

Satellite-Based Earth Observation Market - Growth, Trends, Covid-19 Impact, and Forecasts (2023 - 2028)

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Report description:

The global satellite-based earth observation market is expected to register a CAGR of approximately 8.3% during the forecast period.

Key Highlights

Earth observation satellites facilitate resource management, environmental monitoring and protection, humanitarian assistance, and sustainable development. Also, this includes satellites used for environmental monitoring, meteorology, cartography, and other non-military purposes. These sensors assess air quality, agricultural health, ice thickness, salinity, and other factors. One of the major factors promoting the expansion of the satellite-based earth observation business worldwide is the increasing use of satellites for environmental monitoring. Observing and tracking GHG emissions, deforestation, polar ice changes, wildfires, and coral bleaching are just a few of the uses for satellite-based earth observation. Superior observation satellites for environmental monitoring have been developed due to recent advances in sensing and imaging technologies. These satellites deliver photos with a better resolution and enable the measurement of many indicators.

The growth of satellite-based data in agriculture will significantly drive the market. For instance, In March this year, EarthDaily Analytics, a Canadian earth observation startup spun out of UrtheCast's bankruptcy less than a year ago, is making tremendous progress toward getting back in business. The firm announced the rebranding of Geosys, its agtech segment, to EarthDaily Agro on Wednesday. It also stated that a next-generation software platform would be available in the first quarter of this year. Geosys is the new name for the new platform. EarthPipeline's completely automated SaaS data processing platform converts raw satellite data into ultra-high quality image products ready for direct-to-algorithm processing and fuel AI-based analytics products and services.

One of the main satellite-based earth observation (EO) industry trends fostering market expansion is the rising demand for small satellites. Small satellites, sometimes called SmallSats or CubeSats, can range in size from that of a shoebox to that of a washing

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machine and weigh as little as 10 kilograms. These satellites' compact size, low price, and minimal initial investment are major factors boosting demand for them in various applications. SmallSats were initially employed as proof of concept and teaching tools. But thanks to developments in satellite technology, it is now possible to equip these satellites with various scientific measuring and communication devices. During the forecast period, these factors are anticipated to fuel market expansion. Moreover, NASA stated that, at least in the short term, economic and social shutdowns in response to the COVID-19 pandemic had resulted in noteworthy changes in Earth's ecosystem. NASA researchers track these consequences on air, land, water, and climate using satellite and ground-based observations. These data sets were compiled in an online dashboard that is free and open to the public. The NASA COVID-19 Dashboard displays data from Earth-observing satellites, International Space Station equipment, and sensitive ground-based networks. Various observable change categories, including economic indicators like shipping and construction activities and environmental elements like water quality and climatic changes can search the globe maps. On the flip side, the multi-band terminals used by the Navy, which come with Advanced-EHF satellites, are quite expensive. Furthermore, the cost of purchasing and installing the terminals can be anywhere from 20 to 30 times that of the rockets and spacecraft. The fact that satellite and terminal development initiatives are carried out separately has long been a source of waste and cost overruns. For example, the Air Force may oversee spacecraft, while the Army may oversee radios. Rarely do earth-bound communication equipment and satellites reach the conclusion of their development cycles at the same time. The high cost of satellite communication services is limiting the market's expansion.

Satellite-based Earth Observation Market Trends

Increasing Need to Generate Big Data to Offer Accurate Insights into Earth Observation

The amount of data collected and shared has grown and is continually growing. The same phenomenon is observed regarding space technology, and the rising sensitization and digitalization of various sectors of society cause it. The information obtained from space offers a distinct perspective on the information obtained from other sources. Big data files and related data exchange generate a lot of market value. Effective decision-making and higher productivity are made possible by the intelligent and effective utilization of this data from space-based systems. This point of view from industries and governments is driving the market.

In recent years, there has been a rise in the use of geographic information systems (GIS) and satellite technologies for a more thorough understanding of the landscape and the identification, mapping, and analysis of environmental conditions. The availability of very high and high-resolution satellite data has increased, enabling the management and mitigation of disasters. Additionally, it can identify details about a wide range of commodities sold on a global scale, including agricultural products, metals, minerals, and oil and gas. In risk prediction and detection, post-disaster rescue and recovery activities, infrastructure planning, urban development utilities, and national mapping agencies, the earth observation (EO) market is anticipated to expand.

In July last year, Nettar Group, Inc., a provider of high-resolution satellite data collecting, and CF Acquisition Corp. V, a Cantor Fitzgerald-sponsored special purpose acquisition company, announced that they had reached a formal merger agreement to see Satellogic become a publicly traded business. Satellogic will be able to remap the Earth every day in high resolution and at a reasonable price using its proven technology at scale, reinforcing the company's position as a player in Earth imagery and fundamentally transforming how people access and use satellite data.

