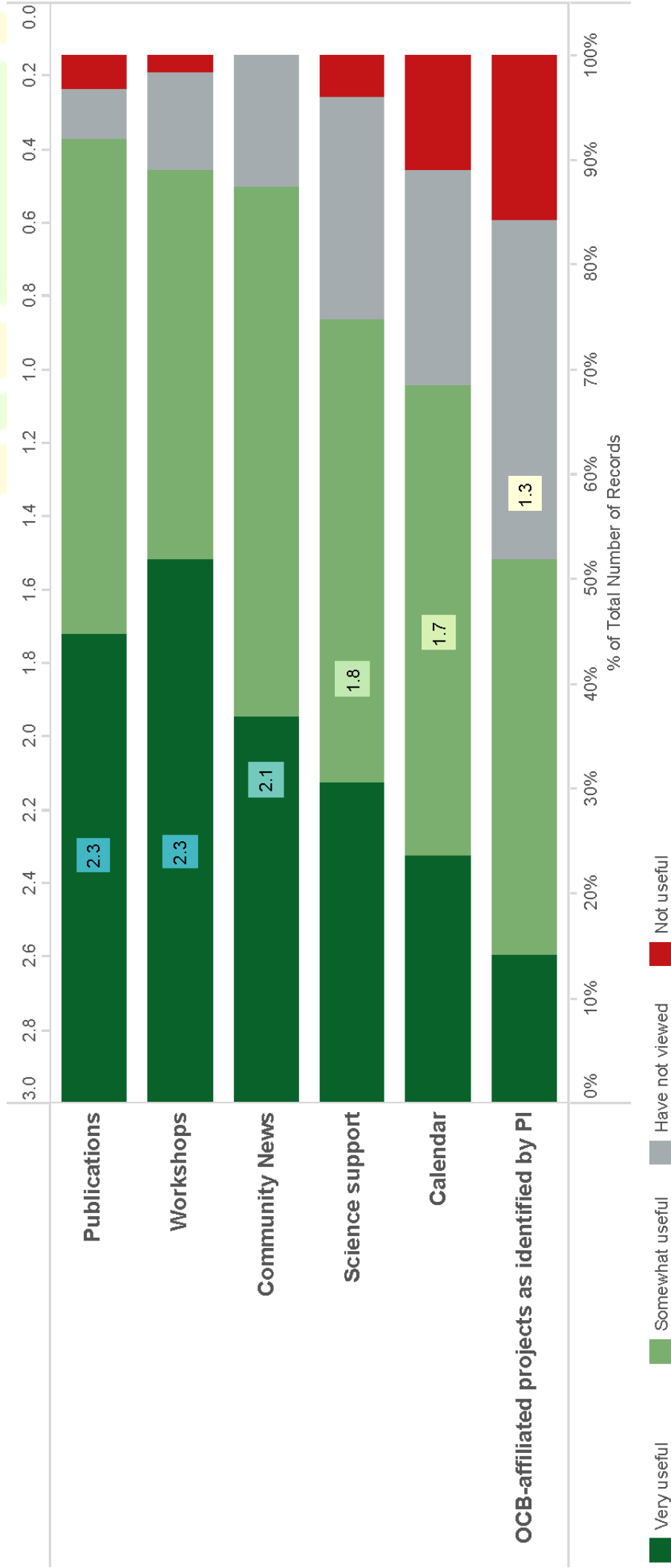
There should be a **workshop devoted to** understanding Particle dynamics and the continuing lack of consensus on Caron budgets (a theme described by Rachael Stanley).

Define a few specific education and outreach goals in a target age group and go for it, but it is important to measure the OCB success and keep evolving the effort. I think that those of us in the **OCB field could do better in education and outreach**.

The human dimension (social sciences; economics; science-policy and science-society interfaces) should be strengthened.

Effectiveness of OCB Communication

Effectiveness of OCB Communication (cont.)



Effectiveness of OCB Communication (cont.)

The one piece I would like to see stopped is the 'advertising' of sessions at meetings. That gets tedious.

A more integrated approach like weekly jobs email, weekly news (unless it is time sensitive) would make me actually read them. Everyday emails make me delete a lot of them.

Maybe accumulate all announcements and send out one email per day with all the announcements instead of multiple emails each day

Cruise opportunities will be very usefully for early-career scientists.

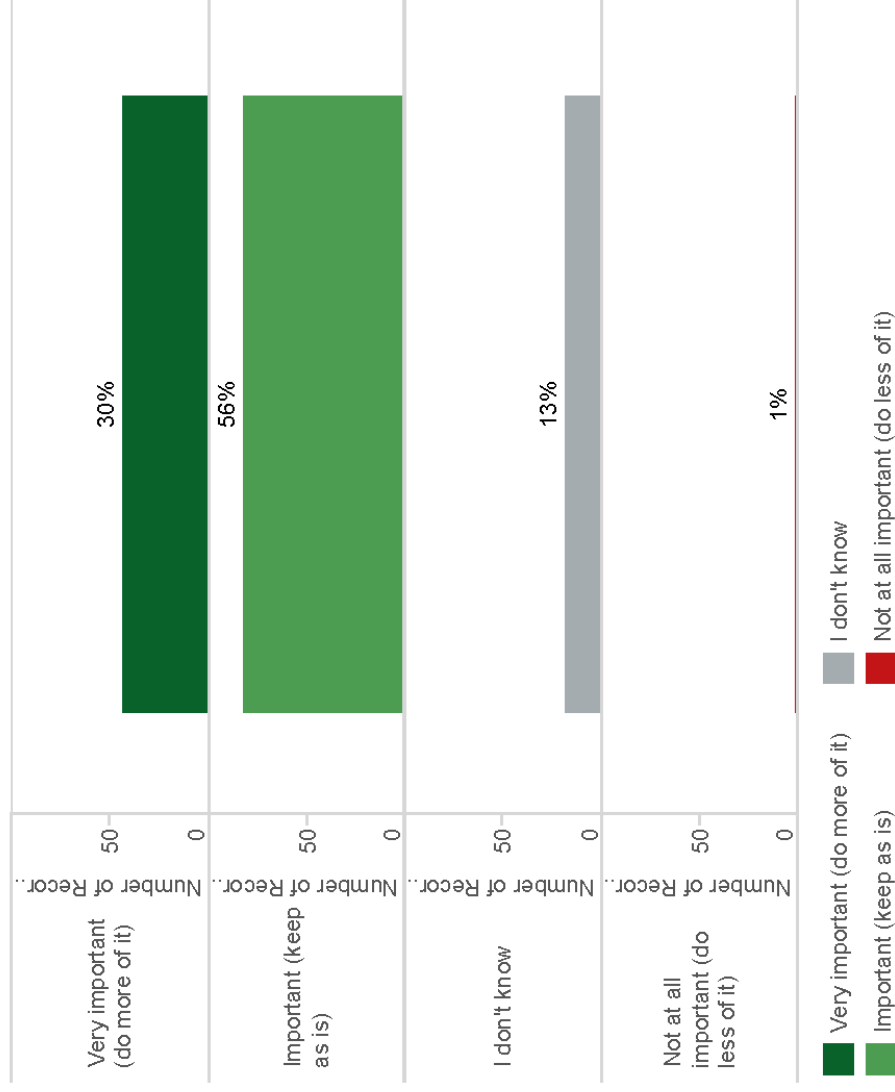
It took me a while to realize this was open to anyone who wanted to be on it. Occasional outreach would be good so others who are not already 'in the loop' can get in it if they want.

The daily emails announcing special sessions at AGU/ASLO/etc... prior to the abstract due dates are quite annoying. Maybe those announcements could be collected and distributed together, less often?

