Earth Observing System Data and Information System

2014 Customer Satisfaction Results

November 2014

FCG

Today's Discussion

- **Background**
  - **Objectives**
  - **Data Collection**
  - **Respondent Information**
- **Overview of Key Results**
- **Detailed Analysis**
- **Summary**

Background

Project Background - Objectives

WHAT

- Measure customer satisfaction with NASA Earth Observing System Data and Information System at a national level for each Data Center
- Identify the key areas that NASA can leverage across the Data Centers to continuously improve its service to its customers
- Assess the trends in satisfaction with NASA EOSDIS specifically in the following areas:
  - Product Search
  - Product Selection and Order
  - Delivery
  - Product Ease of Use*
  - Product Documentation
  - Customer Support

HOW

- Data collection via the web
  - Targeted email invitations to EOSDIS users sent by CFI Group
  - Survey announcements and reminder announcements sent from DAAC User Services team

* NASA Note: In previous years this was called “Product Quality”

Project Background – Data Collection

MEASUREMENT TIMETABLE

- Finalized questionnaire: August 2014
- Data collection: September 2, 2014 – October 3, 2014
- Topline Results: November 14, 2014
- Results Briefing: December 1, 2014

SAMPLE SIZES

Data Center	Original Sample List	Emails Received	Invitations Received Through Jango	Total Invitations Received	Completed Surveys	Completion Percentage of Received Invitations
ASDC-LaRC	2,364	2,123	168	2,291	277	12.1%
ASF SAR DAAC	2,884	2,627	106	2,733	161	5.9%
CDDIS	4,916	2,051	224	2,275	163	7.2%
GES DISC	2,487	2,164	166	2,330	316	13.6%
GHRC	1,081	884	88	972	100	10.3%
LP DAAC	33,081	31,866	245	32,111	1,767	5.5%
MODAPS LAADS	16,203	13,617	366	13,983	434	3.1%
NSIDC DAAC	10,314	8,145	379	8,524	327	3.8%
OBPG/Ocean Color	5,340	4,256	100	4,356	224	5.1%
ORNL DAAC/FLUXNET	9,478	8,758	79	8,837	206	2.3%
PO DAAC-JPL	2,607	2,205	109	2,314	129	5.6%
SEDAC	5,083	4,825	93	4,918	117	2.4%
Total	**95,838**	**83,521**	**2,123**	**85,644**	**4,221**	**4.9%**

LP DAAC is data center most used

Respondent Information

	2010	2011	2012	2013	2014
Data center evaluated					
ASDC-LaRC	5%	5%	4%	5%	6%
ASF SAR DAAC	3%	4%	5%	6%	4%
CDDIS	6%	2%	4%	4%	4%
GES DISC	3%	2%	3%	5%	7%
GHRC	2%	2%	2%	2%	2%
LP DAAC	41%	46%	46%	47%	42%
MODAPS LAADS	17%	12%	11%	9%	10%
NSIDC DAAC	9%	10%	11%	9%	8%
OBPG/Ocean Color	6%	5%	4%	3%	5%
ORNL DAAC/FLUXNET	4%	6%	5%	4%	5%
PO DAAC-JPL	3%	2%	3%	3%	3%
SEDAC	3%	3%	3%	3%	3%
Number of Respondents	**4,390**	**3,996**	**4,315**	**4,146**	**4,147**

Type of User~					
General Public	--	--	--	--	10%
Grade School Teachers	--	--	--	--	1%
University Professor or Student	--	--	--	--	53%
Other Education and Outreach	--	--	--	--	5%
Data Scientist	--	--	--	--	17%
Earth Science Researcher	--	--	--	--	39%
Earth Science Modelers	--	--	--	--	12%
Data Tool Developer	--	--	--	--	7%
Decision Support Systems Analyst	--	--	--	--	6%
Other	--	--	--	--	8%
Number of Respondents					**4,147**

-- Percents dashed due to questionnaire changes
~ Multiple responses allowed

LP DAAC continues to account for the most responses (42%). No other data center accounted for more than 10%.

Slightly more than half (53%) of all users were university professors or students

Land remains most popular area of need; Specialized search most used

Respondent Information

	2010	2011	2012	2013	2014
General areas need or use Earth science data and services~					
Atmosphere	36%	35%	34%	28%	34%
Biosphere	18%	20%	18%	19%	20%
Cryosphere	10%	12%	12%	10%	9%
Land	61%	65%	62%	68%	64%
Human dimensions	10%	11%	11%	15%	14%
Near-real-time applications	14%	14%	15%	14%	17%
Ocean	22%	21%	21%	17%	20%
Space geodesy	9%	7%	9%	9%	9%
Calibrated radiance	12%	12%	11%	10%	10%
Other general area	7%	8%	10%	11%	9%
Number of Respondents	**4,387**	**3,996**	**4,315**	**4,146**	**4,147**

Searched-Requested-Ordered-Visualized-Download from DAAC					
Have used DAAC	94%	93%	91%	92%	90%
Have not used	6%	7%	9%	8%	10%
Number of Respondents	**4,390**	**3,996**	**4,315**	**4,146**	**4,147**

Method of searching for data products or services					
Specialized-search portals or online holdings	52%	60%	61%	41%	41%
Direct interaction with user services personnel	4%	3%	3%	3%	3%
Global Change Master Directory	1%	1%	1%	2%	2%
Internet search tool	17%	15%	18%	28%	30%
Land Atmosphere Near Real -Time Capability for EOS	--	--	2%	3%	4%
Reverb	18%	14%	8%	14%	12%
Did not search	4%	4%	4%	4%	4%
Other	3%	3%	3%	5%	5%
Number of Respondents	**4,114**	**3,699**	**3,907**	**3,765**	**3,750**

-- Percents dashed due to questionnaire changes
~ Multiple responses allowed

Land (64%) and Atmosphere (34%) remain the most popular general area of use.

Almost all of respondents (94%) report using DAAC with Specialized-Search Portals being the most popular (41%).

Earth Explorer used by nearly half of respondents

Respondent Information

	2010	2011	2012	2013	2014
Specialized-search portals or online holdings~					
Earth Explorer	--	--	--	48%	48%
GDEx	--	--	--	2%	2%
Giovanni	--	--	--	9%	16%
GloVis	--	--	--	35%	31%
HITIDE	--	--	--	1%	1%
HyDRO	--	--	--	3%	4%
IceBridge Data Portal	--	--	--	2%	2%
LAADS	--	--	--	13%	17%
Live Access Server (LAS)	--	--	--	2%	2%
LP DAAC Data Pool	--	--	--	30%	29%
Mercury (Advanced Product Search)	--	--	--	1%	1%
Mirador	--	--	--	5%	9%
MISR Order Tool	--	--	--	3%	3%
MIST	--	--	--	3%	2%
MODIS Land Products Subsets	--	--	--	37%	30%
NOESIS	--	--	--	1%	1%
NSIDC Data Pool	--	--	--	11%	10%
PO.DAAC Dataset Discovery	--	--	--	3%	5%
Spatial Data Access Tool (SDAT)	--	--	--	4%	4%
URSA	--	--	--	5%	2%
Vertex	--	--	--	3%	2%
WebGIS	--	--	--	7%	7%
Arctic MEaSUREs	--	--	--	0%	2%
ASF MapServer	--	--	--	0%	3%
MRT Web	--	--	--	0%	5%
Ocean Color Web Portal	--	--	--	0%	11%
OPeNDAP	--	--	--	0%	7%
Terrestrial Ecology	--	--	--	0%	2%
THREDDS	--	--	--	0%	3%
Wetlands MEaSUREs	--	--	--	0%	2%
Other	--	--	--	5%	4%
Number of Respondents				**1,537**	**1,511**

-- Percents dashed due to questionnaire changes
~ Multiple responses allowed

Earth Explorer remains the most popular Specialized-Search Portal with use by 48% of respondents.

GloVis and MODIS Land Products Subsets are used by at least 30% of respondents.

Just over three-fourths got data products with Web Download being most popular

Respondent Information

	2010	2011	2012	2013	2014
Got data products in the last year					
Got data products	--	--	81%	76%	79%
Did not get data products	--	--	19%	24%	21%
Number of Respondents			**3,938**	**3,812**	**3,750**
Downloaded or received data					
Have downloaded data	--	--	--	97%	96%
Have not downloaded data	--	--	--	3%	4%
Number of Respondents				**2,898**	**2,959**
Data delivery method~					
Web download	--	--	56%	--	63%
Web bulk download	--	--	16%	--	34%
FTP immediate retrieval from online holdings	--	--	35%	--	35%
FTP retrieved after order	--	--	42%	--	30%
FTP via subscription	--	--	8%	--	8%
Web-based visualization tool	--	--	8%	--	17%
OPeNDAP	--	--	2%	--	4%
OGC Web services	--	--	3%	--	5%
Other	--	--	1%	--	2%
Number of Respondents			**3,014**		**2,837**

-- Percents dashed due to questionnaire changes
~ Multiple responses allowed

Just over three-fourths of respondents received data products in the last year.

Nearly all (96%) of them downloaded or received data with Web Download being the most popular (63%).

GeoTIFF is most preferred format; Most do not reformat data

Respondent Information

	2010	2011	2012	2013	2014
Preferred data format~					
ASCII	--	--	--	34%	34%
Binary	--	--	--	12%	14%
CEOS format (SIR-C/SAR data)	--	--	--	5%	3%
GeoTIFF	--	--	--	68%	65%
HDF4	--	--	--	16%	19%
HDF-EOS profile of HDF4	--	--	--	11%	12%
HDF5	--	--	--	18%	22%
HDF-EOS profile of HDF5	--	--	--	10%	10%
JPEG, GIF, PNG, TIFF	--	--	--	26%	28%
KMZ/KML	--	--	--	20%	19%
NetCDF classic	--	--	--	12%	14%
NetCDF4	--	--	--	12%	17%
Other GIS (GRID, BIL, e00, etc.)	--	--	--	16%	14%
SHP	--	--	--	38%	33%
Other	--	--	--	4%	3%
Number of Respondents				**2,798**	**2,837**

Data reformatted before delivery					
Reformatted before delivery	--	--	--	--	28%
Not reformatted before delivery	--	--	--	--	72%
Number of Respondents					**2,837**

Operating system use for data analysis~					
Windows	79%	78%	78%	83%	82%
Mac OS	11%	12%	13%	13%	13%
Linux	33%	33%	34%	30%	32%
UNIX	9%	8%	7%	6%	6%
Other	1%	1%	0%	0%	1%
Number of Respondents	**4,038**	**3,673**	**3,177**	**2,798**	**2,837**

-- Percents dashed due to questionnaire changes
~ Multiple responses allowed

GeoTIFF continues to be the preferred format (65%) for downloaded data.

Most (72%) do not reformat data before presenting.

