
Earth as Art²



A Satellite Perspective

About the Artists...

At first glance, the images in this exhibit could pass for works of art created with oil paints, pastels, or mixed media, but the medium is actually light. More precisely, it is energy from the Sun, reflected by the Earth's surface. The "artists" that capture this energy are three state-of-the-art sensors carried aboard satellites orbiting the Earth.

The first of these sensors is the Enhanced Thematic Mapper Plus (ETM+) sensor on the Landsat 7 satellite. Landsat is a joint project of the U.S. Geological Survey (USGS) and the National Aeronautics and Space Administration (NASA). The ETM+ views the entire Earth's surface every 16 days. It takes 57,784 Landsat scenes to cover the Earth's entire landmass.

The second sensor is the Moderate Resolution Imaging Spectroradiometer (MODIS), carried on two satellites named Terra and Aqua, which are part of NASA's Earth Observing System (EOS). MODIS views the entire Earth's surface every 1 to 2 days.

Terra also carries the third of the sensors featured in this exhibit, the Advanced Spaceborne Thermal Emission and Reflection Radiometer (ASTER). ASTER is a cooperative effort between NASA and two Japanese government agencies. ASTER collects data of various parts of the Earth in response to scientific or emergency requests.

Images from all three of these sensors will improve our understanding of the dynamic processes that occur on the land, in the oceans, and in the lower atmosphere. While the primary purpose of these images is to educate and enlighten, they can also enchant with their brilliant colors, striking textures, and abstract designs. The collection of images that make up Earth as Art 2 were chosen solely on the basis of aesthetics. They provide a novel, and undeniably beautiful, view of our world.

Earth as Art²

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Using This Catalog...

The images in Earth as Art 2 are grouped by continent or region. In this catalog, they are set against a background image of part of the continent or region from which they come. However, their placement on the background does not necessarily correlate with their true geographic location. The images are numbered sequentially, from 1 to 36.

All images, including background images, are available to order as a paper print and/or digital file. Each image includes a black collar with the USGS and NASA logos on the bottom left margin and a brief description of the scene in the upper right margin. The paper print consists of a 24" x 24" image on approximately 27" x 30" paper. The digital images will be in Tiff format, which can be viewed in most standard graphics software.

To order an image, simply refer to it by name and number. For more information or to order, please visit <http://edc2.usgs.gov/imagegallery> or contact us at:

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AFRICA



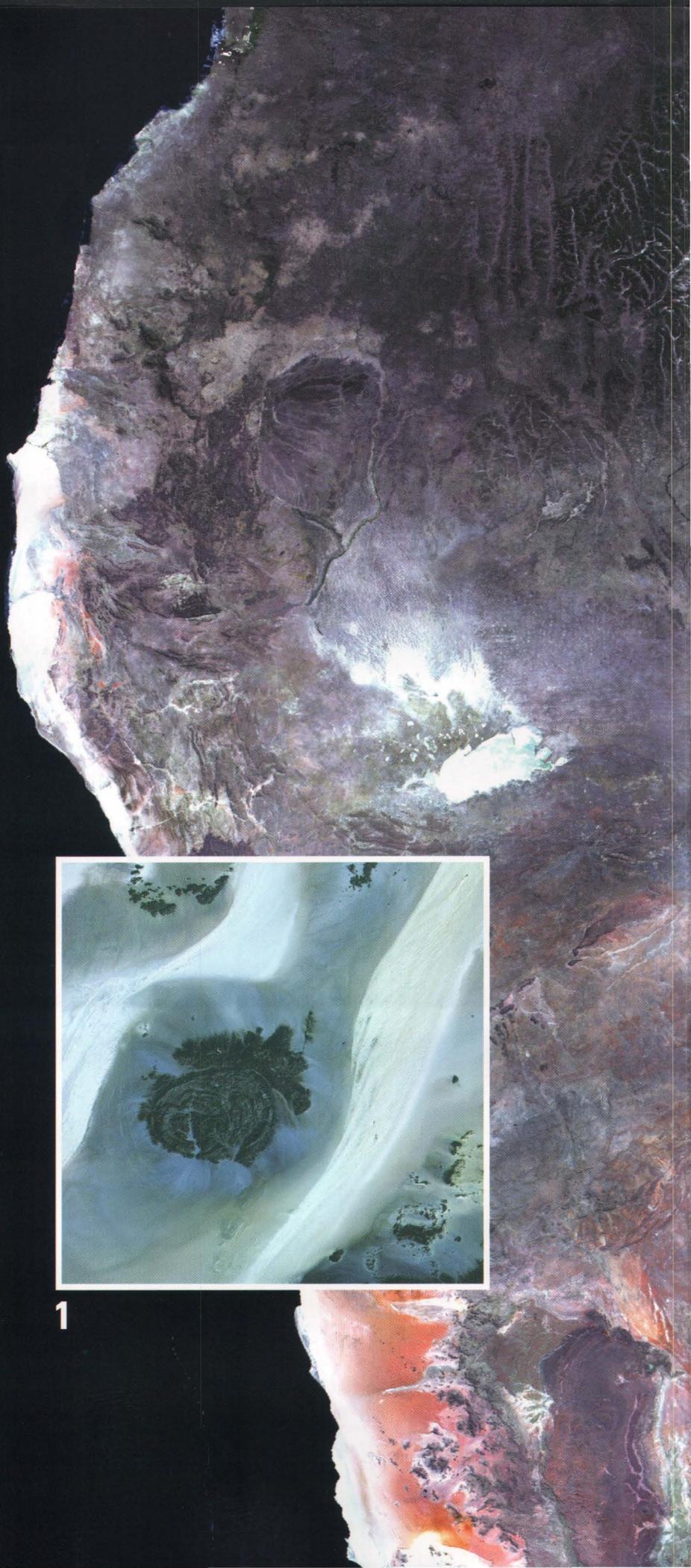
1. Sahara Desert - Massive sand dunes have been swept around and between rock outcroppings in the barren Libyan Desert. Only a handful of oases lie scattered across this especially arid section of the vast Sahara Desert. (ASTER)