I don't think people should be allowed to advertise individual sessions on the OCB mailing list. It becomes a bit too much when there is a big meeting (i.e. Ocean Sciences). Communication about events at big meetings should be restricted to planning act

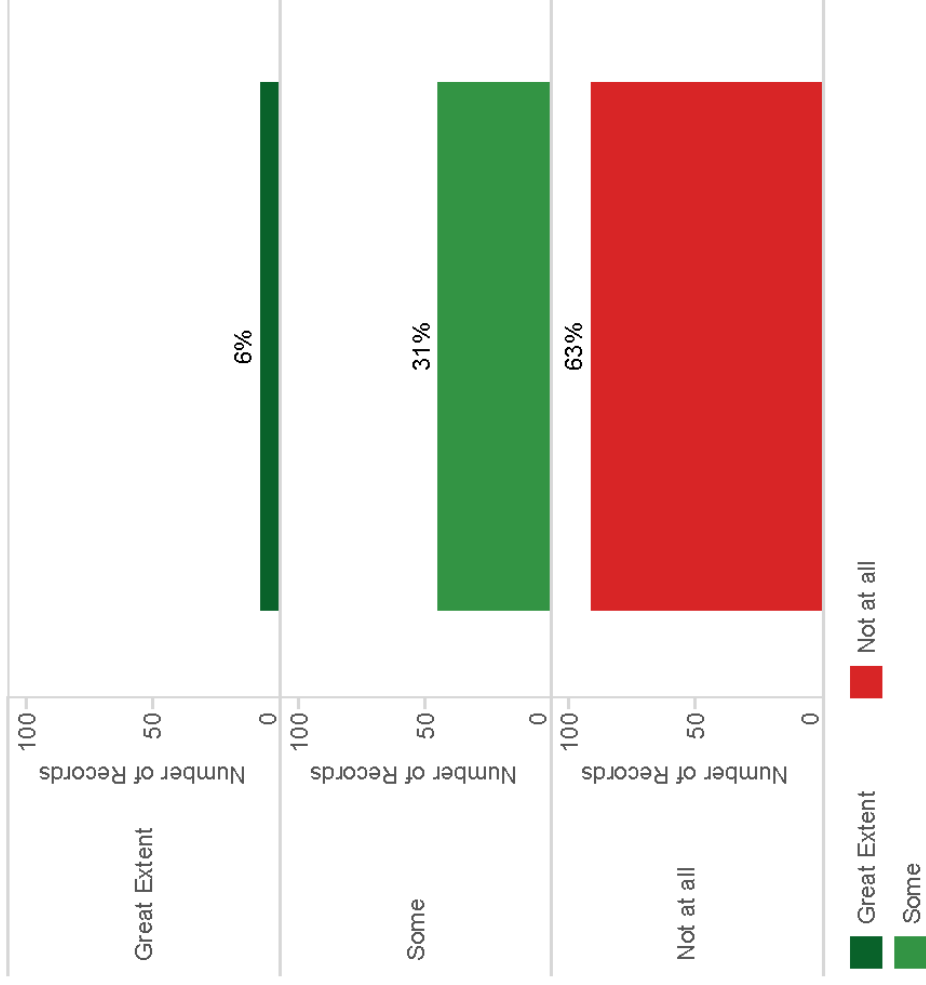
Effectiveness of OCB to Inform the Public

Effectiveness of OCB to Inform Public



Over 85% of respondents felt that the OCB's role to build consensus to inform the community and policy was important. 30% suggested that OCB should take on more consensus-building activities, while 56% suggested OCB keep it at the same level.

Effectiveness of OCB to Inform Public



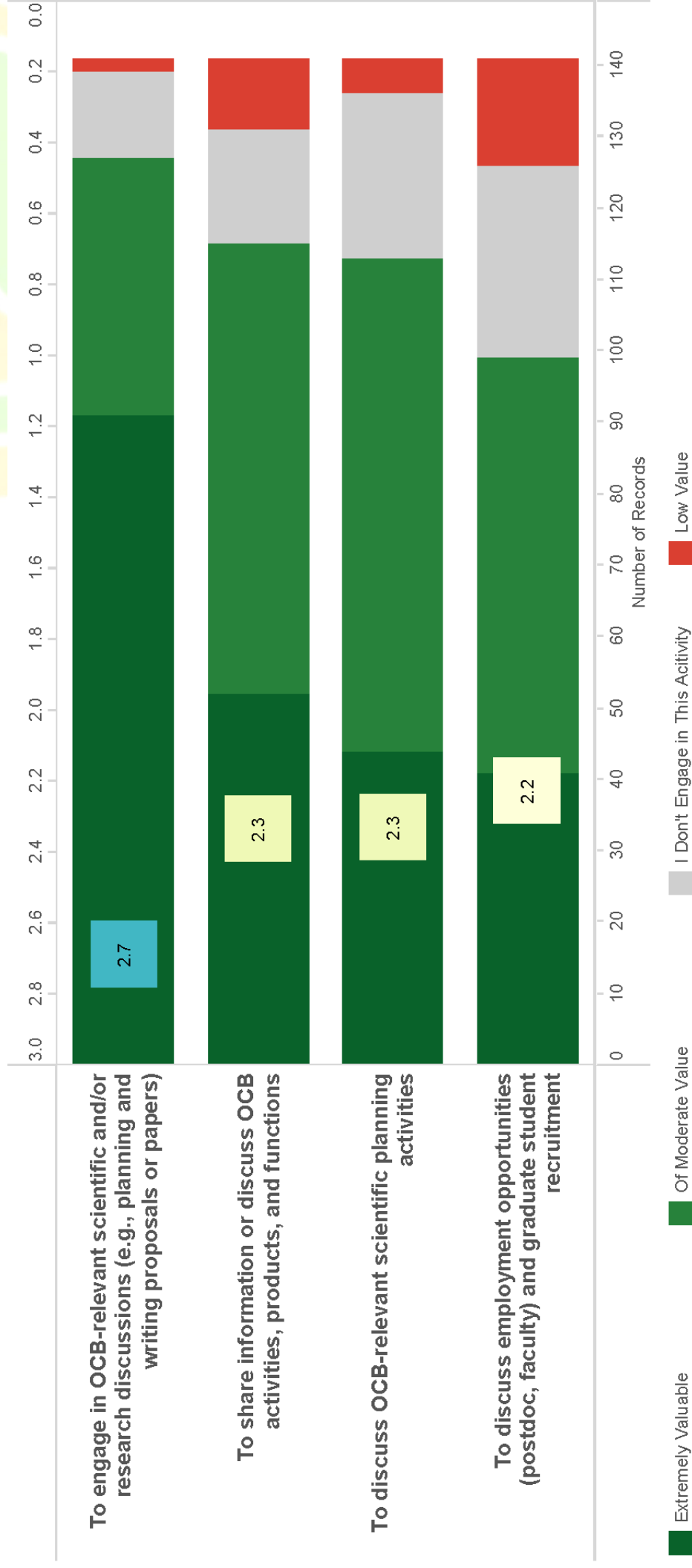
Most community members were, however, not directly involved with such activities. Over 60% responded that they were not at all involved. Only 6% answered that they were extensively involved, and 31% were somewhat involved. It should be noted that involvement increased with the length of OCB affiliation: 50% of respondents who were affiliated for longer than 5 years were involved in consensus-building activities.

Interaction with other OCB Members

Value of Interaction with other OCB Members

- Over half of the interactions among members **occurred at least monthly**. Interactions within larger groups were more frequent than interactions within smaller groups.
- There were no discernable differences between inter- and intradisciplinary interactions.
- Respondents placed the most value on scientific and research discussions.
- Students and post-docs placed the most value on employment and recruitment discussions.

Value of Interaction with other OCB Members



Community Response

Talking to people at my posters at OCB-supported workshops has given me research ideas.

