

Survey Path 2: Present Users of Other Moderate-Resolution Imagery

This path is for users who have not used Landsat imagery in the past year, but have used other types of moderate-resolution imagery in the past year. This path is very similar to Path 1 – most of the questions are the same, with changes in wording to reflect the differences in types of imagery. However, it is significantly shorter than Path 1 (for Landsat users) because the USGS does not require information about costs/revenues of other types of moderate-resolution imagery and those questions have been excluded.

Thank you for participating in this study on the societal benefits of moderate-resolution satellite imagery. Your input will help the USGS understand how moderate-resolution imagery is being used. Your responses will also clarify current and potential applications of this imagery.

Depending upon the type of moderate-resolution imagery you use, completing this survey will take approximately 15 to 35 minutes. You can pause at any time; simply close the window and your answers will be saved. To resume and complete the survey, you will need to click on the link to the survey in the email you received. At that point, you can answer any remaining questions and/or edit any of your previous responses. At the end of the survey, click on the “Submit” button to finish the survey. All responses will be kept confidential and will not be linked to your email address.

This survey was approved by the Office of Management and Budget (1028-XXXX).

Section 1: Your Use of Moderate-Resolution Imagery

The primary purpose of this section is to find out the types of satellite imagery the respondents are currently using and how they are using the images they are acquiring. The responses to Questions 1, 2 and 4 will be used to determine the subsequent survey path each respondent will follow.

Please tell us about the type of satellite imagery you use, and how and why you use it.

Questions 1 and 2 will help the USGS to characterize the community of moderate-resolution imagery users by ascertaining if respondents are currently using moderate-resolution imagery. This information is necessary to determine subsequent questions each respondent will be asked.

Q1

For the purposes of this study, moderate-resolution imagery is that which:

- covers relatively large geographic areas ($>60 \text{ km}^2$),
- has a spatial resolution between 5 and 120 m,
- is characterized by repetitive coverage, and
- includes measurements from several portions of the electromagnetic spectrum.

Moderate-resolution imagery is collected by Landsat, SPOT, ASTER, Resourcesat, CBERS, and other missions. To see examples of products based on moderate-resolution imagery, [click here](#).

Examples of products based on moderate-resolution imagery include:

- National Land Cover Database
- LandFire and Gap Analysis Project vegetation maps
- Wildfire burn severity maps produced by the USGS
- Coastal Zone Analysis Program land cover change products
- USDA National Agricultural Statistical Service crop type maps
- FireLine from Insurance Services Office (ISO)
- Google Earth (moderate-resolution combined with higher-resolution imagery)

Based on the definition below, have you ever used, processed, or supplied moderate-resolution imagery in your work? *Please check only one.*

- Yes
- No → Respondent will be automatically directed to **survey path 4 for users of high- and low-resolution imagery**
- Don't know → *END of survey*

Q2

Have you used moderate-resolution imagery in the past year? *Please check only one.*

- Yes
- No → Respondent will be automatically directed to **survey path 3 for past users of moderate-resolution imagery**

Question 3 will allow the USGS to better understand the spectrum of uses of moderate-resolution imagery in the user community. This information will be used to examine differences in how these groups specifically use the imagery, as well as their requirements for the imagery to be useful. The USGS will be better able to provide imagery which suits the needs of various groups with this information.

Q3

Which of the following describe(s) your work with moderate-resolution imagery? *Please check all that apply.*

- I process imagery (e.g., developing algorithms).
- I apply imagery to answer questions or solve problems (e.g., conducting research or teaching).
- I make decisions based on imagery or products derived from imagery.
- I provide or sell imagery (e.g., basic imagery, post-processed imagery, or value-added services or products).
- I develop software for processing or manipulating imagery (e.g., ERDAS or ENVI).

Questions 4 and 5 are necessary to distinguish Landsat users from users of other moderate-resolution imagery. Question 4 determines the survey path respondents will take. Question 5 will help the USGS determine how dependent on Landsat imagery the users in the community are, which is a measure of the value of the imagery. It also provides information on what other imagery is fulfilling users' needs that Landsat may not be.

Q4

What type(s) of moderate-resolution imagery have you used in the past year? *Please check only one.*

- Landsat only → Respondent will be automatically directed to **survey path 1 for present users of Landsat imagery**
- Landsat and other imagery (e.g., SPOT, CBERS, Resourcesat) → Respondent will be automatically directed to **survey path 1 for present users of Landsat imagery**
- Other imagery only (e.g., SPOT, CBERS, Resourcesat)

Q5

What is the amount of moderate-resolution imagery, expressed as a percent of total imagery, that you have used **in the past year** from the following satellites?