2. The Brandberg Massif - Rising unexpectedly from the heart of the Namib Desert in northern Namibia, the Brandberg Massif is an exhumed granite intrusion. Unique plant and animal communities thrive in its high-altitude environment, and prehistoric cave paintings decorate walls hidden in its steep cliffs. (Landsat 7)

3. Ugab River - Elusive, but ecologically vital, Namibia's Ugab River only flows above ground for a few days each year. The subterranean waters underlying this ephemeral river, however, are shallow enough in places to fill hollows and sustain a wildlife population that includes the rare desert elephant. (Landsat 7)

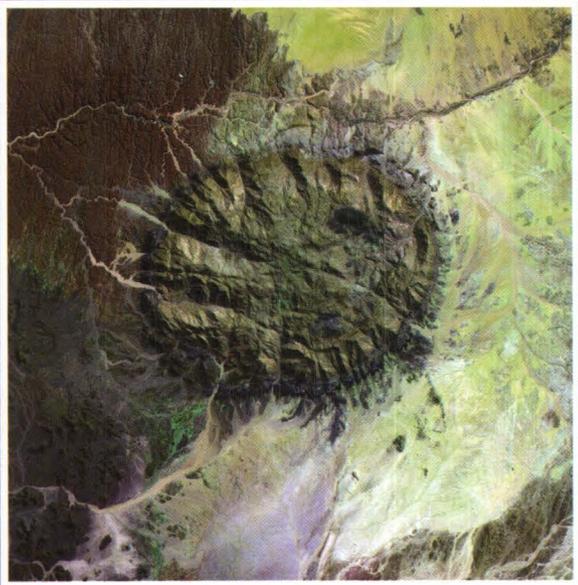
4. The Niger River - Coursing through parched, landlocked Mali in Western Africa, the Niger River skirts the edge of the dune-striped Sahara before turning sharply south to join the Bani River. At the confluence of the two rivers is an inland delta complete with narrow, twisting waterways, lagoons, and tiny islands. (ASTER)

Background Image - Africa, the second largest continent, is a mix of steamy rainforests, vast grasslands, and arid deserts. It has no long mountain ranges, but is home to the world's largest hot desert, the Sahara, and its longest river, the Nile. The featured area is the central South Atlantic coastal region of Namibia, including the cities of Walvis Bay and Windhoek. (MODIS)

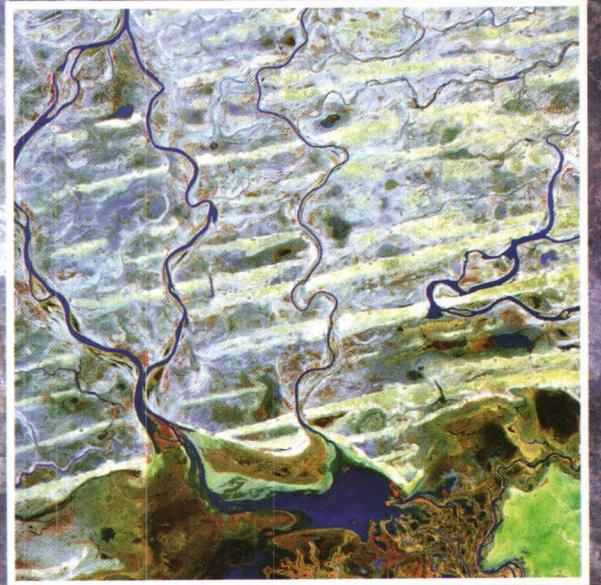




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WESTERN ASIA



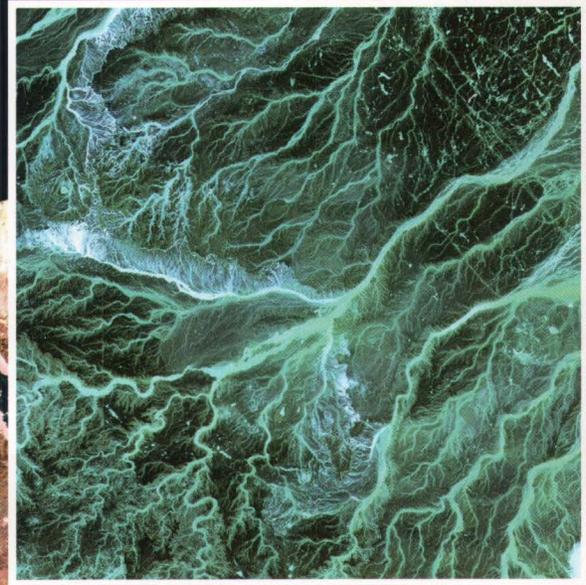
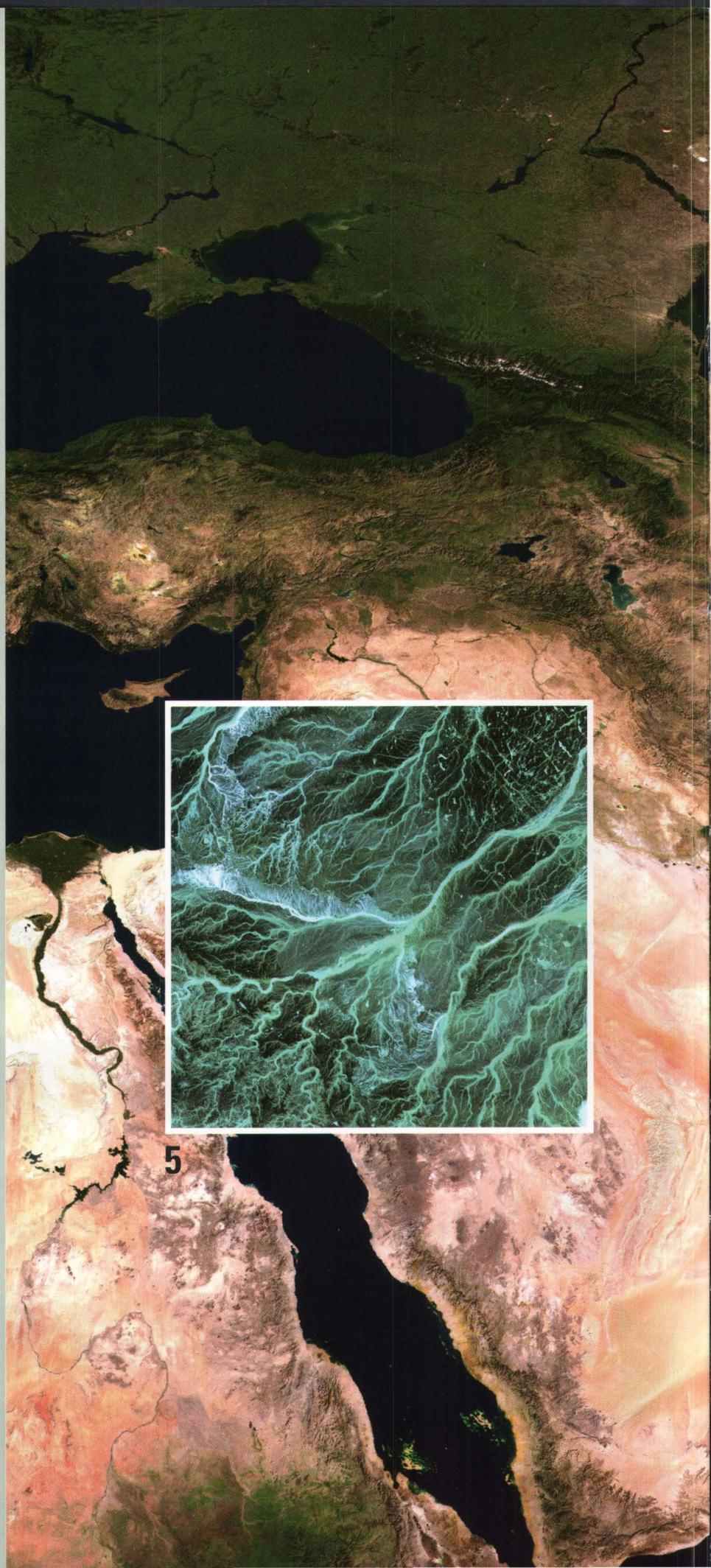
5. Jordan - Meandering wadis combine to form dense, branching networks across the stark, arid landscape of southeastern Jordan. The Arabic word "wadi" means a gulley or streambed that typically remains dry except after drenching, seasonal rains. (*ASTER*)

