

# 2023 EARTH OBSERVATION ASSESSMENT REPORT: AGRICULTURE & FORESTRY ANNEXES

*Product of the*  
SUBCOMMITTEE ON U.S. EARTH OBSERVATION  
COMMITTEE ON ENVIRONMENT

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## **About the Subcommittee on the United States Group on Earth Observations**

The United States Group on Earth Observations (USGEO) is chartered as a Subcommittee of the NSTC Committee on Environment. The Subcommittee's purpose is to plan, assess, and coordinate Federal Earth observations, research, and activities; foster improved Earth system data management and interoperability; identify high-priority user needs for Earth observations data; and engage international stakeholders by formulating the United States' position for, and coordinating U.S. participation in, the intergovernmental Group on Earth Observations (GEO).

## **About this Document**

In Agriculture & Forestry, societal benefits accrue from Earth observation measurements that can inform both short- and long-term decisions made by farmers, ranchers, foresters, research scientists, as well as watershed, natural resource, and land managers. Earth observation measurements of renewable resources and ecosystem condition also support evidence-based decision-making by commodity markets, communities, and all levels of government. These annexes to the Agriculture & Forestry Report provide additional insights into the impact an Earth observation input has on parts of the societal benefit area (SBA) *value tree* (e.g., by SBA, SBA sub-area, and key product, service, and outcome [KPSO]). USGEO is making readily available, either through this report or through the online visualization services (<https://usgeo.gov/eoa>), those elements that are most valuable for agency and public analysis.

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## **Annex A: Agriculture & Forestry Descriptions**

In Agriculture & Forestry, societal benefits accrue from Earth observation measurements that can inform both short- and long-term decisions made by farmers, ranchers, foresters, research scientists, as well as watershed, natural resource, and land managers. Land management decisions are complicated by dynamic and ongoing sources of disturbance, such as diseases, pests, climate extremes, as well as climate change and the conversion of natural land to other uses. Earth observation measurements of renewable resources and ecosystem condition also support evidence-based decision-making within commodity markets, communities, and all levels of government. Accurate and timely (e.g., low latency) information derived from Earth-observing systems can help enhance food supplies, advance the productivity of renewable resources, improve ecosystem condition, and maximize our resilience to disasters and disturbance events. Measurements in this societal benefit area (SBA) improve the ability of farmers and foresters to meet the needs for human food, animal feed, fiber, biofuels, and forest products; support production decisions; and advance forecasting and risk analysis. Measurements in this SBA lead to reduced damages and inform risk from human and natural sources of disturbance including climate change, such as ecosystem degradation, wildfire, drought, flood, and storm events, as well as pests and invasive species. Research and improved data in this SBA can contribute to early warning systems for crop yield shortfalls and pest outbreaks; quantify the potential impact of climate change on the supply of renewable Agricultural & Forestry products; improve data to support the management of and response to disturbance and disaster events; and limit ecosystem degradation associated with agricultural, forestry, and grazing practices.

Within the Agriculture & Forestry SBA, four sub-areas were identified representing the major thematic components, each with between three and seven key objectives. To assess the relative contribution of each Earth observation input to the provision of societal benefit, SBA teams consisting of federal subject matter experts assigned *weights* to each of the sub-areas and key objectives based on input from subject matter experts within the interagency. The total weight of all sub-areas under an SBA sum to 100% as do the total weights of every key objective under a particular sub-area, and these weights are shown in brackets in the descriptions below.

### **Enhance Food Supply [15%]**

Agricultural production is a measure of the Nation’s food supply from local, national, and global sources. Globally, the goal is to consistently produce reliable, objective, timely, transparent, and accurate data on global agricultural production and assessments of the conditions affecting food supply. By monitoring global agricultural production, product supply and demand, baseline market data, and warnings of crop failures, problems can be identified in the food supply system that could lead to famine or other food-insecurities. Timely knowledge of global crop conditions provides the basis for market prices, planting decisions, and emergency food aid. Poor knowledge of food supply and demand often results in unwarranted price fluctuations, human suffering, and county to regional instability. Nationally, the goal is crop monitoring and forecasting of production and supplies of food and fiber. This includes delivering in-season planting intentions, acreage estimates, quality estimates, and harvest estimates in an unbiased manner with measurable error. Each month, the U.S. Department of Agriculture’s (USDA) National Agricultural Statistics Service disseminates its National Crop Production Report, which forecasts and estimates the annual domestic crop harvest—while the Foreign Agriculture Service produces global reports. Earth observations provide an important component of these estimates at the national and global scale.

### ***Understand current agricultural production, production trends, and risk [25%]***

Agricultural land and rangeland, directly or indirectly, provide food to meet local, national, and global demands. Total production, production trends, and crop or animal choice change over time with changes in social and economic demands, together with advances in technology. Tracking changes in the productive capacity of these lands with Earth observations provides an understanding of the change and risk agents affecting the supply of food and the condition of these natural and managed ecosystems, which in turn

provides insight into unsuccessful or unsustainable management practices. Earth observation data can inform factors that affect agricultural production such as ecosystem condition, invasive species and pests, disease, changes in climatic conditions and human-based shocks to the food system, including dynamics in global agriculture and commodity markets or transportation systems.

***Improve soil health, increase carbon uptake and storage, and reduce trace gas emissions from soil by promoting soil conservation practices [30%]***

Soil health is essential to support agricultural, rangeland and ecosystem productivity, cycle nutrients, filter water and pollutants, and provide stability and resources for plant roots. Soil type will determine the agricultural and ecosystem capacity, which will inform changes in land use in response to climate change. The periodic assessment, review, and promotion of soil conservation and carbon management practices in agricultural production areas, rangeland, shrubland, and grasslands provides benefits to our economy and to nature. Careful management practices lead to improvements in soil health, increased carbon uptake and storage, and the reduction of trace gas emissions. Earth observations can inform soil type, moisture, and vegetation supported by the soil, but are limited in their ability to monitor sub-surface soil characteristics.

***Improve resilience of agricultural productivity to empower climate smart agriculture [15%]***

Climate change impacts—including shifting weather patterns and increasingly frequent and severe storms, floods, droughts, and wildfire—present a major threat to agricultural, rangeland, and forest productivity. Climate smart agriculture seeks to sustainably improve agricultural productivity, enhance resilience by adapting to climate change, and reduce greenhouse gas emissions. Practices can include shifting crop type to more drought tolerant varieties, cover cropping, conservation tillage, nutrient management, restoring formerly farmed wetlands, and agroforestry. Earth observations provide data on water supply, soil moisture, and evapotranspiration, as well as the risk and impacts of flood and drought events.

***Increase the efficiency of irrigation, fertilizers, and pesticides by encouraging sustainable and precision agriculture [10%]***

Precision agriculture enables the application of fertilizers, pesticides, and irrigation to be applied with optimal timing and amounts that respond to micro-scale spatial variability in field or tree conditions. This approach gives farmers and foresters the ability to more effectively use resources and reduces the environmental impacts of agriculture. Irrigation is the largest source of consumptive water use across the U.S., and while fertilizers and pesticides can increase productivity and potentially reduce agricultural risk, they can also contaminate surface and ground water. Additionally, excess nutrients can cause eutrophication of waterbodies, while pesticides can harm plants and wildlife. Earth observations can support efforts to track irrigation and inform nutrient and water quality models.

***Manage environmental and human health risks associated with fertilizers and pesticides [5%]***

Managing risks associated with fertilizer and pesticide use is important to protect human health and conserve ecosystem condition. Excess nutrients—like nitrogen and phosphorous—can cause eutrophication and harmful algal blooms in water bodies, which negatively impact aquatic life and can produce toxins harmful to humans. Pesticides negatively impact human health depending on their toxicity and amount and duration of the exposure. In wildlife, pesticides can not only result in mortality, but can also disrupt hormones, impacting a species' ability to reproduce. Earth observations can monitor chlorophyll and cyanobacteria levels in water bodies and provide early warnings of algal blooms. Derived datasets inform effective Federal and State regulatory decisions regarding agricultural and forestry pesticide registration and usage, and can also support efforts to model pesticides, nutrients, and water quality.

***Support forage assessment and management for animal production [5%]***

Both climate dynamics and grazing intensity impact forage availability and grazing conditions. The adoption of sustainable practices and datasets to help monitor and manage rangelands, native grazing lands, pasturelands, haylands, grazed forests, grazed croplands, and naturalized pastures are needed to prevent land degradation as well as improve animal health and production. Best management practices in animal production encourages sustainable ecosystem condition and keeps animals and their waste out of streams to limit nutrient loading in surface waters and protect stream banks and riparian corridors. Earth observations can monitor changes in forage condition, such as leaf area and leaf moisture level, and phenology.

***Improve ecosystem condition to support diverse agricultural pollinators [10%]***

Farmers depend on pollinators like honeybees, butterflies, birds, and bats to pollinate many different food crops. Habitat loss, disease, parasites, and environmental contaminants, however, have all contributed to the decline of many pollinator species. Earth observations that track changes in ecosystem condition, such as leaf cover and phenology—as well as shifts in rainfall and temperature—can be used to guide land management and enhance pollinator habitat. Sustainable agriculture can help diversify agricultural landscapes, and support pollinator-friendly habitats in close proximity with agricultural fields.

**Maximize Productivity and Conservation of Ecosystem Condition [40%]**

Ecosystem condition informs the capacity of ecosystems to regulate climate, store and cycle carbon, provide clean water and pollinator habitats, and support soil formation and nutrient cycling. Climate change, coupled with other stressors, such as unsustainable land use practices and expanding development, threaten the quality of ecosystems and their capacity to provide these regulating and supporting services, as well as provisioning and cultural services. Maintaining and improving ecosystem condition will require utilizing and advancing scientific, technical, and traditional knowledge and promoting sustainable multi-use land management. Conservation of ecosystem condition will also require engagement and collaboration with public and private landowners, including Indigenous communities, to promote the conservation of high value areas and support geospatial data needs. Earth observations can enable sustainable land management decisions and build climate resilience by helping to track land management, species diversity, fire activity, and forest fuels.

***Promote sustainable multi-use management of forests, grasslands, and shrublands that acknowledges Indigenous land management practices [5%]***

Sustainable forestry is using forests and lands in a manner that maintains their biodiversity, productivity, and regenerative capacity for future generations. Similarly, multiple-use management seeks to maintain ecosystem functioning while still enabling populations to meet the demands of products yielded from them. In forests, examples include minimizing soil erosion and compaction in timber production, promoting sustainable harvest rates and regeneration strategies, and minimizing impacts to special status species. In rangelands, examples include multi-species grazing to control invasive plant species, protecting riparian corridors and aquatic fauna from grazing impacts, and supporting wildlife habitat, such as sage-grouse. Sustainable and multi-use strategies will benefit from Traditional Ecological Knowledge (TEK) which refers to the evolving knowledge acquired by Indigenous and local people through direct and long-term or multi-generational contact with the environment. This knowledge can help guide land management practices informed by cultural values and scientific research to create locally optimal and sustainable strategies that balance yields with biodiversity and ecosystem functioning. Earth observations that help to track land management, species diversity, and fire activity—along with TEK, can be used to promote sustainable management of ecosystems.

***Utilize and advance existing scientific, technical, and traditional ecological knowledge to better monitor, manage, and use agricultural lands, forests, grasslands, shrublands, and pasture and rangelands [35%]***

Integrating scientific, technical and TEK into land management practices encourages evidence-based decision-making, improves confidence in predicted outcomes, and enhances stakeholder trust. This process begins with articulating management objectives and questions, using a systematic, rigorous, and transparent approach to summarize relevant science and knowledge, and applying science and knowledge-based conclusions to management objectives. Transparent and collaborative methods are preferred that consider diverse perspectives and recognize socioecological dynamics. Data gaps, sources of uncertainty, and new observing systems can be used to guide research priorities and efforts to produce new and improved Earth observation data products.

***Promote climate resilience by advocating for management practices that adapt to climate change to optimize productivity and improve condition [25%]***

To mitigate the impacts of climate change, it is critical that we document and track changes in the distribution and abundance of flora and fauna, plan and adapt to expected changes in the timing and amount of precipitation and temperature ranges to build resilience in our forests, agriculture (croplands and feedstock), shrublands, and grasslands. Developing an improved understanding of which plants (and animals) are drought and temperature tolerant (and which are not), and which plant species serve as efficient carbon sinks is critical to a long-term management strategy. Earth observations can be used to track vegetation condition and the response of vegetation to climate extremes. As we develop best practices, Federal and State governments need to work collaboratively as advocates for adaptive management practices.

***Minimize adverse effects of human activities on ecosystem condition [15%]***

Ecosystem health depends on the functionality of natural, non-degraded ecosystem components and processes, which have evolved in response to climatic, geologic, and topographic forces. Substantial modification of ecosystem condition threatens species' adaptive capacities, ecosystem functioning, and associated ecosystem services that these systems provide to human economies and societies. Human activities and land use can degrade ecosystem condition in many different ways—for example, polluting air and water quality, removing vegetation, practicing silviculture, mining and other development and extractive activities, fragmenting ecosystems, changing the flow of water across watersheds, and introducing invasive species and pests. Monitoring the impacts of human activities on ecosystem condition is key to developing long-term strategies for adaptive management. The developed management strategies need to be agile, adaptable, and forward-looking to remain compatible with changing climatic regimes. Earth observations help track sources of land cover disturbance, such as forest harvest, development, and changes in land use as well as support efforts to monitor ecosystem type, condition (e.g., leaf area index, leaf moisture, productivity, chemical pollutants), and the impacts of human land use on aquatic and terrestrial ecosystems. Further, Earth observations also inform effective Federal and State regulations for protecting the environment from human-driven stressors.

***Collaboratively promote conservation of high value areas and minimally managed forests, grasslands, and shrublands [15%]***

High conservation value landscapes may provide high biological diversity, conserve critical habitat for special status species, and support cultural values and community needs. Additionally, the conservation of large landscape-level ecosystems and ecosystem mosaics is important to conserve viable populations of plants, wildlife, aquatic fauna, and ecosystem types, store carbon, and maintain essential ecosystem services such as clean air and water. Data products that support the monitoring of high value areas and minimally managed forests, grasslands, and shrublands are important to encourage collaborative conservation efforts at local, regional, and national scales. Networks of long-term monitoring sites, as well as refuges, reserves,

parks, and other protected lands help maintain biodiversity and high conservation value landscapes. Earth observation products that help track changes in land cover, extent and timing of disturbances, and ecosystem condition, including phenology, leaf area and productivity, will inform the condition of, and risks to, both protected lands as well as unprotected and minimally managed lands.

### ***Collaboratively engage and support geospatial needs in rural and Indigenous communities [5%]***

Working collaboratively with rural and Indigenous communities is seeing renewed emphasis across the Federal civil community, particularly in relation to geospatial data collection, analysis, and dissemination. The push for collaboration is both out of respect for these communities, and to empower communities to prioritize locally important values such as environmental justice, urban greening, and cultural knowledge. Numerous tools and dashboards enable effective data communication and collaboration with people in rural and Indigenous communities. The efficient organization and delivery of data products and flexible modeling frameworks can help support local data needs and decision-making.