Enter a number from 0 to 100 on each line. The total must equal 100.

Terra (ASTER)	_____
CBERS (CCD)	_____
Resourcesat (IRS, LISS, AWiFS)	_____
SPOT (HRVIR, HRG, HRS)	_____
ALOS (AVNIR-2)	_____
Other (please specify) _____	_____
Total	_____

Questions 6-9 explore why past users of Landsat imagery are no longer using it. This is critical information for the USGS for the future development of satellites and current and future provision of satellite imagery.

Q6

You stated that you have not used Landsat imagery in the past year. Have you used it at all in the past? *Please check only one.*

- Yes
- No → Q8
- Don't know → Q10

Q7

What are the reason(s) you are not currently using Landsat imagery? *Please check all that apply.*

- The scan line corrector anomaly (SLC-off) on Landsat 7 impacted data usability.
- My work has not required Landsat imagery. → Q10
- The data have not been easily accessible. → Q10
- The data have not been readily available. → Q10
- The cost of imagery has been too high. → Q10
- Data quality has been insufficient. → Q10
- Licensing or distribution restrictions have been problematic. → Q10
- The spatial resolution has not met my needs. → Q10
- The available spectral bands have not met my needs. → Q10

- The temporal resolution/frequency of coverage has not met my needs. → Q10
- New or existing sources of other imagery became more attractive. → Q10
- Other (please specify) _____ → Q10

Q8

What are the reason(s) you have never used Landsat imagery in your work? *Please check all that apply.*

- The scan line corrector anomaly (SLC-off) on Landsat 7 impacted data usability.
- My work has not required Landsat imagery. → Q10
- The data have not been easily accessible. → Q10
- The data have not been readily available. → Q10
- The cost of imagery has been too high. → Q10
- Data quality has been insufficient. → Q10
- Licensing or distribution restrictions have been problematic. → Q10
- The spatial resolution has not met my needs. → Q10
- The available spectral bands have not met my needs. → Q10
- The temporal resolution/frequency of coverage has not met my needs. → Q10
- Other imagery has been more attractive. → Q10
- Other (please specify) _____ → Q10

Q9

You indicated that the scan line corrector anomaly (SLC-off) on Landsat 7 impacted data usability. How have you dealt with this problem? *Please check all that apply.*

- I have replaced Landsat 7 imagery with moderate-resolution imagery from other satellite sensors.
- I have replaced Landsat 7 imagery with other kinds of data, such as data from fieldwork or other data sets.
- I have not replaced Landsat 7 imagery with other imagery or information.

Questions 10 and 11 explore the possibility of past Landsat users using Landsat again in the future. Finding out how the data will be used in the future is important for future satellite mission planning.

Q10

Do you foresee using Landsat imagery in the future? *Please check only one.*

- Yes
- No → Q12
- Don't know → Q12

Q11

For what applications do you foresee using Landsat imagery? *Please check all that apply.*

- Agricultural forecasting

- Agricultural management/production/conservation
- Biodiversity conservation
- Climate science/change
- Coastal science/monitoring/management
- Ecological/ecosystem science/monitoring
- Fish and wildlife science/management
- Fire science/management
- Forest science/management
- Geology/glaciology
- Land use/land cover change
- Oil and gas/mineral exploration/extraction
- Range/grassland science/management
- Recreation management
- Water resources (e.g., watershed management, water rights, hydrology)
- Rural planning and development (e.g., zoning, economic development, land use)
- Urban planning and development (e.g., zoning, economic development, land use)
- Urbanization (e.g., growth, sprawl)
- Engineering/construction/surveying
- Assessments and taxation
- Real estate/property management
- Software development
- Telecommunications
- Transportation
- Utilities
- Anthropology/archaeology/cultural resource management
- Education: K-12
- Education: university/college
- Technical training (e.g., workshops, short courses)
- Emergency/disaster management
- Hazard insurance (e.g., crop, flood, fire)
- Humanitarian aid
- Public health
- Defense/national security
- Environmental regulation
- Law enforcement
- Other (please specify) _____

Questions 12-17 are designed to understand past and future trends in the use of moderate-resolution imagery. Understanding the likelihood of increased or decreased use is critical to the USGS for planning future satellite missions and providing relevant current imagery.

The next few questions pertain to your use of moderate-resolution imagery **within the past 10 years**.