I have learned how others view my specialty, and thus what areas they feel offer synergies.

I met my current PhD advisor at the 2011 OCB Summer Workshop at WHOI, and am now very happily pursuing research I would not be otherwise. I'm grateful for that, and it's because of OCB.

Improved teaching

Community building, networking, bottom-up approach to data management.

OCB contributed funds to IMBER IMBIZO I in Miami which led to DSRII paper in 2010 and IMBIZO III in Goa with synthesis paper in prep

Old reich, chit chatting away. Young people are also well educated and bring good ideas to the table

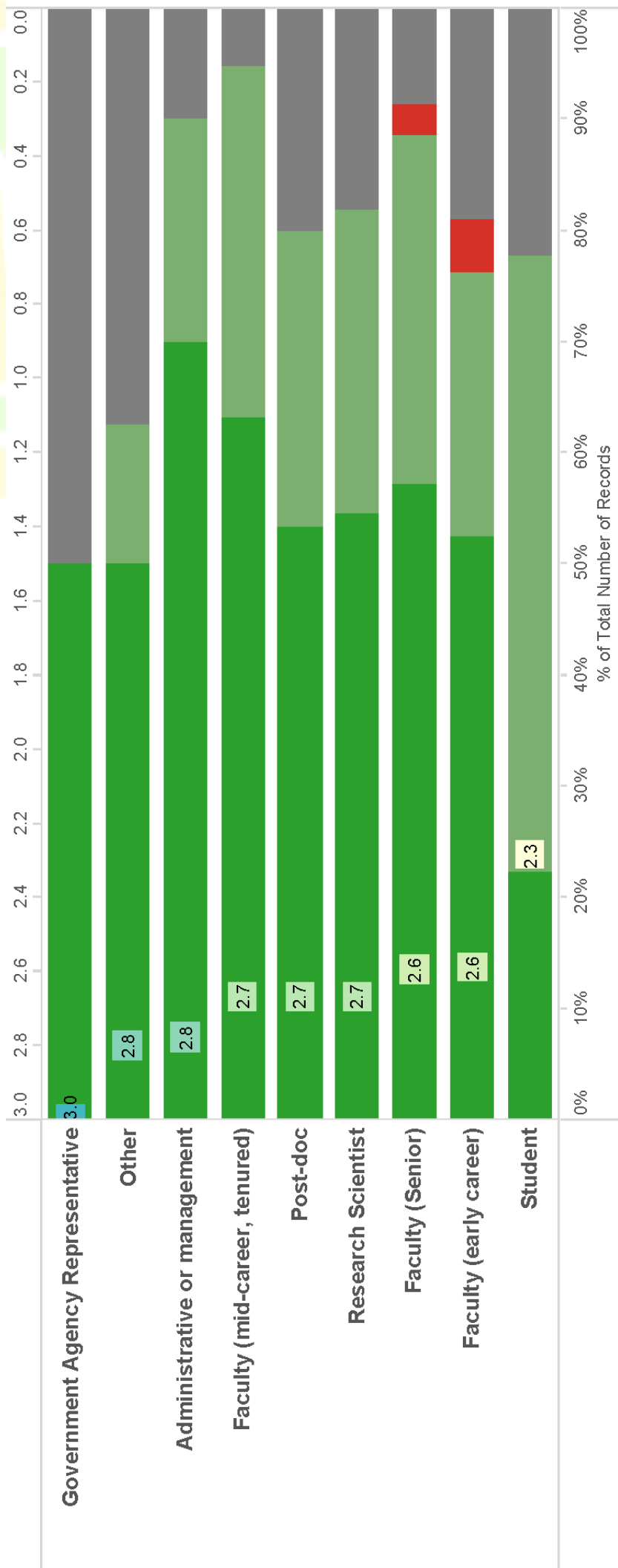
Get a sense sometimes of what topics are 'hot' and gets me thinking of how my skills can contribute

Level of Interdisciplinarity within OCB

Interdisciplinarity

- The majority of respondents felt that multiple disciplines were well represented within OCB programs.
- In most cases, length of affiliation with OCB was directly linked to a positive response regarding the balance of disciplinary representation.

Interdisciplinarity (cont.)



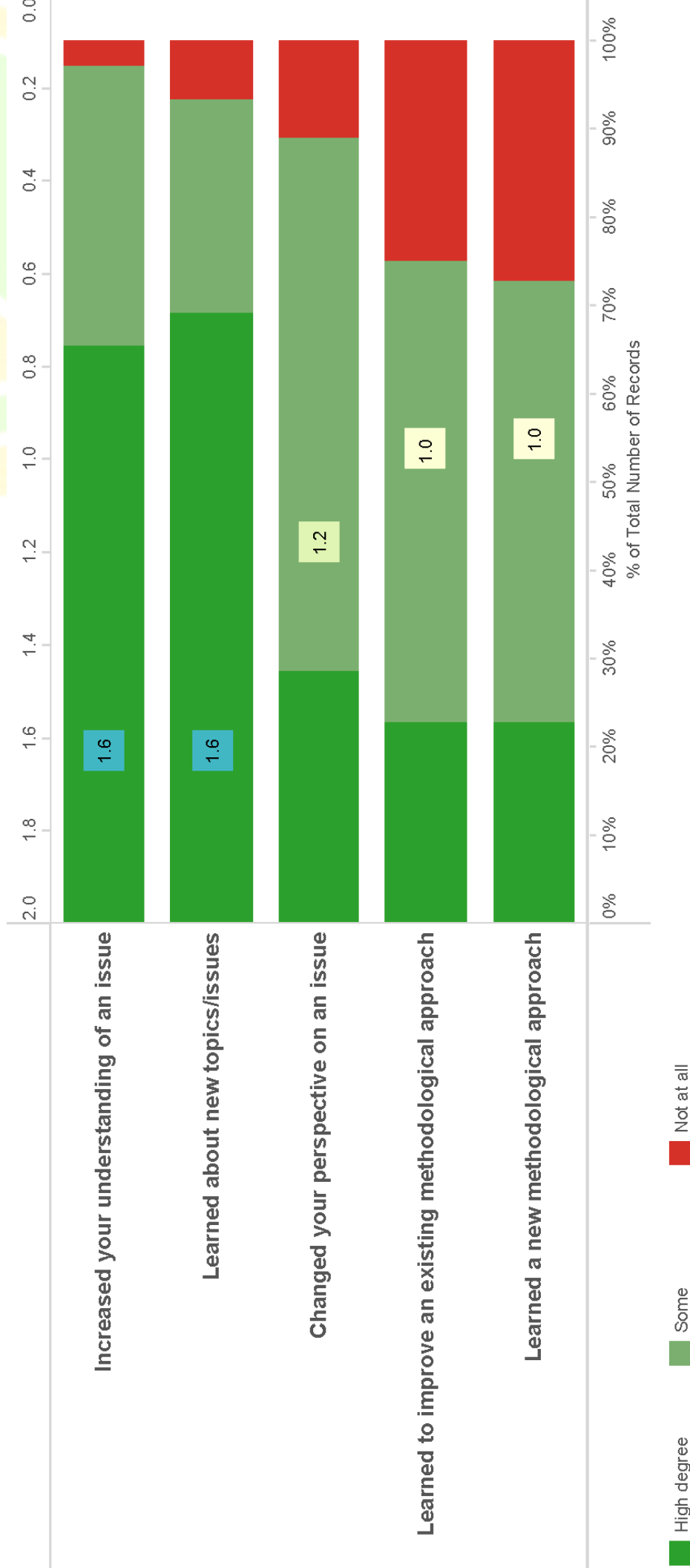
Well Balanced Somewhat Balanced Poorly Balanced I do not know