Windows remains the most popular operating system (82%) with Linux second (32%)

Most used software tools to analyze data with ArcGIS most popular

Respondent Information

	2010	2011	2012	2013	2014
Used a software tool to work with the data					
Yes, used software tools	85%	87%	77%	82%	76%
Yes, made my own using programming language	--	--	17%	12%	19%
No, I couldn´t find what I needed	2%	2%	0%	1%	1%
No, I couldn´t understand how to use it	2%	2%	1%	1%	1%
No, I did not need software tools	12%	10%	4%	4%	3%
Number of Respondents	**4,040**	**3,673**	**3,177**	**2,798**	**2,837**

Tools use to work with data~					
ArcGIS	50%	52%	59%	65%	67%
ENVI	43%	41%	44%	43%	45%
ERDAS/IMAGINE	29%	27%	28%	31%	29%
Excel	--	--	24%	30%	31%
Ferret	--	--	1%	1%	1%
Geomatica	5%	4%	4%	5%	4%
Global Mapper	8%	10%	12%	15%	14%
GrADS	6%	4%	4%	3%	4%
GRASS	--	--	9%	12%	12%
HDFView	16%	15%	12%	12%	11%
HEG	3%	3%	3%	2%	3%
IDL	24%	21%	18%	16%	16%
IDV	--	--	1%	1%	1%
IDRISI	7%	8%	7%	11%	9%
MATLAB	25%	24%	24%	21%	23%
MODIS Reprojection Tool	19%	18%	17%	15%	15%
NCL	2%	2%	2%	2%	3%
Panoply	--	--	3%	3%	4%
Quantum GIS	--	--	15%	23%	25%
R	--	--	--	16%	17%
SeaDAS	7%	6%	6%	4%	6%
Other/OpenSource	20%	22%	17%	16%	15%
Convert to Vector	--	--	--	--	3%
HDFLook	--	--	--	--	3%
MapReady	--	--	--	--	1%
Number of Respondents	**3,432**	**3,179**	**2,454**	**2,301**	**2,153**

-- Percents dashed due to questionnaire changes

~ Multiple responses allowed

76% use software tools to work with the data, while 19% made their own custom tool.

ArcGIS remains the most used tool to work with data with 67% of mentions.

Note: Due to an accidental programming error in the survey questionnaire in 2014, the wrong user group was asked which programming language they preferred. We asked the tool users rather than the users who would likely program for themselves. The downside is we did not get some potentially useful information about the users. However the distribution of responses by % in 2014 is comparable to 2013, suggesting similar results. *

* NASA Note: the results in question appear on slide 12

A variety of programming languages used and Interest in APIs grow

Respondent Information

* NASA Note:

	2010	2011	2012	2013	2014
Preferred programming language					
C	--	--	9%	8%	7%
C++	--	--	10%	12%	11%
C#	--	--	1%	2%	3%
Fortran 77	--	--	6%	4%	2%
Fortran 90	--	--	17%	14%	7%
Java	--	--	3%	6%	10%
Perl	--	--	4%	4%	1%
PHP	--	--	1%	0%	1%
Python	--	--	11%	13%	35%
Others	--	--	37%	37%	23%
Number of Respondents			**550**	**496**	**2,157**

Currently using a DAAC API					
Using DAAC API	--	--	--	--	11%
Not using DAAC API	--	--	--	--	89%
Number of Respondents					**2,837**

Interest in Application Programming Interfaces					
Interested in APIs	--	--	--	49%	57%
Not interested	--	--	--	51%	43%
Number of Respondents				**2,798**	**2,535**

-- Percents dashed due to questionnaire changes
~ Multiple responses allowed

A wide variety of languages were used by those who made their own tools with Python accounting for 35%

11% report using a DAAC API, while general interest in APIs grew to 57%.

* NASA Note: the 2014 data in the frame above are the results from questioning the wrong user group (i.e., the tool users) and does not compare to the previous years respondents (the users who program for themselves). See explanation on slide 11.

OGC most popular web service with Commercial Software Application remaining preferred method

Respondent Information

	2010	2011	2012	2013	2014
Web service interested in~					
OGC	--	--	--	69%	55%
OPeNDAP	--	--	--	18%	12%
REST based web calls	--	--	--	22%	11%
SOAP based web calls	--	--	--	16%	5%
Remote Procedure Call	--	--	--	16%	9%
Other	--	--	--	5%	8%
Number of Respondents				**1,361**	**1,741**

Preferred method for web services					
Scripts	--	--	--	20%	19%
Own Client	--	--	--	6%	6%
Command Line	--	--	--	4%	5%
Commercial Software Application	--	--	--	43%	42%
Access from a Programming Language	--	--	--	24%	25%
Other	--	--	--	2%	3%
Number of Respondents				**1,361**	**1,741**

OGC is the Web service with the most interest (55%).

The most preferred method for web services among those interested in APIs is a Commercial Software Application (42%).

-- Percents dashed due to questionnaire changes
~ Multiple responses allowed

Three-fourths sought documentation; data formats most sought

Respondent Information

	2010	2011	2012	2013	2014
Looked for or got documentation					
Looked	72%	74%	69%	75%	75%
Did not look	28%	26%	31%	25%	25%
Number of Respondents	**4,390**	**3,996**	**4,315**	**4,146**	**4,147**

Documentation looked for~					
Data analysis tools	--	--	48%	63%	41%
Instrument specifications	67%	68%	51%	41%	35%
Science algorithm	75%	73%	56%	44%	45%
Search tools	--	--	15%	18%	23%
Visualization tools	--	--	31%	35%	26%
Data formats	--	--	--	--	77%
Data provenance	--	--	--	--	24%
Dataset metadata	--	--	--	--	66%
Examples of how data has been used	--	--	--	--	40%
Quality assurance or error sources	--	--	--	--	43%
Other documentation	2%	3%	2%	2%	2%
Number of Respondents	**2,078**	**1,836**	**2,373**	**2,418**	**3,093**

How accessed documentation~					
Data Center Website	--	--	--	71%	76%
Readme file	--	--	--	43%	40%
Search and Order Interface	--	--	--	14%	13%
Search Engine	--	--	--	43%	41%
Not found	--	--	--	2%	2%
FAQ	--	--	--	--	33%
Instructional Tutorials	--	--	--	--	30%
Production code	--	--	--	--	7%
Number of Respondents				**2,943**	**3,093**

-- Percents dashed due to questionnaire changes
~ Multiple responses allowed

Three-fourths of all respondents looked for documentation.

Data Formats (77%) is the most popular documentation.

The Data Center Website (76%) is the most common method of accessing documentation although both Readme files (40%) and Search Engine (41%) are also popular.

E-mail most popular format for requesting assistance

Respondent Information

	2010	2011	2012	2013	2014
Requested assistance from user services office during the past year					
Requested assistance	25%	24%	20%	17%	16%
Have not requested assistance	75%	76%	80%	83%	84%
Number of Respondents	**4,390**	**3,996**	**4,315**	**4,146**	**4,147**

Method of requesting assistance~					
By phone	--	--	--	--	12%
By email	--	--	--	--	79%
Website feedback or contact form	--	--	--	--	27%
In person at an event or conference	--	--	--	--	20%
Number of Respondents					**669**

Most respondents (84%) did not request assistance but when they did, they preferred email (79%).

-- Percents dashed due to questionnaire changes
~ Multiple responses allowed

Technical questions are most common assistance requests

Respondent Information

	2010	2011	2012	2013	2014
Reason for contact					
Couldn´t find what I was looking for	--	--	--	--	11%
Data quality	--	--	--	--	12%
Did not receive expected data	--	--	--	--	3%
Documentation needed	--	--	--	--	4%
Error messages	--	--	--	--	4%
How to access data	--	--	--	--	14%
Incomplete information	--	--	--	--	2%
Science questions	--	--	--	--	14%
Service interruptions	--	--	--	--	3%
Technical questions	--	--	--	--	22%
Updates	--	--	--	--	5%
Other	--	--	--	--	7%
Number of Respondents					**669**

Currently located - USA vs All Others					
USA	27%	29%	25%	24%	25%
All Others	73%	71%	75%	76%	75%
Number of Respondents	**4,390**	**3,996**	**4,315**	**4,146**	**4,147**

When requesting assistance, the majority of requests are Technical Questions (22%), Science Questions (14%) and How to Access Data (14%).

75% of all respondents are from outside the United States.

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-- Percents dashed due to questionnaire changes
~ Multiple responses allowed

Top 20 Country Breakout

Respondent Information

	2013		2014	
Country	Currently Located Count	Currently Located Percentage	Currently Located Count	Currently Located Percentage
UNITED STATES	994	23.97%	1035	24.96%
CHINA	348	8.39%	394	9.50%
INDIA	188	4.53%	239	5.76%
BRAZIL	172	4.15%	153	3.69%
GERMANY	163	3.93%	134	3.23%
ITALY	130	3.14%	125	3.01%
UNITED KINGDOM	120	2.89%	119	2.87%
ARGENTINA	133	3.21%	118	2.85%
CANADA	132	3.18%	118	2.85%
AUSTRALIA	97	2.34%	99	2.39%
SPAIN	99	2.39%	90	2.17%
IRAN, ISLAMIC REPUBLIC OF	67	1.62%	88	2.12%
FRANCE	96	2.32%	77	1.86%
MEXICO	104	2.51%	76	1.83%
JAPAN	87	2.10%	75	1.81%
INDONESIA	61	1.47%	69	1.66%
RUSSIAN FEDERATION	74	1.78%	62	1.50%
COLOMBIA	62	1.50%	59	1.42%
SOUTH AFRICA	44	1.06%	44	1.06%
CHILE	49	1.18%	42	1.01%

Responses came from 150 different countries

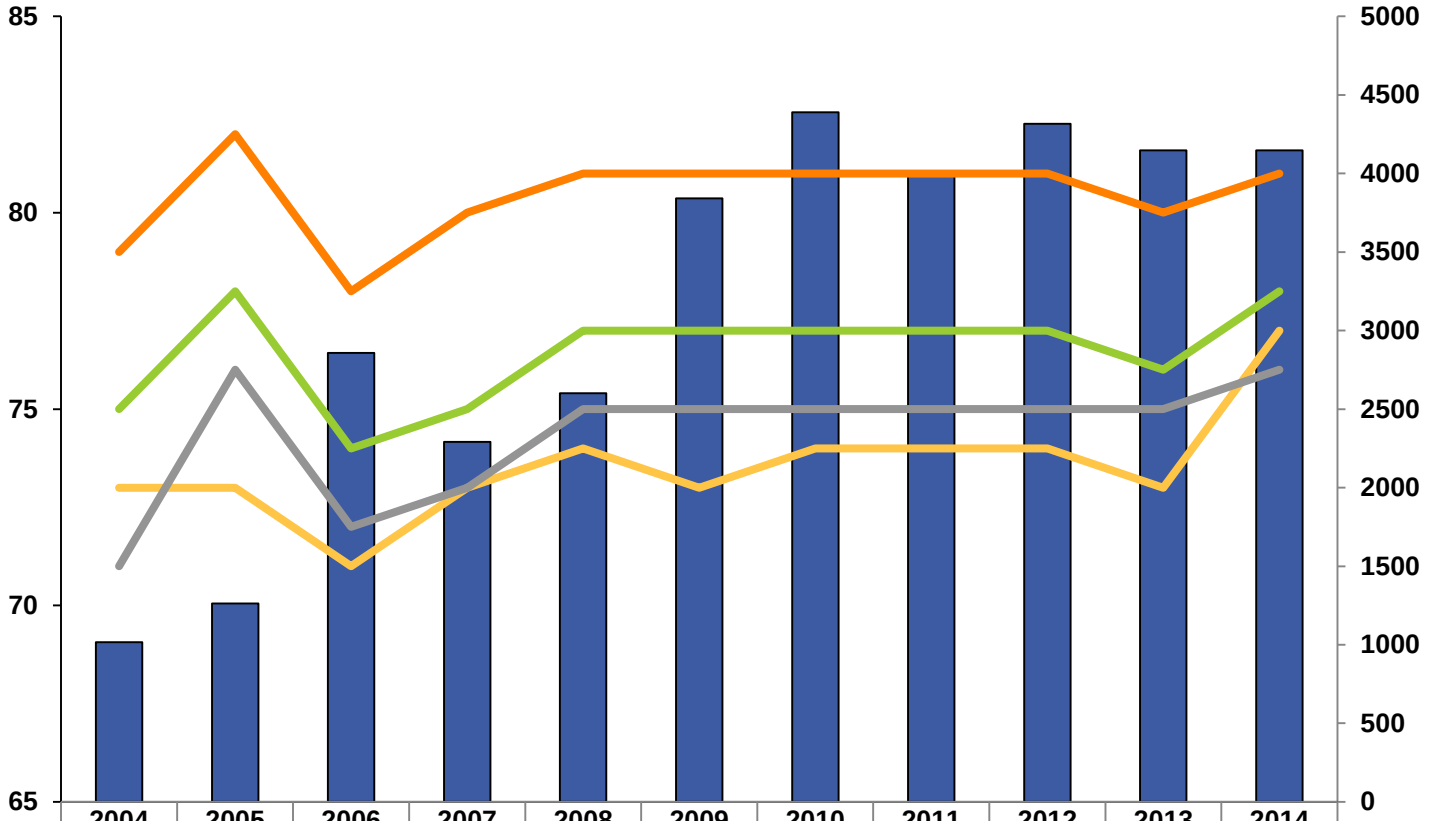
The top 20 countries account for just over 77% of all responses.