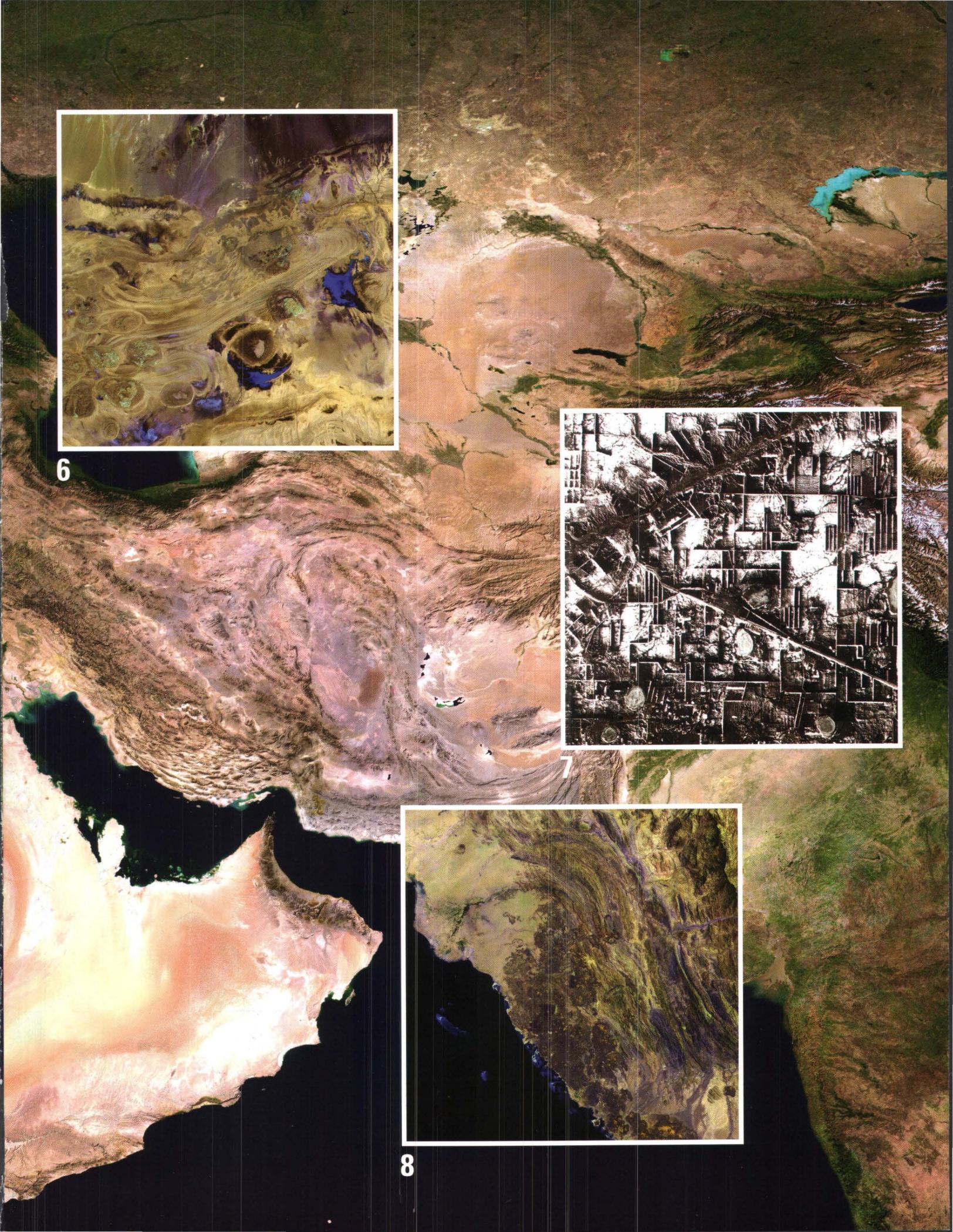
6. Great Salt Desert - Like swirls of paint on an enormous canvas, shallow lakes, mudflats, and salt marshes share the sinuous valleys on Iran's largely uninhabited Dasht-e Kavir, or Great Salt Desert. (*Landsat 7*)