### **Improve Resilience to Disasters and Disturbance Events [35%]**

Ecosystems are highly dynamic systems. Cycles of disturbances and recovery from fire, wind, climate extremes, and pest/disease and compounding effects of disasters often facilitate diversity in ecosystem structure and composition, improving ecosystem resilience. However, disturbance and disasters can also threaten public health and safety as well as the economic productivity of forests and agriculture. Additionally, as climate change modifies disturbance dynamics, impacts on ecosystem condition and productivity become more uncertain. Data products that facilitate the characterization of pre-disturbance conditions, the spatial extent, magnitude and severity of disasters and disturbances, and monitor post-disturbance recovery are critical. Near-real time data products support the tactical response to fast-moving disasters such as wildfires, hurricanes, and floods. Disaster response and mitigation processes require complete, reliable, and time sensitive Earth observations to help protect forest, agriculture, soil, and water resources.

### ***Allow natural disturbance (e.g., fire) where appropriate and manage disturbance risks that affect populations (e.g., wildland-urban interface and coastal areas) [15%]***

Numerous natural disturbances—including wildfire, flooding, hurricanes and storms, and extended drought—are important to promote micro- and macro-scale diversity in ecosystem structure and function but require risk analysis for proper planning and response before, during, and following disturbance events. Wildland fire, for example, can be beneficial (and often necessary) as well as detrimental to the wildland ecosystem. Knowing when to commit resources and when to let fires burn is part of a new paradigm in fire management. Prescriptive fire burning is part of the national approach to reducing fire risk, particularly in areas where communities in the wildland urban interface, and critical infrastructure are at high risk for burning. It is also important for the fire management community to acknowledge, respect, and learn from Indigenous fire stewardship and related practices that improve forest resilience. Increasing wildfire activity also leads to increasing downwind smoke and health impacts to communities. Earth observations can help with tracking of smoke plume movement and air quality measurements, facilitated by online dynamic maps that are shared with the public. Accurate floodplain maps aid in assessing risk in low-lying areas informing homeowners, city planners, insurers, and others. Real-time flood maps are useful in supporting search and rescue and aid in post-flooding damage assessments to structures and infrastructure.

### ***Predict and manage fire risk, tactical fire support, and post-fire remediation [25%]***

Earth observation data needs differ between predicting fire risk, supporting tactical fire management, and managing post-fire risks and impacts (e.g., debris flow, flooding, emissions). Data on fuel loads and fuel moisture integrated with real-time data on wildfire-conducive weather conditions help support efforts to predict and manage wildland fire risk. Land managers can also prescribe treatments to reduce fire risk and



understand where more fire may be beneficial for ecosystem condition. Knowledge of wildfire risk also helps land managers to better lead and to position fire and aviation assets in preparing and responding to fire events. Real-time thermal data from aircrafts, uncrewed aircraft systems (UAS), and satellites provide information critical for the control of active fires. Post fire, it is important to assess the burn severity across the landscape to characterize impacts from the fire and to aid in rapid remediation efforts. Of immediate concern is minimizing downslope wasting and debris flows after the fire is extinguished. The rate of soil stabilization through the reestablishment of grass and shrub species is of interest. In forest fires, long-term concern is the rate and trajectory of forest succession, with post-fire weather and climate change impacting the establishment and survival of tree seedlings.

***Minimize soil erosion from water, wind, active management, and post fire in agricultural and forest ecosystems [10%]***

Soil erosion is a significant problem in systems where bare soil is exposed. Following severe wildfires, for example, rainstorms can cause heavy soil erosion without plant roots to stabilize the soil and plant material to encourage the percolation of water into the soil profile. In agricultural landscapes, minimizing soil erosion from wind and precipitation is integral to maintaining productivity and protecting water quality. In agricultural systems, highly erodible land requires application of conservation systems as a condition of eligibility for most farm commodity and conservation programs. Minimizing soil erosion can be supported through near-real time production of burn severity and tracking and monitoring post-wildfire soil stabilization efforts. In addition, datasets such as geology, soil, vegetation, wind speed, and elevation models can help predict erosion risk and the impact of management actions, such as wind breaks.

***Support risk and impact modeling for drought, flood, climate extremes, pest/disease infestation, fire, and storm-prone areas [30%]***

Predictive modelling for drought, flood, climate extremes, pest/disease infestation, fire, and storm-prone areas is critically important to manage the risk to human health and safety, protect homes and infrastructure, and reduce the economic costs of disturbance and disaster events on agriculture and forestry. Risk analysis provides forewarning and helps guide risk mitigation efforts, such as managing vegetation in the wildland-urban interface, conserving coastal wetlands to buffer impacts to coastline cities, and allocating water supplies to reduce drought impacts. Impact modeling is critical to facilitate the recovery of communities and ecosystems during and following disturbance and disaster events. Earth observations such as floodwater extent mapping can support the allocation of emergency resources, while mapping pest and disease infestations can guide decisions to manage and treat these infestations.

***Maintain resilience of water supplies and facilitate post-disturbance restoration and rehabilitation [10%]***

Water forms the foundation for the human economy and the health of ecosystems. In addition to freshwater providing drinking water, forest, ranching, and agricultural ecosystems all depend on water resources to support vegetation growth and wildlife. Monitoring water supplies in all forms (wetlands, lakes, streams, rivers, reservoirs, aquifers, etc.) is critical for supplying safe drinking water to our growing population, supporting agriculture (plant and animal), and maintaining stable and dependable food supplies. The amount of water, as well as its reliability and quality through time, will determine the capacity of land to sustain forests and agricultural ecosystems, and ultimately, the ability to sustain human populations while maintaining healthy ecosystems. The amount of surface water is driven by surface storage, patterns of precipitation and evapotranspiration, and water extraction. The distribution of surface water, in turn, is influenced by dams, flow modification, and agricultural tile drainage. Tile drainage, for example, increases flash flooding, river and stream erosion, and the movement of fertilizers and pesticides across watersheds. Extended drought and wildfires are also significant threats to water supplies. Earth observations can support forecasts of water supplies, monitor of surface water extent, track the movement of water across landscapes, and better understand the impacts of land use on surface water.

***Improve resistance of agriculture, rangelands, grasslands, and forests to disease and pests including invasive species [10%]***

Native and invasive pests, such as diseases, insects, and weeds, cause costly economic and ecological damage by decimating crops, obstructing streams and waterways, degrading wildlife habitat, and increasing fire vulnerability. Invasive species are of particular threat to ecosystem productivity and condition and include non-native species that tend to reproduce and spread rapidly, out-competing native species. Native species can also have large impacts on ecosystem condition. Bark beetles, for example have co-evolved with forest ecosystems, but their population dynamics are changing with climate change. Efforts to survey, track, and model invasive species, pests, and diseases can be used to slow their spread, monitor their impacts, and guide management plans. Earth-observing capabilities are useful in detecting changes in species composition or vegetation condition that may indicate mortality from invasive species, pests, or disease, as well identifying changes in condition that may indicate increase susceptibility to disease and pests.

**Support Regulatory Requirements and Evidence-Based Decision-Making [10%]**

Compliance and integrity monitoring ensures that adequate safeguards are in place to avoid or correct abuses to taxpayer funded insurance, conservation, and farm programs as well as provide support to firefighters, aviation, and law enforcement. Sources of moderate- and high-resolution imagery are used extensively to supply tactical- and strategic-level support to wildland firefighters, provide farm program management and stewardship tools that support farmers and communities, share actionable information to insurance programs, and afford tools for tracking forest ecosystem carbon pools (storage) and fluxes, which are increasing in importance as the global community works to limit greenhouse gases.

***Provide geospatial support to firefighters, aviators, law enforcement, farmers, communities, and agencies [30%]***

Near real-time Earth observation data are critical to support active and tactical fire mapping, and to track flood water extent and guide post-disaster response. For example, high frequency fire perimeter and spread data are crucial to wildland firefighters whose safety and effectiveness on the fire-line depend on an accurate understanding of where the fire is and how it is behaving (direction, rate of spread, flame fronts). Datasets derived from optical, light detecting and ranging (LiDAR), and radio detection and ranging (RADAR) imagery can also be used to support the needs of farmers, aviators, and law enforcement. Further, easily accessible datasets on environmental and demographic information can help support community needs and improve environmental justice.

***Monitor and promote compliance with Federal laws (farm, insurance, conservation, and leases) and programs [15%]***

Successful implementation of Federal programs, national stewardship and conservation efforts, and Federal laws will benefit from national-scale data on land use and intensity as well as ecosystem condition informing—for example, agricultural and rangeland productivity and management, and forest type, structure, and health. Accurate, complete, and timely Earth observation-based datasets can improve the effectiveness and cost efficiency of implementing and promoting compliance with programs and laws, bringing substantial savings to agencies and the American taxpayer.

***For carbon storage and greenhouse gas emissions, support analysis and evidence-based decision-making [55%]***

Forests sequester and store carbon dioxide from the atmosphere, making them a critical resource to mitigate greenhouse gas emission and climate change. However, the amount of carbon stored, the rate of carbon assimilation, as well as the source (net emission) to sink (net absorption) ratio will depend on forest type,

age, and health, which are impacted by changing climate and disturbances such as wildfire, insect/disease, ecosystem degradation, and harvest. Policies and management decisions can be used to help facilitate the recovery of forests following disturbance events, maximize forest carbon storage, and promote sustainable forestry practices. Earth observations support efforts to monitor forest extent, biomass, and productivity, as well as the recovery of forests following a disturbance.

### **Abbreviations and Acronyms**

<b>EOP</b>	Executive Office of the President
<b>GEO</b>	Group on Earth Observations
<b>KPSO</b>	key product, service, or outcome
<b>LiDAR</b>	light detection and ranging
<b>NSTC</b>	National Science and Technology Council
<b>OSTP</b>	Office of Science and Technology Policy
<b>RADAR</b>	radio detection and ranging
<b>SBA</b>	societal benefit area
<b>TEK</b>	Traditional Ecological Knowledge
<b>UAS</b>	uncrewed aircraft systems
<b>USDA</b>	U.S. Department of Agriculture
<b>USGEO</b>	U.S. Group on Earth Observations

## Annex B: Agriculture & Forestry Summary Table

The ranking in this table reflects the observing systems that the federal community is currently relying on and does not include new/upcoming systems that may have value in the future for the Agriculture and Forestry SBA. The ranking is determined by the number of Agriculture & Forestry KPSOs impacted. The ranking of an Earth Observation Input only applies in the context of the Agriculture and Forestry SBA. Any given Earth Observation Input may be ranked either higher or lower for other SBAs and for the Earth observation enterprise as a whole.

Key	Satellite/Satellite Data	Number of Agriculture & Forestry KPSOs Impacted (208 Total)	% Impact on Agriculture & Forestry
	<i>In Situ</i> Data		
	Airborne Data		
	Field Work		
	Elevation Data		
	Other Reference Data		
<b>Earth Observation Inputs</b>			
1	Aqua Moderate Resolution Imaging Spectroradiometer (MODIS)	164 (78.8%)	9.05%
2	Terra Moderate Resolution Imaging Spectroradiometer (MODIS)	164 (78.8%)	9.01%
3	Digital Elevation Models Output - Shuttle Radar Topography Mission (USGS)	160 (76.9%)	4.21%
4	Landsat Operational Land Imager (OLI)	142 (68.3%)	6.74%
5	Landsat Thermal Infrared Sensor (TIRS)	138 (66.3%)	3.11%
6	Global Land Survey Digital Elevation Model (GLSDEM)	138 (66.3%)	2.45%
7	Airborne Synthetic Aperture Radar (SAR)/Interferometric SAR (IfSAR)	137 (65.9%)	1.30%
8	Canadian Digital Elevation Model	133 (63.9%)	0.68%
9	Commercial Airborne Lidar	130 (62.5%)	5.15%
10	Sentinel-2 Multi-Spectral Imager [ESA]	129 (62%)	3.64%
11	Greenland Ice Mapping Project (GIMP) DEM	128 (61.5%)	0.36%
12	Norwegian Polar Institute (NPI) Elevation Data	128 (61.5%)	0.36%
13	Radarsat Antarctic Mapping Project (RAMP) DEM	128 (61.5%)	0.36%
14	Sweden, Norway, and Finland National (SNF) Elevation Data	128 (61.5%)	0.36%
15	National Agriculture Imagery Program (NAIP)	126 (60.6%)	3.45%
16	JPSS Polar Constellation Visible Infrared Imaging Radiometer Suite	125 (60.1%)	4.49%
17	WorldView 2 Commercial Earth Observation Satellite	119 (57.2%)	0.88%
18	Global Positioning System (GPS)	118 (56.7%)	3.01%
19	SNOWpack TELEmetry (SNOTEL)	118 (56.7%)	1.51%
20	WorldView 3 Commercial Earth Observation Satellite	118 (56.7%)	1.01%
21	Landsat archives	115 (55.3%)	2.52%
22	GOS Basic Surface Synoptic Network	115 (55.3%)	1.39%
23	Field Work - Visual Surveys/Lab Samples Collection	110 (52.9%)	8.53%
24	Global Climate Model DEM	110 (52.9%)	0.49%
25	Interagency Remote Automated Weather Stations (RAWS)	109 (52.4%)	0.74%
26	Automated Surface Observing System (ASOS)	109 (52.4%)	0.24%
27	Community Collaborative Rain, Hail and Snow Network (CoCoRaHS)	108 (51.9%)	0.43%
28	NWS Cooperative Observer Program (COOP)	107 (51.4%)	0.81%
29	Google Earth	102 (49%)	0.83%
30	National Hydrography Dataset (NHD) Data	101 (48.6%)	0.98%
31	ASTER Global Emissivity Database (GED)	99 (47.6%)	0.35%
32	Global Change Observation Mission 1st-Water (GCOM-W1) Advanced Microwave Scanning Radiometer-2 [JAXA]	98 (47.1%)	0.13%

