



The Work of His Hands

A View of God's Creation from Space

Colonel Jeffrey N. Williams

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“An excellent wife is the crown of her husband.” *Proverbs 12:4*

“She is far more precious than jewels. The heart of her husband trusts in her, and he will have no lack of gain. She does him good, and not harm, all the days of her life.” *Proverbs 31:10–12*

This work is dedicated to Anna-Marie—my beloved wife of twenty-nine years and mother of our two sons—whom I love and adore and who has consistently loved and supported me selflessly and sacrificially while enduring many long periods of separation during military deployments, training and mission preparation, as well as spaceflights. The blessing of her companionship, partnership, love, and devotion has been a gift from God, to whom I am grateful. Anna-Marie has been and continues to be my greatest earthly provision. She truly is my Proverbs 31 bride.

Expedition 13

Rocket Preparations

Our arrival at Baikonur was our entrance into the pre-flight medical quarantine, and much of the time was lightly scheduled and restful, that is, until “rollout.” The rollout of the rocket from the assembly building to the launchpad was a milestone that seemed to rapidly feed the building levels of anticipation and excitement, especially among the launch team and family and friends with whom I was able to visit. We crew members had to participate vicariously, however. By tradition, the backup crew goes to the rollout but the prime crew does not attend, so that morning was relatively quiet for us. My insight into the rollout experience had been gained six months previous, while serving on the backup crew for Expedition 12.

For every rollout of a Soyuz, the slow rail ride begins at sunrise two days before launch. It is observed by engineers, managers, and technicians, as well as dignitaries, guests, and family, in what are usually very cold and windy conditions. The entire process of rollout and raising the rocket to the vertical position on the launchpad is seemingly simple and impressively efficient, taking only a few hours. The rocket on the pad is

The Soyuz TMA-8 first-stage rocket booster is shown here, with its center engine and four strap-on boosters, during final preparations a few days before being delivered to the launchpad.



The third-stage rocket booster and Soyuz spacecraft being lowered into position for attachment to the first- and second-stage assembly. The Soyuz displays the flags of Brazil, the United States, and Russia, representing the countries of each member of the crew.



The Soyuz TMA-8 rocket is delivered on rail from the assembly building to the launchpad and erected two days prior to launch.



the last significant milestone leading up to launch day. It is from that point in the launch preparations that time seems to accelerate.

Launch Morning

For every Soyuz crew, the time in Kazakhstan is mostly spent in the crew quarters, what is referred to as the *Cosmonaut Hotel*. It is a modest but comfortable facility located at the outskirts of the city of Baikonur, about a 45-minute drive from the Soyuz assembly facilities and launchpad.

After spending the entire quarantine time in Kazakhstan on a normal day's schedule—with a wake-up at about 0700 and sleep starting at 2300—on the day before launch, we were scheduled with a sleep period starting at 1600 (4:00 p.m.) and a wake-up at 2230 (10:30 p.m.) that evening. That did not work well for obvious reasons. I spent the first couple of hours completing last-minute details and then laid awake for the rest of the evening time.

My wife, Anna-Marie, and I spent a couple of hours together just prior to the sleep period, reflecting on where Providence had put us and was taking us. Our visit was a special time. Having endured nearly four years of travel, training, and preparation, we were both ready to finally get the journey underway.

After wake-up, we underwent final medical checks, took what would be our last shower for six months, and ate a Russian-style breakfast. The mood was light and spirits were high. Since the launch was still about eight hours away, I actually ate a substantial amount. Had I followed the pattern of an earlier flight, I would have eaten very little so as to not have much in my stomach when arriving in weightlessness—the conservative approach. But the previous experience gained several years earlier suggested it was okay to go ahead and eat well.