Q12

Within the past 10 years, how would you characterize your use of moderate-resolution imagery? *Please check only one.*

- My use has increased. → Q14
- My use has decreased.
- My use has stayed more or less the same. → Q15
- I cannot characterize my use. → Q15

Q13

What are the reason(s) your use of moderate-resolution imagery decreased **within the past 10 years**? *Please check all that apply.*

- My work has not required as much moderate-resolution imagery. → Q15 (*all answers*)
- Moderate-resolution imagery has not been easily accessible.
- Moderate-resolution imagery has not been readily available.
- The cost of moderate-resolution imagery had been too high.
- Data quality has been insufficient for my needs.
- Licensing or distribution restrictions have been problematic.
- The spatial resolution has not met my needs.
- The available spectral bands have not met my needs.
- The temporal resolution/frequency of coverage has not met my needs.
- Other (please specify) _____

Q14

What are the reason(s) your use of moderate-resolution imagery has increased **within the past 10 years**? *Please check all that apply.*

- The imagery became more affordable.
- My work has required more imagery.
- Other (please specify) _____

Please tell us about your likely use of moderate-resolution imagery **in the next 5 years**.

Q15

In the next 5 years, how much will your use of moderate-resolution imagery likely change? *Please check only one.*

- My use will increase. → Q17
- My use will stay the same. → Q18
- My use will decrease.
- I will no longer use moderate-resolution imagery.
- I cannot characterize my use. → Q18

Q16

What are the reason(s) your use of moderate-resolution imagery will likely decrease or cease **in the next 5 years**? *Please check all that apply.*

- My work will not require as much moderate-resolution imagery. → Q19 (all answers)
- The data will not be easily accessible.
- The data will not be readily available.
- Licensing or distribution restrictions will continue to be a problem.
- Data quality will not be sufficient.
- The temporal resolution/frequency of coverage will not meet my needs.
- The available spectral bands will not meet my needs.
- The spatial resolution will not meet my needs.
- Other (please specify) _____

Q17

What are the reason(s) your use of moderate-resolution imagery will likely increase **in the next 5 years**? *Please check all that apply.*

- The imagery will be more affordable.
- My work will require more imagery.
- Other (please specify) _____

Section 2: How You Use Moderate-Resolution Imagery

This section explores more specifically the ways in which respondents are using moderate-resolution imagery, as well as the benefits which may accrue from projects using the imagery. The USGS will be able to determine some of the qualitative benefits of moderate-resolution imagery from the latter questions.

In this next section we would like to ask you a few questions about your use of moderate-resolution imagery in your work. Please answer the following questions in terms of your own projects **in the past year**, rather than those of your entire organization, unless otherwise requested.

Questions 18-22 further characterize the ways in which moderate-resolution imagery is being used. This information will be used by the USGS to understand the scope of the use of moderate-resolution imagery and thus the value of the imagery.

Q18

At what scales have your projects that have used moderate-resolution imagery occurred? *Please check all that apply.*

- Local (e.g., county, municipal)
- State/Province
- Regional (e.g., multi-state, multi-province)
- National

- Continental
- Global

Q19

In what regions were these projects focused? *Please check all that apply.*

- United States
- Canada
- Mexico
- Antarctic
- Arctic
- Africa
- Asia
- Australia
- Europe
- Middle East
- South or Central America

Question 20 is included to separate U.S.-based users from internationally-based users. While the opinions of international users are also important to the USGS, the current effort is focused on U.S.-based users because information about U.S. users is more relevant for the purposes of this information collection than information about users outside the borders of the U.S.

Q20

Regardless of where your projects are located, are you located in the United States? *Please check only one.*

- Yes
- No

Questions 21 and 22 will help the USGS determine the breadth of applications of moderate-resolution imagery, thus helping to ascertain the value of the imagery and to demonstrate the potential of the imagery in various fields.

Q21

What is the **primary** application for which you have used moderate-resolution imagery? *Please check only one.*

- Agricultural forecasting
- Agricultural management/production/conservation
- Biodiversity conservation
- Climate science/change
- Coastal science/monitoring/management
- Ecological/ecosystem science/monitoring
- Fish and wildlife science/management

- Fire science/management
- Forest science/management
- Geology/glaciology
- Land use/land cover change
- Oil and gas/mineral exploration/extraction
- Range/grassland science/management
- Recreation management
- Water resources (e.g., watershed management, water rights, hydrology)
- Rural planning and development (e.g., zoning, economic development, land use)
- Urban planning and development (e.g., zoning, economic development, land use)
- Urbanization (e.g., growth, sprawl)
- Engineering/construction/surveying
- Assessments and taxation
- Real estate/property management
- Software development
- Telecommunications
- Transportation
- Utilities
- Anthropology/archaeology/cultural resource management
- Education: K-12
- Education: university/college
- Technical training (e.g., workshops, short courses)
- Emergency/disaster management
- Hazard insurance (e.g., crop, flood, fire)
- Humanitarian aid
- Public health
- Defense/national security
- Environmental regulation
- Law enforcement
- Other (please specify) _____