-- Percents dashed due to questionnaire changes
~ Multiple responses allowed

Overview Key Results

Satisfaction rises two points in 2014

NASA EOSDIS Customer Satisfaction Trend



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Sample Size	1016	1263	2857	2291	2601	3842	4390	3996	4315	4146	4147
Customer Satisfaction Index	75	78	74	75	77	77	77	77	77	76	78
Overall satisfaction	79	82	78	80	81	81	81	81	81	80	81
Expectations	73	73	71	73	74	73	74	74	74	73	77
Ideal	71	76	72	73	75	75	75	75	75	75	76
Margin of Error (+/-)	0.9	0.7	0.5	0.6	0.5	0.4	0.4	0.4	0.4	0.4	0.4

Information providers CSI range from mid 70s to mid 80s

Benchmarking

NASA EOSDIS rates above the federal government average (66).

The CSI (78) for NASA is within the range of scores for government agencies that are data providers (74 to 84).

2014 NASA EOSDIS– Customer Satisfaction Model (n=4147)

SATISFACTION DRIVERS

89	1.3	Customer Support
82	1.2	Product Selection and Order
81	0.9	Product Search
78	0.9	Product Documentation
82	0.7	Product Ease of Use
85	0.6	Delivery

Customer Satisfaction Index 78

Overall Satisfaction 81
Compared to Expectations 77
Compared to Ideal 76

FUTURE BEHAVIORS

Likelihood to Recommend	4.0	88
Use Services in Future	3.3	89

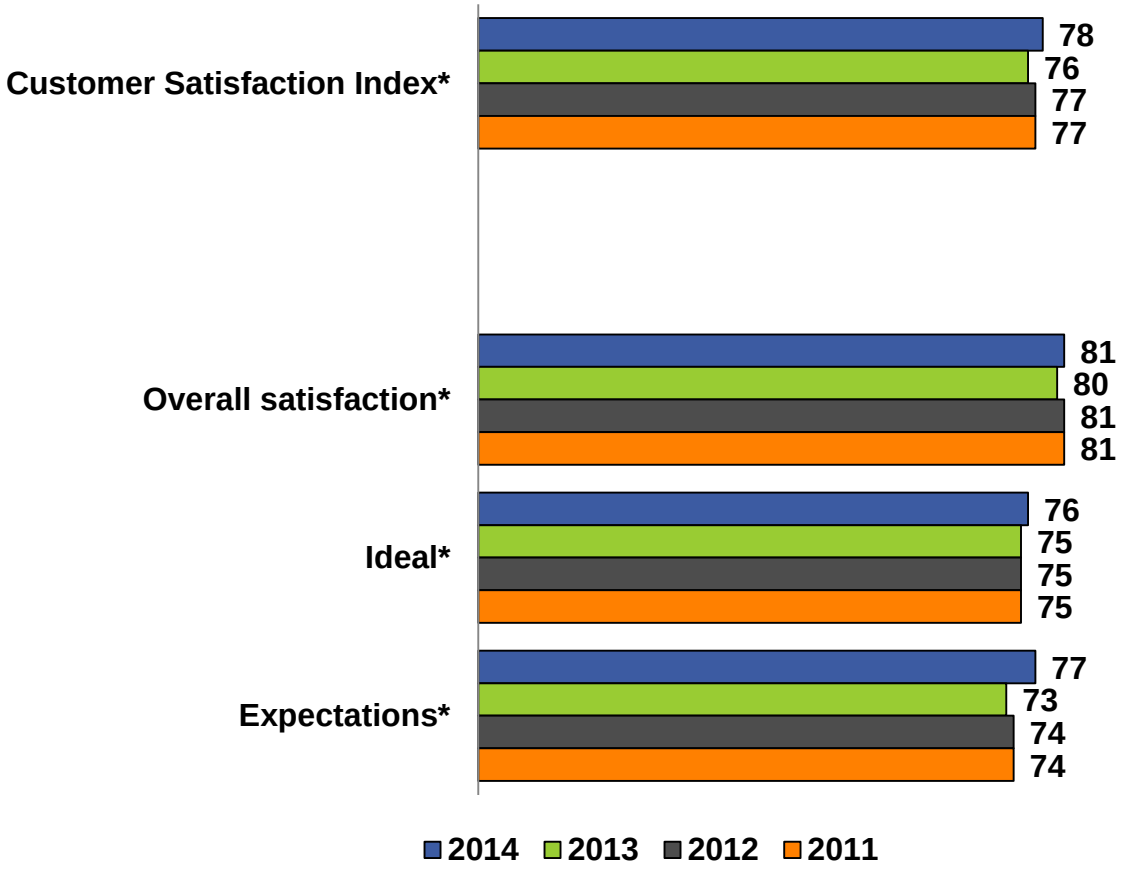
Scores represent your performance as rated by ***your*** customers

Driver Impacts show you which driver has the most/least leverage – where improvements matter most/least to ***your*** customers

Future Behavior Impacts represent the impact of CSI on the future behaviors of ***your*** customers

Satisfaction rises 2 points in 2014

CSI & Component Scores

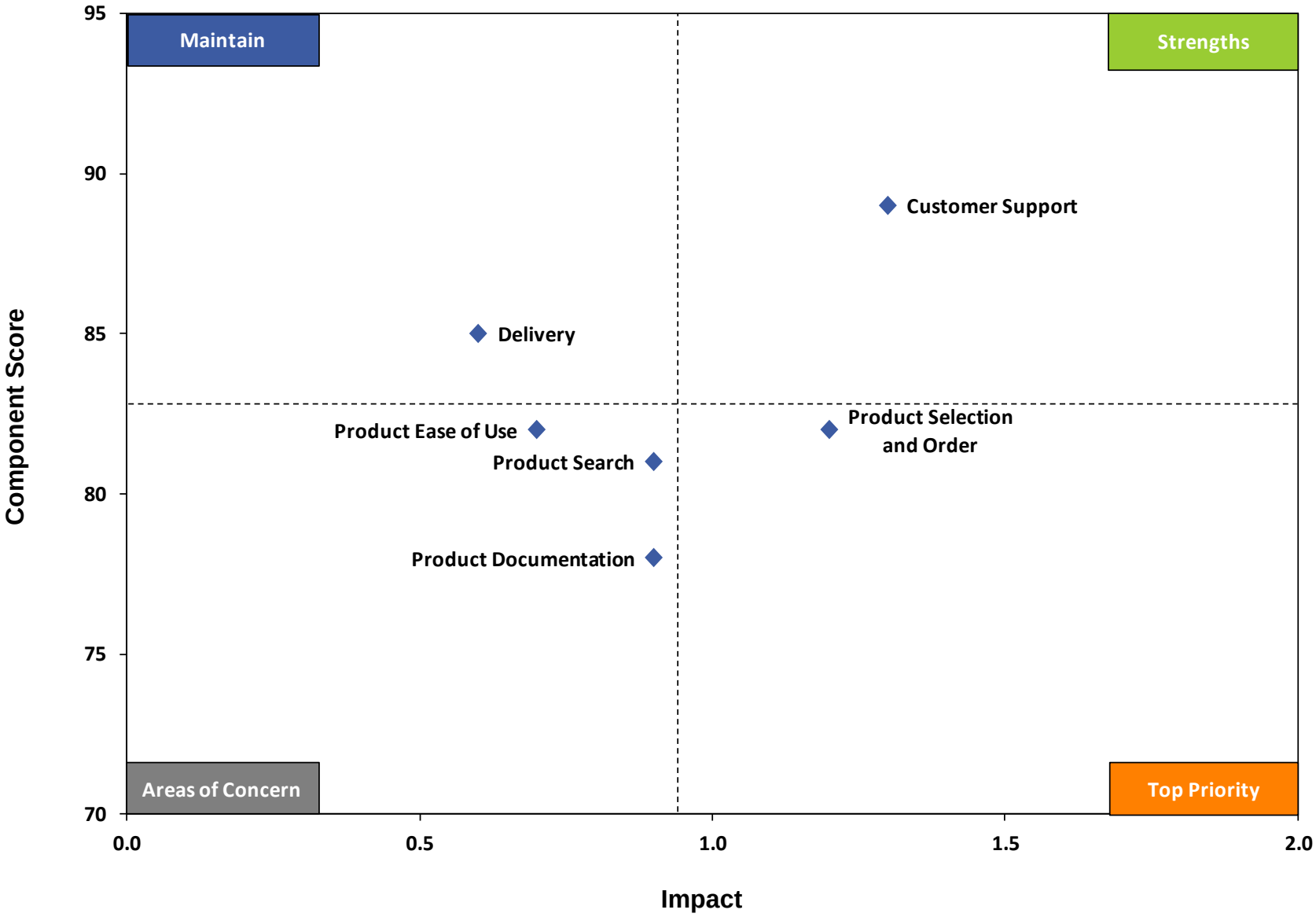


* indicates a Significant Difference between scores at 90% confidence level

Satisfaction (78) rises two points in 2014.

Satisfaction compared to expectations (77) rose 4 points while the other attributes rose modestly.