7. Northern Kazakhstan - Mimicking a cubist collage, linear windbreaks of densely planted trees surround farmsteads in this winter landscape near the city of Komsomolets in Northern Kazakhstan. (*Landsat 7*)

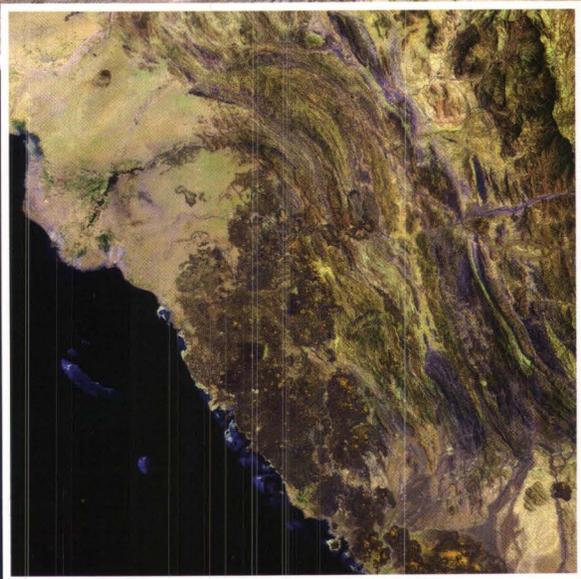
8. Harrat Al Birk - Dark-colored volcanic cones sprout from an ancient lava field known as Harrat Al Birk along Saudi Arabia's Red Sea coastline. Many such lava fields dot the Arabian Peninsula and range in age from 2 million to 30 million years old. (*Landsat 7*)

Background Image - Western Asia, the world's largest continent, occupies one-third of the Earth's landmass. Although divisions are somewhat arbitrary, Western Asia encompasses the Middle East and countries that surround the Caspian Sea, including Kazakhstan and Russia. (*MODIS*)



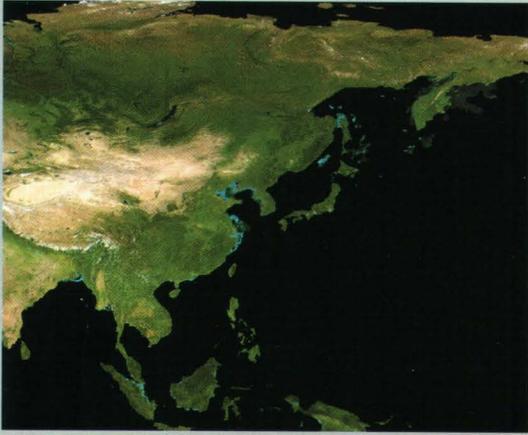


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EASTERN ASIA



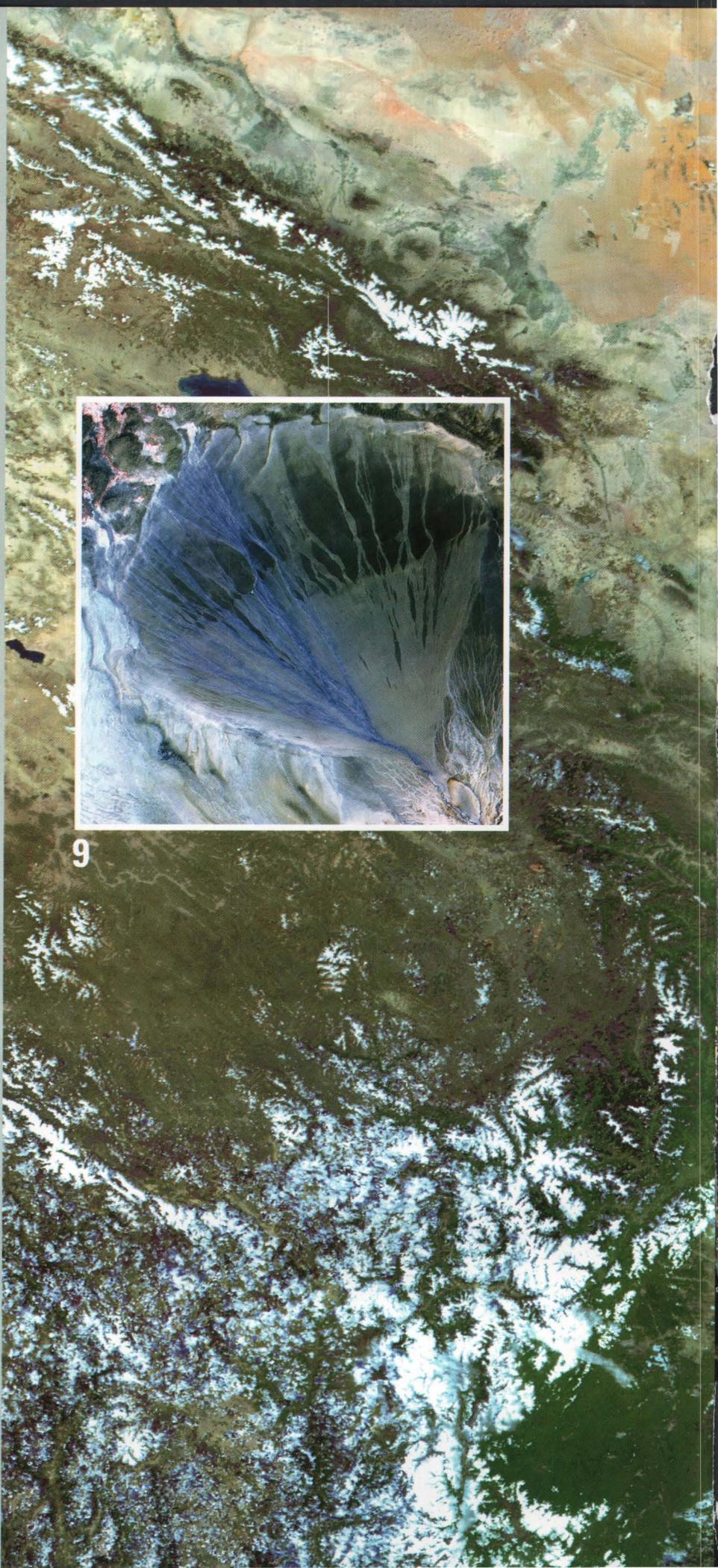
9. Alluvial Fan - A vast alluvial fan blossoms across the desolate landscape between the Kunlun and Altun mountain ranges that form the southern border of the Taklimakan Desert in China's XinJiang Province. (*ASTER*)