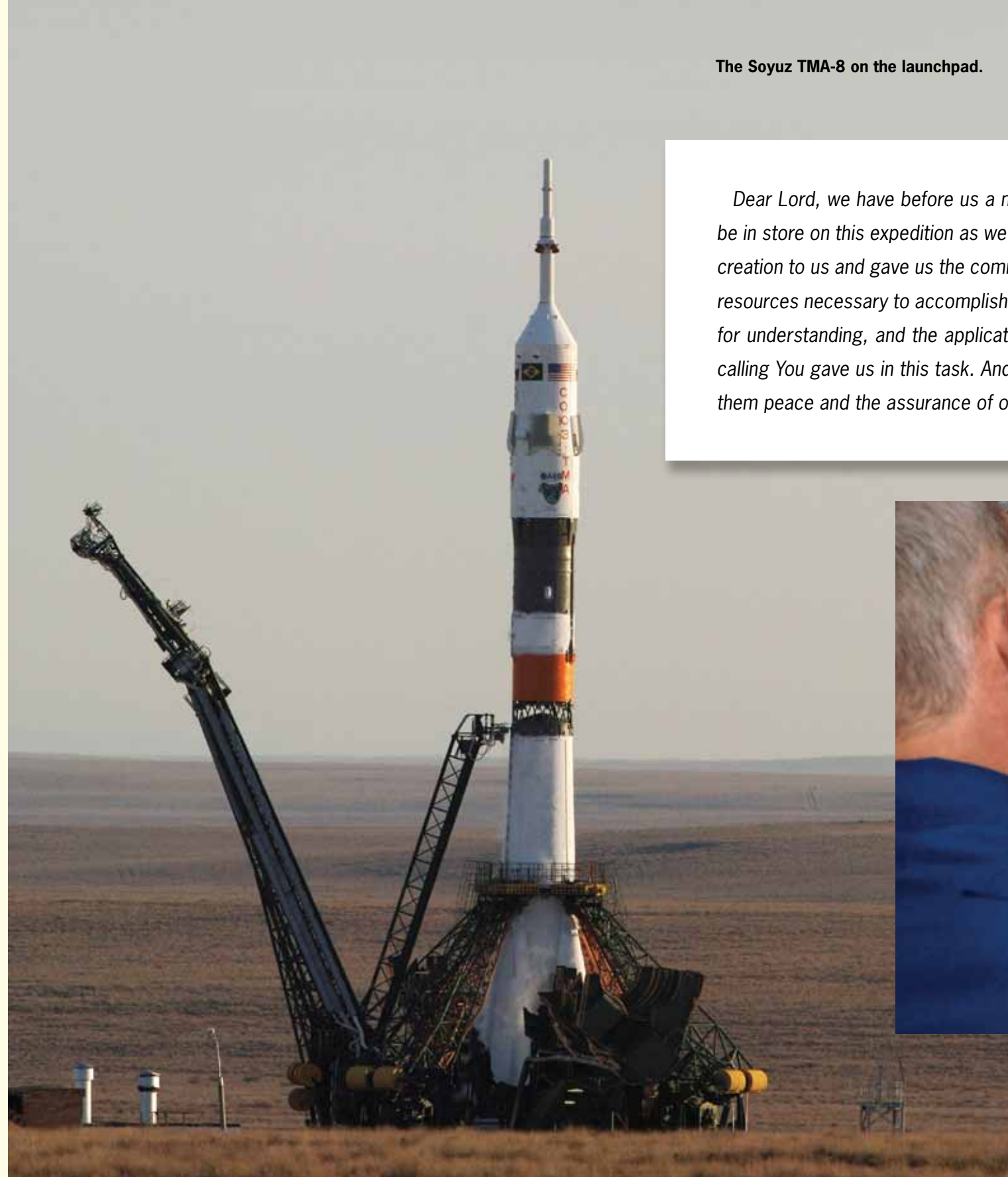
The traditional door signing ceremony came after breakfast. Back at our rooms we gathered with several of the leaders, the flight surgeons, and our families for that traditional event that included a few words of Godspeed from the senior Russian officer present. Then it was down the stairs, out the door,

and down the path to the bus. The sidewalk was lined with family, launch guests, trainers, staff, and photographers. I could hear familiar voices, but with the bright light of the cameras and the accelerated pace of things, it was difficult to see and acknowledge everybody in the crowd.