Outcomes of OCB Events and Activities

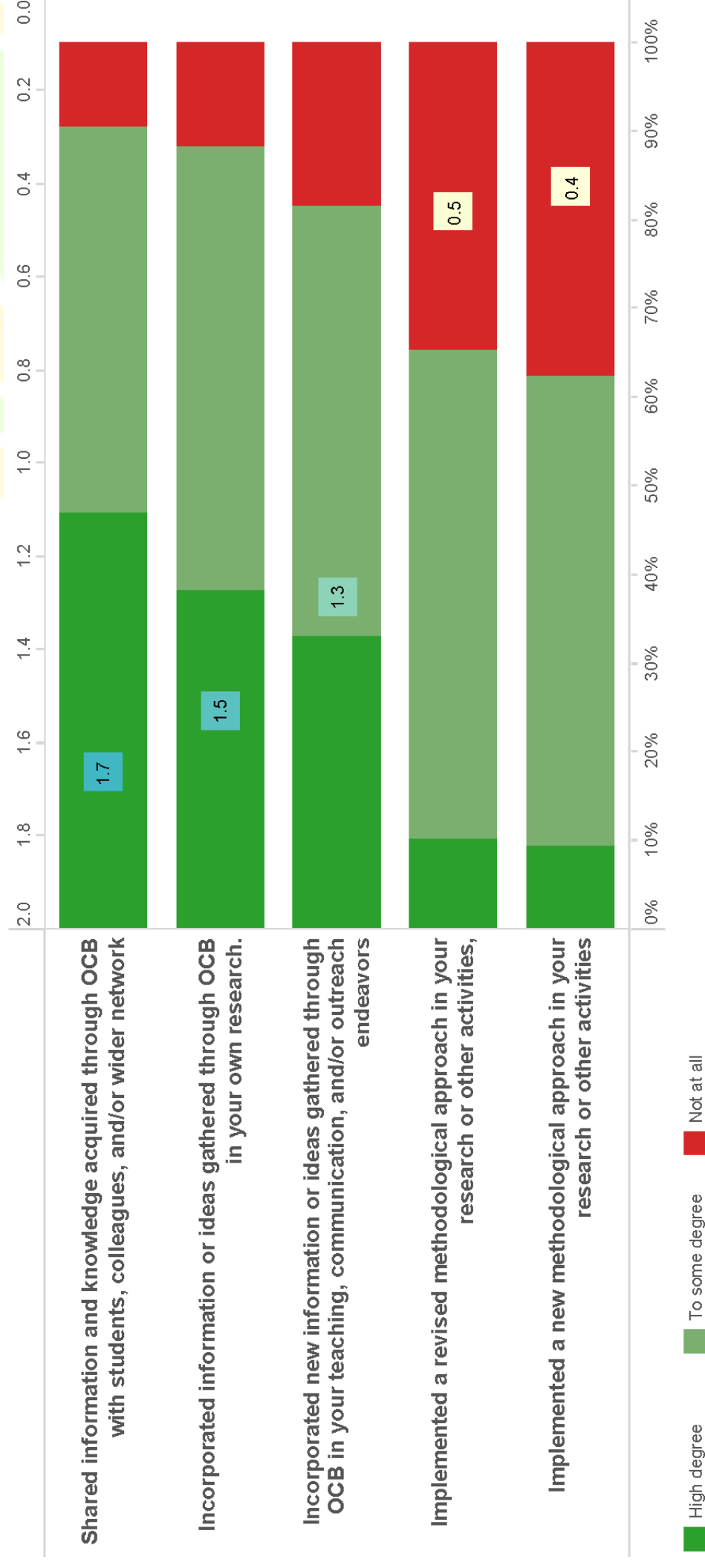
OCB Events & Activities

- Identifying and learning about topics and issues was the most common outcome of the participation.
- Early career groups (students, post-doc and early career faculty) responded more positively than other groups.
- Individuals affiliated with OCB longer than 5 years responded more positively than other groups.
- Dissemination of the information was the most common outcome of participation.
- Use of acquired information in research was the second highest outcome of participation.

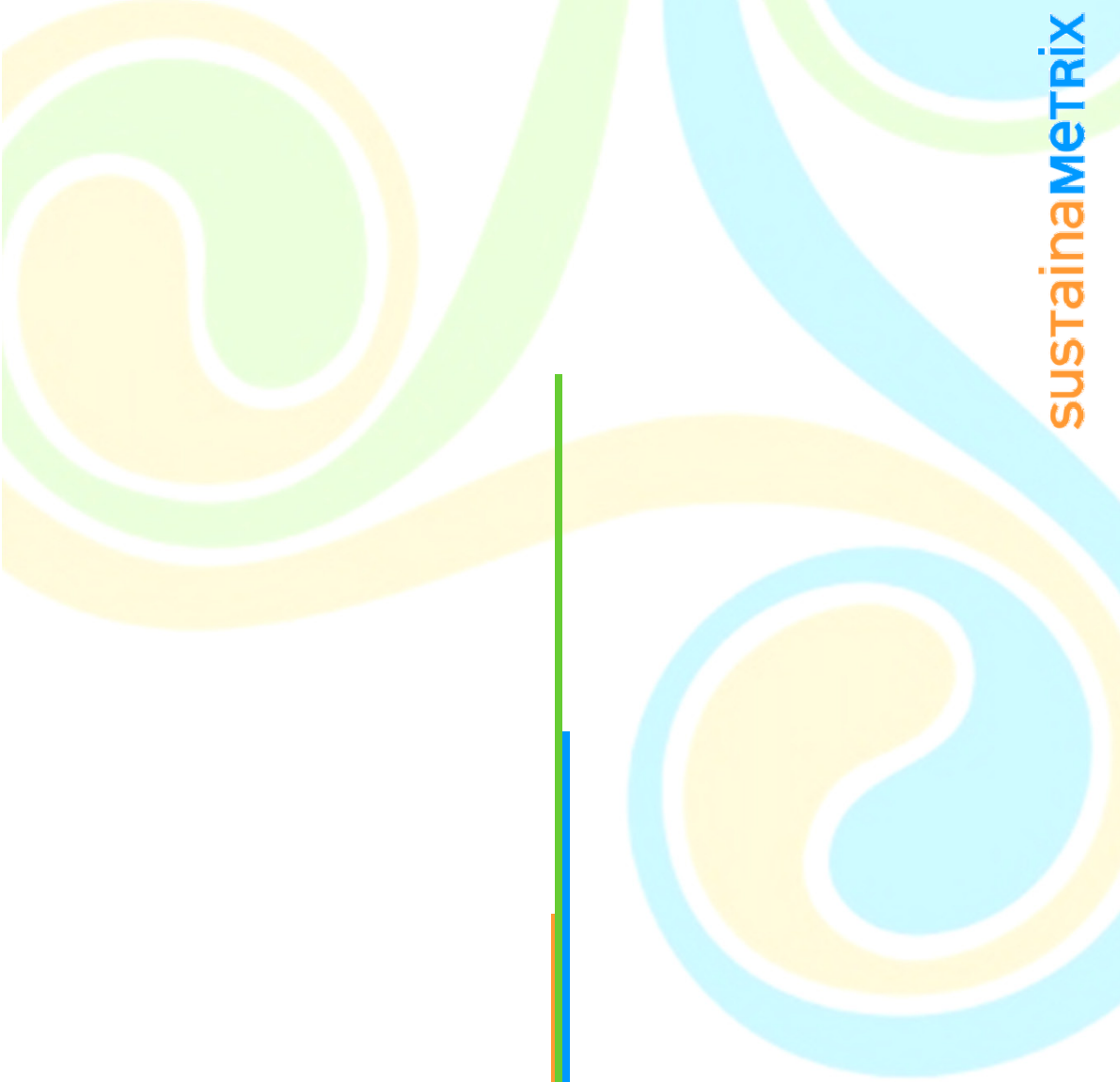
OCB Events & Activities (cont.)



