441,449 Low Earth Orbit Satellites – Operating, Approved and Proposed

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While the attention of a terrified world has been riveted on a virus, and while concern about radiation has been focused on 5G on the ground, the assault on the heavens has reached astronomical proportions. During the past two years, the number of satellites circling the earth has increased from 2,000 to 4,800, and a flood of new projects has brought the number of operating, approved, and proposed satellites to at least 441,449. And that number only includes low-earth-orbit (LEO) satellites that will reside in the ionosphere.

The satellite projects include the ones listed below. The companies are based in the United States unless otherwise indicated.

17,270 satellites already approved by the U.S. Federal Communications Commission:

- Amazon (Kuiper) – 3,236 satellites
- Astro Digital – 30 satellites
- Black Sky Global – 36 satellites
- Boeing – 147 satellites

- Capella Space Corp. – 7 satellites
- Globalstar (operating since 2000) – 48 satellites
- Hawkeye 360 – 80 satellites
- ICEYE – 6 satellites (FINLAND)
- Iridium (operating since 1998) – 66 satellites
- Kepler Communications – 140 satellites (CANADA)
- Loft Orbital – 11 satellites
- OneWeb – 720 satellites (UNITED KINGDOM)
- Planet Labs (operating) – 200 satellites
- R2 Space, LLC – 8 satellites
- Spire Global – 175 satellites
- SpaceX – 11,943 satellites
- Swarm – 150 satellites
- Telesat – 117 satellites (CANADA)
- Theia Holdings – 120 satellites
- Umbra Lab – 6 satellites
- Viasat – 24 satellites

Applications for 65,912 satellites pending before the FCC:

- Amazon (Kuiper) – 4,538 additional satellites
- AST & Science – 243 satellites
- Astra Space – 13,620 satellites
- Boeing – 5,789 additional satellites

- Black Sky Global – 14 additional satellites
- Fleet Space Technologies – 40 satellites (AUSTRALIA)
- Hughes Network Systems – 1,440 satellites
- Inmarsat – 198 satellites (UNITED KINGDOM)
- Kepler Communications – two additional constellations of 360 satellites and 212 satellites (CANADA)
- Lynk Global – 10 satellites (HONG KONG)
- Maxar Technologies – 12 satellites
- New Spectrum – 30 satellites (CANADA)
- OneWeb-6,368 additional satellites (UNITED KINGDOM)
- Orbital Sidekick – 6 satellites
- SN Space Systems – 1,190 satellites (UNITED KINGDOM)
- SpaceX – 30,000 additional satellites
- Telesat – 1,554 additional satellites (CANADA)
- Terra Bella – 24 satellites (15 already operating)
- Viasat – 264 additional satellites

Constellations totaling 14,892 satellites announced by governments:

- Guowang – 12,992 satellites (CHINA)
- Roscosmos – 264 satellites named Marathon (RUSSIA)
- Roscosmos – 640 satellites named Sfera (RUSSIA)
- Defense Advanced Research Projects Agency – 20

satellites (U.S. MILITARY)

- Space Development Agency – 500 satellites (U.S. MILITARY)
- UN:IO-400 satellites (EUROPEAN COMMISSION)
- Yaogan – 76 satellites (already operating) (CHINESE MILITARY)

Other LEO constellations planned by U.S. and foreign companies, totaling more than 16,055 satellites:

- 4pi Lab – 16 satellites (CANADA)
- ADA Space – 192 satellites (CHINA)
- Aerospacelab – two constellations (unknown number of satellites) (BELGIUM)
- Aistech – 20 satellites (SPAIN)
- Albedo Space – 24 satellites
- Alpha Insights – unknown number (CANADA)
- Analytical Space – 36 satellites (under contract with U.S. SPACE FORCE)
- Apogee Networks – 18 satellites (NEW ZEALAND)
- Astrocast – 100 satellites (SWITZERLAND)
- Astrome – 198 satellites (INDIA)
- Aurora Insight – 12 satellites
- Avant Space – 30 satellites (RUSSIA) equipped with lasers to serve as a billboard in space to display advertisements