Key	Satellite/Satellite Data	Number of Agriculture & Forestry KPSOs Impacted (208 Total)	% Impact on Agriculture & Forestry
	<i>In Situ</i> Data		
	Airborne Data		
	Field Work		
	Elevation Data		
	Other Reference Data		
<b>Earth Observation Inputs</b>			
33	U.S. Climate Reference Network (USCRN)	97 (46.6%)	0.45%
34	WorldView 1 Commercial Earth Observation Satellite	96 (46.2%)	0.04%
35	Field Work - Visual Inspections	95 (45.7%)	1.09%
36	NASA Global Precipitation Measurement Mission (GPM) Microwave Imager	93 (44.7%)	0.13%
37	Voluntary Observing Ship	93 (44.7%)	0.11%
38	AURA Ozone Monitoring Instrument	92 (44.2%)	0.16%
39	USDA FSA Form 578 Database	90 (43.3%)	0.64%
40	Geostationary Operational Environmental Satellite - R Series (GOES-R) Advanced Baseline Imager	88 (42.3%)	1.28%
41	Soil Climate Analysis Network (SCAN)	88 (42.3%)	0.20%
42	State Geologic Survey Maps	87 (41.8%)	0.61%
43	Automated Weather Observing System (AWOS)	84 (40.4%)	0.26%
44	Hydrometeorological Automated Data System (HADS)	84 (40.4%)	0.16%
45	Information Management System: Advanced Hydrological Prediction Service (AHPS)	82 (39.4%)	0.18%
46	Upper-air Rawinsonde Network	81 (38.9%)	0.25%
47	Weather Bureau Army Navy (WBAN) Weather Data	81 (38.9%)	0.19%
48	Papers - Journals, Scientific Articles/Reports (External)	79 (38%)	0.30%
49	Environment Canada (EC) Weather Network	79 (38%)	0.15%
50	Mexico Weather Network	79 (38%)	0.12%
51	Snow Courses	78 (37.5%)	0.19%
52	Western Regional Climate Center (WRCC) Mesonet	78 (37.5%)	0.11%
53	Planet Dove	78 (37.5%)	0.09%
54	Field Work - Salinity Sampling, Tidal Observations	76 (36.5%)	0.07%
55	NOAA National Data Buoy Center (NDBC) Buoy Network	74 (35.6%)	0.13%
56	NOAA Hydrometeorological Design Studies Center (HDSC) Precipitation	73 (35.1%)	0.05%
57	USGS Streamgages	72 (34.6%)	1.06%
58	Meteorological Data Collection and Reporting System (MDCRS)	72 (34.6%)	0.08%
59	Nebraska Mesonet (NEMESO)	72 (34.6%)	0.05%
60	North Dakota Agricultural Weather Network (NDAWN)	72 (34.6%)	0.05%
61	USGS Topographic Maps	71 (34.1%)	1.60%
62	Aircraft Meteorological Data Relay (AMDAR)	71 (34.1%)	0.08%
63	California Irrigation Management Information System (CIMIS)	71 (34.1%)	0.03%
64	California Data Exchange Center (CDEC) Mesonet	70 (33.7%)	0.04%
65	Agrimet (USBR, Pac NW Agricultural Sfc Weather Network)	70 (33.7%)	0.03%
66	Washington State University AgWeatherNet	70 (33.7%)	0.03%
67	Lower Colorado River Authority Network (LCRA)	70 (33.7%)	0.03%
68	GeoEye1 Commercial High-Resolution Satellite Imagery	69 (33.2%)	0.18%
69	Long-Term Precipitation Storage Gage Stations	69 (33.2%)	0.03%
70	Minnesota Climatology Working Group Gauge Network	69 (33.2%)	0.03%
71	Nevada Division of Water Resources (NVDWR) Gauge Network	69 (33.2%)	0.03%
72	North Dakota State Water Commission (NDSWC) Gauge Network	69 (33.2%)	0.03%
73	South Florida Water Management District (SFWMD) Gauge Network	69 (33.2%)	0.03%
74	Colorado Agricultural Meteorological Network (COAGMET)	69 (33.2%)	0.03%

Key	Satellite/Satellite Data	Number of Agriculture & Forestry KPSOs Impacted (208 Total)	% Impact on Agriculture & Forestry
	<i>In Situ</i> Data		
	Airborne Data		
	Field Work		
	Elevation Data		
	Other Reference Data		
	Earth Observation Inputs		
75	National Geologic Map	68 (32.7%)	0.20%
76	Polar-orbiting Operational Environmental Satellite Series (POES) Advanced Very High Resolution Radiometer	66 (31.7%)	0.19%
77	Polar-orbiting Operational Environmental Satellite Series (POES) Advanced Microwave Sounding Unit A	65 (31.3%)	0.09%
78	Nevada Climate-Ecohydrological Assessment Network (NevCAN)	64 (30.8%)	0.02%
79	Oklahoma Mesonet	64 (30.8%)	0.02%
80	Arizona Mesonetnetwork (AZMET)	64 (30.8%)	0.02%
81	Utah State University Agricultural Weather Network (UCC-AGNET)	64 (30.8%)	0.02%
82	MetOp Advanced Microwave Sounding Unit A [EUMETSAT]	63 (30.3%)	0.07%
83	Kansas Mesonet	63 (30.3%)	0.02%
84	Kentucky Mesonet	63 (30.3%)	0.02%
85	New Jersey Weather and Climate Network (NJWXNET)	63 (30.3%)	0.02%
86	North Carolina Environment and Climate Observing Network (NCECONET)	63 (30.3%)	0.02%
87	STATSGO Database	62 (29.8%)	0.82%
88	CA - LandIQ Specialty Crops (2019)	62 (29.8%)	0.04%
89	NRCS National Commodity Crop Productivity Index (NCCPI) [MI only]	62 (29.8%)	0.04%
90	FL - NASS Citrus Data Layer (2022)	62 (29.8%)	0.04%
91	WA - Washington State Dept of Agriculture Crop Data (2022)	62 (29.8%)	0.04%
92	Florida Automated Weather Network (FAWN)	62 (29.8%)	0.02%
93	GAP Protected Area Database (PAD-US) Data	61 (29.3%)	0.48%
94	Delaware Environmental Observing System (DEOS)	61 (29.3%)	0.02%
95	National Hydrography Dataset Plus (NHD-Plus)	60 (28.8%)	0.24%
96	Defense Meteorological Satellite Program (DMSP) Special Sensor Microwave Imager Sounder	60 (28.8%)	0.09%
97	Commercial Airborne High-resolution Visible Imagery	60 (28.8%)	0.02%
98	Historical Airborne Imagery	59 (28.4%)	0.26%
99	Himawari Advanced Himawari Imager [JMA]	59 (28.4%)	0.14%
100	Next Generation Weather Radar (NEXRAD) Base Products	59 (28.4%)	0.13%
101	MetOp Advanced Scatterometer [EUMETSAT]	58 (27.9%)	0.10%
102	Next Generation Weather Radar (NEXRAD) Velocity Derived Products	58 (27.9%)	0.09%
103	NOAA Air Resources Lab (ARL) Field Research Division (ARLFRD) Mesonets	58 (27.9%)	0.02%
104	NOAA Air Resources Lab (ARL) Special Operations and Research (ARLSORD) Mesonets	58 (27.9%)	0.02%
105	HJ Andrews Long Term Ecological Research (LTER) Site Mesonet Data (OREGON)	58 (27.9%)	0.02%
106	Wetland Potential Index (WPI)	55 (26.4%)	0.16%
107	JPSS Polar Constellation Advanced Technology Microwave Sounder	55 (26.4%)	0.08%
108	Citizens Weather Observer Program	55 (26.4%)	0.01%
109	Georgia Automated Environmental Monitoring Network (GAEMN)	55 (26.4%)	0.01%
110	University of South Alabama Mesonet	55 (26.4%)	0.01%
111	MetOp Advanced Very High Resolution Radiometer [EUMETSAT]	54 (26%)	0.12%
112	GOS Upper Air Network	54 (26%)	0.06%
113	JPSS Polar Constellation Cross-track Infrared Sounder	53 (25.5%)	0.08%

Key	Satellite/Satellite Data	Number of Agriculture & Forestry KPSOs Impacted (208 Total)	% Impact on Agriculture & Forestry
	<i>In Situ</i> Data		
	Airborne Data		
	Field Work		
	Elevation Data		
	Other Reference Data		
	<b>Earth Observation Inputs</b>		
114	MetOp Infrared Atmospheric Sounding Interferometer [EUMETSAT]	53 (25.5%)	0.08%
115	GCOS Reference Upper Air Network (GRUAN)	53 (25.5%)	0.04%
116	Michigan Automated Weather Network (MAWN)	53 (25.5%)	0.01%
117	Shuttle Radar Topography Mission (SRTM)	52 (25%)	0.43%
118	Next Generation Weather Radar (NEXRAD) Precipitation Estimation Products	52 (25%)	0.08%
119	MetOp Microwave Humidity Sounder [EUMETSAT]	52 (25%)	0.04%
120	Polar-orbiting Operational Environmental Satellite Series (POES) Microwave Humidity Sounder	52 (25%)	0.03%
121	Polar-orbiting Operational Environmental Satellite Series (POES) High Resolution Infrared Sounder	52 (25%)	0.03%
122	Airborne Gamma Ray Surveys	52 (25%)	0.01%
123	Luke Air Force Base Network (LUKEAFB)	52 (25%)	0.01%
124	Meteosat Second Generation [EUMETSAT]	51 (24.5%)	0.07%
125	Spatial - Global Land Survey Topography (University of Maryland)	51 (24.5%)	0.04%
126	Mississippi Delta Agricultural Weather Center (MS-DELTA) Weather Stations	51 (24.5%)	0.01%
127	Montana Mesonet (MT-MESO)	51 (24.5%)	0.01%
128	Mississippi Delta Agricultural Weather Center (MS-DELTA) Weather Stations	51 (24.5%)	0.01%



### Annex C: Agriculture & Forestry Full Results Table

The ranking in this table reflects the observing systems that the federal community is currently relying on and does not include new/upcoming systems that may have value in the future for the Agriculture and Forestry SBA. The ranking is determined by the weights in Annex A, which were developed by federal subject matter experts. The ranking of an Earth Observation Input only applies in the context of the Agriculture and Forestry SBA. Any given Earth Observation Input may be ranked either higher or lower for other SBAs and for the Earth observation enterprise as a whole.

Key	SBA		Sub-area			
	99th Percentile	Agriculture & Forestry [AF]	Enhance Food Supply [AF-1]	Maximize productivity and conservation of ecosystem condition [AF-2]	Improve resilience to disasters and disturbance events [AF-3]	Support regulatory requirements and evidence-based decision-making [AF-4]
	95th Percentile					
	90th Percentile					
	75th Percentile					
	50th Percentile					
	Below 50th Percentile					
	Blank Cells Indicate Input Does Not Contribute to Area					
Earth Observation Inputs						
1	Aqua Moderate Resolution Imaging Spectroradiometer (MODIS)	9.05%	8.57%	8.98%	9.85%	7.27%
2	Terra Moderate Resolution Imaging Spectroradiometer (MODIS)	9.01%	8.43%	8.98%	9.79%	7.26%
3	Field Work - Visual Surveys/Lab Samples Collection	8.53%	11.18%	14.67%	1.98%	1.68%
4	Landsat Operational Land Imager (OLI)	6.74%	5.78%	7.38%	6.96%	4.74%
5	Commercial Airborne Lidar	5.15%	8.02%	4.73%	4.57%	4.47%
6	JPSS Polar Constellation Visible Infrared Imaging Radiometer Suite	4.49%	2.47%	3.83%	6.39%	3.75%
7	Digital Elevation Models Output - Shuttle Radar Topography Mission (USGS)	4.21%	4.04%	4.31%	4.32%	3.63%
8	Sentinel-2 Multi-Spectral Imager [ESA]	3.64%	3.80%	2.66%	5.35%	1.52%
9	National Agriculture Imagery Program (NAIP)	3.45%	5.09%	2.75%	2.00%	8.95%
10	Landsat Thermal Infrared Sensor (TIRS)	3.11%	3.24%	3.18%	2.97%	3.09%
11	Global Positioning System (GPS)	3.01%	1.48%	3.90%	1.35%	7.49%
12	Field Work - Ground Surveys, Field Measurements	2.87%	0.18%	4.17%	1.05%	8.01%
13	State/Local Parcel Data	2.57%	0.16%	3.68%	0.98%	7.33%
14	Landsat archives	2.52%	1.29%	3.11%	1.74%	4.73%
15	Global Land Survey Digital Elevation Model (GLSDEM)	2.45%	2.27%	2.51%	2.59%	1.96%
16	Citizen Reporting - Phenology	1.98%	0.23%	4.32%	0.54%	
17	USGS Topographic Maps	1.60%	0.15%	2.13%	0.78%	4.48%
18	SNOWpack TElemetry (SNOTEL)	1.51%	1.97%	0.91%	2.19%	0.86%
19	GOS Basic Surface Synoptic Network	1.39%	0.52%	0.15%	3.45%	0.68%
20	Field Work - Visual Surveys	1.34%	1.69%	0.34%	1.19%	5.53%
21	NEON Airborne Observation Platform (AOP) Imaging Spectrometer	1.32%	1.93%	2.51%	<0.01%	<0.01%
22	ISS Global Ecosystem Dynamics Investigation (GEDI) Lidar	1.31%	0.08%	1.48%	0.64%	4.88%

Key	SBA		Sub-area			
	99th Percentile	Agriculture & Forestry [AF]	Enhance Food Supply [AF-1]	Maximize productivity and conservation of ecosystem condition [AF-2]	Improve resilience to disasters and disturbance events [AF-3]	Support regulatory requirements and evidence-based decision-making [AF-4]
	95th Percentile					
	90th Percentile					
	75th Percentile					
	50th Percentile					
	Below 50th Percentile					
	Blank Cells Indicate Input Does Not Contribute to Area					
Earth Observation Inputs						
23	Airborne Synthetic Aperture Radar (SAR)/Interferometric SAR (IfSAR)	1.30%	2.64%	1.06%	0.99%	1.33%
24	Historical FIA Forest Inventory Data	1.29%	0.07%	1.88%	0.45%	3.71%
25	Geostationary Operational Environmental Satellite - R Series (GOES-R) Advanced Baseline Imager	1.28%	0.52%	0.48%	2.77%	0.55%
26	Field Work - Visual Inspections	1.09%	1.99%	0.37%	0.81%	3.68%
27	USGS Streamgages	1.06%	1.97%	0.70%	1.22%	0.62%
28	WorldView 3 Commercial Earth Observation Satellite	1.01%	1.08%	0.33%	1.53%	1.93%
29	National Ecological Observatory Network (NEON)	0.99%	0.12%	2.16%	0.27%	
30	National Hydrography Dataset (NHD) Data	0.98%	1.43%	1.25%	0.41%	1.11%
31	Integrated Reporting of Wildland-Fire Information (IRWIN)	0.90%	0.07%	0.30%	1.92%	1.11%
32	WorldView 2 Commercial Earth Observation Satellite	0.88%	0.88%	0.33%	1.24%	1.92%
33	Google Earth	0.83%	0.11%	1.22%	0.43%	1.69%
34	STATSGO Database	0.82%	1.22%	0.82%	0.65%	0.75%
35	NWS Cooperative Observer Program (COOP)	0.81%	0.97%	0.49%	1.20%	0.49%
36	ArcGIS Imagery	0.80%	0.04%	1.09%	0.45%	2.06%
37	US National Imagery Systems (USNIS)	0.78%	<0.01%	<0.01%	1.70%	2.01%
38	State & Local Air Monitoring Stations (SLAMS)	0.76%	0.01%	1.59%	0.31%	0.01%
39	Interagency Remote Automated Weather Stations (RAWS)	0.74%	0.64%	0.45%	1.17%	0.57%
40	VIIRS Land Cover Product	0.72%	0.31%	1.51%	0.18%	<0.01%
41	Google Earth Engine (GEE)	0.68%	0.55%	1.04%	0.14%	1.29%
42	Canadian Digital Elevation Model	0.68%	0.65%	0.66%	0.74%	0.53%
43	FAA Airport Diagrams	0.66%	0.03%	0.97%	0.22%	1.89%
44	Avenza Maps	0.66%	0.03%	0.97%	0.22%	1.89%
45	Field Work - Field Experiments	0.65%		1.59%		
46	Hydrologic Unit Codes (HUC)	0.65%	1.33%	0.62%	0.48%	0.27%
47	USDA FSA Form 578 Database	0.64%	1.75%	0.58%	0.33%	0.29%
48	State Geologic Survey Maps	0.61%	1.47%	0.49%	0.28%	0.94%
49	Carbon Budget Model of the Canadian Forest Sector (CBM-CFS3)	0.60%			1.34%	1.46%
50	Field Work - Field Moisture Sampling	0.56%			1.59%	0.11%
51	Sentinel-3 Ocean and Land Color Instrument [ESA]	0.55%	0.85%	<0.01%	1.23%	
52	NCore (National Core Network)	0.53%	0.01%	1.28%	<0.01%	0.01%
53	Soil Moisture Active-Passive (SMAP)	0.51%	2.80%	0.18%	0.04%	<0.01%
54	Natural Resource Management Community Reporting (Fed, State, Local Gov't)	0.50%	0.06%	1.08%	0.14%	