OCB Events & Activities (cont.)



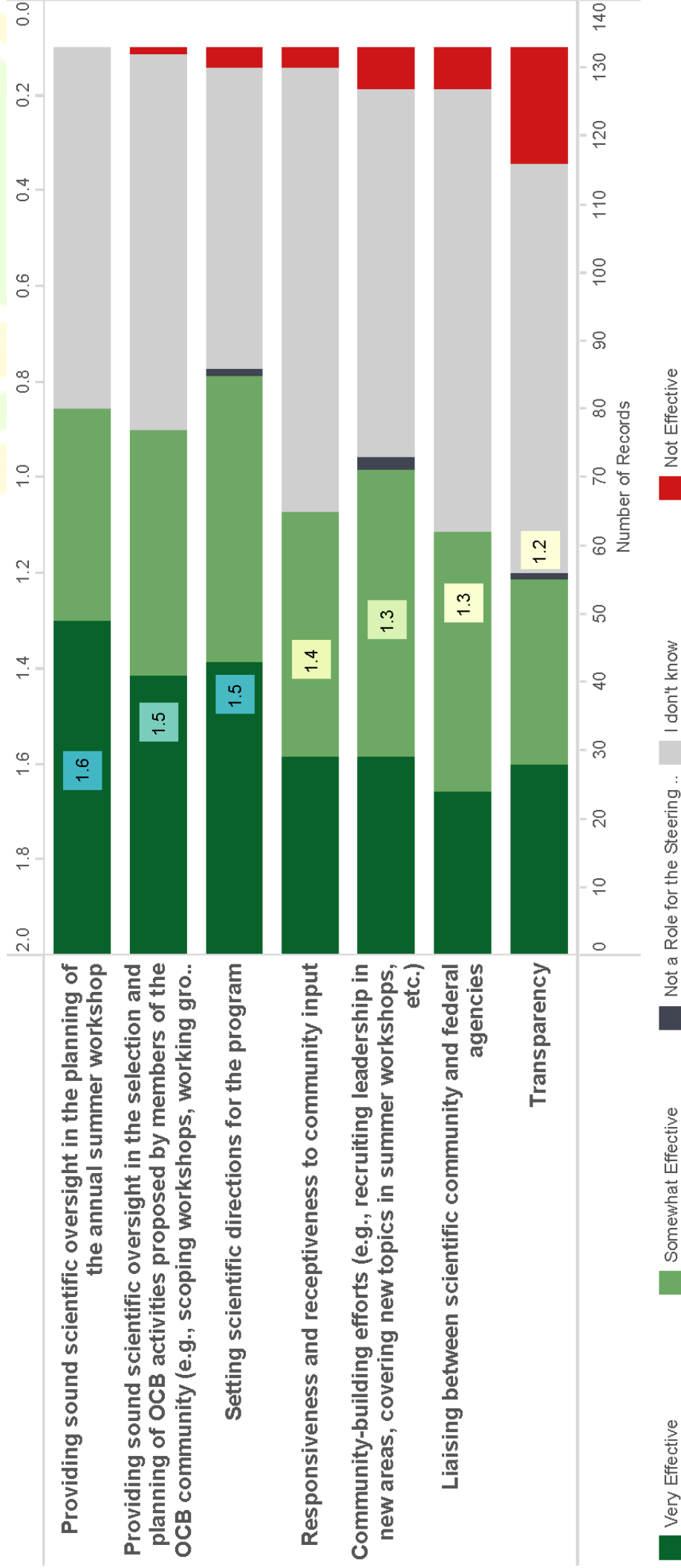
OCB Leadership



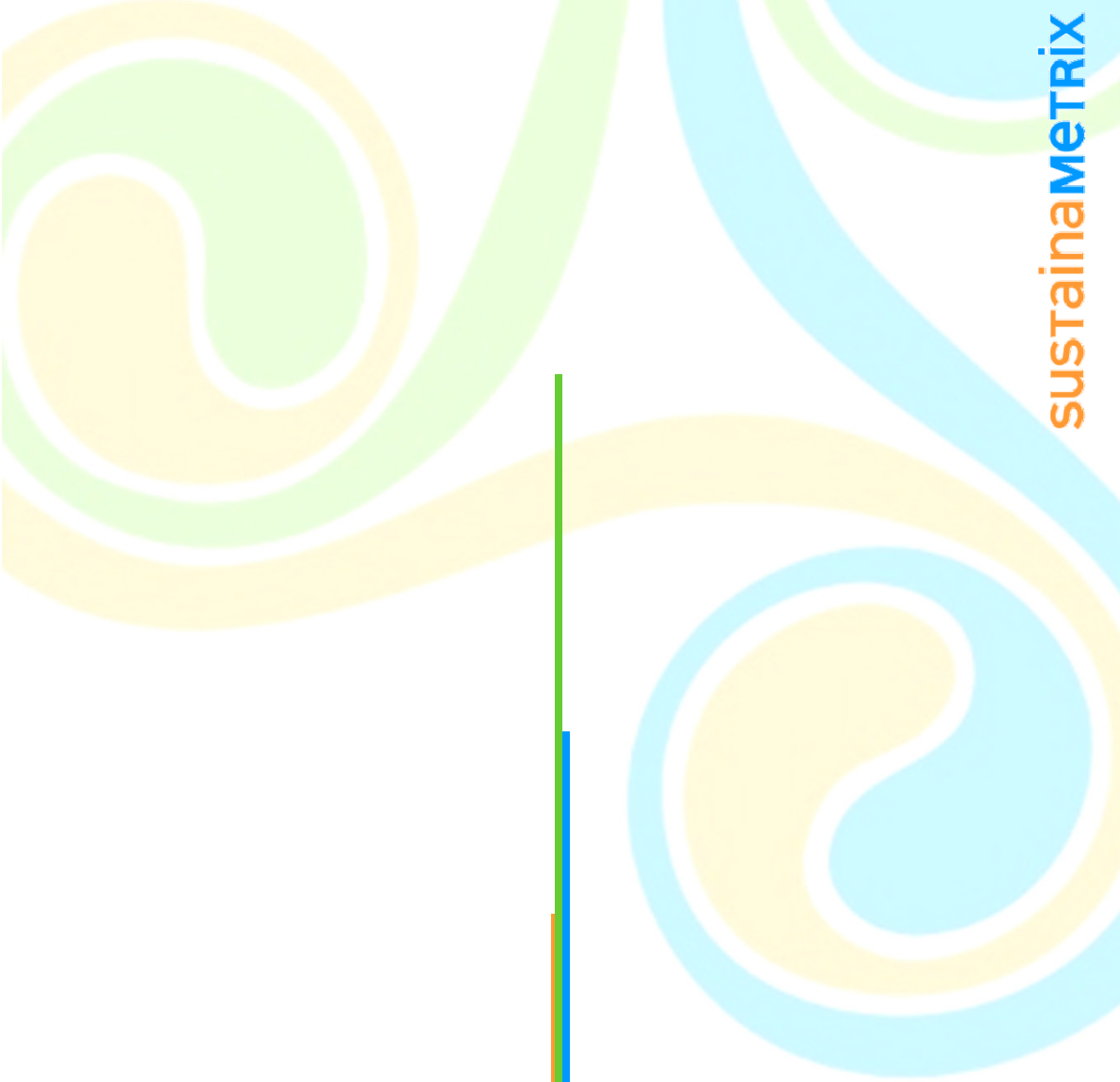
Leadership

- Most effective role of OCB's Scientific Steering Committee is to provide oversight for the OCB's community activities.
- Scientific Steering Committee is effective at providing scientific direction for the program, marginally less effective at communicating and liaising outside the OCB community.
- Transparency was rated the lowest. However, the overall response was still positive.