Q22

In addition to the primary application, in what other areas have you used moderate-resolution imagery? *Please check all that apply.*

- I do not use it in other areas.
- Agricultural forecasting
- Agricultural management/production/conservation
- Biodiversity conservation
- Climate science/change
- Coastal science/monitoring/management

- Ecological/ecosystem science/monitoring
- Fish and wildlife science/management
- Fire science/management
- Forest science/management
- Geology/glaciology
- Land use/land cover change
- Oil and gas/mineral exploration/extraction
- Range/grassland science/management
- Recreation management
- Water resources (e.g., watershed management, water rights, hydrology)
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- Hazard insurance (e.g., crop, flood, fire)
- Humanitarian aid
- Public health
- Defense/national security
- Environmental regulation
- Law enforcement
- Other (please specify) _____

Questions 23-25 will help the USGS to ascertain the potential benefits of moderate-resolution imagery to society. These questions are open-ended to elicit the greatest variety of responses. Understanding the qualitative benefits of Landsat imagery will provide insight into its overall benefits. The USGS and other decision makers are interested in knowing about the current uses of Landsat and how the imagery is being incorporated in decision making and policy changes. USGS program officers need a comprehensive explanation of the societal benefits of satellite imagery, beyond the measurable and quantifiable economic benefits. We have chosen the following questions to target that goal. Responses from these questions will be analyzed and

categorized in terms of content themes. In order to encourage brief responses and to minimize burden, the respondents will have a limited amount of space to answer these questions.

Q23

Considering your **primary** application area, please give us a brief description, including objectives, of **ONE** of your current projects that uses moderate-resolution imagery. (*Open-ended - limit 1500 characters*)

Q24

How have results from this project been used in decision-making? (*Open-ended - limit 1500 characters*)

Question 25 will help the USGS ascertain the benefits of moderate-resolution imagery that are or have been provided by the projects conducted by the professional user community to the environment and/or society. The question asks specifically about the known benefits from their project and does not ask respondents to speculate on the potential benefits. The USGS needs information on the current benefits of satellite imagery in order to be able to increase those benefits, as directed by policy. Restricting the question by asking only about environmental benefits eliminates the possibility for respondents working in societal-focused application areas (i.e., urban planning, disaster response, humanitarian aid, national security) to relate the benefits to people from their projects.

Initially, for the PECORA survey review, this question was a fixed-response question. Feedback from the reviewers indicated that the fixed response format would not allow full exploration of the range of benefits of respondents' work that uses moderate-resolution imagery. Reviewers felt it was not possible to develop a comprehensive list of benefits for a fixed-response question because of the diversity of work being undertaken with moderate-resolution imagery. An open-ended question will allow full exploration of the benefits of such work. Ultimately, only summaries of themes and categories of comments will be reported.

Q25

Please describe any benefits to the environment and/or society that you have observed from this project. (*Open-ended - limit 1500 characters*)

Question 26 will allow the USGS to know more about future uses of moderate-resolution imagery. This information is important to decision makers as they consider future satellite missions. For effective configuration and specifications of future missions, it is important to understand the potential new uses of the imagery. This question is open-ended because the new and unique uses of the imagery are unknown and cannot be listed in a multiple choice format.

Q26

New and unique uses for moderate-resolution imagery continue to emerge as more people have access to the data and the means to manipulate it. What new or unique uses do you envision for moderate-resolution imagery in the next five years? (*Open-ended - limit 1500 characters*)

Section 3: Importance of Moderate-Resolution Imagery in Your Work

This section explores the importance of various attributes of imagery and types of imagery products. This information will help the USGS make decisions about future satellite missions as well as current provision of data.

We would like to know about the importance of moderate-resolution imagery in your work. Please answer the following questions in terms of your own projects, rather than those of your entire organization, unless otherwise requested.

Question 27 explores the importance of various attributes of moderate-resolution imagery. The attributes are a mix of those that can be changed with relative ease (i.e., accessibility, cost) and those which cannot be changed easily (i.e., spatial, spectral, or temporal resolution). By determining the importance of these attributes, the USGS can evaluate the need to make changes to current and future satellite missions in order to better serve the user community.