Priorities for NASA EOSDIS



Detailed Analysis

Despite higher Support and Delivery ratings, CSI only one point higher for USA

CSI & Component Scores by Location

	USA	All Others	Difference	Significant Difference
	Scores			
Sample Size	1,035	3,112		
Product Search	80	81	1	
Product Selection and Order	83	82	-1	
Delivery	87	84	-3	*
Product Ease of Use	84	82	-2	*
Product Documentation	78	77	-1	
Customer Support	93	87	-6	*
Customer Satisfaction Index	79	78	-1	*
Likelihood to Recommend	88	88	0	
Likelihood to Use Services in Future	90	89	-1	*

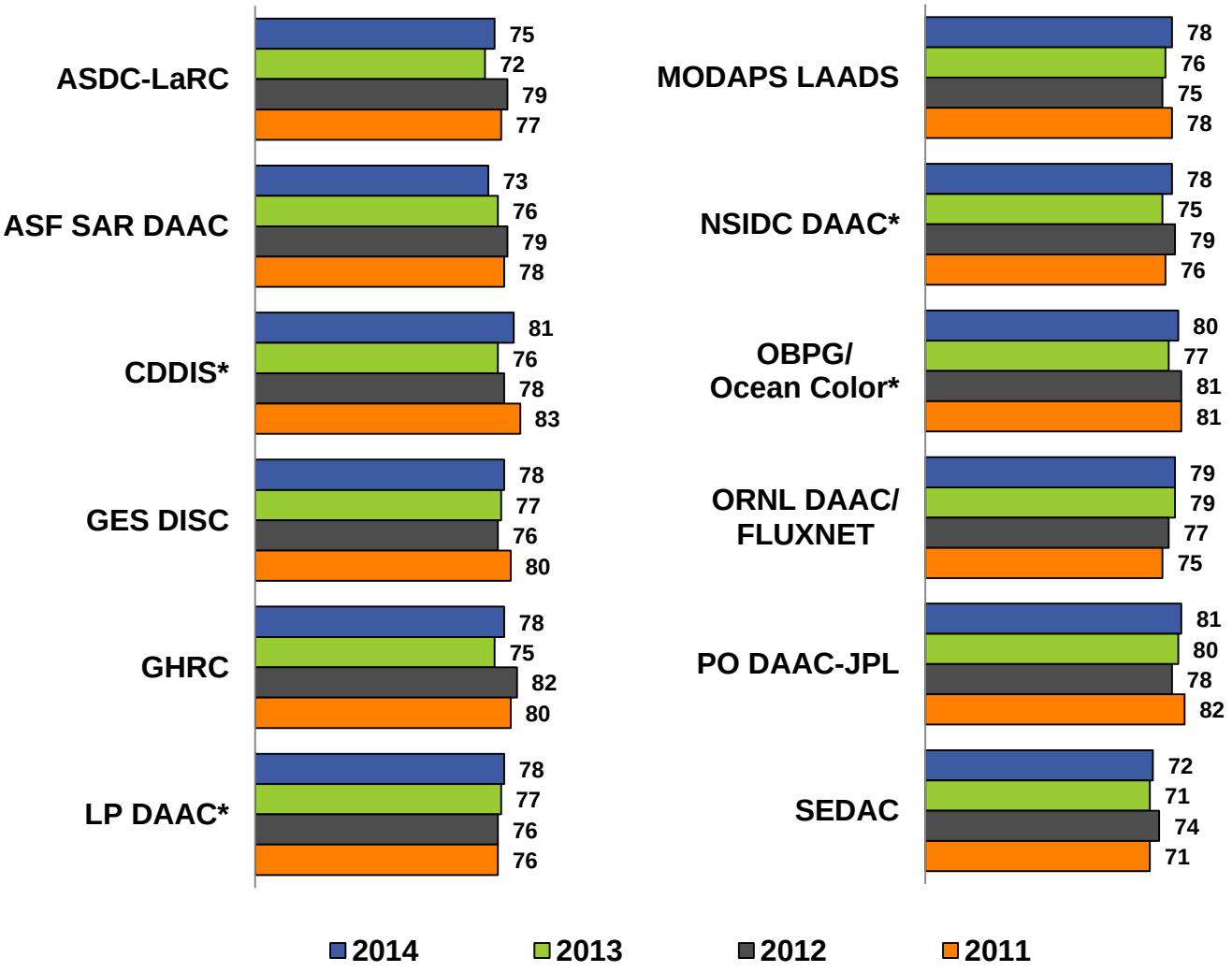
Customer Support and Delivery show the greatest score difference between USA and non-USA respondents.

Overall satisfaction only differs by one point.

* indicates a Significant Difference between scores at 90% confidence level

Most Data Centers' CSI within a 3-point range

CSI by DAAC



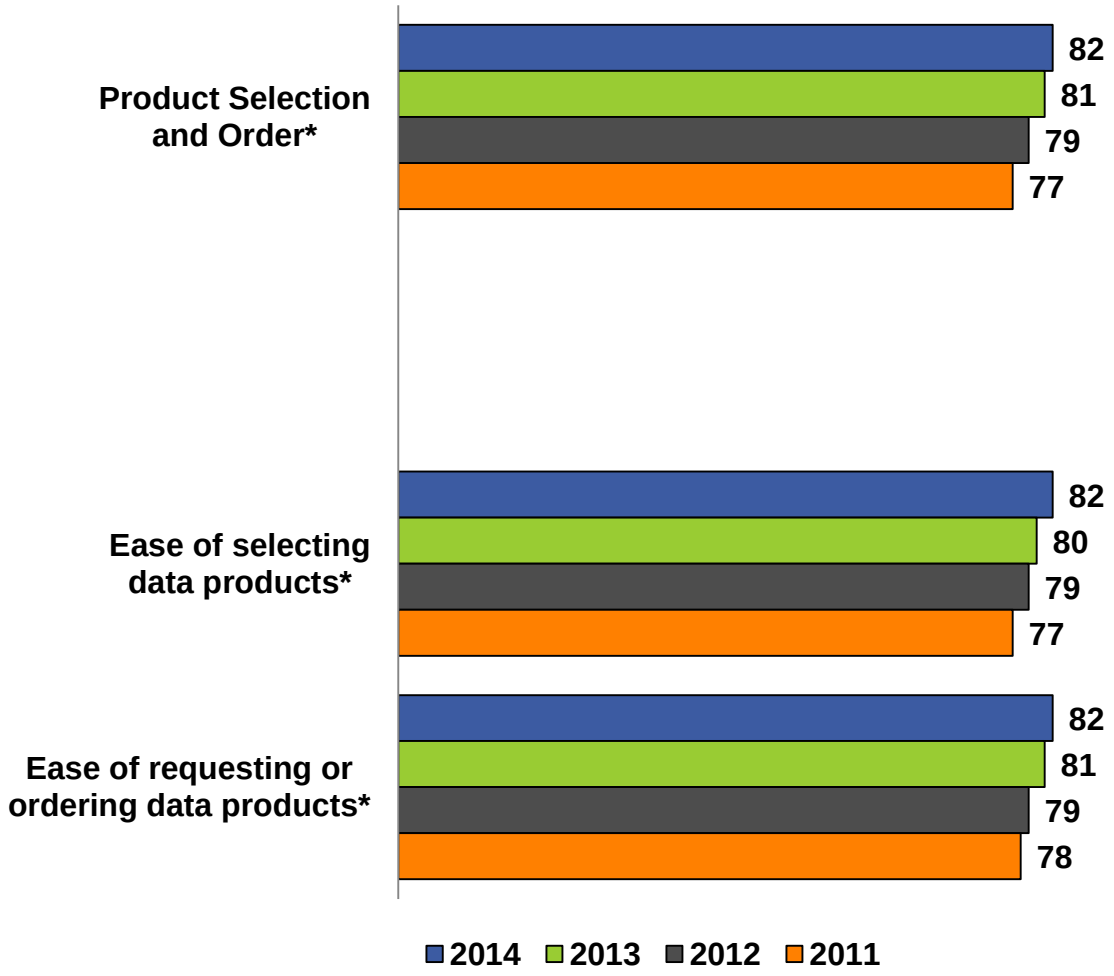
* indicates a Significant Difference between scores at 90% confidence level

CSI does not vary by much for most data centers as 9 of 12 score between 78 and 81.

CDDIS and PO DAAC-JPL lead with CSI of 81, while SEDAC is in the low 70s.

High-impact area of Product Selection and Order rises for fourth straight year

Component Detail – Product Selection and Order (Impact = 1.2)



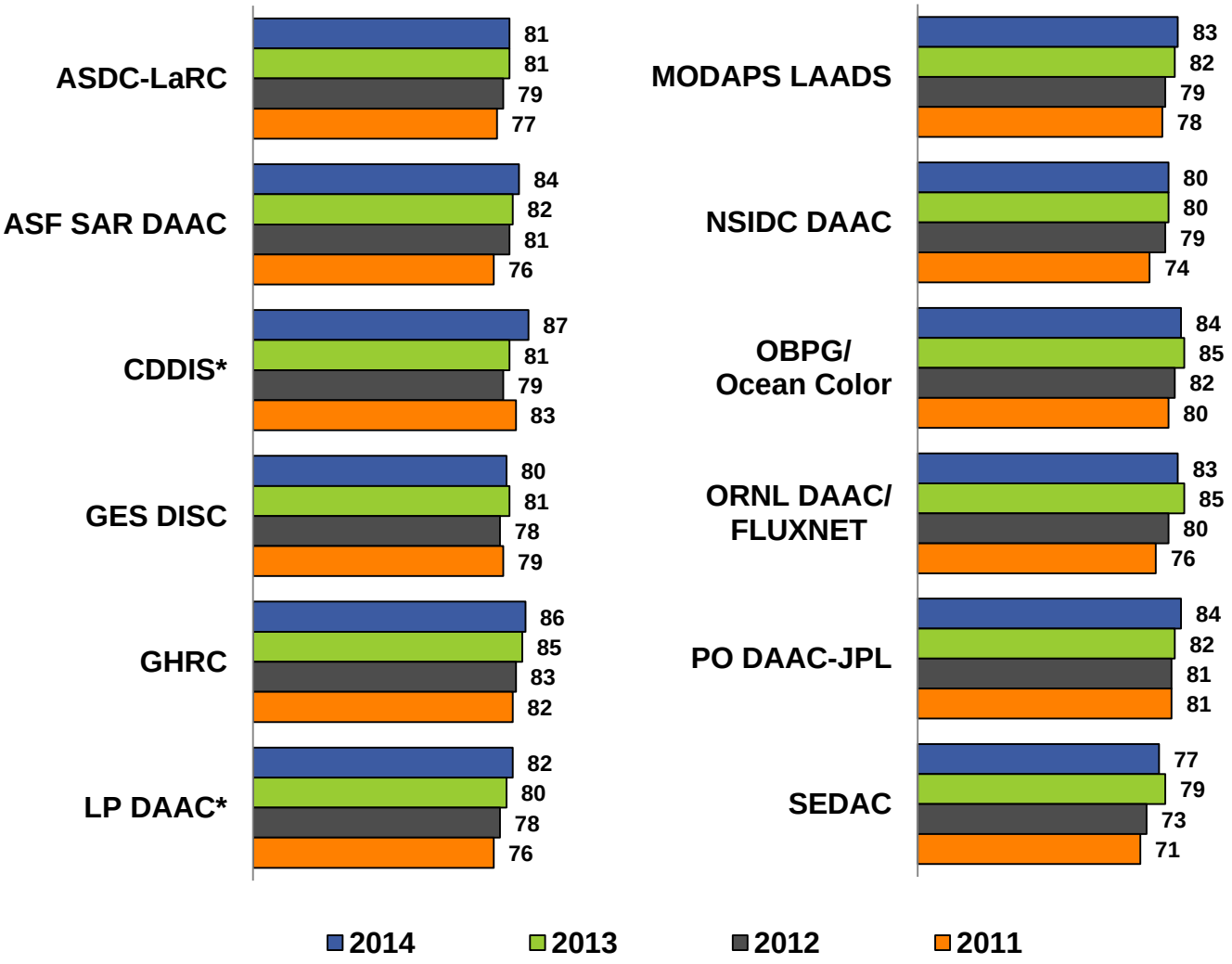
Product Selection and Order rises for the fourth straight year and improves 1 point in 2014.