Key	SBA		Sub-area			
			Enhance Food Supply [AF-1]	Maximize productivity and conservation of ecosystem condition [AF-2]	Improve resilience to disasters and disturbance events [AF-3]	Support regulatory requirements and evidence-based decision-making [AF-4]
	99th Percentile					
	95th Percentile					
	90th Percentile					
	75th Percentile					
	50th Percentile					
Below 50th Percentile						
Blank Cells Indicate Input Does Not Contribute to Area						
Earth Observation Inputs						
		Agriculture & Forestry [AF]				
55	NEON Airborne Observation Platform (AOP) Airborne Lidar	0.49%	0.76%	0.92%	<0.01%	0.01%
56	Global Climate Model DEM	0.49%	0.54%	0.56%	0.46%	0.22%
57	Airborne High-Resolution Visible Imagery	0.48%	0.07%	0.52%	0.50%	0.90%
58	National Incident Feature Service (NIFS)	0.48%	0.06%	0.17%	0.87%	1.04%
59	Field Work - Species Data Collection	0.48%	0.01%	1.13%	0.04%	<0.01%
60	GAP Protected Area Database (PAD-US) Data	0.48%	0.05%	0.50%	0.47%	1.05%
61	Ice, Cloud, and Land Elevation Satellite 2 (ICESAT) Advanced Topographic Laser Altimeter System	0.46%	<0.01%	1.09%	<0.01%	0.18%
62	Field Experiments (Controlled Ecosystem)	0.45%		1.11%		
63	U.S. Climate Reference Network (USCRN)	0.45%	0.55%	0.31%	0.63%	0.24%
64	Shuttle Radar Topography Mission (SRTM)	0.43%	0.17%	0.78%	0.21%	0.13%
65	Farm Operator Surveys	0.43%	1.49%	0.42%	<0.01%	0.33%
66	Community Collaborative Rain, Hail and Snow Network (CoCoRaHS)	0.43%	0.64%	0.39%	0.37%	0.44%
67	OnX Hunt - Hunting GPS Maps	0.42%	0.02%	0.62%	0.14%	1.20%
68	Quantifying Greenhouse Gas Fluxes in Agriculture and Forestry: Methods for Entity-Scale Inventory	0.42%	2.16%			0.97%
69	Field Work - Soil Sample Collection	0.41%	0.07%	0.01%		4.04%
70	USGS Global 30 Arc-Second Elevation (GTOPO30)	0.40%	0.49%	0.57%	0.15%	0.42%
71	U.S. Census Data	0.40%	0.14%	0.23%	0.73%	0.33%
72	Direct Reports from Farmers (Crop Reports, 578s)	0.38%	0.24%	0.14%	0.80%	0.16%
73	Historical Landslide Inventory	0.37%			1.08%	
74	Crewed Aircraft Visual Surveys	0.37%	0.11%	0.07%	0.93%	0.03%
75	Climate Hazards Group InfraRed Precipitation with Station data (CHIRPS)	0.36%	1.80%			0.92%
76	Norwegian Polar Institute (NPI) Elevation Data	0.36%	0.35%	0.35%	0.39%	0.28%
77	Sweden, Norway, and Finland National (SNF) Elevation Data	0.36%	0.35%	0.35%	0.39%	0.28%
78	Greenland Ice Mapping Project (GIMP) DEM	0.36%	0.35%	0.35%	0.39%	0.28%
79	Radarsat Antarctic Mapping Project (RAMP) DEM	0.36%	0.35%	0.35%	0.39%	0.28%
80	ASTER Global Emissivity Database (GED)	0.35%	0.58%	0.37%	0.30%	0.06%
81	Census of Agriculture Data	0.35%	0.92%	0.25%	0.07%	0.82%
82	Sentinel-1 Synthetic Aperture Radar C-Band [ESA]	0.34%	0.45%	0.28%	0.32%	0.54%
83	Telemetered Cameras (Rivers)	0.33%	<0.01%	0.80%	<0.01%	<0.01%
84	Coupled Model Intercomparison Project Phase 5 (CMIP5)	0.32%	0.55%	0.52%	<0.01%	0.20%

Key	SBA		Sub-area			
	99th Percentile	Agriculture & Forestry [AF]	Enhance Food Supply [AF-1]	Maximize productivity and conservation of ecosystem condition [AF-2]	Improve resilience to disasters and disturbance events [AF-3]	Support regulatory requirements and evidence-based decision-making [AF-4]
	95th Percentile					
	90th Percentile					
	75th Percentile					
	50th Percentile					
	Below 50th Percentile					
Blank Cells Indicate Input Does Not Contribute to Area						
Earth Observation Inputs						
85	Papers - Journals, Scientific Articles/Reports (External)	0.30%	0.45%	0.30%	0.31%	0.07%
86	WORLDCLIM Temp Climate Data	0.29%	0.33%	0.37%	0.21%	0.20%
87	APEX SyncroSIM ST-Sim	0.29%	0.02%	0.19%	0.57%	0.15%
88	Cligen Climate Database	0.28%	0.05%	0.03%	0.75%	<0.01%
89	Forest Pest Event Recorder	0.28%	0.30%		0.67%	
90	Conservation Resources Land Management Operations Database (CRLMOD) - Crops	0.27%	0.03%	0.03%	0.75%	
91	Conservation Resources Land Management Operations Database (CRLMOD) - Operations	0.27%	0.03%	0.03%	0.75%	
92	Interagency Monitoring of Protected Visual Environments (IMPROVE)	0.27%	<0.01%	0.50%	0.19%	<0.01%
93	Automated Weather Observing System (AWOS)	0.26%	0.20%	0.08%	0.54%	0.12%
94	Bing Maps	0.26%	1.19%	0.05%	<0.01%	0.59%
95	Historical Airborne Imagery	0.26%	0.96%	0.02%	0.09%	0.78%
96	5-Minute Refresh	0.25%	0.01%	0.01%	0.73%	0.01%
97	USACE National Inventory of Dams (NID)	0.25%	0.68%	0.12%	0.17%	0.41%
98	Upper-air Rawinsonde Network	0.25%	0.12%	0.09%	0.55%	0.06%
99	Soil Moisture Sensors	0.25%	0.26%	0.30%	0.24%	<0.01%
100	Foreign Crop Statistics	0.25%	0.18%		0.64%	
101	Emissions Factors Literature and Research	0.24%			0.71%	
102	Fuel Data Literature and Research	0.24%			0.71%	
103	Bing Building Footprint Maps Database	0.24%	<0.01%	0.04%	0.66%	0.01%
104	Automated Surface Observing System (ASOS)	0.24%	0.25%	0.20%	0.29%	0.20%
105	National Hydrography Dataset Plus (NHD-Plus)	0.24%	0.77%	0.16%	0.09%	0.28%
106	Citizen Reporting	0.24%	0.28%	0.39%	0.03%	0.26%
107	MACAv2-METDATA	0.24%		0.45%		0.55%
108	Global Biodiversity Information Facility (GBIF)	0.23%	0.39%	0.03%	0.46%	
109	Clean Air Status and Trends Network (CASTNET)	0.23%	<0.01%	0.50%	0.06%	<0.01%
110	State Forest Health Monitoring Programs	0.23%	0.07%	0.05%	0.57%	0.02%
111	WORLDCLIM Precip Climate Data	0.22%	0.25%	0.31%	0.11%	0.20%
112	USFS Visitor Map	0.22%	0.01%	0.33%	0.07%	0.63%
113	USFS Motor Vehicle Use Maps (MVUM)	0.22%	0.01%	0.33%	0.07%	0.63%
114	Ameriflux	0.21%	0.53%	0.22%	<0.01%	0.39%
115	Photochemical Assessment Monitoring Stations (PAMS)	0.21%	<0.01%	0.50%	<0.01%	<0.01%
116	Socio-Economic - Population Data (DoC/U.S. Census)	0.21%	0.09%	0.12%	0.41%	0.01%
117	Flux Towers	0.20%	0.32%	0.38%	<0.01%	<0.01%
118	SoilGrids 2.0	0.20%	0.25%	0.27%	<0.01%	0.57%
119	Soil Climate Analysis Network (SCAN)	0.20%	0.31%	0.16%	0.23%	0.09%

Key	SBA		Sub-area			
	99th Percentile	Agriculture & Forestry [AF]	Enhance Food Supply [AF-1]	Maximize productivity and conservation of ecosystem condition [AF-2]	Improve resilience to disasters and disturbance events [AF-3]	Support regulatory requirements and evidence-based decision-making [AF-4]
	95th Percentile					
	90th Percentile					
	75th Percentile					
	50th Percentile					
	Below 50th Percentile					
Blank Cells Indicate Input Does Not Contribute to Area						
Earth Observation Inputs						
120	USFS Experimental Forests and Ranges (EFR) Network	0.20%	0.21%	0.38%	0.04%	0.02%
121	National Geologic Map	0.20%	0.44%	0.15%	0.13%	0.30%
122	Snow Courses	0.19%	0.26%	0.09%	0.31%	0.11%
123	University of Idaho Vegetation Transition Database	0.19%	0.01%	0.06%	0.44%	0.16%
124	Polar-orbiting Operational Environmental Satellite Series (POES) Advanced Very High Resolution Radiometer	0.19%	0.11%	0.07%	0.41%	0.06%
125	ArcMap Surface Toolset	0.19%	<0.01%	0.01%	0.54%	0.03%
126	Silvics of North America	0.19%		0.46%		
127	Weather Bureau Army Navy (WBAN) Weather Data	0.19%	0.27%	0.22%	0.11%	0.20%
128	Fire Reporting (Lookout Towers, Firefighters, Citizens)	0.19%			0.42%	0.42%
129	WORLDCLIM Aridity Index	0.18%	0.19%	0.24%	0.11%	0.20%
130	Information Management System: Advanced Hydrological Prediction Service (AHPS)	0.18%	0.31%	0.19%	0.12%	0.21%
131	GeoEye1 Commercial High-Resolution Satellite Imagery	0.18%	0.07%	0.05%	0.41%	0.09%
132	Field Work - Sample Collection	0.18%	0.32%		0.39%	
133	Commercial Airborne Imagery	0.17%	0.25%	0.15%	0.07%	0.50%
134	Non-USFS Forest Inventories (e.g., BIA Inventory, DOI Inventory)	0.17%				1.77%
135	CRP Conservation Layers	0.17%	0.26%	0.22%	0.12%	
136	National Hierarchical Framework of Ecological Units	0.17%		0.41%		
137	State-level Field Boundary Datasets [CA, OR, WA, ID, UT, NV]	0.17%	0.50%	0.13%	0.11%	<0.01%
138	LANDFIRE Existing Vegetation Type (EVT) 2016 Remap	0.17%	0.01%	0.05%	0.38%	0.14%
139	AURA Ozone Monitoring Instrument	0.16%	0.22%	0.16%	0.16%	0.12%
140	National Land Cover Dataset (NLCD) Alaska	0.16%	0.01%	0.05%	0.39%	0.09%
141	NASS County-Level Planting and Harvest Date Reporting	0.16%		0.40%		
142	Wetland Potential Index (WPI)	0.16%	0.04%	0.22%	0.18%	0.02%
143	NLDAS-2 Forcings Dataset	0.16%	0.92%	<0.01%	0.07%	<0.01%
144	Hydrometeorological Automated Data System (HADS)	0.16%	0.16%	0.03%	0.33%	0.12%
145	Basic Site-Specific Dam Information	0.16%			0.47%	
146	Real Time International GNSS Service	0.16%	0.25%	0.30%	<0.01%	<0.01%

Key	SBA		Sub-area			
	99th Percentile	Agriculture & Forestry [AF]	Enhance Food Supply [AF-1]	Maximize productivity and conservation of ecosystem condition [AF-2]	Improve resilience to disasters and disturbance events [AF-3]	Support regulatory requirements and evidence-based decision-making [AF-4]
	95th Percentile					
	90th Percentile					
	75th Percentile					
	50th Percentile					
	Below 50th Percentile					
Blank Cells Indicate Input Does Not Contribute to Area						
Earth Observation Inputs						
147	Historical Wildland Fire Interagency Geospatial Services (WFIGS) Data	0.16%			0.46%	
148	Fixed Wing Aircraft (DOD, contract Comm)	0.15%	<0.01%	<0.01%	0.35%	0.37%
149	U.S. Census Topologically Integrated Geographic Encoding and Referencing (TIGER) system	0.15%	0.29%	0.04%	0.25%	0.09%
150	Early Detection and Distribution Mapping System (EDDMapS)	0.15%	0.35%		0.29%	
151	Environment Canada (EC) Weather Network	0.15%	0.22%	0.17%	0.08%	0.16%
152	Global Multi-Resolution Terrain Elevation Data 2010 (EROS)	0.15%	0.11%	0.07%	0.23%	0.24%
153	Other Air Quality Networks	0.15%			0.42%	
154	POLARIS Soil Map	0.14%	0.17%	0.14%	0.15%	0.11%
155	Bureau of Land Management Lightning Data	0.14%	<0.01%	0.02%	0.39%	<0.01%
156	Field Work - Vegetation Measurements	0.14%	0.04%	<0.01%	0.39%	<0.01%
157	Himawari Advanced Himawari Imager [JMA]	0.14%	0.16%	0.04%	0.26%	0.09%
158	WindGen Wind Database	0.14%	0.03%	0.03%	0.35%	
159	NASA Global Precipitation Measurement Mission (GPM) Microwave Imager	0.13%	0.20%	0.13%	0.12%	0.09%
160	Global Change Observation Mission 1st-Water (GCOM-W1) Advanced Microwave Scanning Radiometer-2 [JAXA]	0.13%	0.19%	0.13%	0.12%	0.09%
161	LANDFIRE Existing Vegetation Cover 2016 Remap	0.13%	0.01%	0.04%	0.30%	0.12%
162	NOAA National Data Buoy Center (NDBC) Buoy Network	0.13%	0.12%	0.08%	0.19%	0.17%
163	EPA Level III Ecoregions Map	0.13%	0.18%	0.06%	0.17%	0.22%
164	FSA F3B Layer	0.13%	0.20%	0.17%	0.09%	
165	Next Generation Weather Radar (NEXRAD) Base Products	0.13%	0.15%	0.05%	0.24%	0.02%
166	Hawaii Statewide Agricultural Baseline Project	0.13%	0.01%	0.04%	0.29%	0.11%
167	USGS Microsoft Building Footprints	0.13%	0.01%	0.04%	0.29%	0.11%
168	2015 North American Land Change Monitoring System (NALCMS) Land Cover	0.13%	0.01%	0.04%	0.29%	0.11%
169	Fuel Beds Literature and Research	0.13%	<0.01%	<0.01%	0.35%	0.09%
170	USFS Ecological Response Units	0.13%		0.27%	0.04%	
171	Ag Conservation Practice Type and Acreage Data	0.12%	0.27%	0.11%	0.06%	0.19%
172	MetOp Advanced Very High Resolution Radiometer [EUMETSAT]	0.12%	0.06%	0.06%	0.25%	0.04%
173	ARS small Unmanned Aircraft Systems (sUAS)	0.12%	0.19%	0.22%	<0.01%	<0.01%
174	Esri Streets Map Layer	0.12%	0.01%	0.05%	0.15%	0.44%
175	NWS Cooperative Observer Program (COOP) - Temperature	0.12%	0.07%	0.01%	0.26%	0.11%