As soon as we were on the buses—one carrying the prime crew and one, the back-up—it was off to the Cosmodrome to get the Russian *Sokol* (“falcon”) suits donned and pressure checked. They are full-pressure space suits especially designed for use on the Soyuz spacecraft to protect the crew in case of a cabin depressurization.



The Soyuz TMA-8 crew donning the Sokol space suits just prior to the ride to the launchpad. Pavel Vinogradov is in the center of the view and Jeff Williams is on the right.



The Soyuz TMA-8 on the launchpad.

Dear Lord, we have before us a most unique challenge and opportunity. We do not know what will be in store on this expedition as we fulfill the duties of our vocation. Lord, You have relinquished Your creation to us and gave us the commission to subdue Your creation. In it, You have given us all of the resources necessary to accomplish Your calling. You gave us the capacity for dreaming, for learning, for understanding, and the application of that understanding. May we use that capacity to fulfill the calling You gave us in this task. And Lord, while we are away, protect and comfort our families. Give them peace and the assurance of our safe return. And bring us to a safe and joyful reunion. Amen.



The traditional door signing, completed just prior to departing the Baikonur crew quarters for launch.

The Beauty and Order of the Planet

The diversity of the phenomena of nature is so great,
and the treasures hidden in the heavens so rich, precisely in order
that the human mind shall never be lacking in fresh nourishment.

—Johannes Kepler, Dedication, *Mysterium Cosmographicum*

We love to behold beauty, even if we struggle to define what beauty is. It is no wonder that, throughout history, nature has inspired exploration as well as art, literature, and music of all types. The scenes of nature are frequently stunning in color, shape, harmony, and symmetry. There is also an undeniable order apparent in the observation of natural phenomena. Patterns and rhythms can be seen everywhere. They are often predictable and repeatable and reveal what we call the laws of nature and physics. Even in the midst of nature's apparent chaos, we observe order. Waves hit the shore at a predictable frequency. A stone thrown in the water produces expanding concentric waves that dissipate over time in a predictable way. Sand dunes form an orderly pattern. Observing that order in nature, along with the development of our ability to measure time, historically has led to hypothesizing and proving natural laws and the development of mathematics and physics. It has been because of the predictable order in the universe

Left: Rows of clouds display order in their pattern against the backdrop of midwestern agriculture in North America.

Far left: A low sun reflecting off the ocean with low-altitude cumulus and high-altitude cirrus clouds produces this mysterious scene.

Then God said, “Let Us make man in
Our image, after Our likeness.”
Genesis 1:26

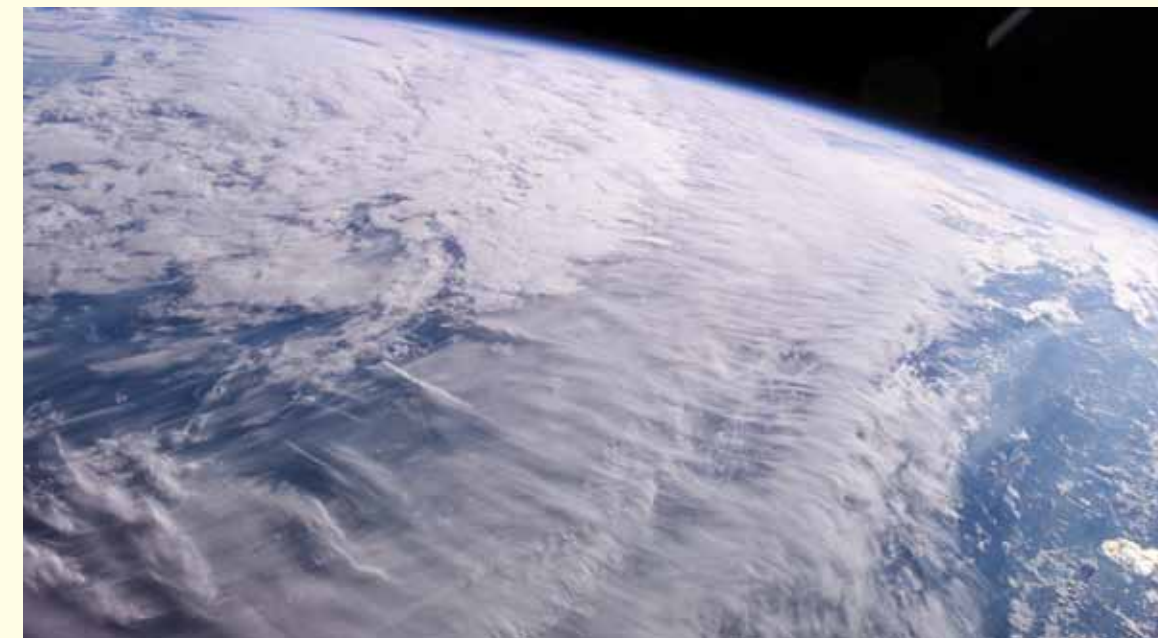
Below left: Valleys of the Cascade Mountains in northern Washington filled with clouds.