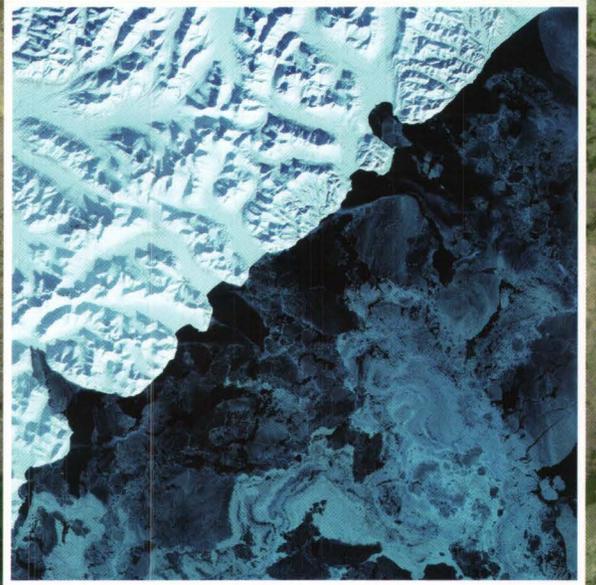
10. The Himalayas - Soaring, snow-capped peaks and ridges of the eastern Himalaya Mountains create an irregular white-on-red patchwork between major rivers in southwestern China. The Himalayas are made up of three parallel mountain ranges that together extend more than 2,900 kilometers. (*ASTER*)

11. Kamchatka Peninsula - The eastern side of Russia's Kamchatka Peninsula juts into the Pacific Ocean west of Alaska. In this winter image, a volcanic terrain is hidden under snow-covered peaks and valley glaciers feed blue ice into coastal waters. (*ASTER*)

12. Bogda Mountains - The Turpan Depression, nestled at the foot of China's Bogda Mountains, is a strange mix of salt lakes and sand dunes, and is one of the few places in the world that lies below sea level. (*Landsat 7*)

Background Image - Eastern Asia is dominated geographically by China, which stretches from the Tian Shan Mountains in the west to the sheltered bays of the Yellow Sea in the east. (*MODIS*)

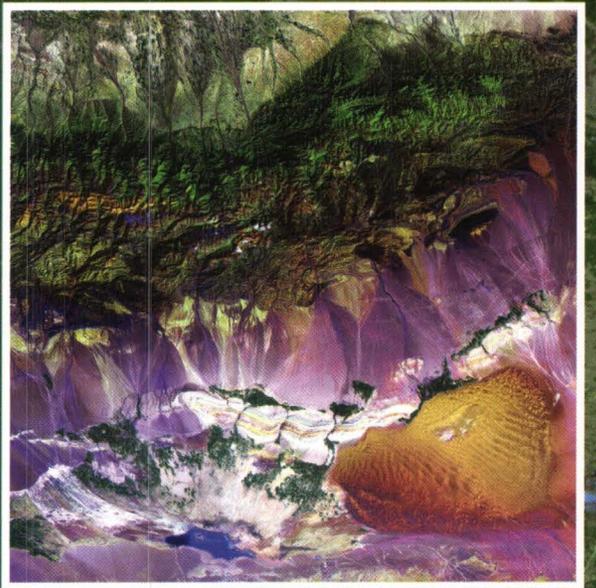




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SOUTH AMERICA



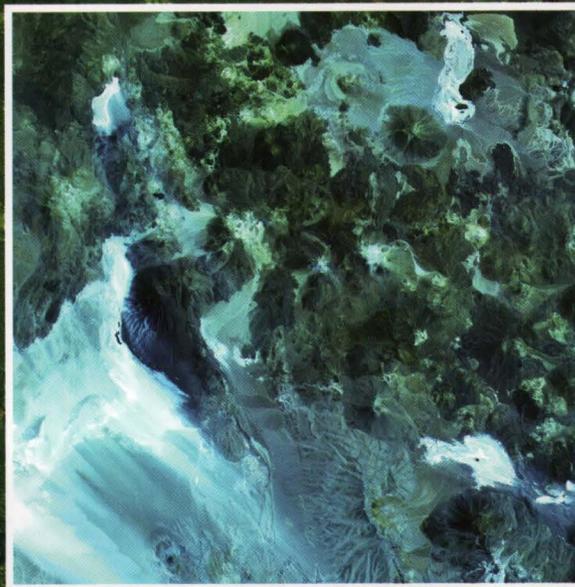
13. Volcanoes - Steep-sided volcanic cones along the Chilean-Argentinean border add texture to this "study in blues." Of approximately 1,800 volcanoes scattered across this region, 28 are active. (*ASTER*)

14. The Andes - Vivid colors belie the arid landscape of northern Chile where the Atacama Desert, one of the world's driest, meets the foothills of the Andes. Here salt pans and gorges choked with mineral-streaked sediments give way to white-capped volcanoes. (*ASTER*)