Key	SBA		Sub-area			
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	95th Percentile					
	90th Percentile					
	75th Percentile					
	50th Percentile					
	Below 50th Percentile					
Blank Cells Indicate Input Does Not Contribute to Area						
Earth Observation Inputs						
176	Mexico Weather Network	0.12%	0.17%	0.13%	0.07%	0.13%
177	LANDFIRE Internal Disturbance Detection Process	0.11%	0.01%	0.03%	0.28%	0.09%
178	Long Term Agroecosystem Research (LTAR) Network - Micronets	0.11%	0.32%	0.16%	<0.01%	<0.01%
179	EROS MODIS Irrigated Agriculture for the U.S. (MirAD-US) dataset	0.11%	0.07%	0.17%	0.05%	0.18%
180	NatureServe Ecological Systems Datasets	0.11%	0.01%	0.13%	0.16%	<0.01%
181	Commercial Roads Databases (NavTeq)	0.11%	0.02%	0.12%	0.17%	0.02%
182	State & Local DOT Traffic Counts	0.11%	0.26%	0.17%		
183	U.S. Census Topologically Integrated Geographic Encoding and Referencing (TIGER) system - Roads	0.11%	0.09%	0.04%	0.22%	
184	USFS Wildfire Risk to Communities	0.11%	0.01%	0.03%	0.25%	0.09%
185	California Statewide Crop Mapping	0.11%	0.01%	0.03%	0.25%	0.09%
186	Voluntary Observing Ship	0.11%	0.15%	0.09%	0.11%	0.09%
187	LANDFIRE Existing Vegetation Height 2016 Remap	0.11%	0.01%	0.04%	0.24%	0.08%
188	Forest Stand Exam Data	0.11%		0.09%	0.01%	0.66%
189	Ecozone Modeling	0.11%		0.23%	0.03%	
190	Western Regional Climate Center (WRCC) Mesonet	0.11%	0.15%	0.12%	0.06%	0.11%
191	National Conservation Easement Database	0.10%	0.18%	0.11%	0.05%	0.15%
192	NPS Northern Colorado Plateau Network (NCPN) Inventory & Monitoring	0.10%	0.19%	0.01%	0.20%	<0.01%
193	WFIGS Working Polygons	0.10%	<0.01%	<0.01%	0.28%	0.04%
194	NIFS Event Polygons	0.10%	<0.01%	<0.01%	0.28%	0.04%
195	Field Work - Water, Soil, Species Collection	0.10%		0.01%	0.29%	
196	ISS Ecosystem Spaceborne Thermal Radiometer Experiment on Space Station (ECOSTRESS)	0.10%	0.16%	0.11%	0.09%	0.01%
197	MetOp Advanced Scatterometer [EUMETSAT]	0.10%	0.11%	0.06%	0.16%	0.04%
198	BLM Surface Management Agency Layer	0.10%	0.17%	0.10%	0.05%	0.15%
199	State/Local Water Use Data	0.10%	0.17%	0.14%	0.05%	<0.01%
200	Copernicus Global Land Cover Dataset	0.10%	0.06%	0.08%	0.11%	0.22%
201	USGS Rain Gauge Network	0.10%	0.11%	0.19%	0.01%	0.03%
202	Next Generation Weather Radar (NEXRAD) Velocity Derived Products	0.09%	0.08%	0.04%	0.18%	0.03%
203	Downscaled Population & Income Scenarios (Wear et al. 2019)	0.09%		0.05%		0.74%
204	Downlooking RGB Photography	0.09%	0.17%		0.20%	
205	In Situ Water Quality (NRCS)	0.09%		0.23%		

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	95th Percentile					
	90th Percentile					
	75th Percentile					
	50th Percentile					
	Below 50th Percentile					
Blank Cells Indicate Input Does Not Contribute to Area						
Earth Observation Inputs						
206	Defense Meteorological Satellite Program (DMSP) Special Sensor Microwave Imager Sounder	0.09%	0.09%	0.06%	0.13%	0.05%
207	Commercial Airborne Lidar Elevation Data	0.09%	0.12%	0.05%	0.12%	0.09%
208	USGS Land Cover Trends Dataset (1973-2000)	0.09%	0.03%			0.88%
209	Global Inventory Modeling and Mapping Studies 3rd Generation (GIMMS 3g) (1982-2012)	0.09%	0.48%	0.04%		
210	CryoSat-2 SAR Interferometer Radar Altimeter [ESA]	0.09%	0.05%	0.01%	0.20%	0.13%
211	Planet Dove	0.09%	0.06%	0.04%	0.18%	0.03%
212	University of Bristol LISFLOOD-FP Hydrodynamic Model	0.09%		0.16%		0.25%
213	Coupled Model Intercomparison Project Phase 5 (CMIP5) Temperature	0.09%		0.16%	0.05%	0.05%
214	Meteosat Third Generation [EUMETSAT]	0.09%	0.12%		0.19%	0.04%
215	Polar-orbiting Operational Environmental Satellite Series (POES) Advanced Microwave Sounding Unit A	0.09%	0.10%	0.05%	0.15%	0.04%
216	Bathymetry Data	0.09%	0.02%	<0.01%	0.23%	0.05%
217	Interagency Fire Perimeter Historical Data	0.08%			0.24%	
218	PRecursore IperSpettrale della Missione Applicativa (PRISMA) Hyperspectral Camera [ASI]	0.08%	0.15%		0.17%	
219	JPSS Polar Constellation Advanced Technology Microwave Sounder	0.08%	0.06%	0.05%	0.14%	0.04%
220	JPSS Polar Constellation Cross-track Infrared Sounder	0.08%	0.06%	0.05%	0.14%	0.04%
221	JPSS Polar Constellation OMPS Nadir Mapper	0.08%	<0.01%	0.05%	0.11%	0.24%
222	InFORM Fire Occurrence Data Record (FODR)	0.08%	<0.01%	<0.01%	0.22%	0.03%
223	State Natural Heritage Databases	0.08%	<0.01%	0.07%	<0.01%	0.52%
224	Coupled Model Intercomparison Project Phase 5 (CMIP5) Precipitation	0.08%		0.16%	0.03%	0.03%
225	Next Generation Weather Radar (NEXRAD) Precipitation Estimation Products	0.08%	0.06%	0.02%	0.17%	0.02%
226	MetOp Infrared Atmospheric Sounding Interferometer [EUMETSAT]	0.08%	0.06%	0.05%	0.14%	0.04%
227	MODIS Geolocation Parameters (MOD03)	0.08%	0.15%	0.07%	0.06%	0.06%
228	Global Fuel Characteristics Classification System (FCCS)	0.08%	<0.01%	<0.01%	0.21%	0.05%
229	NCAR Community Climate System Model 4/Community Earth System Model 2	0.08%		0.19%		
230	NRCS Reservoir Storage Monitoring	0.08%	0.11%		0.18%	



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	95th Percentile					
	90th Percentile					
	75th Percentile					
	50th Percentile					
	Below 50th Percentile					
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Earth Observation Inputs						
231	Meteorological Data Collection and Reporting System (MDCRS)	0.08%	0.07%	0.05%	0.12%	0.04%
232	USDA National Forest Type Dataset	0.08%			0.17%	0.19%
233	Soil Moisture and Ocean Salinity Mission (SMOS) Microwave Imaging Radiometer using Aperture Synthesis [ESA]	0.08%	0.19%	0.08%	0.04%	<0.01%
234	Aircraft Meteorological DATA Relay (AMDAR)	0.08%	0.07%	0.05%	0.11%	0.04%
235	EROS MODIS (eMODIS)(7-day composites, NDVI, Reflectance)	0.08%	0.12%		0.08%	0.32%
236	NFCMS Forest Carbon Stocks and Fluxes, Conterminous USA, 1990-2010 [Williams et al.]	0.07%			0.16%	0.18%
237	National Lightning Data Network (NLDN)	0.07%	0.01%	0.01%	0.19%	0.01%
238	LTAR Streamgages	0.07%	0.12%	0.14%	<0.01%	<0.01%
239	Coupled Model Intercomparison Project Phase 6 (CMIP6)	0.07%	<0.01%	0.10%		0.31%
240	State/Local Streamgages	0.07%	0.10%	0.04%	0.11%	0.04%
241	LANDFIRE Fuel Rules Database	0.07%	<0.01%	0.04%	0.14%	0.06%
242	LANDFIRE Total Fuels Change Tool (LFTFC)	0.07%	<0.01%	0.04%	0.14%	0.06%
243	LANDFIRE 40 Fire Behavior Fuel Models 2016 Remap	0.07%	<0.01%	0.04%	0.13%	0.07%
244	Planet SuperDove	0.07%	0.02%	0.03%	0.04%	0.41%
245	Radarsat Series Synthetic Aperture Radar [CSA]	0.07%	0.09%	0.12%	0.02%	0.01%
246	Cyanobacteria Archive NCEI	0.07%	0.46%			
247	Field Work - Salinity Sampling, Tidal Observations	0.07%	0.06%	0.07%	0.08%	0.06%
248	Height Above Nearest Drainage (HAND) Mask	0.07%	0.04%		0.16%	0.10%
249	U.S. Census Topologically Integrated Geographic Encoding and Referencing (TIGER) system - Boundaries	0.07%	0.01%	0.15%		0.06%
250	Environmental Conservation Online System (ECOS) Critical Habitat Mapper	0.07%	0.14%	0.12%		0.01%
251	Spatial - Critical Infrastructure (FEMA)	0.07%		0.17%	<0.01%	
252	Surface Precipitation Observation (e.g., NWS, State, Local, RAWS)	0.07%			0.20%	
253	Next Generation Weather Radar (NEXRAD) Reflectivity Derived Products	0.07%	0.02%	0.02%	0.16%	0.02%
254	MIRCA2000 Global Monthly Crop Irrigated and Rainfed Harvested Crop Areas	0.07%		0.17%		
255	Fertilizer Application Rates Data	0.07%		0.17%		
256	Multi-Error-Removed Improved-Terrain (MERIT) Hydro River Network Data	0.07%		0.17%		

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	90th Percentile					
	75th Percentile					
	50th Percentile					
	Below 50th Percentile					
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Earth Observation Inputs						
257	Technosylva 2019 PSPS Event Wildfire Risk Analysis Reports	0.07%		0.17%		
258	CoreLogic Tax Bulk Data	0.07%		0.17%		
259	IMPLAN Economic Impact Data	0.07%		0.17%		
260	USACE North Atlantic Coast Comprehensive Study Report - Risk Management	0.07%		0.17%		
261	State-level Water Rights Data	0.07%		0.17%		
262	Zillow ZTRAX	0.07%		0.17%		
263	Integrated Public Use Microdata Series (IPUMS)	0.07%		0.17%		
264	WaterLitix Data	0.07%		0.17%		
265	FAO Harmonized World Soil Database v1.2	0.07%		0.17%		
266	Global Effective Plant Rooting Depth	0.07%		0.17%		
267	Global Irrigation Efficiency Model Data 2002	0.07%		0.17%		
268	Planet SkySat	0.07%	0.09%	0.11%	0.03%	<0.01%
269	VIIRS Geolocation Parameters (VNP03)	0.07%	0.11%	0.08%	0.05%	
270	Northern Arizona University - The Phenocam Network	0.07%	0.11%	0.12%	<0.01%	<0.01%
271	State Airborne Fire Assets (CAL FIRE, CO Multi-Mission, etc.)	0.07%	<0.01%	<0.01%	0.15%	0.17%
272	Greenhouse Gas Chambers (CO2/CH4 flux measurements)	0.07%				0.69%
273	State Natural Resource Management Programs Fire Datasets	0.07%		0.04%	0.14%	<0.01%
274	Landsat-based Irrigation (LandID) 1997-2017	0.07%	<0.01%	0.02%	0.15%	0.06%
275	Meteosat Second Generation [EUMETSAT]	0.07%	0.05%	0.06%	0.08%	0.07%
276	State & Local Lidar	0.07%		0.11%	0.06%	0.01%
277	MetOp Advanced Microwave Sounding Unit A [EUMETSAT]	0.07%	0.06%	0.04%	0.11%	0.03%
278	BLM National Surface Management Agency Area Polygons	0.06%	0.12%	0.03%	0.10%	<0.01%
279	Eulerian Level Set Model of FIRE spread Model (ELMFIRE)	0.06%		0.08%		0.32%
280	Reservoir Operations Data	0.06%	0.10%	<0.01%	0.14%	<0.01%
281	National Wind Erosion Research Network (NWERN)	0.06%	0.23%	0.06%		0.02%
282	National Wildland Fire Coordinating Group (NWCG) Units	0.06%	<0.01%	<0.01%	0.18%	<0.01%
283	Parameter-Elevation Regressions on Independent Slopes Model	0.06%	0.03%	0.02%	0.13%	0.06%
284	USFS Land Ownership/Land Use	0.06%	0.03%	0.03%	0.12%	0.03%
285	NatureServe Biodiversity Datasets	0.06%		0.15%		
286	MODIS Archives	0.06%			0.18%	