- Axelspace – 50 satellites (JAPAN)
- BeetleSat – 80 satellites (ISRAEL)
- Canon – 100 satellites (JAPAN)
- Capella Space Corp. – 29 additional satellites
- Carbon Mapper – 20 satellites
- Care Weather – 50 satellites
- Chang Guang – 138 satellites (CHINA)
- China Aerospace Science and Industry Corporation – 80 satellites (CHINA)
- Climavision – 50 satellites
- Commsat – 72 satellites (8 already operating) (CHINA)
- ConstellR – 30 satellites (GERMANY)
- Curvalux – 240 satellites (UNITED KINGDOM)
- Earth Observant – 30 satellites
- EarthDaily Analytics – 6 satellites (CANADA)
- Earth-i – 15 satellites (UNITED KINGDOM)
- EchoStar – 30 satellites (CANADA)
- Elecnor Deimos – unknown number (SPAIN)
- EOSAgriSat – 12 satellites
- Eutelsat – 25 satellites (FRANCE)
- ExactEarth (operating) – 68 satellites (CANADA)
- Fleet Space – 60 additional satellites (AUSTRALIA)
- Future Navigation – 120 satellites (CHINA)

- GalaxEye – 15 satellites (INDIA)
- Galaxy Space – 1,000 satellites (CHINA)
- Geely – unknown number (CHINA)
- GeoOptics – 50 satellites
- GHG Sat – 10 satellites (CANADA)
- GP Advanced Projects – 9 satellites (ITALY)
- Guodian Gauke – 38 satellites (CHINA)
- Hanwha Systems – 2,000 satellites (SOUTH KOREA)
- HEAD Aerospace – 48 satellites (CHINA)
- Hera Systems – 50 satellites
- Horizon Technologies – 13 satellites (UNITED KINGDOM)
- Hydrosat – 16 satellites
- Hypersat – 6 satellites
- ICEYE – has already launched 14 satellites and plans 18, for 12 more satellites than have been approved by the FCC (FINLAND)
- Innova Space – 100 satellites (ARGENTINA)
- iQPS – 36 satellites (JAPAN)
- Kinéis – 25 satellites (FRANCE)
- KLEO – 300 satellites – (GERMANY)
- Kleos Space – 80 satellites (LUXEMBOURG)
- Lacuna Space – 240 satellites (UNITED KINGDOM)
- Launchspace – 124 satellites

- LunaSonde – unknown number (UNITED KINGDOM)
- Lynk Global – 4,990 additional satellites (HONG KONG)
- LyteLoop – 6 satellites
- MDA – unknown number
- Mission Space – unknown number (LATVIA)
- Modularity Space – 150 satellites
- Muon Space – unknown number
- Myriota – 50 satellites (AUSTRALIA)
- NanoAvionics – 72 satellites (LITHUANIA)
- Ningxia – 10 satellites (CHINA)
- NorthStar – 52 satellites (CANADA)
- OHB Italia – 20 satellites (ITALY)
- Omnispace – 200 satellites
- OQ Technology – 60 satellites (LUXEMBOURG)
- Orbital Micro Systems – 40 satellites
- OroraTech – 100 satellites (GERMANY)
- PION Labs – unknown number (BRAZIL)
- PIXXEL – 36 satellites (INDIA)
- PlanetIQ – 20 satellites
- PredaSAR – 48 satellites
- Prométhée – unknown number (FRANCE)
- QEYNet – unknown number (CANADA)

- QianSheng – 20 satellites (CHINA)
- Reaktor Space Lab – 36 satellites (FINLAND)
- RocketLab- “Mega-constellation” of unknown number (NEW ZEALAND)
- Rogue Space Systems – 40 satellites
- Rovial – unknown number (FRANCE)
- Saab – 100 satellites (SWEDEN)
- SaraniaSat – unknown number
- Sateliot – 100 satellites (SPAIN)
- Satellogic – 90 satellites (ARGENTINA)
- SatRevolution – 1500 satellites (POLAND)
- Scanworld – 10 satellites (BELGIUM)
- Scepter and ExxonMobil – 24 satellites
- SCOUT – unknown number
- Shanghai Lizheng – 90 satellites (CHINA)
- Skykraft – 210 satellites (AUSTRALIA)
- Space JLTZ – 200 satellites (MEXICO)
- Space Union – 32 satellites (LITHUANIA)
- SpaceBelt – 12 satellites
- SpaceFab – unknown number
- Spacety – 56 satellites (CHINA)
- Stara Space – 120 satellites
- Startical – 200 satellites (SPAIN)

- Sternula – 50 satellites (DENMARK)
- Synspective – 30 satellites (JAPAN)
- Telnet – 30 satellites (TUNISIA)
- Tomorrow.io – 36 satellites
- Totum Labs – 24 satellites
- Trion Space – 288 satellites (LIECHTENSTEIN)
- Trustpoint – unknown number
- Umbra Lab – 18 additional satellites
- UnseenLabs – 50 satelites (FRANCE)
- Vyoma Space – unknown number (GERMANY)
- WiseSat Space – unknown number (SWITZERLAND)
- Xona – 300 satellites
- ZeroG Lab – 378 satellites (CHINA)
- Zhuhai Orbita – 34 satellites (CHINA)

Rwanda, which wants to catapult Africa into world leadership in space, filed an application with the International Telecommunication Union (ITU) on September 21, 2021 for 327,320 satellites. Its proposal includes 937 orbital planes, distributed in 27 orbital shells (layers of satellites at different altitudes), with 360 satellites in each plane.