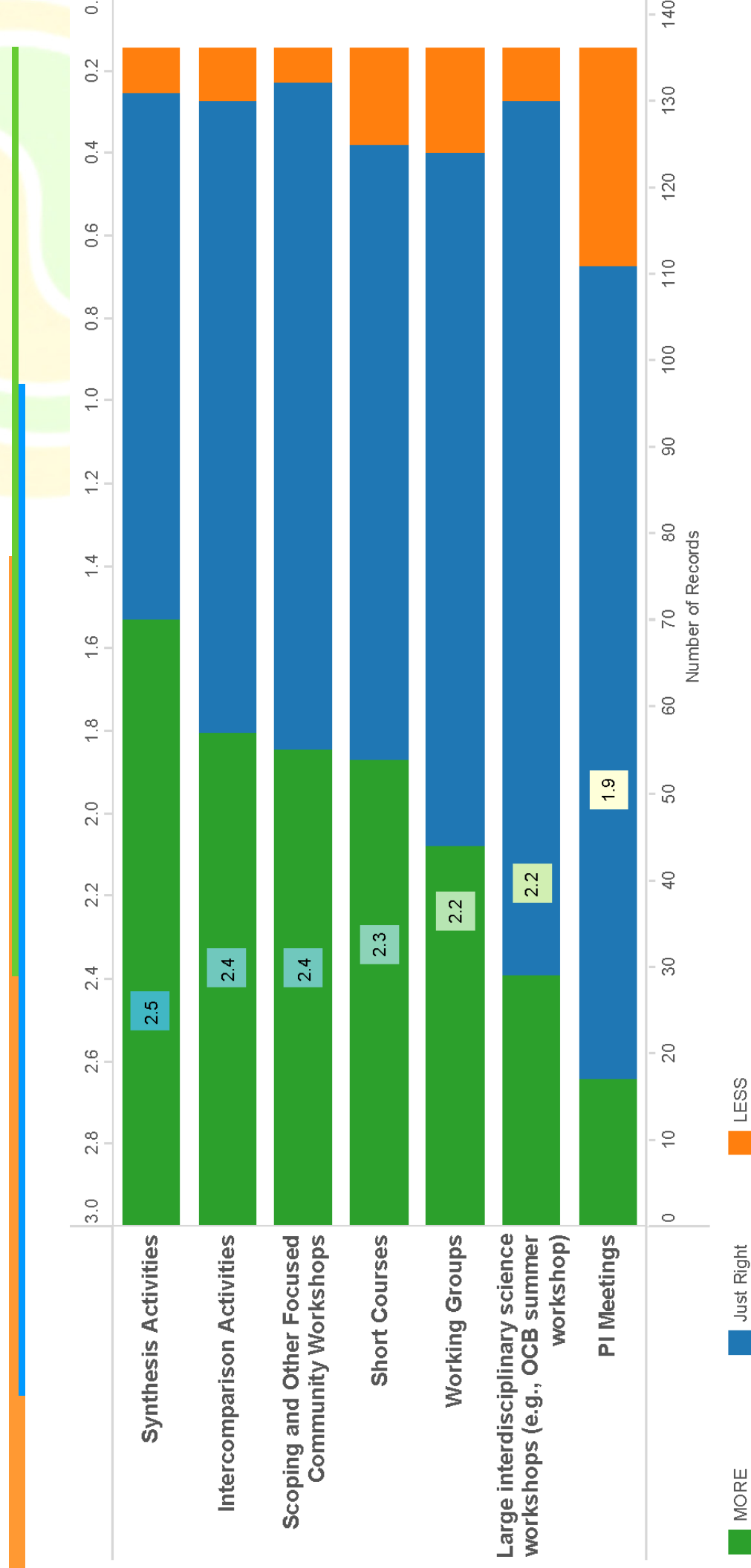
Leadership (cont.)



OCB Future Directions



Future Directions



OCB Research Priorities

The OCB's current research priorities include the following:

- Climate- and human-driven changes in ocean chemistry and associated impacts on biogeochemical cycles and marine ecosystems
- Ocean carbon uptake and storage
- Estuarine and coastal carbon fluxes and processes, including exchanges with open ocean, terrestrial, and atmospheric reservoirs
- Water column and seafloor ecological and biogeochemical processes and associated effects on carbon export and the biological pump
- Molecular-level responses of marine organisms (primarily lower trophic levels, including plankton, mollusks, etc.) to their changing environment
- Impacts of evolutionary changes on plankton community structure, function and biogeochemical cycling in the face of global change

➤ **Q.55 On what new or existing research priorities should OCB focus more energy in the future?**

44 Total Responses

New or Existing Research Priorities (Social Science)

- Bridging the gap between scientists and the public on the germane topics - periodic public forums such as those organized by the Smithsonian
- Communication with social, law, and economy scientists.
- Creating tangible links between the above topics and human health and well being
- Creating tangible links between the above topics and human health and well being
- Engaging with social sciences - including more about the human dimension, socio-economic issues
- Engaging with social sciences.
- Links between science and policy
- Mitigation of climate change effects and social sciences
- More social science and more communication outreach efforts.

New or Existing Research Priorities (Deeper OCB)

- Molecular-level responses of marine organisms to their changing environment. **OCB should not dilute its focus on interacting with social scientists.**
- More basic science and **less interaction with the softer sciences**
- The stability of the ocean biological carbon pump.
- Understanding the mesopelagic.
- Water column and seafloor ecological and biogeochemical processes and associated effects on carbon export and the biological pump. Molecular-level responses of marine organisms (primarily lower trophic levels, including plankton, mollusks, etc.) to their changing environment
- In my view there has been too great an emphasis on ocean acidification - while clearly an important topic, my sense is that there is still considerable uncertainty how this process will impact future ocean ecosystem/biogeochemical functioning. I would like to see greater attention on the biological pump and its regulation, and the interaction between ocean habitat variability and plankton community structure.

New or Existing Research Priorities (Just Right)

- I think these priorities are very appropriate—just right.
- I think it's too soon to start changing or beginning new research priorities; the list above is quite encompassing and enough to keep OCB busy for another 5+ years.
- The difficulty, I believe, is in achieving priorities and not spreading efforts too thin. I feel the real benefits lie in networking, research planning, and promulgation of research tools. Adding new “priorities” would be problematic unless old ones were dropped.
- Climate and human-driven changes and the ecological and evolutionary responses will dominate in the future
- Climate- and human-driven changes in ocean chemistry (e.g., acidification, expanding low-oxygen conditions, nutrient loading, etc.) and associated impacts on biogeochemical cycles and marine ecosystems Ocean carbon uptake and storage.

Strategy Analysis

(Henry Mintzberg *Tracking Strategies* 2007)

Intended
Strategy
(OCB plan)

Unrealized Strategy

Deliberate
Strategy

Emergent
Strategy

Realized
Strategy
(What OCB
Really Did)

OCB Intended Strategy

- OCB intended to build interdisciplinary communities to address important science questions. Ocean acidification (all disciplines), coastal synthesis (terrestrial, estuarine, ocean), and GEOMICS (seagoing microbial oceanographers and chemists) are all good examples where OCB brought disciplines together on a focused topic.

Intended strategy became realized strategy.

OCB Emergent Strategy

- OCB has modified and/or changed course when necessary, depending on community needs and priorities. For example, there were several scoping workshops early in OCB's history that generated an interesting response from participants.
- There was consensus among SSC members and OCB members near the beginning of Generation 2 that there needed to be more substantive follow-through on scoping workshops, something with a more lasting impact or legacy. OCB put a pause on scoping workshops and started supporting more specific community activities that would help advance priorities or recommendations that had come out of the scoping workshops.