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	95th Percentile					
	90th Percentile					
	75th Percentile					
	50th Percentile					
	Below 50th Percentile					
	Blank Cells Indicate Input Does Not Contribute to Area					
Earth Observation Inputs						
287	DOE Energy Information Administration (EIA) Consumptive Use Data	0.06%	0.09%	0.11%	<0.01%	<0.01%
288	Field Work - Tree Measurements	0.06%		0.01%	<0.01%	0.56%
289	FCCS Digital Photo Series	0.06%	<0.01%	<0.01%	0.16%	0.04%
290	RUSLE2 Climate Database	0.06%	0.09%	0.08%	0.04%	
291	Historical Dam Break Reports	0.06%			0.17%	
292	UK Climate Research Unit (CRU) Climate Data	0.06%	0.05%	0.07%		0.23%
293	Field Work - Water Testing	0.06%	0.16%		0.10%	
294	Sentinel-3 Sea and Land Surface Temperature Radiometer [ESA]	0.06%	0.07%	<0.01%	0.13%	0.05%
295	USFS Spatial Wildfire Occurrence Data	0.06%		<0.01%	0.16%	0.02%
296	Global Positioning System (GPS) Integrated Precipitable Water Sensor	0.06%	0.01%	0.03%	0.13%	0.01%
297	SHIFT Colonization Model	0.06%		0.14%		
298	Regional and State Mesonetworks	0.06%	0.11%	0.07%	0.03%	<0.01%
299	Earth Networks Total Lightning Network (ENTLN)	0.06%	<0.01%	<0.01%	0.16%	<0.01%
300	HYDRO1K Compound Topographic Index	0.06%	0.09%	0.11%	<0.01%	<0.01%
301	Various Mesonets	0.06%	0.02%	0.02%	0.13%	0.01%
302	Atlantic Hurricane Database Reanalysis Project (AOML)	0.06%	0.03%	<0.01%	0.12%	0.09%
303	State Species Databases	0.06%		0.14%		
304	LANDFIRE Historical Disturbance	0.06%	0.02%	0.02%	0.11%	0.03%
305	GOS Upper Air Network	0.06%	0.07%	0.02%	0.11%	0.01%
306	Conservation Practice Data from non-Government Stakeholder Engagement	0.06%	0.21%	0.06%		<0.01%
307	NRCS Planning Land Units (PLU)	0.05%	0.01%	0.04%		0.39%
308	NPS Vegetation Mapping Inventory	0.05%	0.11%	0.01%	0.09%	
309	State/Local Land Cover Data	0.05%	0.04%	0.01%	0.11%	0.07%
310	Surface Observations without Ceiling and Visibility	0.05%	<0.01%	<0.01%	0.15%	<0.01%
311	National GroundWater Monitoring Network (NGWMN)	0.05%	0.23%	<0.01%	0.05%	<0.01%
312	In Situ Monitoring at Dams	0.05%			0.15%	
313	Cooperative Agency Profilers	0.05%	0.05%	0.02%	0.10%	0.01%
314	NADP National Trends Network (NTN)	0.05%	0.05%	0.10%	<0.01%	0.02%
315	Global Forest Age Map [Bernard et al.]	0.05%			0.12%	0.13%
316	Snow Pack Monitoring (CSAS)	0.05%	0.07%		0.12%	
317	USGS and other agencies rating tables	0.05%	0.07%		0.12%	
318	Coupled Model Intercomparison Project (CMIP) Archives	0.05%		0.09%		0.12%
319	Source Water Assessments EPA	0.05%			0.14%	

Key	SBA		Sub-area			
	99th Percentile	Agriculture & Forestry [AF]	Enhance Food Supply [AF-1]	Maximize productivity and conservation of ecosystem condition [AF-2]	Improve resilience to disasters and disturbance events [AF-3]	Support regulatory requirements and evidence-based decision-making [AF-4]
	95th Percentile					
	90th Percentile					
	75th Percentile					
	50th Percentile					
	Below 50th Percentile					
	Blank Cells Indicate Input Does Not Contribute to Area					
Earth Observation Inputs						
320	Environmental Conservation Online System (ECOS) T&E	0.05%	<0.01%	0.12%		0.01%
321	COSMIC-2 Tri-GNSS Radio Occultation System	0.05%	0.07%	0.01%	0.09%	0.01%
322	TerraSAR-X GPS-RO [DLR]	0.05%	0.05%	0.03%	0.07%	0.03%
323	FracFocus	0.05%	0.08%	0.09%	<0.01%	<0.01%
324	OneMine Global Mining and Minerals Library	0.05%	0.08%	0.09%	<0.01%	<0.01%
325	Homeland Infrastructure Foundation-Level Data (HIFLD)	0.05%		<0.01%	0.13%	
326	Conservation Resources Land Management Operations Database (CRLMOD) - Management	0.05%	0.01%	<0.01%	0.13%	
327	Next Generation Weather Radar (NEXRAD) Dual-Pol Derived Products	0.05%	0.02%	0.01%	0.11%	0.01%
328	USGS Chesapeake Bay Watershed Non-tidal Network (NTN) Stations	0.05%	0.18%	0.05%		<0.01%
329	National Levee Database (USACE)	0.05%	0.02%	<0.01%	0.11%	0.05%
330	Environmental Conservation Online System (ECOS) Species Status Assessment	0.05%		0.11%		
331	NOAA Hydrometeorological Design Studies Center (HDSC) Precipitation	0.05%	0.08%	0.05%	0.03%	0.05%
332	North Dakota Agricultural Weather Network (NDAWN)	0.05%	0.07%	0.05%	0.03%	0.05%
333	Nebraska Mesonet (NEMESO)	0.05%	0.07%	0.05%	0.03%	0.05%
334	NASA Uninhabited Aerial Vehicle SAR (UAVSAR)	0.05%	0.09%	0.07%	0.01%	<0.01%
335	State 303(d) Water Quality Assessments	0.05%	<0.01%	0.06%		0.20%
336	National Land Cover Dataset (NLCD 2006) Land Cover	0.05%	0.07%		0.05%	0.19%
337	2011-2020 Real Time Mesoscale Analysis (RTMA) dataset	0.05%		0.06%		0.22%
338	State/Local Rain Gauge Network	0.04%	0.07%	0.08%	<0.01%	<0.01%
339	USGS Surficial Materials Map Database	0.04%		0.01%	0.11%	0.03%
340	National Infrared Operations (NIROPS) Phoenix Sensor	0.04%	0.02%	<0.01%	0.09%	0.11%
341	OpenStreetsMap	0.04%	<0.01%	0.11%	<0.01%	<0.01%
342	National Elevation Dataset (NED) Multi-Scale Topographic Position Index (mTPI)	0.04%	0.10%		0.08%	
343	National Elevation Dataset (NED) Topographic Diversity	0.04%	0.10%		0.08%	
344	Shuttle Radar Topography Mission (SRTM) Continuous Heat-Insolation Load Index (CHILI)	0.04%	0.10%		0.08%	
345	Extent of Aquifer Maps (base, width, depth)	0.04%	0.12%	<0.01%	0.08%	0.01%
346	CONUS-SOIL	0.04%	0.03%	0.07%	<0.01%	0.11%

Key	SBA		Sub-area			
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	95th Percentile					
	90th Percentile					
	75th Percentile					
	50th Percentile					
	Below 50th Percentile					
	Blank Cells Indicate Input Does Not Contribute to Area					
Earth Observation Inputs						
347	USGS Water Level Sensors	0.04%	<0.01%	<0.01%	0.13%	<0.01%
348	Global Argo Profiling Floats	0.04%	0.04%	0.02%	0.08%	0.01%
349	Advanced Spaceborne Thermal Emission and Reflection Radiometer (ASTER) Global Digital Elevation Model (GDEM)	0.04%	0.03%	0.04%	0.01%	0.18%
350	US National Incident Management System (NIMS) Incident Status Summary (ICS-209) forms	0.04%		0.03%	0.09%	<0.01%
351	Waverider Buoys	0.04%	0.02%	<0.01%	0.09%	0.07%
352	GPS Tracking	0.04%		0.10%		
353	USACE Hydrologic Engineering Center River Analysis System (HEC-RAS) Dam Breach Analysis	0.04%			0.12%	
354	Washington Department of Natural Resources Portal Data	0.04%		0.09%	0.01%	
355	Interagency Fuel Treatment Decision Support System Data	0.04%		0.09%	0.01%	
356	USFS Gradient Nearest Neighbor (GNN)	0.04%		0.09%	0.01%	
357	WorldView 1 Commercial Earth Observation Satellite	0.04%	0.05%	0.04%	0.03%	0.04%
358	State/Local Roads Information	0.04%	0.05%	0.01%	0.04%	0.14%
359	USFS Resource Photography Archive	0.04%	0.01%	0.01%	0.10%	<0.01%
360	GAP Land Cover/Ecological Systems Dataset	0.04%		0.05%		0.20%
361	Canadian Wildland Fire Information System (CWFIS) Active Fire Locations Data	0.04%	<0.01%	0.06%		0.15%
362	CA - LandIQ Specialty Crops (2019)	0.04%	0.11%	0.03%	0.02%	0.02%
363	NRCS National Commodity Crop Productivity Index (NCCPI) [MI only]	0.04%	0.11%	0.03%	0.02%	0.02%
364	NWS Cooperative Observer Program (COOP) - Precipitation	0.04%	0.02%	0.01%	0.09%	0.03%
365	EPA Safe Drinking Water Information System (SDWIS) Data	0.04%	0.06%	0.07%	<0.01%	0.04%
366	NOAA Tide Gauges	0.04%		0.08%		0.09%
367	FL - NASS Citrus Data Layer (2022)	0.04%	0.11%	0.03%	0.02%	0.02%
368	WA - Washington State Dept of Agriculture Crop Data (2022)	0.04%	0.11%	0.03%	0.02%	0.02%
369	State/Local Well File/Permit Information	0.04%	0.07%	0.04%	0.04%	<0.01%
370	Forest Biomass Mapping in CA and OR	0.04%	0.09%	0.06%		
371	GCOS Reference Upper Air Network (GRUAN)	0.04%	0.06%	0.04%	0.04%	0.04%
372	Mercury Deposition Network (MDN)	0.04%	0.04%	0.07%	<0.01%	0.01%
373	National Water Quality Network (NWQN)	0.04%	0.22%	<0.01%	0.02%	<0.01%
374	UCDavis California Soil Resource Lab SoilWeb	0.04%	0.06%	0.07%	<0.01%	<0.01%
375	InFORM Inspector Reports	0.04%	<0.01%	<0.01%	0.11%	0.01%

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	95th Percentile					
	90th Percentile					
	75th Percentile					
	50th Percentile					
	Below 50th Percentile					
Blank Cells Indicate Input Does Not Contribute to Area						
Earth Observation Inputs						
376	EPA BenMAP	0.04%		0.09%		
377	USGS Mineral Resources Data System (MRDS)	0.04%			0.11%	
378	USMIN Mineral Deposit Database	0.04%			0.11%	
379	1-Minute Refresh	0.04%	<0.01%	<0.01%	0.11%	<0.01%
380	Historical Airborne High-Res Stereo Imagery	0.04%	<0.01%	0.06%	0.01%	0.11%
381	USACE Wave Information Studies (WIS)	0.04%	0.02%	<0.01%	0.08%	0.06%
382	Field Work - Water and Soil Sampling, Farmer Interviews (Management Practices)	0.04%	0.14%	0.04%		<0.01%
383	USGS Streamgauge Network River	0.04%	0.08%	0.01%	0.06%	0.01%
384	MetOp Microwave Humidity Sounder [EUMETSAT]	0.04%	0.03%	0.03%	0.05%	0.02%
385	In Situ Water Quality (USGS) Continuous Sampling	0.04%	0.21%	<0.01%	0.01%	<0.01%
386	California Data Exchange Center (CDEC) Mesonet	0.04%	0.05%	0.04%	0.02%	0.04%
387	Spatial - Global Land Survey Topography (University of Maryland)	0.04%	0.05%	0.03%	0.03%	0.03%
388	CAL FIRE Wildfire Perimeters	0.04%	<0.01%	<0.01%	0.10%	0.02%
389	The FOrest Resource Outlook Model (FOROM)	0.04%		0.02%		0.28%
390	LANDFIRE polygons (Federal, State and Local)	0.03%	<0.01%	0.01%	0.08%	0.03%
391	USFS Vegetation Treatment Data	0.03%	<0.01%	0.01%	0.08%	0.03%
392	Polar-orbiting Operational Environmental Satellite Series (POES) Microwave Humidity Sounder	0.03%	0.03%	0.03%	0.05%	0.02%
393	Polar-orbiting Operational Environmental Satellite Series (POES) High Resolution Infrared Sounder	0.03%	0.04%	0.02%	0.05%	0.02%
394	USACE Infrastructure Database	0.03%	0.02%	<0.01%	0.07%	0.05%
395	Ground-based Structure Surveys	0.03%	0.02%	<0.01%	0.07%	0.05%
396	Coriolis WindSat Archive	0.03%	0.02%	0.03%	0.04%	0.03%
397	Canadian National Fire Database (CNFDB)	0.03%	<0.01%	<0.01%	0.09%	0.02%
398	Economic Data and Models	0.03%		0.05%		0.15%
399	NOAA National Geodetic Survey (NGS) Coastal Mapping Program Airborne Lidar	0.03%	0.02%	<0.01%	0.07%	0.05%
400	National Geochemical Database (NGDB)(USGS)	0.03%	0.11%	0.04%		
401	AURA Microwave Limb Sounder	0.03%	0.02%	0.03%	0.04%	0.02%
402	California Irrigation Management Information System (CIMIS)	0.03%	0.05%	0.04%	0.02%	0.03%
403	Agrimet (USBR, Pac NW Agricultural Sfc Weather Network)	0.03%	0.05%	0.04%	0.02%	0.03%
404	Washington State University AgWeatherNet	0.03%	0.05%	0.04%	0.02%	0.03%
405	Future Scenarios 2020 RPA (Langner et al., 2020)	0.03%		0.08%		
406	Percent Tree and Impervious Cover 2020-2070 (Greenfield et al., 2023)	0.03%		0.08%		