- Rwanda Space Agency – 327,320 satellites (RWANDA)

TOTAL: 441,449 SATELLITES OPERATING, APPROVED AND PROPOSED (+18 constellations whose numbers are not yet known)

Most of the above list of satellites would orbit at altitudes

between about 325 km (200 miles) and 1,100 km (680 miles), except that some of Rwanda's proposed orbits go as low as 280 km (174 miles). The above list does not include applications for satellites in geostationary orbit (GEO), or for LEO constellations of fewer than 5 satellites, or constellations in medium earth orbit (MEO) such as:

- Intelsat (at 8600 km) – 216 satellites (LUXEMBOURG)
- Mangata Networks (at 6,400 km and 12,000 km) – 791 satellites
- O3b (at 8,062 km) – 112 satellites (LUXEMBOURG)

Brightening the Night Sky

Scientists have already begun to publish papers analyzing the effect all these satellites will have, not only on astronomy, but on the appearance of the night sky and the visibility of the stars to everyone on earth. An article published online on March 29, 2021 in Monthly Notices of the Royal Astronomical Society by scientists in

Slovakia, Spain and the United States is titled "The proliferation of space objects is a rapidly increasing source of artificial night sky brightness." The scattering of sunlight from all of the objects in space, wrote the authors, is causing a "new skyglow" during the beginning and end of each night that has already brightened the natural night sky by about 10 percent. The authors are concerned that "the additional contribution of the new satellite mega-constellations" would ruin the night sky to a much greater extent.

A group of Canadian astronomers have an article in the January 2022 issue of The Astronomical Journal. "Megaconstellations of thousands to tens of thousands of artificial satellites

(satcons) are rapidly being developed and launched," they write. "These satcons will have negative consequences for observational astronomy research, and are poised to drastically interfere with naked-eye stargazing worldwide." They analyzed what the effect on astronomy will be if 65,000 new low- orbit satellites are launched. At 40 degrees latitude (mid-United States; Mediterranean; mid-China; Japan; Buenos Aires; New Zealand), say these authors, more than 1,000 of these satellites will be sunlit and visible in the sky in the summer even at midnight. At higher latitudes (northern U.S.; Canada; most of Europe; Russia), thousands of these satellites will be visible all night long.

Another paper, titled Report on Mega-Constellations to the Government of Canada and the Canadian Space Agency, was commissioned by the Canadian Astronomical Society and submitted to the Canadian government on March 31, 2021. It is a moving document. These astronomers write:

"In ancient times, humans everywhere in the world had access to completely dark skies. In stark contrast, today 80% of North Americans cannot see the Milky Way from where they live because of light pollution. The lack of darkness that many people now experience due to urban light pollution has been linked to many physical and mental health issues, both in humans and wildlife. But there are still pockets of darkness where urban-dwellers can escape the light pollution and experience skies nearly as dark as those seen by our ancestors. Unfortunately, light pollution from satellites will be a global phenomenon – there will be nowhere left on Earth to experience skies free from bright satellites in orbit.

"Anyone who has ever spent time in a truly dark place staring up at the stars understands the powerful feeling of connection and insignificance this act inspires. Our lives, our worries, even our entire planet seem so inconsequential on these scales – a feeling that has shaped literature, art, and culture around the globe.

Seeing the night sky makes it immediately obvious that we are part of a vast and wondrous universe full of countless stars… Connecting to the sky is part of our humanity, and everyone in the world is in very real danger of losing that…

“With the naked eye, stargazing from a dark-sky location allows you to see about 4,500 stars… Once Starlink approaches 12,000 satellites in orbit, most people in Canada will see more satellites than stars in the sky.”

The World’s Largest Garbage Pit

And not only do thousands of whole satellites threaten the heavens, but a phenomenal amount of debris orbits the earth as a result of satellites colliding, or exploding, or otherwise being destroyed while in space. During the 64 years that humans have been launching rockets, the protective blankets of the ionosphere and magnetosphere have become the Earth’s largest garbage pit.