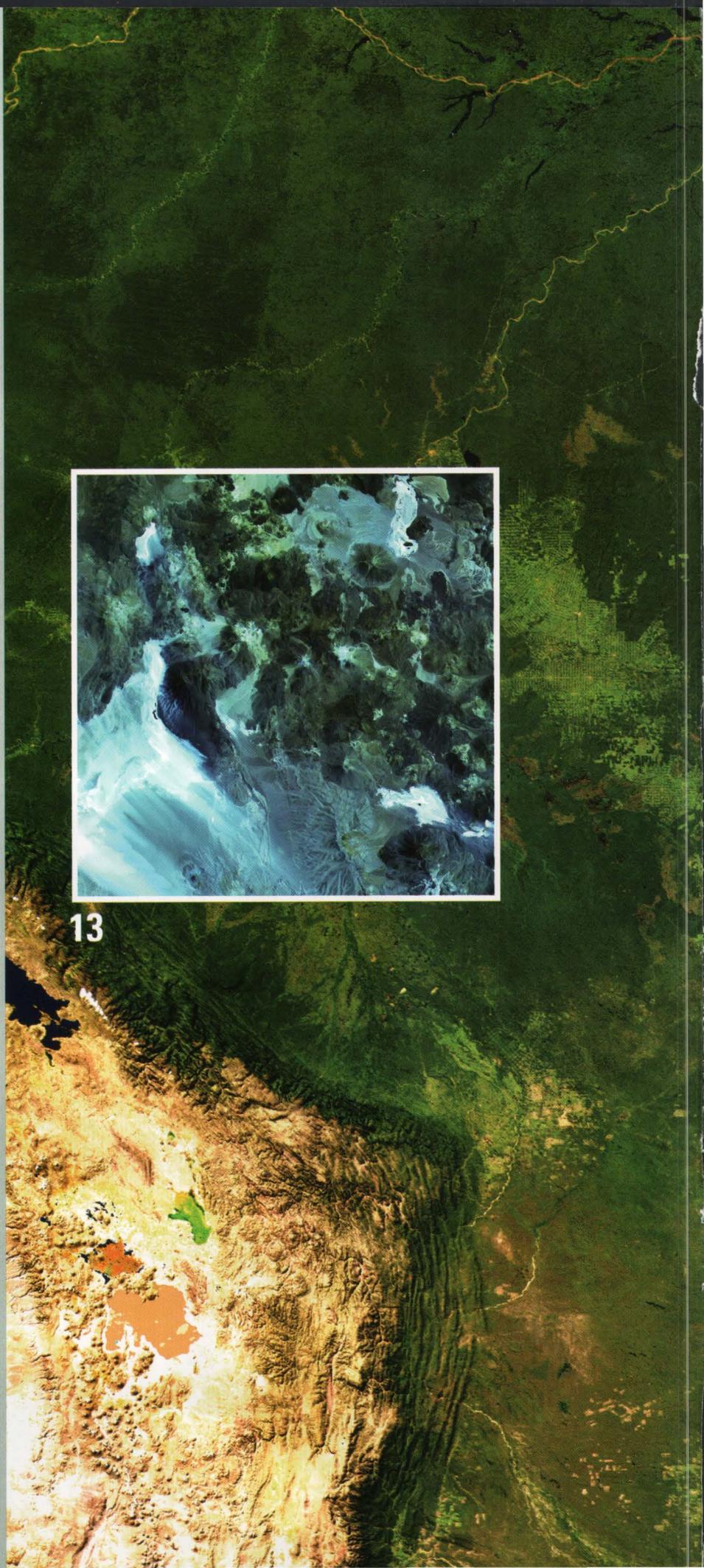
15. Cabo San Antonio - Several hundred kilometers southeast of Buenos Aires, Cabo San Antonio juts out into the Atlantic Ocean along the Argentinean coast. (*Landsat 7*)

16. Jau Park - Fed by multiple waterways, Brazil's Negro River is the Amazon River's largest tributary. The mosaic of partially-submerged islands visible in the channel disappears when rainy season downpours raise the water level. (*Landsat 7*)

Background Image - South America - stretches more than 7,500 kilometers from the warm Caribbean Sea almost to Antarctica. Waters from the eastern slopes of the Andes Mountains drain into mighty rivers, such as the Amazon, that traverse rain forests, grassy plains, and dry plateaus to eventually reach the Atlantic Ocean. (*MODIS*)

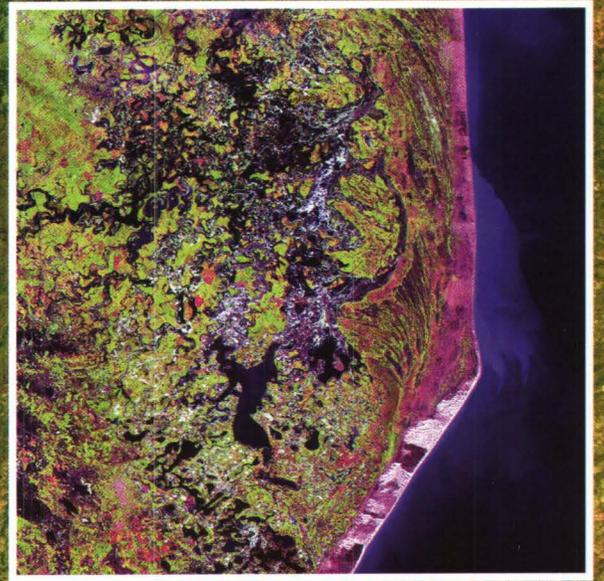


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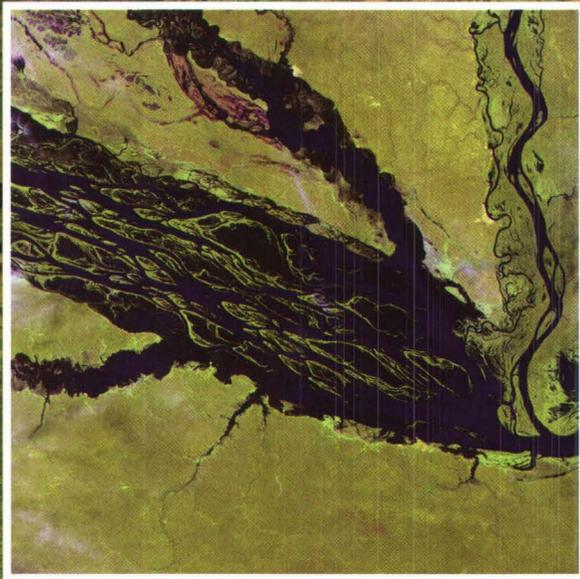




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NORTH AMERICA



17. Mississippi River Delta - Turbid waters spill out into the Gulf of Mexico where their suspended sediment is deposited to form the Mississippi River Delta. Like the webbing on a duck's foot, marshes and mudflats prevail between the shipping channels that have been cut into the delta. (ASTER)