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	95th Percentile					
	90th Percentile					
	75th Percentile					
	50th Percentile					
	Below 50th Percentile					
	Blank Cells Indicate Input Does Not Contribute to Area					
Earth Observation Inputs						
407	Jason Ocean Surface Topography Mission (2, 3 & CS) [NASA, EUMETSAT]	0.03%	0.13%	0.01%	0.02%	0.01%
408	Information Management System: Visualization (OCM)	0.03%		0.04%		0.15%
409	Ground-Based Photographic Records	0.03%			0.09%	
410	USGS Rapidly Deployable Gage	0.03%	0.01%	<0.01%	0.08%	0.02%
411	Lower Colorado River Authority Network (LCRA)	0.03%	0.05%	0.04%	0.02%	0.03%
412	DOD Surface Observations	0.03%	0.04%	0.01%	0.06%	<0.01%
413	International Surface Observations	0.03%	0.04%	0.01%	0.06%	<0.01%
414	Internal USGS Custom Vdep Tool	0.03%		<0.01%	0.08%	
415	Seattle Public Utilities Elevation Database	0.03%	0.07%	0.05%		
416	In Situ Water Quality (non-USGS)	0.03%	0.20%			
417	ESA Global Surface Water	0.03%		0.05%		0.10%
418	FAS Agricultural Attache' Reports (GAIN)	0.03%	0.20%			
419	Minnesota Climatology Working Group Gauge Network	0.03%	0.05%	0.03%	0.02%	0.03%
420	North Dakota State Water Commission (NDSWC) Gauge Network	0.03%	0.05%	0.03%	0.02%	0.03%
421	Nevada Division of Water Resources (NVDWR) Gauge Network	0.03%	0.05%	0.03%	0.02%	0.03%
422	South Florida Water Management District (SFWMD) Gauge Network	0.03%	0.05%	0.03%	0.02%	0.03%
423	Long-Term Precipitation Storage Gage Stations	0.03%	0.05%	0.03%	0.02%	0.03%
424	Aqua Atmospheric Infrared Sounder	0.03%	0.03%	0.01%	0.06%	0.01%
425	Colorado Agricultural Meteorological Network (COAGMET)	0.03%	0.04%	0.03%	0.02%	0.03%
426	BLM Public Lands Survey System (PLSS)	0.03%	0.03%	0.04%	0.01%	0.04%
427	NDFD Relative Humidity	0.03%	<0.01%	0.01%	0.07%	0.01%
428	MetOp Global navigation satellite system Receiver for Atmospheric Sounding [EUMETSAT]	0.03%	0.04%	0.01%	0.05%	0.01%
429	NOAA Aircraft KingAir Coastal Mapping Topography	0.03%	<0.01%	0.04%	<0.01%	0.14%
430	Multi-Error-Removed Improved-Terrain (MERIT) DEM	0.03%		0.07%		
431	Colorado State Global N2O Database	0.03%	0.03%	0.01%		0.22%
432	Watershed Boundary Dataset (WBD)	0.03%		0.04%		0.14%
433	WRF National Water Census	0.03%		0.07%		
434	MetOp High Resolution Infrared Sounder [EUMETSAT]	0.03%	0.04%	0.02%	0.03%	0.02%
435	EPA Permit Compliance System and Integrated Compliance Information System (PCS-ICIS) databases	0.03%	0.17%	<0.01%		

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	95th Percentile					
	90th Percentile					
	75th Percentile					
	50th Percentile					
	Below 50th Percentile					
Blank Cells Indicate Input Does Not Contribute to Area						
Earth Observation Inputs						
436	MN Department of Natural Resources Forest Inventory Imagery Data	0.03%			0.08%	
437	ENVISAT(SCIAMACHY) Archive	0.03%				0.28%
438	Sentinel-2 Satellite Archives	0.03%	0.04%	0.05%	<0.01%	<0.01%
439	TanDEM-X Synthetic Aperture Radar [DLR]	0.03%	<0.01%	<0.01%	0.07%	<0.01%
440	Homeland Security Infrastructure Program (HSIP) Data	0.03%			0.08%	
441	Global Drifter Program	0.03%	0.02%	0.01%	0.05%	0.01%
442	Land Cover Institute - Land Cover (USGS)	0.03%	0.01%	0.03%	0.01%	0.10%
443	USACE Streamgage Network	0.03%	0.02%	<0.01%	0.06%	0.04%
444	FAO & FAS Typical Planting and Harvesting Dates Data	0.03%	0.17%			
445	FEMA Hazus Loss Library	0.03%			0.08%	
446	State Industrial Sites Listings	0.03%	<0.01%	0.02%		0.18%
447	EPA Emissions & Generation Resource Integrated Database (eGRID)	0.03%		0.03%		0.12%
448	FishTraits Database USGS	0.02%	0.09%	0.03%		
449	National Anthropogenic Barrier Dataset (NABD) USGS	0.02%	0.09%	0.03%		
450	State Fish Community Sampling Records for UMRB	0.02%	0.09%	0.03%		
451	Uncrewed Aerial System	0.02%	0.01%	<0.01%	0.06%	<0.01%
452	Borehole Geophysical Logs	0.02%	0.05%		0.05%	
453	Coastal Weather Buoys (CWB)	0.02%	0.02%	0.01%	0.04%	0.01%
454	Nevada Climate-Ecohydrological Assessment Network (NevCAN)	0.02%	0.03%	0.03%	0.01%	0.02%
455	Vegetation and Environment Monitoring on a New Micro-Satellite Superspectral Camera (VENUS)[CNES]	0.02%	0.04%	0.04%	<0.01%	<0.01%
456	National Emissions Inventory (NEI)(EPA)	0.02%	0.01%	0.03%	<0.01%	0.11%
457	Commercial Contract NIROPS-like Aircraft	0.02%			0.05%	0.06%
458	Oklahoma Mesonet	0.02%	0.03%	0.02%	0.01%	0.02%
459	Arizona Mesonet (AZMET)	0.02%	0.03%	0.02%	0.01%	0.02%
460	Utah State University Agricultural Weather Network (UCC-AGNET)	0.02%	0.03%	0.02%	0.01%	0.02%
461	NLCD % Tree Canopy	0.02%		0.03%		0.10%
462	Commercial Airborne High-resolution Visible Imagery	0.02%	0.02%	0.02%	0.03%	0.02%
463	USBR Water Flow Data	0.02%	0.04%	0.04%	<0.01%	<0.01%
464	Global Reservoir and Dam (GRanD) database	0.02%		0.05%		
465	HydroConDams Database v2.0 HarvardU	0.02%		0.05%		
466	Google Maps	0.02%			0.06%	



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	95th Percentile					
	90th Percentile					
	75th Percentile					
	50th Percentile					
	Below 50th Percentile					
Blank Cells Indicate Input Does Not Contribute to Area						
Earth Observation Inputs						
467	Spatial - Soil Classification (USDA)	0.02%	0.03%	<0.01%	0.05%	<0.01%
468	ISS Earth Surface Mineral Dust Source Investigation (EMIT)	0.02%	0.04%		0.04%	
469	Diversions irrigation districts	0.02%	0.03%		0.05%	
470	Kansas Mesonet	0.02%	0.03%	0.02%	0.01%	0.02%
471	Kentucky Mesonet	0.02%	0.03%	0.02%	0.01%	0.02%
472	NOAA Air Resources Lab (ARL) Field Research Division (ARLFRD) Mesonets	0.02%	0.03%	0.02%	0.01%	0.02%
473	NOAA Air Resources Lab (ARL) Special Operations and Research (ARLSORD) Mesonets	0.02%	0.03%	0.02%	0.01%	0.02%
474	NEON Airborne Observation Platform (AOP) Airborne Hyperspectral	0.02%	0.07%	0.02%		0.01%
475	Bureau of Economic Analysis (BEA) Income Data	0.02%		0.01%		0.16%
476	Decagon Soil Moisture Sensors (ground-based)	0.02%	0.04%		0.04%	
477	Polar-orbiting Operational Environmental Satellite Series (POES) Solar Backscatter Ultraviolet Spectral Radiometer	0.02%	0.04%	<0.01%	0.04%	<0.01%
478	Various Mesonets - Boundary Layer	0.02%	0.02%	0.01%	0.04%	0.01%
479	Sentinel-3 Synthetic Aperture Radar Altimeter [ESA]	0.02%	0.12%	<0.01%	<0.01%	<0.01%
480	National Biomass & Carbon Dataset	0.02%		0.02%		0.09%
481	Sentinel-6 Poseidon-4 Dual-Frequency SAR [ESA]	0.02%	0.12%	<0.01%	<0.01%	<0.01%
482	North Carolina Environment and Climate Observing Network (NCECONET)	0.02%	0.03%	0.02%	0.01%	0.02%
483	New Jersey Weather and Climate Network (NJWXNET)	0.02%	0.03%	0.02%	0.01%	0.02%
484	Gravity Recovery and Climate Experiment (GRACE) Follow-On Triple G (GPS, Galileo, GLONASS)	0.02%	0.03%	<0.01%	0.04%	<0.01%
485	National Water Level Observation Network (NWLON)	0.02%	<0.01%	0.01%	0.04%	0.02%
486	NCDC Extreme Events Database	0.02%	0.07%	0.02%		<0.01%
487	State and Local Aquifer Characteristics Data	0.02%	0.03%		0.04%	
488	U.S. Census Future Water Demand	0.02%	0.03%		0.04%	
489	Traditional Ecological Knowledge (TEK)	0.02%		0.04%		
490	FL - FSAID Specialty Crop Data (2020)	0.02%	0.05%	0.01%	0.01%	0.01%
491	NY - Cornell University Grape/Vineyard Data (2022)	0.02%	0.05%	0.01%	0.01%	0.01%
492	CA+AZ - US Bureau of Reclamation Crop Data	0.02%	0.05%	0.01%	0.01%	0.01%
493	OR - Oregon State University Tree Crop and Vineyard Data (2015)	0.02%	0.05%	0.01%	0.01%	0.01%
494	NDFD Chance of Wetting Rain	0.02%	<0.01%	0.01%	0.05%	<0.01%

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	95th Percentile					
	90th Percentile					
	75th Percentile					
	50th Percentile					
	Below 50th Percentile					
Blank Cells Indicate Input Does Not Contribute to Area						
Earth Observation Inputs						
495	Aircraft Report (AIREP)	0.02%	0.01%	0.01%	0.03%	<0.01%
496	State Habitat and Species Data (Fish and Wildlife Agency Data)	0.02%		0.04%		
497	Florida Automated Weather Network (FAWN)	0.02%	0.03%	0.02%	0.01%	0.02%
498	International Doppler Radars	0.02%	0.01%	<0.01%	0.04%	0.01%
499	AMSR & SSMI Topographic Moisture Potential (National Surface Moisture Datasets)	0.02%	0.05%		0.03%	
500	SmartFIRE fire detection points	0.02%	<0.01%	<0.01%	0.05%	0.01%
501	Ground Field Webcam (non-volcano)	0.02%	0.04%		0.03%	0.03%
502	NASA Land, Vegetation and Ice Sensor (LVIS)	0.02%		0.02%		0.08%
503	Information Management System: Geographic Information Systems (OCM)	0.02%		0.02%		0.09%
504	Information Management System: Web Services (OCM)	0.02%		0.02%		0.09%
505	State & Local Streamgage Networks River	0.02%	0.01%	<0.01%	0.04%	0.01%
506	MAPBOX Building Footprints Data	0.02%		0.03%		0.05%
507	USGS Basin Boundaries	0.02%		0.04%		
508	Climate Database Modernization Program (CDMP)	0.02%	<0.01%	<0.01%	0.04%	0.02%
509	Quality Controlled Local Climatological Data	0.02%	<0.01%	<0.01%	0.04%	0.02%
510	USFS Public and Private Forest Ownership Conterminous United States Map	0.02%		0.04%		
511	Aqua Advanced Microwave Sounding Unit	0.02%	0.03%	<0.01%	0.03%	<0.01%
512	Tile Drainage Type and Acreage Data	0.02%	0.06%	0.01%	0.01%	<0.01%
513	NDFD Lightning Activity Level	0.02%	<0.01%	<0.01%	0.04%	<0.01%
514	Tractor-mounted Lidar	0.02%	0.03%		0.04%	
515	Terra Advanced Spaceborne Thermal Emission and Reflection Radiometer	0.02%	0.01%	<0.01%	0.05%	<0.01%
516	FWS Land Ownership/Land Use	0.02%	0.03%	0.02%	0.01%	0.02%
517	Tropical Atmospheric Ocean Buoy Array (TAO) Ocean Profile	0.02%	0.02%	0.01%	0.03%	0.01%
518	NRCS National Coordinated Common Resource Area (CRA) Geographic Database	0.02%	0.08%	0.01%		<0.01%
519	NPS Land Ownership/Land Use	0.02%	0.03%	0.02%	0.01%	0.02%
520	NDFD Wind Speed	0.02%	0.01%	<0.01%	0.04%	<0.01%
521	Surface Radiation Budget Network (SURFRAD)	0.02%	0.03%	0.01%	0.02%	<0.01%
522	Airport Weather Observations (METAR)	0.02%	0.01%	<0.01%	0.04%	0.03%
523	Delaware Environmental Observing System (DEOS)	0.02%	0.02%	0.02%	0.01%	0.02%
524	Historical Aerial Imagery Data	0.02%		0.04%		
525	BLM Vegetation Treatment (VTRT) Data	0.02%	<0.01%	<0.01%	0.04%	0.01%
526	NPS Vegetation Treatment Data	0.02%	<0.01%	<0.01%	0.04%	0.01%

Key	SBA		Sub-area			
	99th Percentile	Agriculture & Forestry [AF]	Enhance Food Supply [AF-1]	Maximize productivity and conservation of ecosystem condition [AF-2]	Improve resilience to disasters and disturbance events [AF-3]	Support regulatory requirements and evidence-based decision-making [AF-4]
	95th Percentile					
	90th Percentile					
	75th Percentile					
	50th Percentile					
	Below 50th Percentile					
	Blank Cells Indicate Input Does Not Contribute to Area					
Earth Observation Inputs						
527	State & Local Coastal Erosion Databases	0.02%	0.01%	<0.01%	0.04%	0.02%
528	Gravity Recovery and Climate Experiment (GRACE) Follow-On High Accuracy Inter-satellite Ranging System	0.02%	0.03%	<0.01%	0.03%	0.01%
529	Resource Satellite-2A Advanced Wide Field Sensor [ISRO]	0.02%	<0.01%	<0.01%	0.04%	<0.01%
530	NOAA Digital Coast Lidar	0.02%	0.01%	<0.01%	0.03%	0.02%
531	HJ Andrews Long Term Ecological Research (LTER) Site Mesonet Data (OREGON)	0.02%	0.02%	0.02%	0.01%	0.02%
532	NASA ABoVE - Wildfire Date of Burning	0.02%	<0.01%	<0.01%	0.04%	0.01%
533	ADCIRC Western and Eastern Tidal Databases	0.02%	0.01%	<0.01%	0.03%	0.02%
534	Geostationary Operational Environmental Satellite - R Series (GOES-R) Geostationary Lightning Mapper	0.01%	<0.01%	<0.01%	0.04%	<0.01%
535	Internal USFS S-Class ArcPro Tool	0.01%		<0.01%	0.04%	
536	Nature Conservancy S-Class Assignment Spreadsheet	0.01%		<0.01%	0.04%	
537	Citizens Weather Observer Program	0.01%	0.02%	0.02%	0.01%	0.01%
538	Remote Video Monitoring	0.01%	<0.01%	<0.01%	0.04%	<0.01%
539	Field Work - Field Work and Campaigns including Aircraft	0.01%	0.09%			
540	3D Hydrography Program (3DHP)	0.01%	0.01%	0.01%	0.02%	0.01%
541	Airborne Gamma Ray Surveys	0.01%	0.03%	0.01%	0.01%	0.02%
542	Michigan Automated Weather Network (MAWN)	0.01%	0.02%	0.02%	0.01%	0.01%
543	Radiosonde Observations by National Weather Service (RAOBS)	0.01%		0.03%		
544	FWS Low-Altitude Imagery	0.01%				0.15%
545	DOE Energy Information Administration (EIA) Cost Stats	0.01%		0.03%		
546	North American Environmental Atlas - Land Cover 2015	0.01%	<0.01%	<0.01%	0.03%	0.01%
547	Kruitwagen Photovoltaic Solar Energy Inventory	0.01%	<0.01%	0.01%	0.02%	<0.01%
548	TOPEX/Poseidon	0.01%	0.01%	<0.01%	0.03%	0.02%
549	Georgia Automated Environmental Monitoring Network (GAEMN)	0.01%	0.02%	0.02%	0.01%	0.01%
550	University of South Alabama Mesonet	0.01%	0.02%	0.02%	0.01%	0.01%
551	Coastal-Marine Automated Network (C-MAN)	0.01%	0.02%	0.01%	0.02%	0.01%
552	NOAA Above Ground Forest Biomass Map	0.01%				0.14%
553	Vaisala Global Lightning Dataset 360 (GLD360)	0.01%	<0.01%	<0.01%	0.03%	<0.01%
554	First Street Foundation (FSF) Adaption and Infrastructure Internal Database	0.01%		0.03%		0.03%
555	Synthetic Hurricane Tracks Dataset	0.01%		0.03%		0.03%