According to the European Space Agency there are, in orbit around the Earth today, 7,790 intact satellites, of which 4,800 are functioning. Since 1957, there have been more than 630 breakups, explosions, collisions, and other satellite-destroying events. This has resulted in the creation of more than 9,700 tons of space debris. There are, in orbit today:

- 30,430 debris objects presently being tracked
- 36,500 objects larger than 10 cm in size
- 1,000,000 objects from 1 cm to 10 cm in size
- 330,000,000 objects from 1 mm to 1 cm in size

Effects on Ozone, Earthquakes, and Thunderstorms

Ozone

In a 2020 paper titled "The environmental impact of emissions from space launches: A comprehensive review," Jessica Dallas and her colleagues at the University of New South Wales wrote that "ozone depletion is one of the largest environmental concerns surrounding rocket launches from Earth."

In 2021, there were 146 orbital rocket launches to put 1,800 satellites into space. At that rate, to maintain and continually replace 100,000 low-earth-orbit satellites,

which have an average lifespan of five years, would require more than 1,600 rocket launches per year, or more than four every day, forever into the future.

2020 and 2021 witnessed two of the largest Antarctic ozone holes since measurements began in 1979. The 2020 hole was also the longest-lasting on record, and the 2021 hole was only a few days shorter; larger than the continent of Antarctica, it began in late July 2021 and ended on December 28, 2021. Everyone is still blaming chlorofluorocarbons (CFCs), which were banned by the Montreal Protocol in 1978. Nobody is looking at rocket launches, of which there were more in 2020 and 2021 than in any previous year. In addition to the 146 orbital launches in 2021, there were 143 sub-orbital launches of rockets to over 80 kilometers in altitude, for a total of 289 high-altitude launches for the year, or almost one every day.

Earthquakes and Thunderstorms

In 2012, Anatoly Guglielmi and Oleg Zotov reviewed evidence that the global use of electricity has an effect on both seismic activity and thunderstorms. In particular, global electric power consumption spikes every hour on the hour, and so does the average number of earthquakes in the world. In 2020, a group of Italian scientists supplied additional

information: solar activity also correlates with earthquakes, and it appears to do so by raising the voltage of the ionosphere. Since this must increase the current flow in the global electric circuit (see chapter 9 of my book, The Invisible Rainbow), it would increase the electric currents that flow through the earth's crust at all times, which would increase the stress on earthquake faults and increase the frequency of earthquakes. The Italian paper's title is "On the correlation between solar activity and large earthquakes worldwide."

Whether 100,000 satellites, although emitting powerful radio waves, would raise the ionospheric voltage, is doubtful. However, the rocket exhaust from every launch emits tons of water vapor, which is more conductive than dry air. The stratosphere is dry and contains very little water, and any water humans put there remains there for years and accumulates. Multiple daily rocket launches, in perpetuity, will fill the stratosphere with water vapor, increase its conductivity, and increase the current flowing in the global electric circuit. The current flowing through the earth's crust will increase, possibly increasing the frequency of earthquakes.

I also speculate that this would increase the frequency and power of thunderstorms worldwide. Were it not for thunderstorms, the ionospheric voltage, which averages 300,000 volts, would discharge in about 15 minutes. About 100 lightning strokes per second, somewhere on Earth, continuously recharge it. Increasing the current flow in the global electric circuit would discharge the ionosphere more quickly, and since it is thunderstorms that recharge the Earth's battery, the frequency and violence of thunderstorms would have to increase.

Alteration of the Earth's Electromagnetic Environment

What everyone is completely blind to is the effect of all the radiation from satellites on the ionosphere, and consequently on the life force of every living thing. The relationship of electricity to qi and prana has escaped the notice of modern humans. Atmospheric physicists and Chinese physicians have yet to share their knowledge with one another. And at this time, such a sharing is crucial to the survival of life on Earth.

"The pure Yang forms the heaven, and the turbid Yin forms the earth. The Qi of the earth ascends and turns into clouds, while the Qi of the heaven descends and turns into rain." So the Yellow Emperor's Classic of Internal Medicine described the global electric circuit 2,400 years ago – the circuit that is generated by the ionosphere and that flows perpetually between the Yang (positive) heaven and the Yin (negative) earth. The circuit that connects us to earth and sky and that flows through our meridians giving us life and health. A circuit that must not be polluted with frequencies emitted by a hundred thousand satellites, some of whose beams will have an effective power of up to ten million watts. That is sheer insanity, and so far no one is paying attention. No one is even asking whether the satellites have anything to do with the profound and simultaneous decline, planetwide, in the number of insects and birds, and with the pandemic of sleep disorders and fatigue that so many are experiencing. Everyone is so focused on a virus, and on antennas on the ground, that no one is paying attention to the holocaust descending from space.

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