Both attributes, Ease of Selecting (82) and Ease of Requesting/Ordering (82) rise as well.

* indicates a Significant Difference between scores at 90% confidence level

CDDIS and GHRC rate highest

Product Selection and Order Scores by Data Center



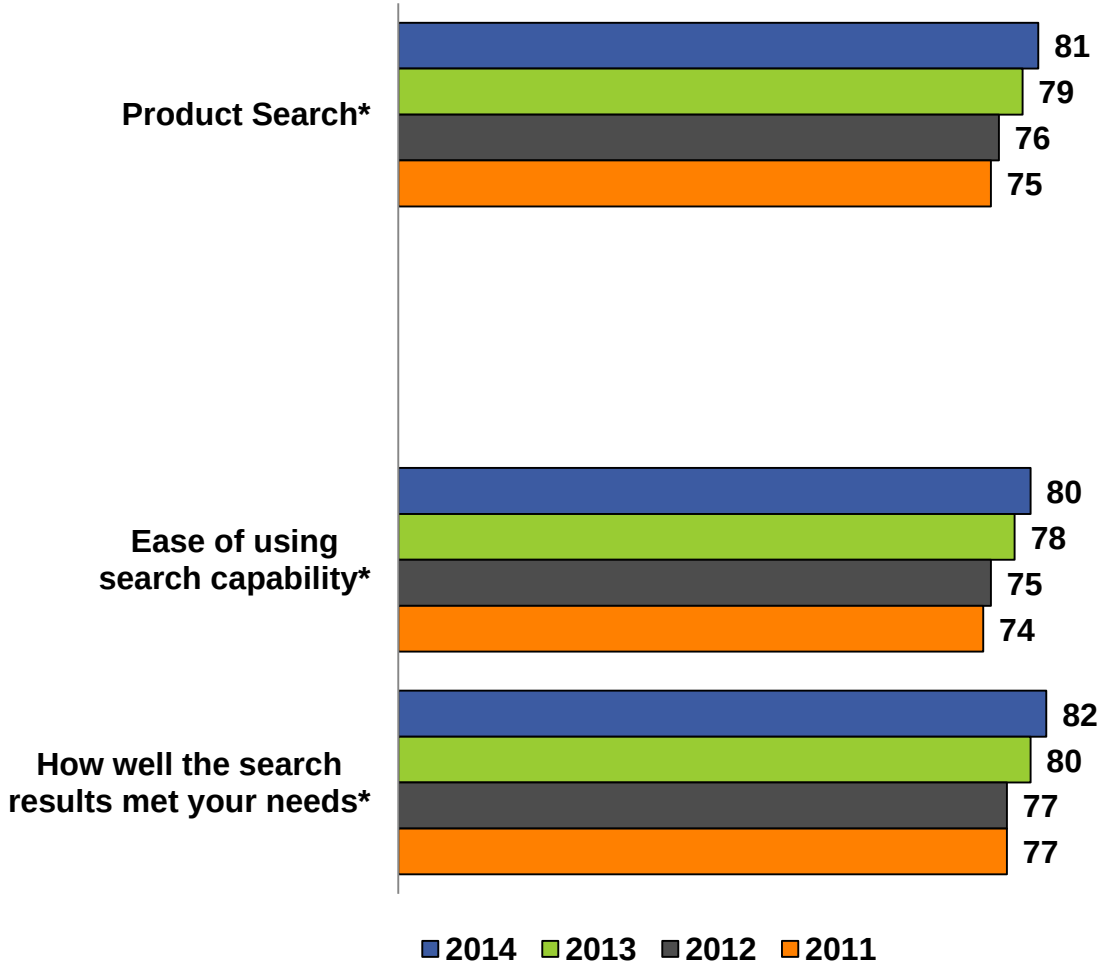
* indicates a Significant Difference between scores at 90% confidence level

CDDIS experiences a significant 6 point gain.

11 of 12 data centers score 80 or higher.

Product Search improves two points

Component Detail - Product Search (Impact = 0.9)

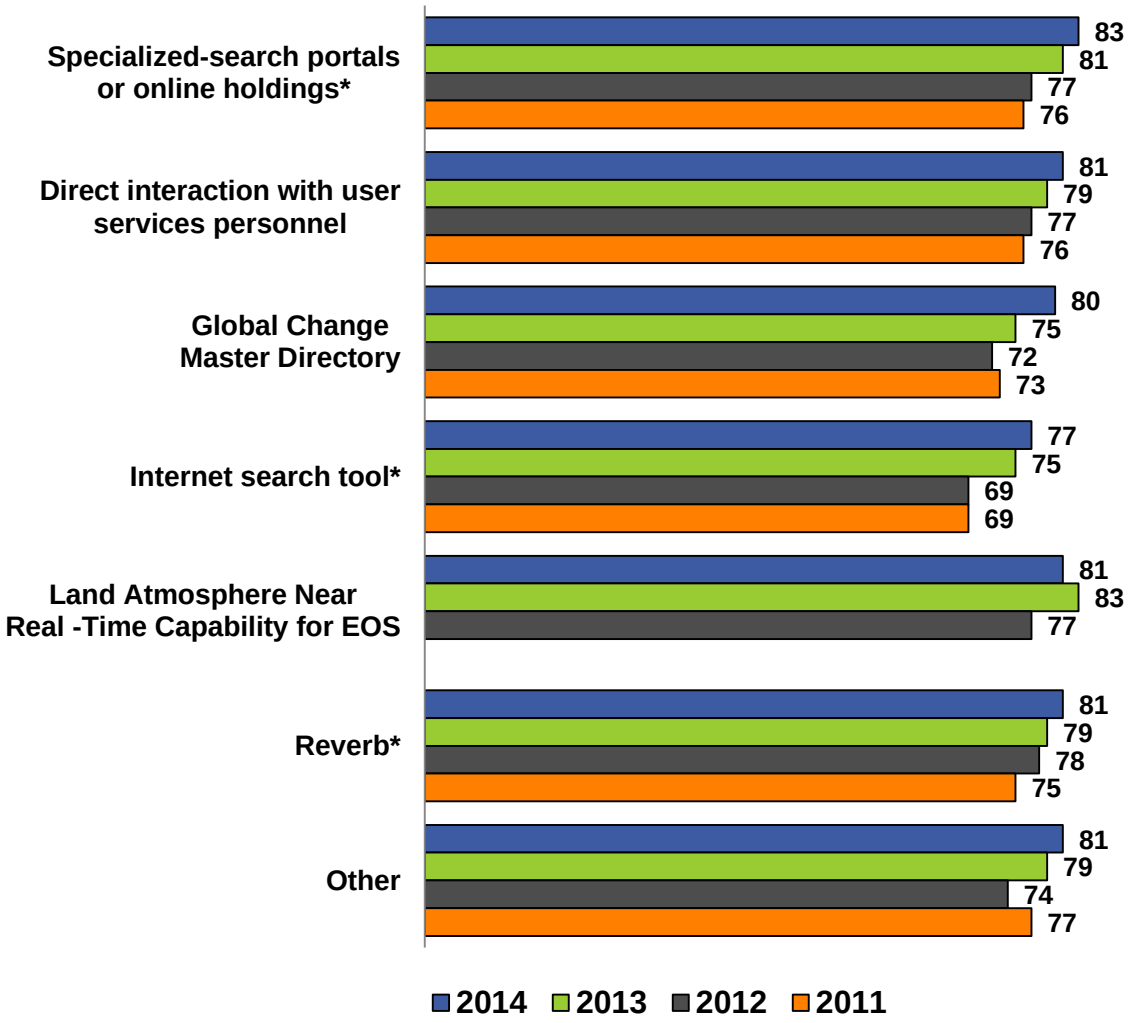


Product Search improves 2 points with both Ease of Using and Results Meeting Needs up 2 points as well.

* indicates a Significant Difference between scores at 90% confidence level

Most used search method also rates highest among Product Search scores

Product Search Scores by Method of Search



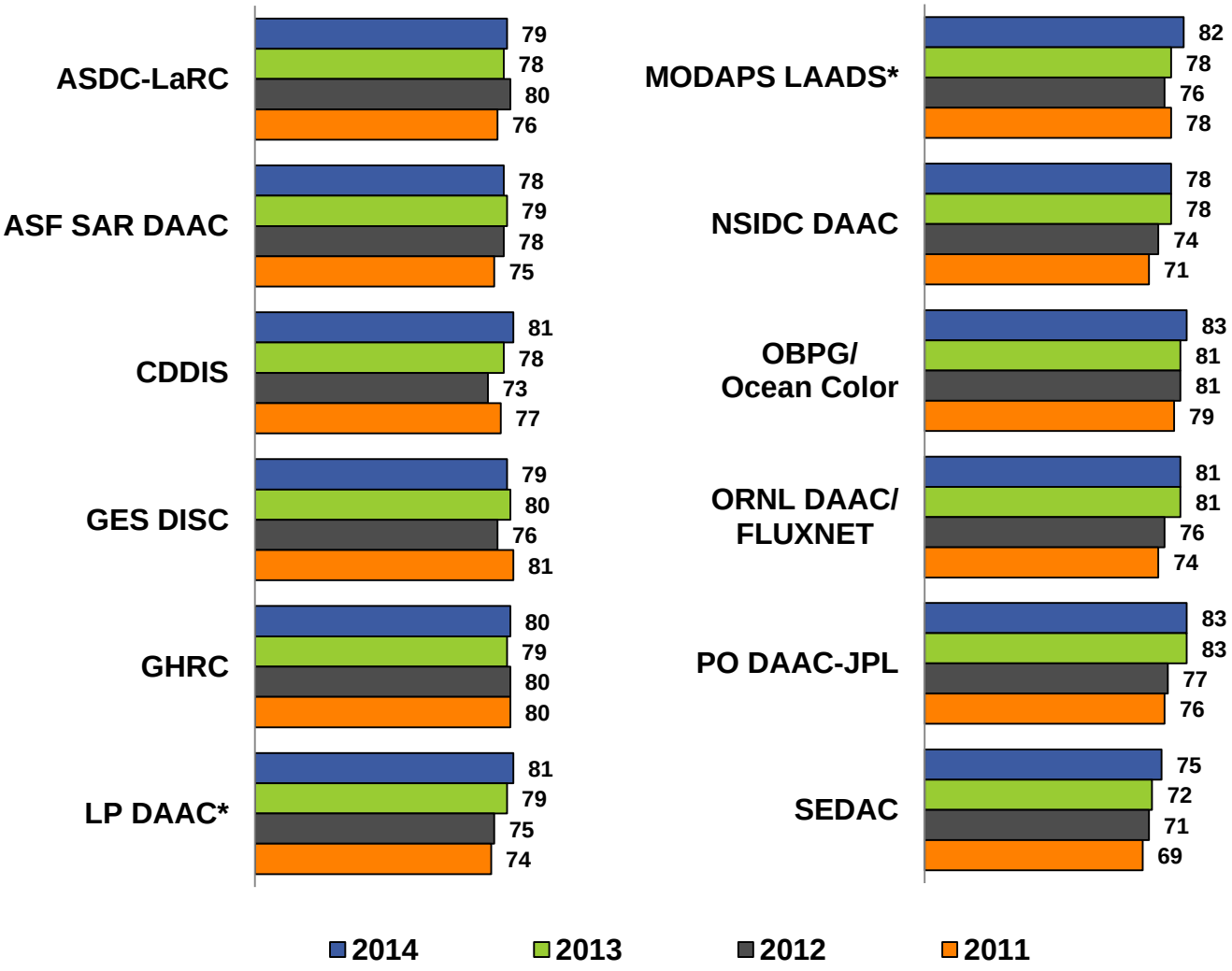
* indicates a Significant Difference between scores at 90% confidence level

41% use data center's or data-specific specialized search. Product Search improved 2 points for this method.