Improvements vs. Developments

Improvements

Improvements are basic changes that simply make the program run better, achieve the desired outcomes in a better way but **does not change the fundamental model** of OCB

Developments

Developments describe a significant change to OCB that was put in place – such as how participants were engaging with OCB programs. This may be the result of adapting to a changed circumstance, the exploration of a concept, or an innovative idea that may lead to a **change in the model** of the OCB program delivery

Improvements

- Changes in meeting planning and structure to promote dialog and ensure more effective outcomes
- Changes in email format (availability of digest format)
- Changes in web content and development of web-based information on timely issues (ocean fertilization, Gulf oil spill, etc.) to help community
- Increased transparency – e.g., how SSC decisions are made about scoping workshops and other activities and insuring that the criteria are stated up front in OCB activity; published terms of reference explaining membership composition and turnover and charges for OCB scientific leadership bodies; explicit protocols for travel support

Improvements

- Increased polling of community after each OCB activity to gather detailed feedback
- Providing a stronger sense of ownership via communitywide solicitation of workshop/activity proposals and nominations for all OCB leadership positions; OCB also asks for community feedback each year (via email and annual summer workshop surveys) on summer workshop program content
- Increased support of students and early career scientists to participate in OCB and other relevant meetings, short courses, and professional development opportunities

Developments

- **Changes in format and balance of activities:** Early in Generation 2, multiple scoping workshops in Generations 1 and 2 were followed by a “scoping hiatus” (2012-2013). This led to many other focused activities during 2012 and 2013 that yielded useful products and outcomes for the community.
- **Shifts in scientific focus and spinoff of new programs:** Generations 1 and 2, ocean acidification was a prominent focus of OCB. More recently, it seems to have taken on a life of its own as other national and regional activities have spun up. OCB is in part responsible for this, having built the interdisciplinary community and provided the scientific leadership and momentum via numerous products and activities.

Developments

- **New Research Dimensions:** During Generations 2 and 3, OCB has seen an upsurge in activities focused on molecular and evolutionary biology (e.g., 2010 molecular biology of biogeochemistry scoping workshop and follow-on GEOMICS cruise and workshop, plenary session in 2013 summer workshop; May 2014 scoping workshop Improving predictive biogeochemical models through single cell-based analyses of marine plankton physiological plasticity, genetic diversity and evolutionary processes).

Developments

- **Stronger Voice At The Table:** Increased engagement with the US Carbon Cycle Science Program and their scientific steering group and interagency working group: In the past two years, OCB has had a much more prominent presence. At their meetings (2x/yr), OCB's SSC chair is presenting detailed updates on OCB's community building activities and has been bringing ocean scientists to the table to present in detail on scientific outcomes of OCB and partner activities, raising the visibility of oceans and their importance to climate and carbon cycling within the USCCSP.

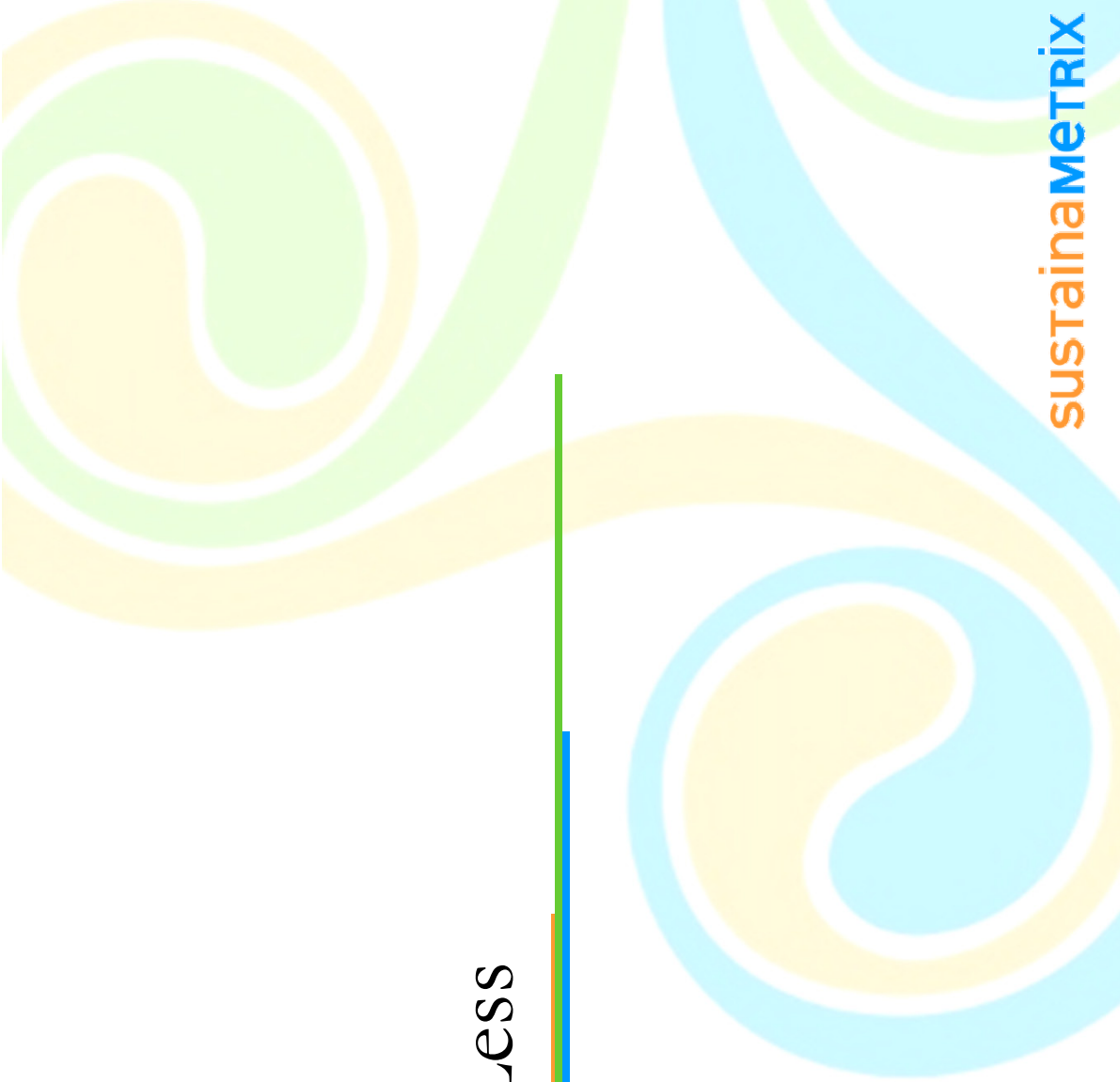
OCB Realized Strategy

- Program components cannot be rolled up into a singular picture of how OCB functions
- OCB builds its strengths by responding adaptively to the unique conditions of different research domains in which it works, as well as to the different regions and conditions in which it operates.
- The challenge is how to further develop the program – while responding to both top down and bottom up needs, to help spin offs take on a life of their own.

OCB Realized Strategy

- There has been significant learning over three generations of OCB about the relationships among intended, implemented, dropped, emergent and ultimately realized strategies.
- For a program to maintain a clear identity, build impact and at the same time respond to the shifting needs of its community, it is important to maintain a balance of consistency (annual summer workshops, travel support, scoping workshops) and flexibility (follow-on activities that arise from the solid/consistent OCB activities) and guide new programs to new homes – or build greater capacity internally.
- Needs a clear statement about what it does and does not do

OCB in 100 Words or Less



The Goal

Describe what OCB is and what it does – in 100 words or less.