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	95th Percentile					
	90th Percentile					
	75th Percentile					
	50th Percentile					
	Below 50th Percentile					
Blank Cells Indicate Input Does Not Contribute to Area						
Earth Observation Inputs						
556	Irrigated Cropland (Google Earth Engine)	0.01%	0.04%	0.01%	0.01%	<0.01%
557	NASA Global Precipitation Measurement Mission (GPM) Dual-frequency Precipitation Radar	0.01%	<0.01%	<0.01%	0.04%	<0.01%
558	North America Forest Database (NAFD)	0.01%		0.02%		0.06%
559	Atmospheric Mercury Network (AMNet)	0.01%	0.01%	0.03%	<0.01%	0.01%
560	Montana Mesonet (MT-MESO)	0.01%	0.02%	0.02%	0.01%	0.01%
561	Mississippi Delta Agricultural Weather Center (MS-DELTA) Weather Stations	0.01%	0.02%	0.02%	0.01%	0.01%
562	National Climate Assessment (NCA) 2016	0.01%		0.03%		
563	Ammonia Monitoring Network (AMon)	0.01%	0.01%	0.02%	<0.01%	0.01%
564	NADP Mercury Litterfall Network (MLN)	0.01%	0.01%	0.02%	<0.01%	0.01%
565	Museum Databases/Specimen Data	0.01%		0.03%		
566	FLUXNET	0.01%	0.02%	0.02%	<0.01%	<0.01%
567	Historical Photographs	0.01%			0.04%	
568	Historic Post-storm Damage Imagery	0.01%	0.01%	<0.01%	0.03%	0.02%
569	USGS Revised Hydrogeologic Framework of the Florida Aquifer System	0.01%	0.05%	0.01%		<0.01%
570	Florida Geological Survey Water Table Depth Data	0.01%	0.05%	0.01%		<0.01%
571	Internal Research Fire Behavior Models	0.01%	0.05%	0.01%		0.01%
572	National Solar Radiation Database (NSRDB)	0.01%	0.02%	<0.01%	0.02%	<0.01%
573	Other Base Layers (Misc.)	0.01%	<0.01%	<0.01%	0.03%	0.03%
574	FAOSTAT Wood Products Data	0.01%		0.03%		
575	U.S. Air Force Hurricane Hunters Dropsondes	0.01%	0.02%	<0.01%	0.02%	<0.01%
576	Natural Resources Canada (NRC) Fire Danger Maps	0.01%	<0.01%	0.02%		0.04%
577	Surface Geophysical Surveys (physical and hydrological properties of rocks)	0.01%	0.02%		0.03%	
578	Annual Wildland Fire Statistics	0.01%			0.04%	
579	EPA Green Book Nonattainment Areas	0.01%	<0.01%	0.01%		0.08%
580	USGS Texas Atlas	0.01%	0.01%	<0.01%	0.03%	0.02%
581	NOAA Atlas 14 precipitation frequency estimates	0.01%	<0.01%	<0.01%	0.03%	0.01%
582	USDA Economic Research Service (ERS) Statistical Data	0.01%	0.04%	0.01%		<0.01%
583	Flood Thresholds Established by WFO Service Hydrologist and Emergency Managers	0.01%			0.03%	
584	Luke Air Force Base Network (LUKEAFB)	0.01%	0.02%	0.01%	0.01%	0.01%
585	Historic Beach Profile Survey Datasets	0.01%	0.01%	<0.01%	0.03%	0.02%
586	Digital Ortho Quarter Quads (DOQQ)	0.01%	<0.01%	0.01%	0.02%	0.03%
587	NOAA Aircraft G-IV Dropsondes	0.01%	0.01%	<0.01%	0.02%	<0.01%
588	Water Quality Samples (EPA)	0.01%	0.03%	0.01%	0.01%	<0.01%
589	Oil and Gas Point Location Data	0.01%	<0.01%	0.01%	0.02%	<0.01%

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	95th Percentile					
	90th Percentile					
	75th Percentile					
	50th Percentile					
	Below 50th Percentile					
Blank Cells Indicate Input Does Not Contribute to Area						
Earth Observation Inputs						
590	IOOS Regional Ocean Observing System	0.01%	<0.01%	0.01%	0.02%	0.01%
591	Texas Coastal Ocean Observation Network (TCOON)	0.01%	0.01%	<0.01%	0.02%	0.02%
592	Aqua Advanced Microwave Scanning Radiometer	0.01%	0.01%	<0.01%	0.02%	<0.01%
593	Commercial GNSSRO	0.01%	0.01%	0.01%	0.02%	<0.01%
594	WMO Ground Station Soil Moisture	0.01%	0.07%			
595	Pilot Report for Aviation Weather Phenomena (PIREP)	0.01%	<0.01%	0.01%	0.02%	<0.01%
596	Research Moored Array for African-Asian-Australian Monsoon Analysis (RAMA) Ocean Profile	0.01%	0.01%	<0.01%	0.02%	<0.01%
597	West Wide Wildfire Risk Assessment (WWRA)	0.01%				0.11%
598	Water Quality Samples (USGS) - Surface Water	0.01%	0.07%			
599	Prediction and Research Moored Array in the Atlantic (PIRATA) Ocean Profile	0.01%	0.01%	<0.01%	0.02%	<0.01%
600	Field Work - Soil Burn Severity Validation	0.01%			0.03%	
601	Canadian Doppler Radar	0.01%	0.02%	0.01%	0.01%	0.01%
602	Field Work - Experimental Watersheds for Field Campaigns	0.01%	0.04%	0.01%		<0.01%
603	NDFD Temperature	0.01%	<0.01%	<0.01%	0.03%	<0.01%
604	IKONOS Archive	0.01%	0.02%	0.01%	0.01%	0.01%
605	Commercial Airborne Lidar Point Cloud	0.01%	<0.01%	0.01%	0.02%	<0.01%
606	University of Utah (UUNET) Cameras	0.01%	0.01%	0.01%	0.01%	0.01%
607	Utah Climate Center Data for MesoWest	0.01%	0.01%	0.01%	0.01%	0.01%
608	Data Transmission Network (DTN) Weather Data for MesoWest	0.01%	0.01%	0.01%	0.01%	0.01%
609	Unedited Local Climatological Data	0.01%	<0.01%	<0.01%	0.02%	0.01%
610	Spotters US Forest Service	0.01%		<0.01%	0.03%	
611	U.S. Census Survey of Construction Data	0.01%		0.01%		0.08%
612	U.S Census Public Use Microdata Sample (PUMS) People and Housing Unit Data	0.01%		0.01%		0.08%
613	Pilot Balloon (PIBAL)	0.01%	0.01%	0.01%	0.02%	<0.01%
614	State Beach Inventories/Profile Observations	0.01%	0.01%	<0.01%	0.02%	0.02%
615	U.S. Drought Monitor data tables	0.01%	<0.01%	<0.01%	0.03%	0.01%
616	USGS Small Uncrewed Aircraft Systems (sUAS)	0.01%		0.02%		
617	USDA Conservation Reserve Program Geospatial Data	0.01%	<0.01%	0.01%		0.07%
618	USFS FHP Airborne Hyperspectral	0.01%			0.02%	0.02%
619	NASA Airborne Passive Active L- and S-band Sensor (PALS)	0.01%	0.06%			
620	ALOS1(PALSAR) Phased Array L-band SAR data	0.01%		0.01%	<0.01%	0.03%
621	NDFD Sky Cover	0.01%	<0.01%	<0.01%	0.02%	<0.01%

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	95th Percentile					
	90th Percentile					
	75th Percentile					
	50th Percentile					
	Below 50th Percentile					
	Blank Cells Indicate Input Does Not Contribute to Area					
Earth Observation Inputs						
622	POES Microwave (NCDC)	0.01%	0.04%	0.01%	<0.01%	<0.01%
623	Washington Dept of Ecology Nutrient Loading Data	0.01%	0.02%	0.01%		
624	Objective Yield Field Surveys	0.01%	0.03%			0.05%
625	USGS Tide Gages	0.01%	<0.01%	<0.01%	0.02%	<0.01%
626	FAO/UNESCO Soil Map of the World	0.01%	0.02%	<0.01%	0.02%	
627	Advanced Land Observing Satellite-2 (ALOS-2) Phased Array L-band SAR [JAXA]	0.01%	<0.01%	0.01%	0.01%	0.05%
628	West Texas Mesonet	0.01%	0.01%	0.01%	0.01%	0.01%
629	GPS (handheld)	0.01%	0.06%			
630	ARS Aeolian Erosion (AERO) Model	0.01%	0.03%	0.01%		<0.01%
631	Topographic Data (External)	0.01%	<0.01%	<0.01%	0.02%	0.01%
632	Wind Farms	0.01%	<0.01%	<0.01%	0.02%	0.01%
633	WorldPop Population	0.01%		0.01%		0.03%
634	Post Event High Water Mark Reports (USGS, USACE)	0.01%	<0.01%	<0.01%	0.02%	0.01%
635	NDFD Haines Index	0.01%	<0.01%	<0.01%	0.02%	<0.01%
636	Pleiades Commercial High-Resolution Satellite Imagery	0.01%	0.01%	0.01%	0.01%	0.01%
637	Discrete Water Quality Samples (USGS)	0.01%	0.01%	<0.01%	0.02%	<0.01%
638	FWS Information for Planning and Consultation (IPaC)	0.01%		0.02%		
639	RPA Population Projections 2020, Langer et al.	0.01%		0.02%		
640	DOE Energy Information Administration (EIA) Power Production Estimates	0.01%		0.02%		
641	Desert Research Inst. Community Environment Monitor Program (CEMP) Network	0.01%	0.01%	0.01%	0.01%	0.01%
642	Landsat NDVI 10 Year Average	0.01%	<0.01%	<0.01%	0.02%	<0.01%
643	State Harmful Algal Blooms Toxin Reports	0.01%	0.05%			
644	Natural Resources Defense Council Harmful Algal Blooms Reports	0.01%	0.05%			
645	State Health Department Recreational Advisories	0.01%	0.05%			
646	Greenhouse Gas Inventory Emissions Statistics	0.01%		0.02%		
647	International Soil Carbon Network Database (ISCN)	0.01%		0.01%		0.03%
648	Continuous Water-Level Recorders (Groundwater)	0.01%	0.01%	<0.01%	0.02%	<0.01%
649	Lithologic Logs/Lithologic Data (Local)	0.01%	0.05%			
650	Thickness of Unconsolidated Deposits Data	0.01%	0.05%			
651	National Fire Map	0.01%			0.02%	
652	NDFD Mixing Height	0.01%	<0.01%	<0.01%	0.02%	<0.01%
653	NDFD Wind Gust Speed	0.01%	<0.01%	<0.01%	0.02%	<0.01%

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	95th Percentile					
	90th Percentile					
	75th Percentile					
	50th Percentile					
	Below 50th Percentile					
Blank Cells Indicate Input Does Not Contribute to Area						
Earth Observation Inputs						
654	Supplementary Aviation Weather Reporting Station (SAWRS)	0.01%	<0.01%	<0.01%	0.01%	0.01%
655	UK Climate Research Unit (CRU) Precipitation Data (CRUTS 3.1.x)	0.01%	0.04%			
656	UK Climate Research Unit (CRU) Temperature Data (CRUTS 3.1.x)	0.01%	0.04%			
657	Conductivity, Temperature, Depth (CTDs)	0.01%	0.04%			
658	Water Quality Samples (Local Partners/Cooperators)	0.01%	<0.01%	0.01%	<0.01%	<0.01%
659	Severe Weather and Hydro Application Development NSSL	0.01%	0.01%	<0.01%	0.01%	<0.01%
660	USFS FHP Airborne High-Resolution Visible Imagery	0.01%			0.01%	0.02%
661	NOAA National Beach Nourishment Database	0.01%	<0.01%	<0.01%	0.01%	0.01%
662	Operational Tillage Information System (OpTIS)	0.01%	0.01%	<0.01%		0.05%
663	National Center for Education Statistics Education Data	0.01%		0.02%		
664	State Geologic Maps	0.01%	0.04%	<0.01%		
665	Stream Flow (USGS)	0.01%	0.04%	<0.01%	<0.01%	<0.01%
666	MOM Research Activity, Code Stack, and Collaborations: GFDL	0.01%	0.01%	<0.01%	0.01%	<0.01%
667	Spring Location Data	0.01%	0.01%		0.01%	
668	ESRI 2020 Global Land Cover Map	0.01%	0.04%			
669	Pyromes of the Conterminous United States	0.01%			0.02%	
670	USFS Community zones for assessing wildfire exposure	0.01%			0.02%	
671	Aircraft-3	0.01%			0.01%	0.01%
672	June Agriculture Surveys	0.01%	0.04%			
673	Bureau of Land Management Fire Fuel Reports	0.01%		<0.01%	0.02%	
674	Illinois Climate Network	0.01%	0.01%	0.01%	<0.01%	0.01%
675	NDFD Wind Direction	0.01%	0.01%	<0.01%	0.01%	<0.01%
676	LANDFIRE 13 Fire Behavior Fuel Models 2016 Remap	0.01%	<0.01%	<0.01%	0.01%	<0.01%
677	Physical Oceanographic Real-Time System Currents	0.01%	0.03%			
678	CDMP 19th Century Forts and Voluntary Observers Database	0.01%	<0.01%	<0.01%	0.01%	0.01%
679	NOAA Aircraft Otter (Coastal Mapping)	0.01%	<0.01%	0.01%	<0.01%	0.03%
680	USGS Mobile Surge Sensors	0.01%	<0.01%	<0.01%	0.01%	<0.01%
681	NOAA Aircraft P-3 (Dropsondes)	0.01%	0.01%	<0.01%	0.01%	<0.01%