Below: Low clouds, typical of the Pacific coast of North America, lap the coastline of Vancouver Island in British Columbia and fill the coastal valleys.



Below: Various cloud patterns generated by weather systems, terrain, and high-altitude winds are evident in this view looking southwest over North America from the area of Newfoundland.

Below right: The layers of the atmosphere are displayed in characteristic colors and intensities at the moment of sunset.



On Your wondrous works,
I will meditate.
Psalms 145:5b



that we are able to develop the means to get to space in the first place and make further exploration and observation from that vantage point. A rocket is designed to fly a very precise trajectory with a very precise acceleration to achieve a very precise orbit in order to rendezvous very precisely with another spacecraft. The path of a spacecraft is highly predictable. Likewise, the entry trajectory and return to Earth are predictable. All of that is possible because of the order in nature.

That order is also apparent from viewing the earth from orbit. Seeing order in that observation produces a uniquely human response—an obvious awe and wonder at the earth’s display of its

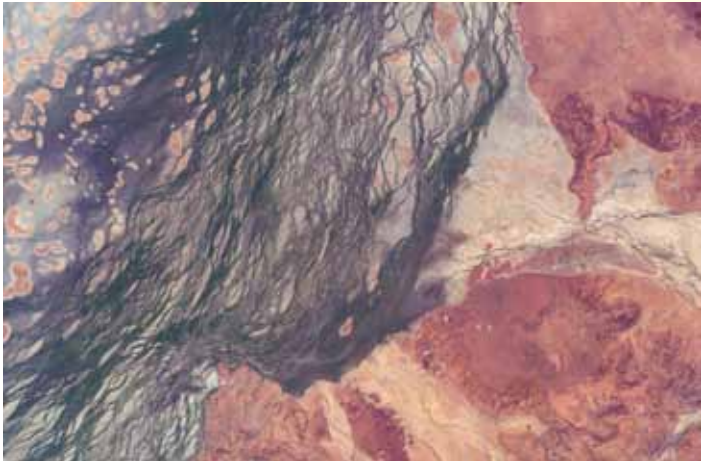
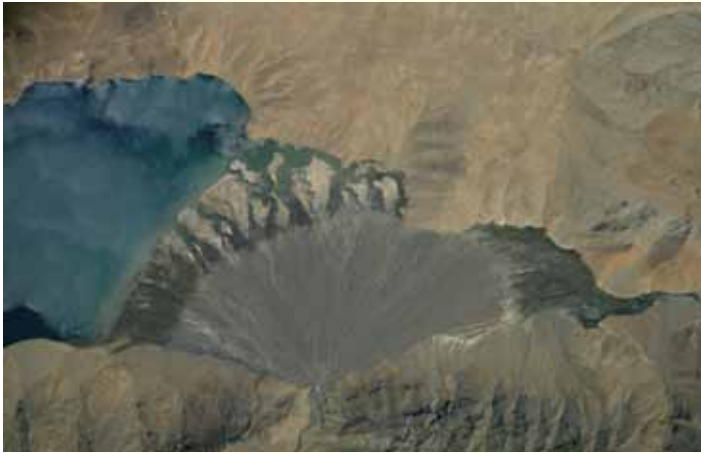
unparalleled attributes. It is unique to human experience to have the ability and inclination to recognize and appreciate that which we consider beautiful. That is especially true in observing nature.