In June 2021, Wyvern, a commercial space data firm based in Edmonton, Alberta, Canada, agreed with Sky Watch Space Applications Inc., a Waterloo-based space technology startup, to supply data management capabilities. The Wyvern team is passionate about environmental sustainability and the power of hyperspectral images to bring it to the world. Due to the optical technology necessary to record hyperspectral imaging via low-Earth orbit satellites, hyperspectral imagery, which captures light over hundreds of bands to produce the most information-rich images of the Earth's surface, has historically been prohibitively expensive.

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Earth observation satellites fly in orbits, offering a range of world perspectives. Most satellites cannot continually collect data due to power and memory limitations. Others gather smaller amounts over time, while some regularly collect enormous amounts of data. The data can be downlinked once a ground station can see the satellite. With the development of technology, the time it takes to download a picture has decreased from weeks to seconds. Because different companies manage satellites, there are numerous data sources.

The deployment of various analytics tools will enable satellite-based earth observation firms to generate insights from the data they have received. For instance, according to Datanyze inc, With a market share of 13.5%, MATLAB will be one of the prominent players in the world's advanced analytics and data science market in 2021. It was closely followed by Alteryx and HubSpot Analytics, which had respective market shares of 9.92 and 9.21%.

North America to Hold the Largest Market Share

North America is anticipated to dominate the market studied, during the forecast period, due to the highest number of ongoing research studies and investments in the market, the presence of a sophisticated infrastructure to undertake space programs, and the quickest and highest adoption of commercial satellite imaging across various industries in the region.

To command and control forces, monitor opponent actions, and uncover threats that could jeopardize the United States and its allies, the US Department of Defense (DoD) relies on the advantages afforded by satellites for nearly every military mission. As per the Union of Concerned Scientists, out of 4,852 active artificial satellites orbiting the Earth, 2,944 belongs to the United States as of January this year. The United States Space Force (USSF) operates the USD 6.8 billion Satellite Control Network (SCN) for military warfighters, which consists of a global ground network of fixed antennas at seven sites to command more than 190 military and government satellites.

NASA's Land, Atmosphere Near real-time Capability for EOS (LANCE) Earth Observing System (EOS) data and imagery enable users to get a picture of the Earth in near-real-time (NRT). This timely data can be used to detect fires, track smoke, ash, and dust plumes; monitor aerosols, carbon monoxide (CO), and Sulphur dioxide (SO₂), which can be used to assess air quality; and determine the extent of sea ice, snow, and flooding, which can help support shipping in the polar regions and allow rapid assessment of areas worst affected by snow or flood water.

In April this year, The Defense Advanced Research Projects Agency (DARPA) is looking for recommendations on improving satellite imagery technology. Proposals for three efforts focused on upgrading synthetic aperture radar(SAR) technology in satellites will be accepted by the Defense Advanced Research Projects Agency. Governments and businesses are expanding their investments in satellite images, especially SAR. Unlike traditional electro-optical systems, SAR sensors can provide images of the Earth at night and in all weather situations since they rely on the radar. The capacity is precious for tracking ground movements or changes, and it was in high demand during Russia's invasion of Ukraine.

In March this year, The Canadian Space Agency (CSA) awarded MDA Ltd., the firm behind the Canadarm, a USD 269 million contract to begin the third stage of designing the latest iteration of Canada's most prominent contribution to international efforts to occupy space. MDA now plans to commercialize space robotics solutions in the future by leveraging its world-class technical capabilities, mission expertise, and advanced Canadarm3 technology.

Satellite-based Earth Observation Market Competitor Analysis

The Satellite-based Earth Observation Market is highly competitive and moving toward the fragmented stage because of many players in the market. The major players in the market are Airbus Defense and Space, MDA Corp., UrtheCast Corp., and Harris Corporation, among others.

In August 2022, Planet Labs PBC, a provider of daily data and insights about Earth, announced that it has been chosen by two

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companies, SES Government Solutions and Telesat Government Solutions, to demonstrate real-time space-to-space connectivity solutions from LEO satellites to other in-space communication satellites operated by SES and Telesat for NASA's Communication Services Project, or "CSP." Together with SES Government Solutions, Planet will develop and demonstrate a global, always-on, low-latency connectivity solution that is made possible by SES's multi-orbit fleet of geostationary (GEO) and medium earth orbit (MEO) satellite constellations, including on-demand inter-satellite-link connectivity through the O3b mPower satellite communications system.

In February 2022, Indian-based Reliance Jio Infocomm's newly established satellite unit applied for a Global Mobile Personal Communication (GMPCS) license for satellite services from the Telecommunications Bureau, making it the second-largest telecommunications company after Bharti Airtel. Jio's new satellite arm may also be ready to provide satellite broadband services to potential customers in other industries, such as aviation and maritime.

Additional Benefits:

The market estimate (ME) sheet in Excel format
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