18. The Yukon Delta - An intricate maze of small lakes and waterways define the Yukon Delta at the confluence of Alaska's Yukon and Kuskokwim Rivers with the frigid Bering Sea. Wildlife abounds on the delta and offshore where sheets of sea ice form during the coldest months of the year. (ASTER)

19. Von Karman Vortices - As air flows over and around objects in its path, spiraling eddies, known as Von Karman vortices, may form. The vortices in this image were created when prevailing winds sweeping east across the northern Pacific Ocean encountered Alaska's Aleutian Islands. (Landsat 7)

20. Desolation Canyon - Utah's Green River flows south across the Tavaputs Plateau (top) before entering Desolation Canyon (center). The Canyon slices through the Roan and Book Cliffs—two long, staircase-like escarpments. Nearly as deep as the Grand Canyon, Desolation Canyon is one of the largest unprotected wilderness areas in the American West. (Landsat 7)

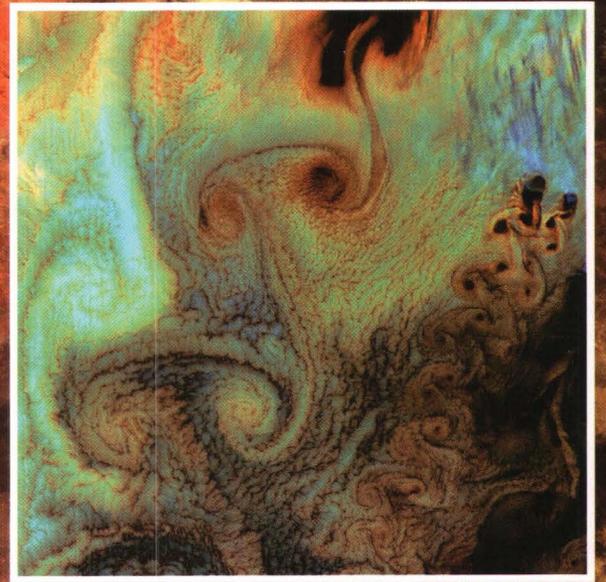
Background Image - North America - The third largest continent, North America is a land of many facets: frozen tundra, rugged mountains, high plains, deserts, and lowland forests. (MODIS)



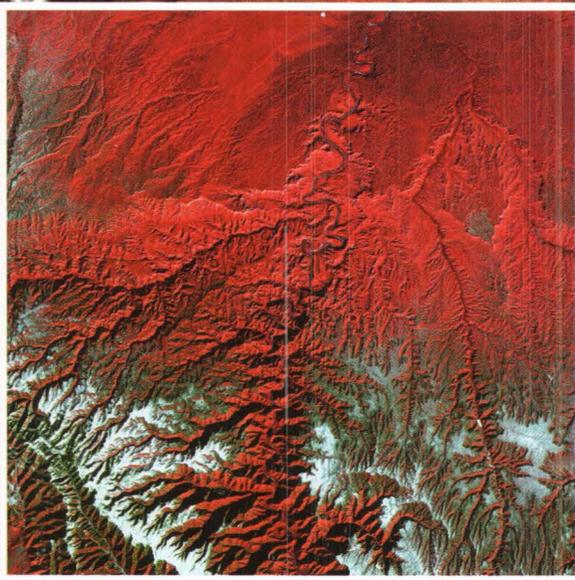
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NORTHERN EUROPE



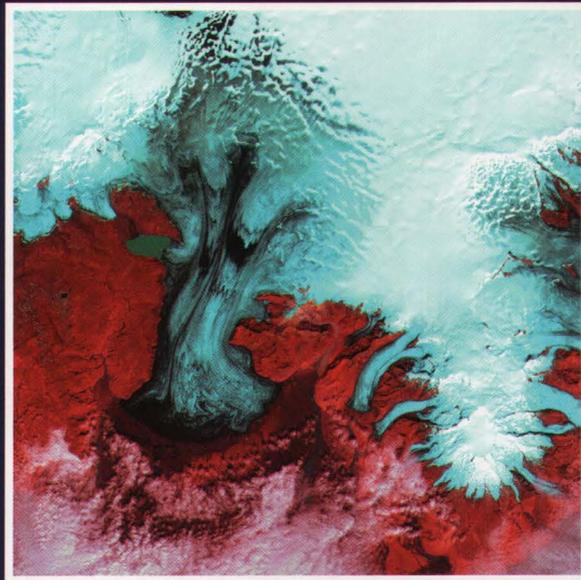
21. Vatnajökull Glacier Ice Cap - Valley glaciers appear as fingers of blue ice reaching out from the Vatnajökull Glacier in Iceland's Skaftafell National Park. The park lies on southern edge of Vatnajökull, Europe's largest ice cap. (*Landsat 7*)

22. Shetland Islands - Like a many-faceted jewel fashioned in an indigo setting, the Shetland Islands lie 210 kilometers north of the Scottish mainland in the North Atlantic Ocean. Despite their 60 degree north latitude, the Shetlands enjoy a relatively temperate climate thanks to the warming influence of the Gulf Stream. (*Landsat 7*)

23. Northern Norway - Like dark fingers, cold ocean waters reach deeply into the mountainous coastline of northern Norway, defining the fjords for which the country is famous. Flanked by snow-capped peaks, some of these ice-sculpted fjords are hundreds of meters deep. (*ASTER*)

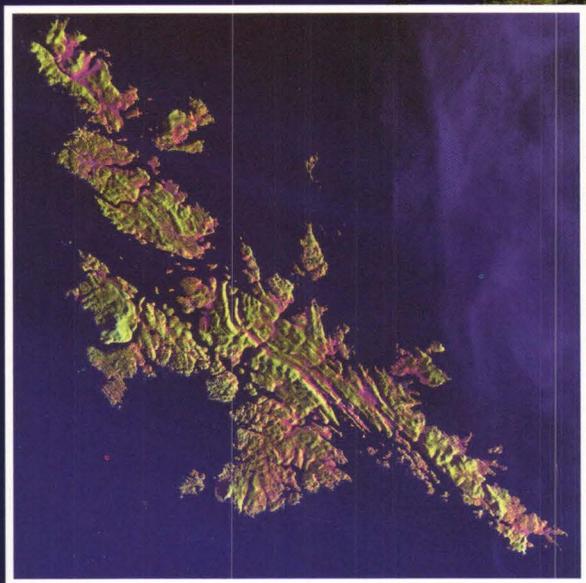
24. Delta Region, Netherlands - Along the southern coast of the Netherlands, sediment-laden rivers have created a massive delta of islands and waterways in the gaps between coastal dunes. After unusually severe spring tides devastated this region in 1953, the Dutch built an elaborate system of dikes, canals, dams, bridges, and locks to hold back the North Sea. (*ASTER*)