The observed character of creation testifies objectively to the Creator responsible for it.

And that exclusively human response testifies to the uniqueness of humans among creatures—uniqueness in abilities of rational thought, intellect, emotion, imagination, and self-consciousness, which all testify that humans bear the image of God.



Left column from top:
Gulf of California A complex interaction of wave sets and tidal currents displayed in sun glint are visible in this view. A low tide is causing an outflow of water, producing this peculiar interaction.
Lake Morari in Tibet sits at an elevation of nearly 15,000 feet above sea level on the Tibetan Plateau and is fed by melt water from surrounding glaciers. The prominent formation of sediment at the lake's outlet is called an "alluvial fan" and has effectively produced a dam and the resulting lake. The fan's apex was reportedly about 130 feet above the level of the lake at the time of this photograph.
Bulloo River in Queensland, Australia The floodplain of the Bulloo River and seasonal water levels form this very complex flowing pattern set against the backdrop of the dry, reddish terrain of this isolated region in the interior of Australia.
Below: The confluence of the Missouri and White rivers in South Dakota form this extraordinary downstream pattern of mixing waters of different colors. The White River flows through the Badlands National Monument in Western South Dakota and picks up the light colored silt that contrasts with the darker Missouri waters.



The Amur River and the adjacent floodplain form a magnificent pattern of swirling channels and vegetation on the border between the north-eastern corner of China and Russia.

The Betsiboka River delta in Madagascar is starkly beautiful in its flowing patterns and red color as it flows into the coastal plain and into the Indian Ocean. Off the southeast coast of Africa, Madagascar is known for its unique and varied plants and animals.



The Brahmaputra River flows out of the Himalayan Mountains and into the Assam Valley of northeastern India. The flat terrain that supports multiple channels and makes the river susceptible to catastrophic flooding from the upstream spring melt is apparent. The area is known for its wildlife, including rhinoceroses, tigers, elephants, and water buffalo.