Internet Search Tool use increased 9 points from 2013 to 30%. While it is still the lowest rated Product Search method, it improved 2 points.

Product Search score up significantly at two Data Centers

Product Search Scores by Data Center



* indicates a Significant Difference between scores at 90% confidence level

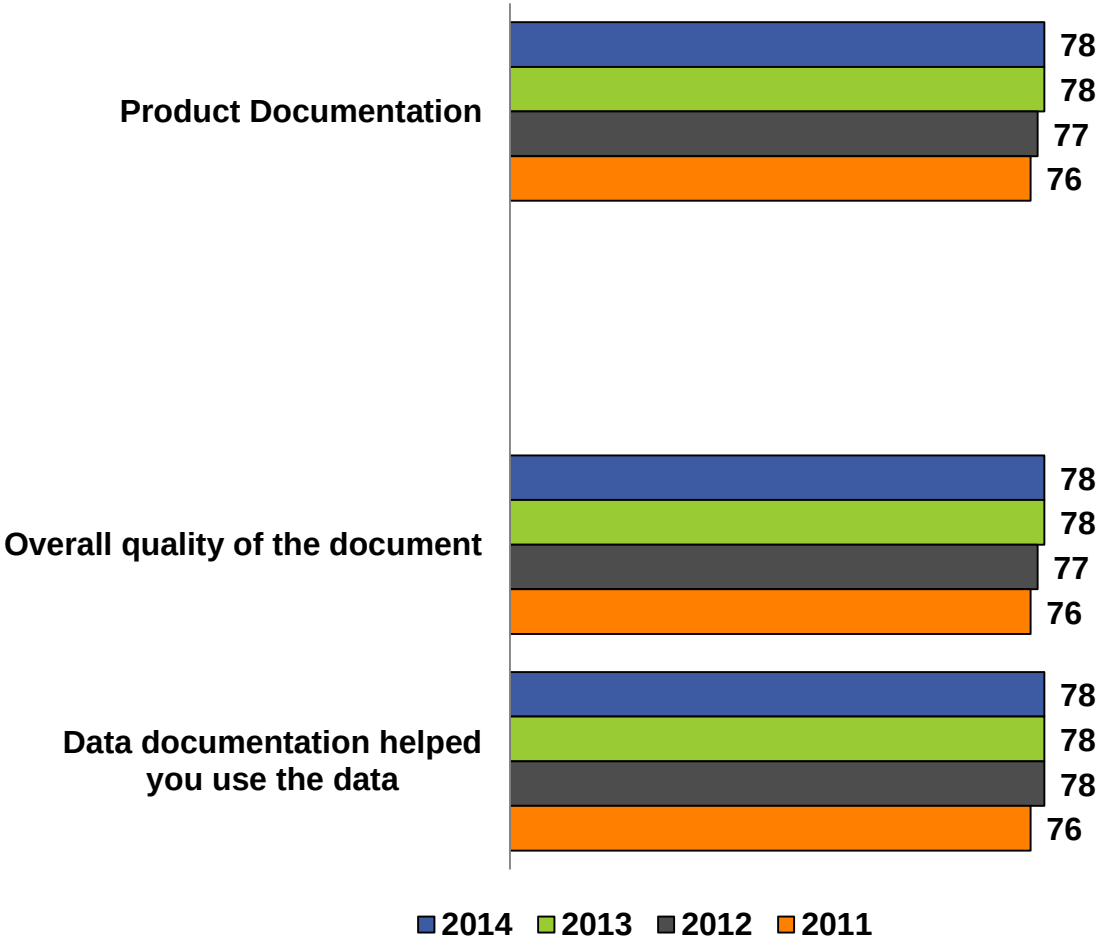
Product Search rates highest for PO DAAC-JPL and OBPG/Ocean Color (83).

Two Data Centers show a significant improvement in their Product Search score as MODAPS LAADS (82) gains 4 points and LP DAAC (81) gains 2 points.

Score mostly range in the high 70s to low 80s.

Documentation holds steady in 2014

Component Detail – Product Documentation (Impact = 0.9)

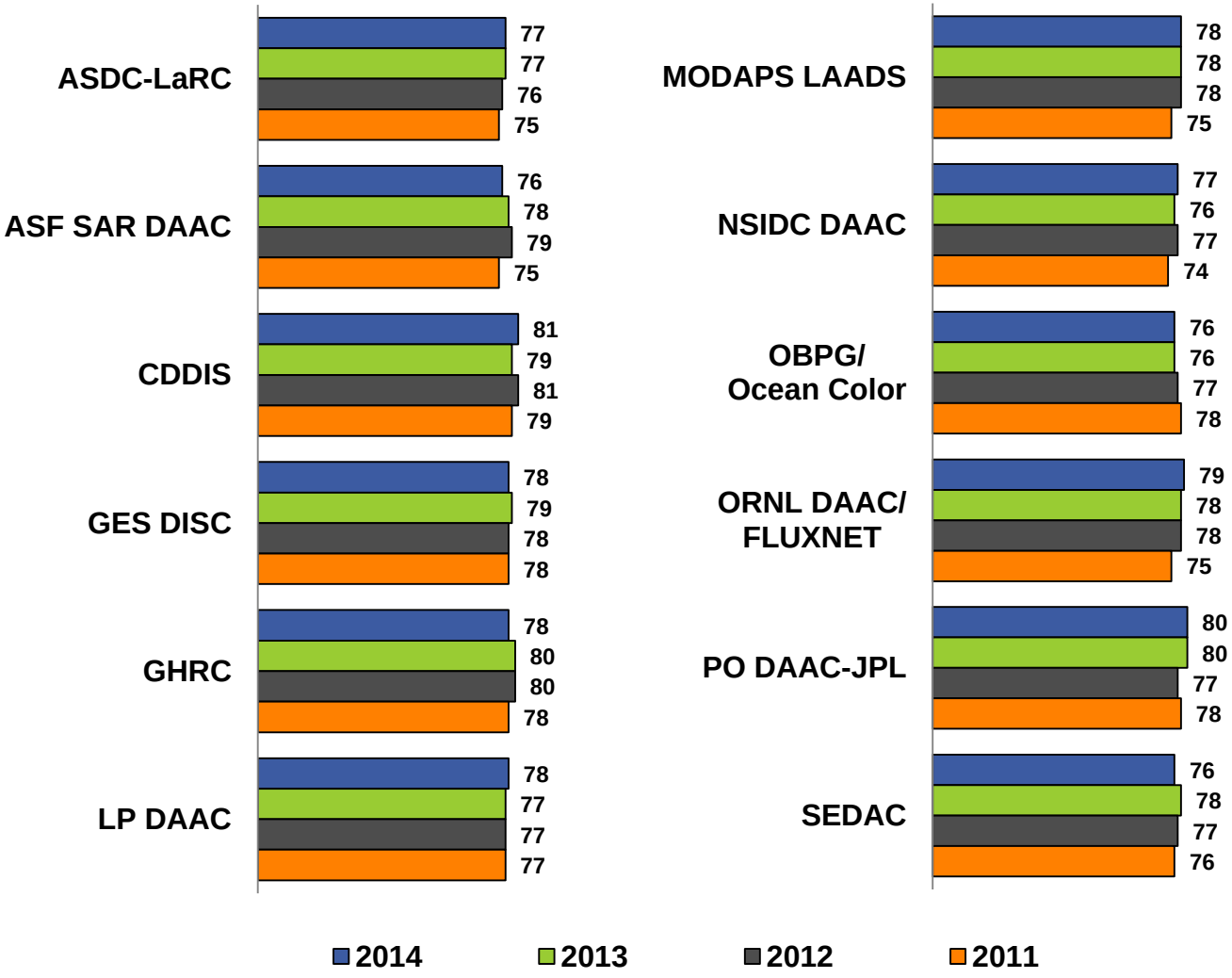


Overall Product Documentation and attributes all hold steady at 78.

* indicates a Significant Difference between scores at 90% confidence level

Product Documentation scores hold across all Data Centers

Product Documentation Scores by Data Center



* indicates a Significant Difference between scores at 90% confidence level

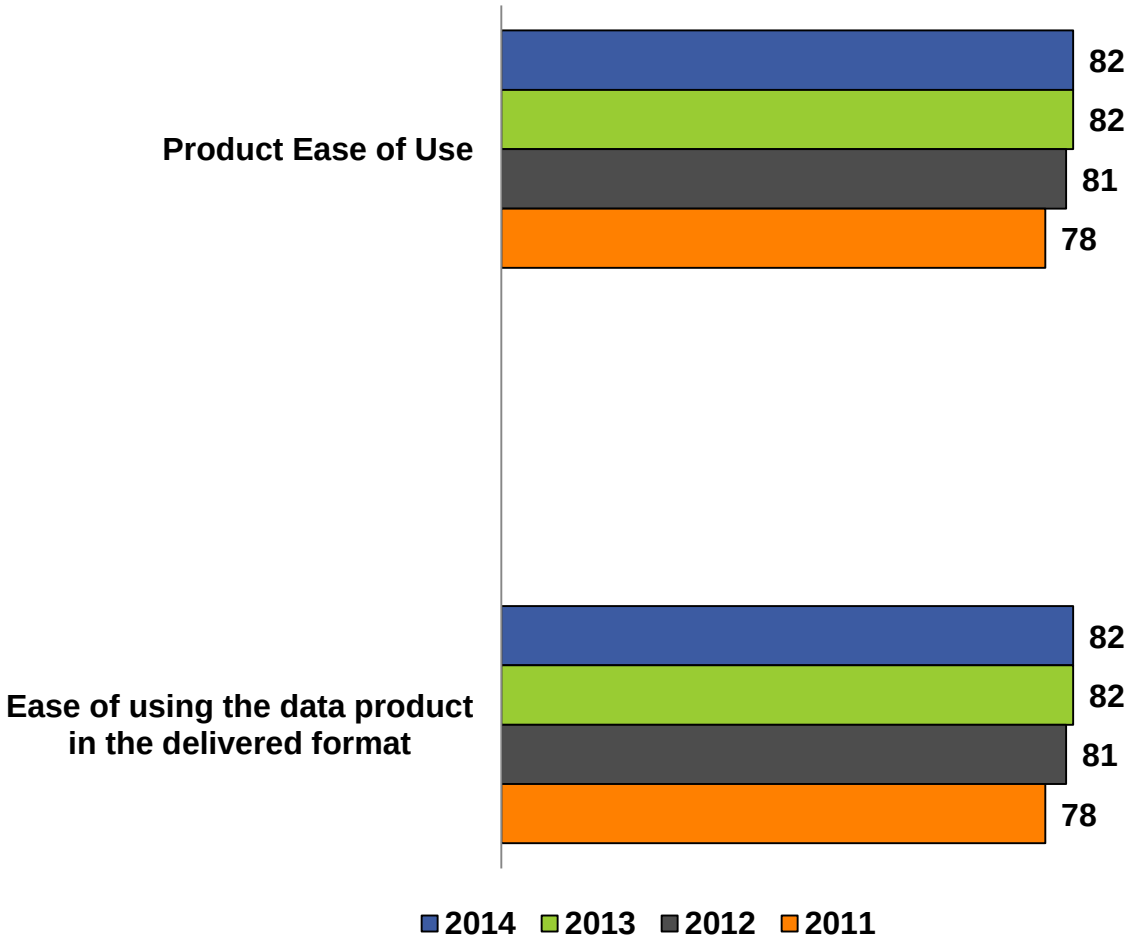
CDDIS led all Data Centers with Product Documentation score of 81.