And then do the same thing in one sentence.

What's the Point?

A statement “written for someone who isn't part of OCB, and who wants to know why they *should* be involved with OCB.”

(original)

"The Ocean Carbon & Biogeochemistry Program is a scientific coordinating body that facilitates research on the feedbacks among ocean chemistry, physics, and marine life, and how the ocean interacts with other parts of the earth system, such as the land, the atmosphere, the ice sheets, and humans."

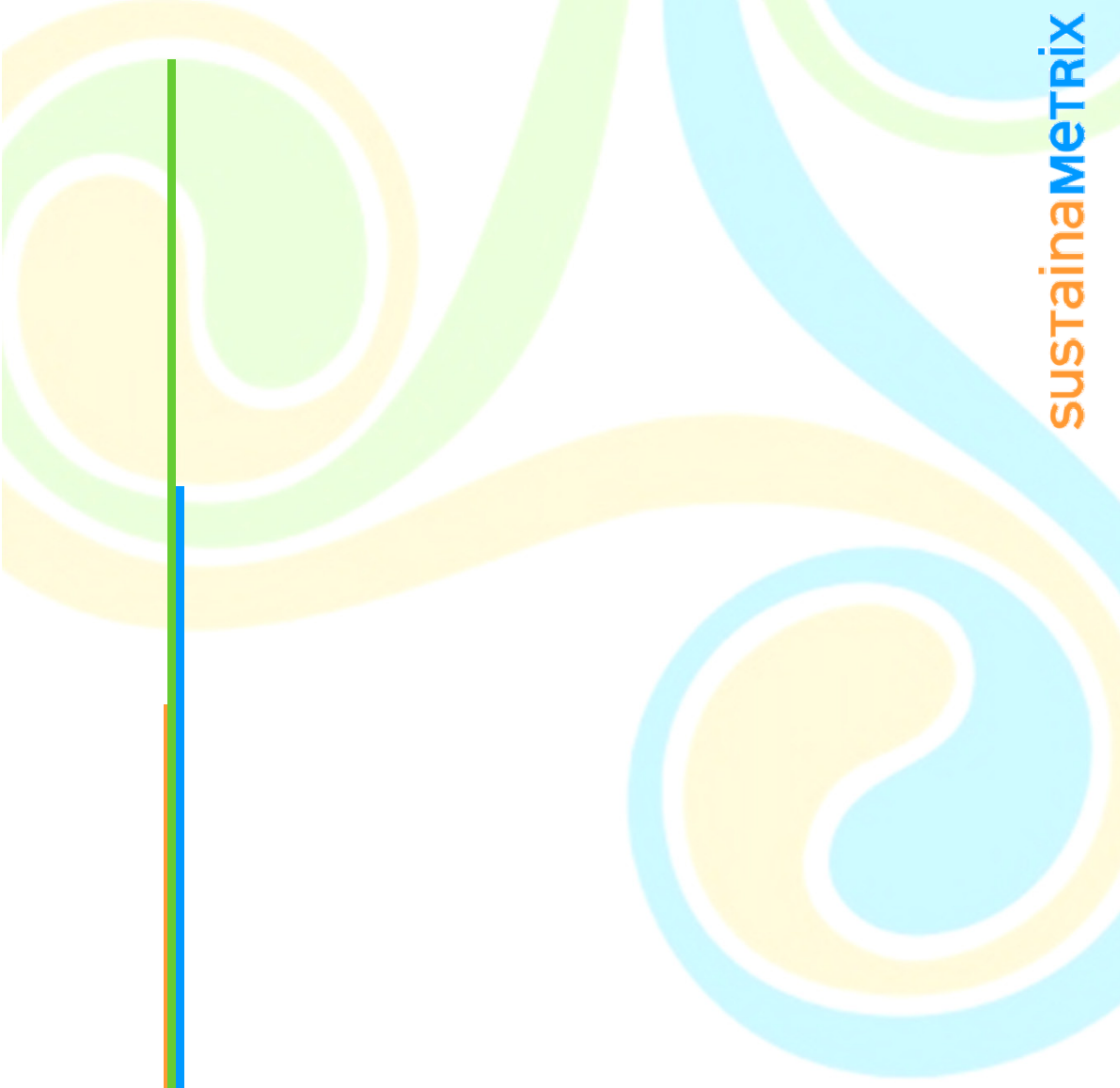
(another original)

“The OCB program focuses on the ocean’s role as a component of the global Earth system, bringing together research in geochemistry, ocean physics, and ecology that inform on and advance our understanding of ocean biogeochemistry.”

Questions We Asked

- How do you describe OCB at cocktail parties?
- What makes OCB different from any other group?
- If OCB didn't exist, what would be missing?
- What do you DO all day?

What We Heard...



What We Heard...

“OCB is a bridging institution.”

What We Heard...



“OCB has brought together chemists, microbiologists, ecologists... people who before didn't always have an integrated community.”

What We Heard...

Survey respondents ranked “scientific inspiration” as OCB’s most effective role.
“Community building” was close behind.

What We Heard...



“OCB brings together people across disciplines to address research challenges that single investigators, groups and disciplines *can't* address.”

What We Heard...

“This is a nimble group. We try not to be bureaucratic, even though the work can be incredibly process-intensive.”

What We Heard...

“We're trying to facilitate people to do big things.”

What We Heard...

“We herd a lot of cats.”

THE RESULTS

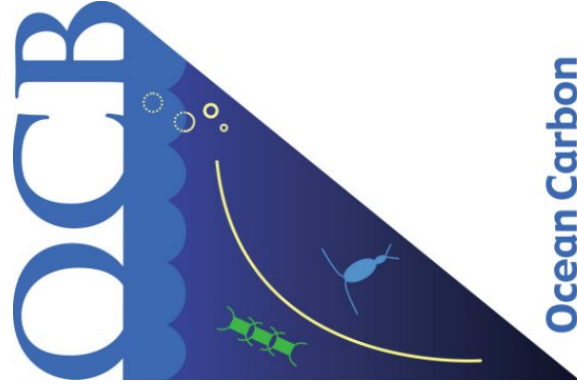
100 words or less

- OCB is a dynamic network of scientists who are working across disciplines to understand the ocean's role in the global climate and carbon cycle. This is a massive research challenge that involves specialists from fields like ocean chemistry, marine biology and physics. OCB's project office serves as a central information hub, hosts workshops on emerging research issues, and provides travel and logistical support. OCB is part of the interagency U.S. Carbon Cycle Science Program, and our work is guided by a steering committee of distinguished scientists from many related fields.

The Cocktail Party Elevator Pitch Version

- We bring scientists together to research, discuss and discover the ocean's role in the global carbon cycle and its effect on our future.

Ocean Carbon and Biogeochemistry (OCB) Program

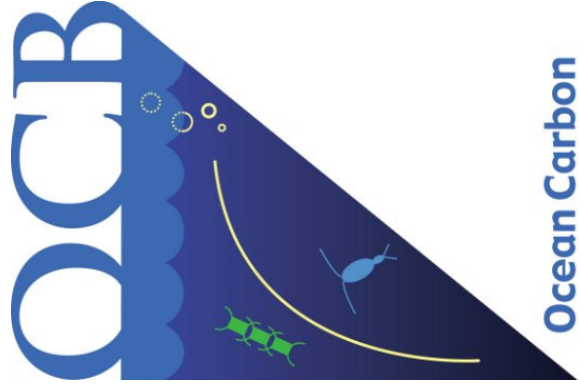


Ocean Carbon
& Biogeochemistry

The Future of OCB?

SUSTAINAMETRIX

Ocean Carbon and Biogeochemistry (OCB) Program



Ocean Carbon
& Biogeochemistry

THANK YOU!

SUSTAINAMETRIX