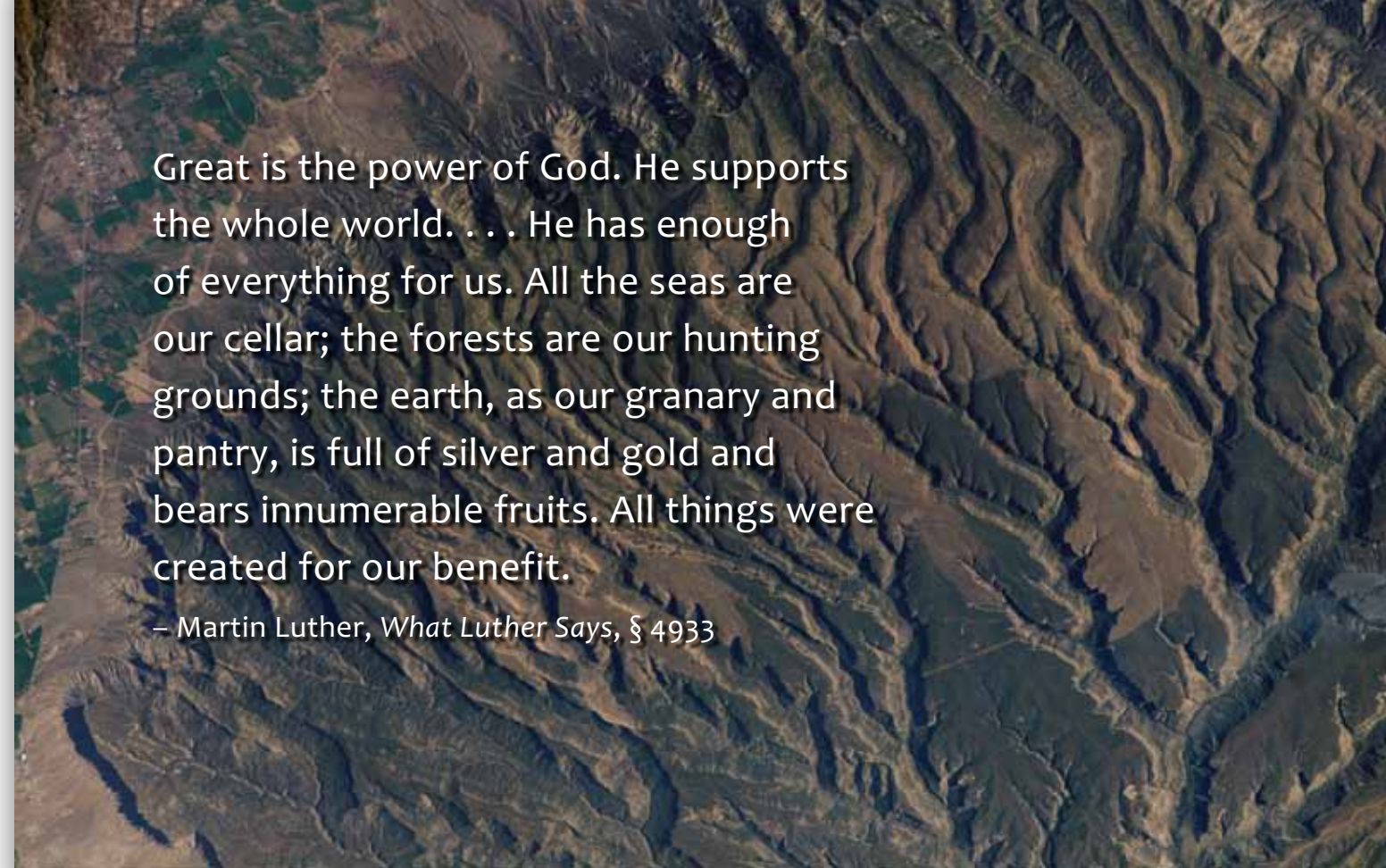
Far right: The details of Niagara Falls are easily seen with the high contrast of the rapids and falls with the surrounding water and terrain.



Lake Lanier, a reservoir just northeast of Atlanta, GA, is congested with recreational boaters, as evidenced by the many V-shaped wakes, on this beautiful day after Memorial Day.



’Tis wonderful how completely the earth is fertilized by currents of water running in all directions and constantly replenished by snow, rain, and dew.
—Martin Luther, *Table Talk*



Great is the power of God. He supports the whole world. . . . He has enough of everything for us. All the seas are our cellar; the forests are our hunting grounds; the earth, as our granary and pantry, is full of silver and gold and bears innumerable fruits. All things were created for our benefit.

– Martin Luther, *What Luther Says*, § 4933

Above: Fan-shaped array of terrain in the center of western Colorado.

Top left corner: Lake Amadeus, a huge salt lake in the Northern Territories of Australia, appears as if it is the surface of another planet. About 90 miles long and up to 12 miles wide, it sometimes contains a few inches of water but is usually dry as seen here.

Left: Lake Powell, in southern Utah, exists because of the Glen Canyon Dam and fills a canyon nearly 190 miles long. The long narrow reservoir and surrounding terrain is beautiful from orbit. The horseshoe-shaped dry canyon adjacent to the river is known as the Rincon, an old meander prominent from orbit.

Right: This amazing large-scale swirling pattern of salt domes in the Kavir Desert of central Iran (32.7 N, 56.4 E), appears as though it was bent and folded in a fluidic state before solidifying.



Above: This panorama of the Kings Canyon Area in Australia is as beautiful from orbit as it is reported to be on the ground. Note the small riverbed that appears to cut across the geological formations.

Below: The snow-covered top of the inactive volcano Kibo on Mount Kilimanjaro, Africa's highest point at 19,341 feet. Because of the elevation combined with its location near the equator, nearly every climate type on earth can be found on and near Kilimanjaro.