There were no significant changes in Product Documentation scores at any Data Center.

9 of the 12 Data Centers scored between 76 and 78.

Product Ease of Use is stable in 2014

Component Detail – Product Ease of Use (Impact = 0.7)

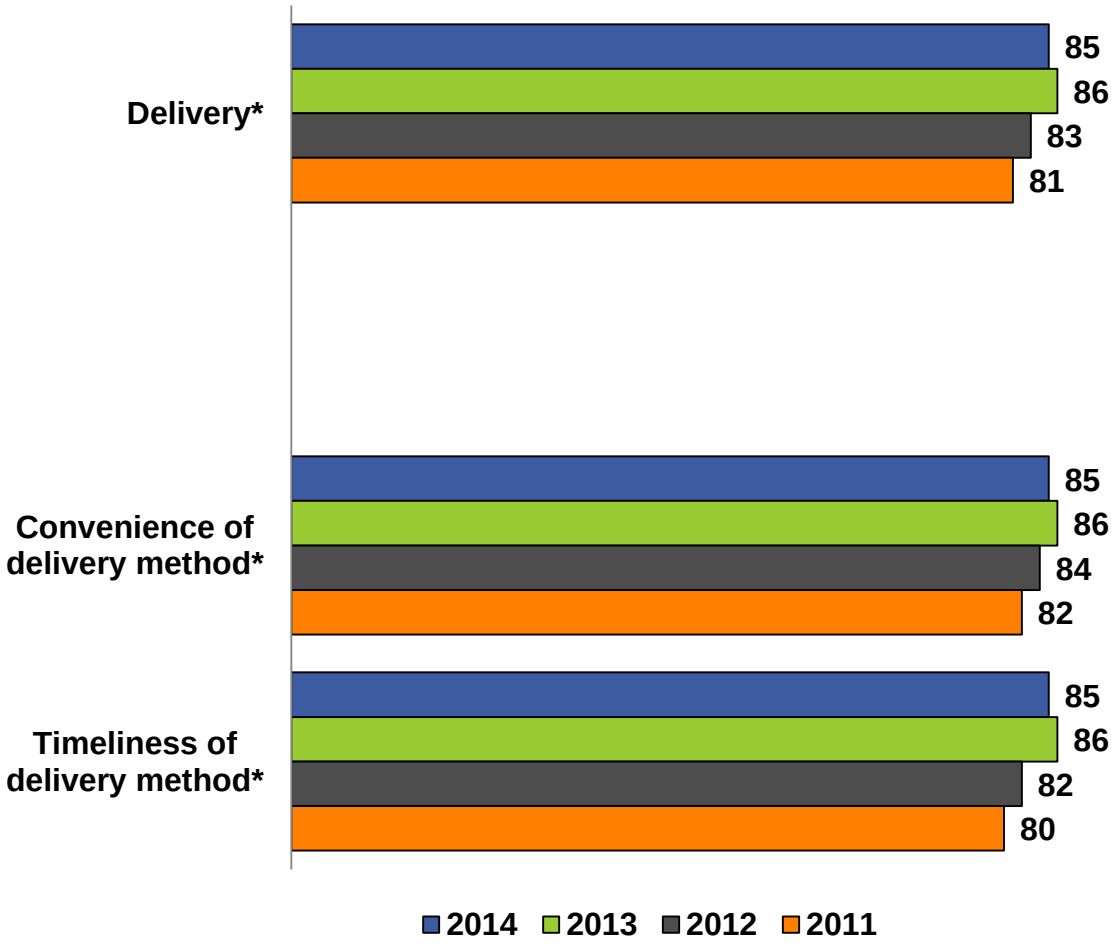


After increases in the last two years, Product Ease of Use is stable at 82.

* indicates a Significant Difference between scores at 90% confidence level

Delivery of products declines modestly

Component Detail – Delivery (Impact = 0.6)

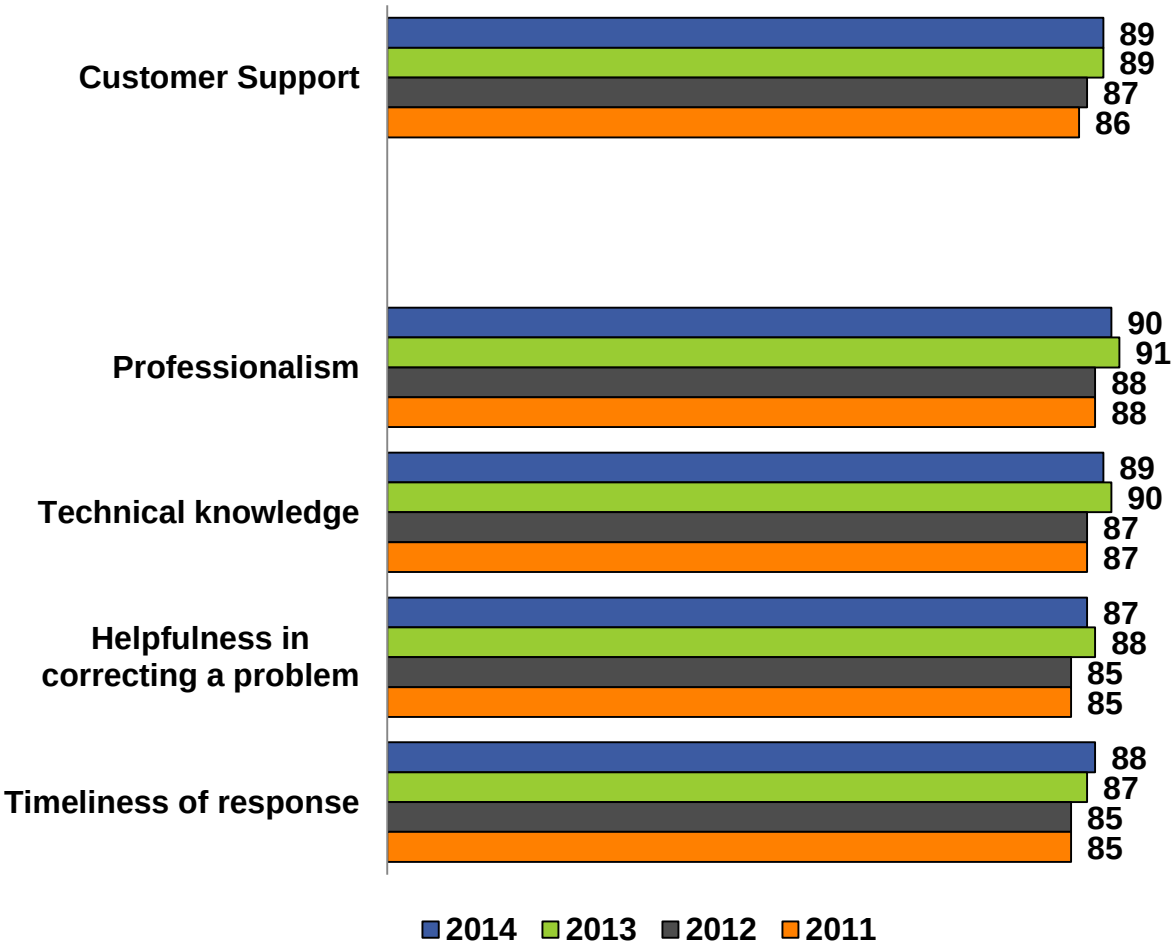


Although Timeliness and Convenience dipped one point in 2014, they are both still relatively strong at 85.

* indicates a Significant Difference between scores at 90% confidence level

Customer Support continues to be a strength of NASA EOSDIS

Component Detail – Customer Support (Impact = 1.3)



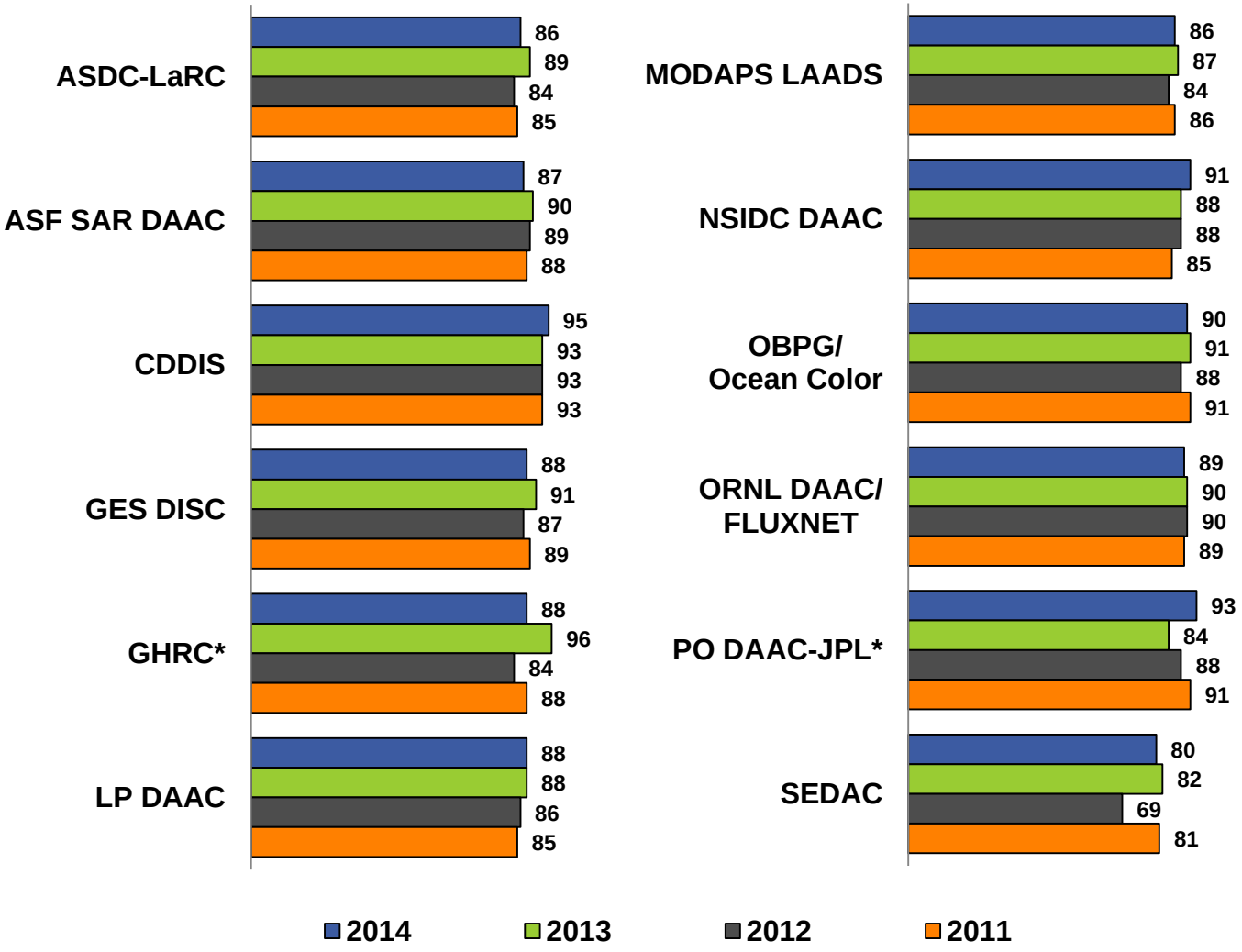
Customer Support has the highest impact on satisfaction and remains the highest rated driver (89).