Q27

When deciding which moderate-resolution imagery (e.g., Landsat TM, ASTER, AWiFs) to use for a project, how important are the following attributes? *Please select only one answer for each attribute.*

	Very Unimportant	Somewhat Unimportant	Neither Important nor Unimportant	Somewhat Important	Very Important
Accessibility	-2	-1	0	1	2
Archive/continuity	-2	-1	0	1	2
Area/footprint of an individual scene	-2	-1	0	1	2
Availability	-2	-1	0	1	2
Cost	-2	-1	0	1	2
Data quality assessments	-2	-1	0	1	2
Delivery time	-2	-1	0	1	2
Ease of use	-2	-1	0	1	2
Global coverage	-2	-1	0	1	2
Licensing/distribution restrictions	-2	-1	0	1	2
Spatial resolution	-2	-1	0	1	2
Spectral resolution	-2	-1	0	1	2
Temporal resolution/ frequency of coverage	-2	-1	0	1	2

Question 28 determines the types of processing are most important to users of moderate-resolution imagery. Understanding of these preferences will aid in the creation of more useful products for the user community.

Q28

How important are the following types of moderate-resolution imagery to your work? *Please select only one answer for each type of imagery.*

	Very <u>Unimportant</u>	Somewhat <u>Unimportant</u>	Neither Important nor <u>Unimportant</u>	Somewhat <u>Important</u>	Very <u>Important</u>
Raw, unprocessed imagery	-2	-1	0	1	2
A basic, processed product that is calibrated, geo-referenced and orthorectified	-2	-1	0	1	2
A processed product that is calibrated, geo-referenced, orthorectified, and adjusted for surface reflectance	-2	-1	0	1	2
A derived product such as vegetation condition, change area, or land cover map	-2	-1	0	1	2

Section 4: A Little Bit About Yourself

Questions 29-37 are demographics questions. We need this information to provide a detailed picture of the moderate-resolution imagery user community. Additionally, in the case that another survey is conducted on this topic in the next few years, this information will be necessary to determine how the user community has changed. We would like establish a set of baseline data that can be used to characterize any changes in the user demographics.

Please tell us a little bit about yourself. Your answers to these questions will help further characterize users of moderate-resolution imagery. Answers are in no way linked to any individual taking this survey.

Q29

In what sector do you work? *Please check all that apply.*

- Academic institution (e.g., university, college, technical/vocational)
- Federal government
- State government
- Local government (e.g., county, municipal)
- Private business
- Non-profit organization
- Tribe or nation

Other (please specify) _____

Q30

Are you...?

- Male
- Female

Q31

In what year were you born?

Questions 32 and 33 will provide information on underrepresented users of moderate-resolution imagery. Decision makers would like to know the extent to which use has expanded to traditionally underrepresented groups.

Q32

What ethnicity do you consider yourself? *Please check only one.*

- Hispanic or Latino
- Not Hispanic or Latino

Q33

From what racial origin(s) do you consider yourself? *Please check all that apply.*

- American Indian or Alaska Native
- White
- Black or African American
- Asian
- Native Hawaiian or Other Pacific Islander

Q34

What is your highest level of formal schooling? *Please check only one.*

- Junior high or middle school
- Some high school
- High school diploma or GED
- Some college
- Associates degree
- Bachelors degree
- Some graduate school
- Masters degree
- Doctorate degree

Questions 35 and 36 will allow the USGS to determine the extent to which respondents are professionally trained and involved in the user community. Again, the user community may be changing to include people who have different professional backgrounds and baseline data needs

to be established to determine if such changes are occurring.

Q35

What type(s) of education or training (e.g., university degrees, technical certificates) have you received related to remote sensing or GIS? (*Open-ended - limit 500 characters*)

Q36

To which of the following remote sensing/GIS-related organizations do you belong? *Please check all that apply.*

- I am not a member of any remote sensing/GIS-related organizations.
- American Association for Geodetic Surveying
- American Congress of Surveying and Mapping (ACSM)
- American Society of Photogrammetry and Remote Sensing (ASPRS)
- Association of American Geographers (AAG)
- Cartography and Geographic Information Society (CAGIS)
- Consortium for International Earth Science Information Network (CIESIN)
- Geographic and Land Information Society (GLIS)
- National Society of Professional Surveyors (NSPS)
- National States Geographic Information Council (NSGIC)
- University Consortium for Geographic Information Science (UCGIS)
- Urban and Regional Information System Agencies (URISA)
- Other (please specify) _____

Question 37 allows respondents to express any additional thoughts or concerns about the issues raised in the survey. The responses will be analyzed to determine any unforeseen issues or problems with moderate-resolution imagery that the USGS may choose to address.

Q37

Thank you for completing this survey. If you have any additional thoughts or concerns about the issues raised in the survey, please enter your remarks in the space below. (*Open-ended - limit 1500 characters*)