All four attributes; Professionalism, Tech Knowledge, Helpfulness and Timeliness score in the high eighties or low nineties.

* indicates a Significant Difference between scores at 90% confidence level

Data Centers providing excellent Customer Support

Customer Support Scores by DAAC



* indicates a Significant Difference between scores at 90% confidence level

PO DAAC- JPL (93) jumped 9 significant points while GHRC (88) dropped 8.

No Data Center scored below 80.

Summary and Recommendations

Summary

- **After six consecutive years of relatively stable scores, Customer Satisfaction with NASA EOSDIS gained two points and rose to 78.**

- **Four Data Centers had a statistically significant increase in score from last year.**
  - Centers with increases are CDDIS (81, +5), LP DAAC (78, +1), NSIDC DAAC (78, +3) and OBPG (80, +3).
  - Although ASF SAR DAAC (76) was the only center to decrease, it's three point drop was not significant.

- **Five of the six satisfaction drivers either held steady or increased from last year**.
  - Customer Support (89) was both the highest rated driver and also had the highest impact on satisfaction.
  - Product Ease of Use, which measures the ease of using the data product in the delivered format, remained unchanged at 82. Delivery, which is a lower impact area, was the only driver to slightly dip 1 point in 2014 but still remained relatively strong at 85.

Recommendations

- **Customer Support remains the highest rated area. It provides users with strong technical knowledge and is very helpful in addressing customers' problems. They also respond in a very timely manner and overall are performing at a high level.**
  - While the percentage of respondents requesting assistance (16%) has dropped for the fourth consecutive year, it is still a high-impact area.
  - Most assistance is requested via e-mail with 79% using e-mail at some point during the past year to make contact. Only 12% reported using the phone.
  - At the very least, NASA should maintain current levels of support. Given that the majority of users prefer text-based customer support, any improvements/additions should be based around expanding the current email support through an online chat system.

- **Product Selection and Order (82) increase for second straight year with a 1 point increase and remains a key driver of satisfaction.**
  - Almost all centers had ratings in the eighties, indicating that selecting and ordering products is easy for users across all data centers and appear to be meeting their needs.
  - While most respondents are generally satisfied with Product Selection and Order, there does seem to be some room for improvement in the organization of the web interface to consolidate the multitude of data sets.
  - A periodic review of the DAACs in order to consolidate the selection options and streamline the order process would be recommended to ensure that users can find the data for which they are looking and download it in a relatively easy manner.

Recommendations

- **Most respondents (75%) looked for or received documentation. Product Documentation (78) held steady and has a high impact on satisfaction**
  - The most popular documentation was on Data Formats and Dataset Metadata.
  - With scores ranging from 76 to 80 across the 12 data centers, it appears that the documentation is useful, but there may be opportunities to improve.
  - New/occasional users tend to feel overwhelmed by the scope of the data. Most respondents acknowledge documentation exists but have some difficulties in accessing it. Creating a first level set of documentation such as a "How to" document, Acronym Definitions and/or a FAQ page that is prominently displayed would help users in getting acclimated.
  - Also, there might be an opportunity to raise overall satisfaction by encouraging customers to use documentation, as those using it rated the driver areas Product Search, Product Selection and Order higher and indicated more overall satisfaction.

- **Product Search (81) showed a 2 point improvement and is one of the key drivers of satisfaction.**
  - Among data centers, PO DAAC-JPL and OBPG/Ocean Color had the highest Product Search scores (83).
  - Whatever initiatives that have been implemented during the past two years seem to have improved users' perceptions of the ease of search as most centers improved or held steady. It is recommended that these initiatives continue.
  - In comparing the two most popular search methods, the scores for Product Search are 6 points higher for those using the data center's specialized search (83) versus those who used the internet (77).
  - As a result, it is further recommended to drive searches away from the internet and emphasize the search options available within the data center's specialized search.

Appendix

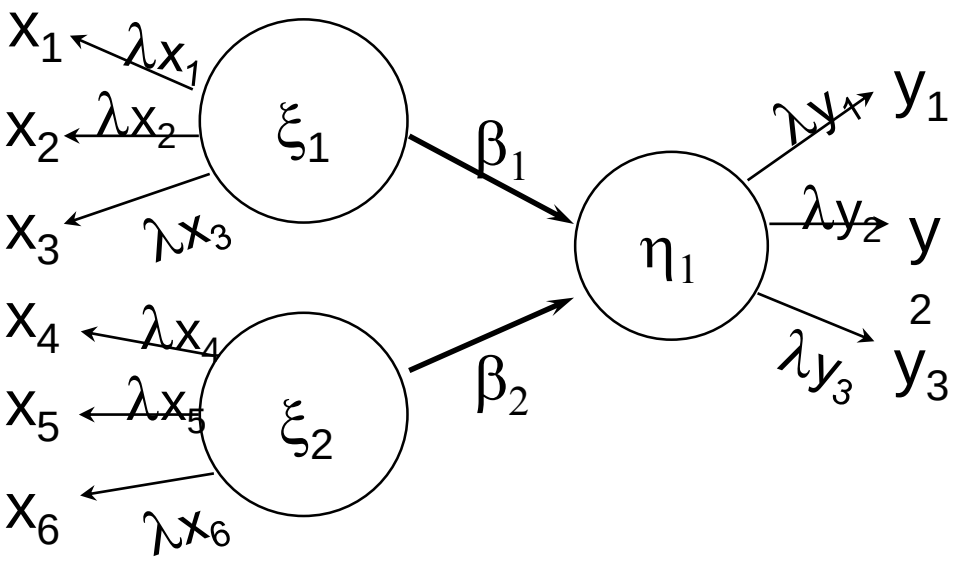
Satisfaction among repeat respondents holds above aggregate

Repeat respondents in 2013 and 2014

	2013	2014	Difference	Significant Difference
	Scores			
Sample Size	**373**	**373**		
Product Search	**82**	**84**	**2**	*
Ease of using search capability	82	84	2	*
How well the search results met your needs	83	85	2	*
Product Selection and Order	**84**	**85**	**1**	
Ease of selecting data products	84	85	1	
Ease of requesting or ordering data products	84	85	1	
Delivery	**89**	**88**	**-1**	
Convenience of delivery method	89	88	-1	
Timeliness of delivery method	88	88	0	
Product Ease of Use	**84**	**84**	**0**	
Ease of using the data product in the delivered format	84	84	0	
Product Documentation	**79**	**80**	**1**	
Overall quality of the document	80	80	0	
Data documentation helped you use the data	79	80	1	
Customer Support	**92**	**94**	**2**	
Professionalism	93	95	2	
Technical knowledge	92	94	2	
Helpfulness in correcting a problem	91	94	3	
Timeliness of response	91	94	3	*
Customer Satisfaction Index	**80**	**83**	**3**	*
Overall satisfaction	84	86	2	*
Ideal	78	81	3	*
Expectations	76	81	5	*
Likelihood to Recommend	**88**	**92**	**4**	*
Likelihood to recommend	88	92	4	*
Likelihood to Use Services in Future	**91**	**92**	**1**	
Likelihood to use services in future	91	92	1	

* Significant difference vs. 2014 at 90% confidence level

The Math Behind the Numbers



$$x_i = \lambda_{xi}\xi_t + \delta_i, \text{ for i=1,2,3 t=1,2}$$

$$y_j = \lambda_{yj}\eta_1 + \varepsilon_j, \text{ for j = 1,2,3}$$

$$\eta_1 = \beta_1\xi_1 + \beta_2\xi_2 + \zeta_1$$

A discussion for a later date…or following this presentation for those who are interested.

A Note About Score Calculation

- Attributes (questions on the survey) are typically answered on a 1-10 scale
  - Social science research shows 7-10 response categories are optimal
  - Customers are familiar with a 10 point scale
- Before being reported, scores are transformed from a 1-10 to a 0-100 scale
  - The transformation is strictly algebraic; e.g.

Orig. (1-10)	Trans. (0-100)
1	0
2	11.1
3	22.2
8	77.8
9	88.9
10	100

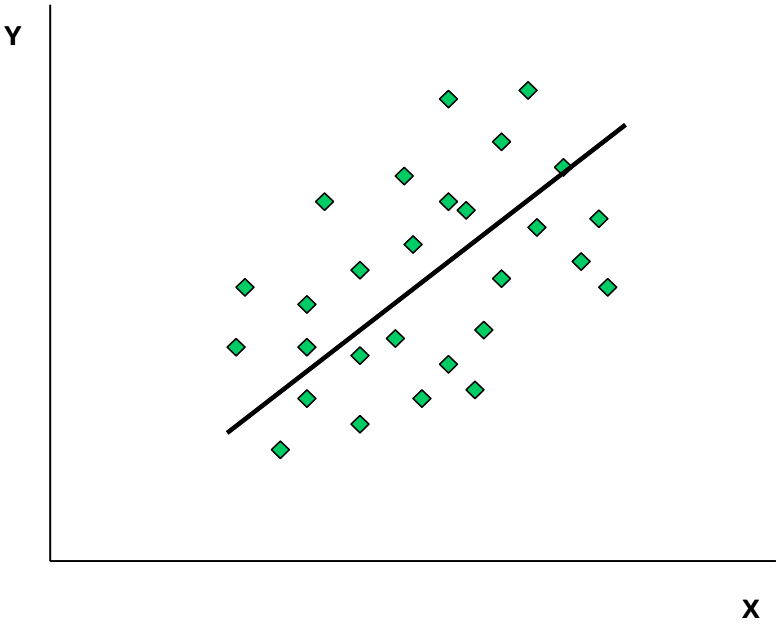
  - The 0-100 scale simplifies reporting:
    - Often no need to report many, if any, decimal places
    - 0-100 scale is useful as a management tool

Deriving Impacts

- Remember high school algebra? The general formula for a line is:

$$y = mx + b$$

- The basic idea is that x is a "cause" and y is an "effect", and m represents the slope of the line – *summarizing the relationship between x & y*



- CFI Group uses a sophisticated variation of the advanced statistical tool, Partial Least Squares (PLS) Regression, to determine impacts when many difference causes (i.e., quality components) simultaneously effect an outcome (e.g., Customer Satisfaction)

Thank you

CFI GROUP
625 Avis Drive
Ann Arbor, MI 48108

734.930.9090 (tel)
734.930.0911 (fax)

askcfi@cfigroup.com
www.cfigroup.com

CFI GROUP WORLDWIDE

MICHIGAN (USA) - Ann Arbor
ENGLAND (UK) – London
SWEDEN - Stockholm
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