Background Image - Europe is a modestly sized continent, only Australia is smaller, but its long, irregular coastline is riddled with bays, inlets, islands, and peninsulas, both great and small. (*MODIS*)

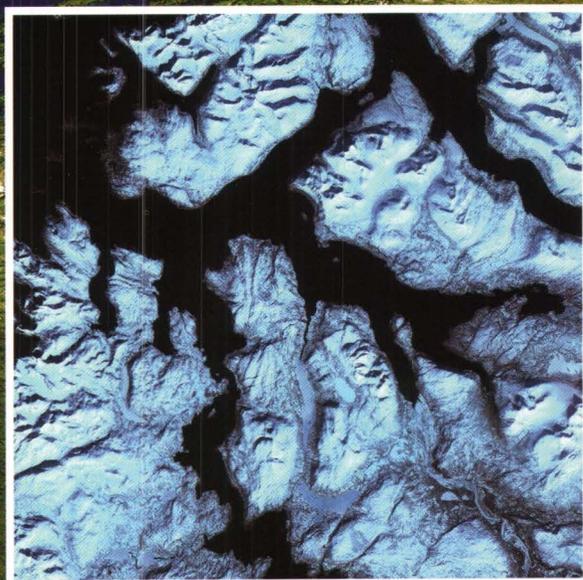


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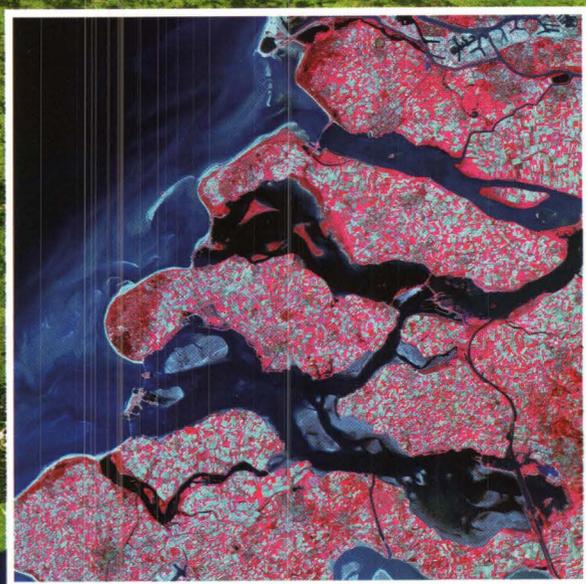




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THE MEDITERRANEAN

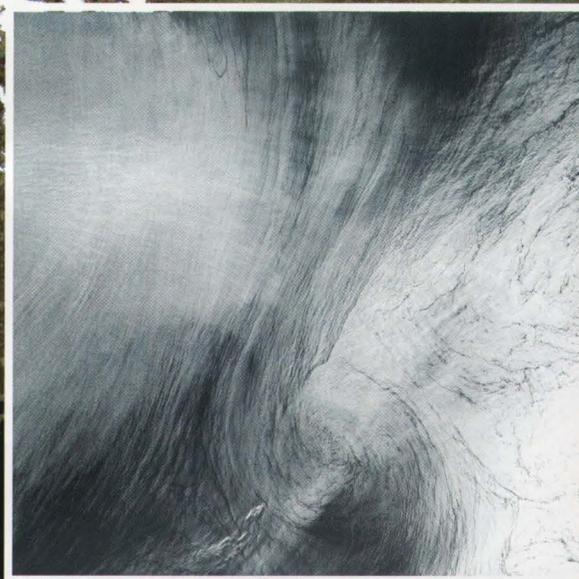


25. Whirlpool Cloud - A giant whirlpool cloud, coaxed into shape by high-altitude winds, swirls above the sea between Spain and Morocco. (ASTER)

26. The Syrian Desert - Between the fertile Euphrates River valley and the cultivated lands of the eastern Mediterranean coast, the Syrian Desert covers parts of modern Syria, Jordan, Saudi Arabia, and Iraq. (Landsat 7)

27. Southern Coast of France - France's famed Provence region meets the Mediterranean as a gentle curve intricately sculpted into sheltered bays and fringing peninsulas. The ancient port of Marseilles, the country's second largest city, nestles in the large bay at the lower left corner of the image. (Landsat 7)

28. Mt. Etna - Located on the Italian island of Sicily, Mt. Etna is one of the world's most active volcanoes. In this image of the volcano in 2001, a plume of steam and smoke rising from the crater drifts over some of the many dark lava flows that cover its slopes. (ASTER)

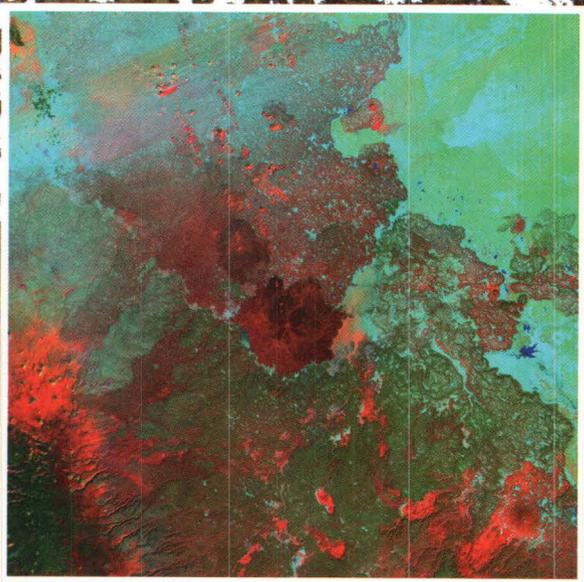


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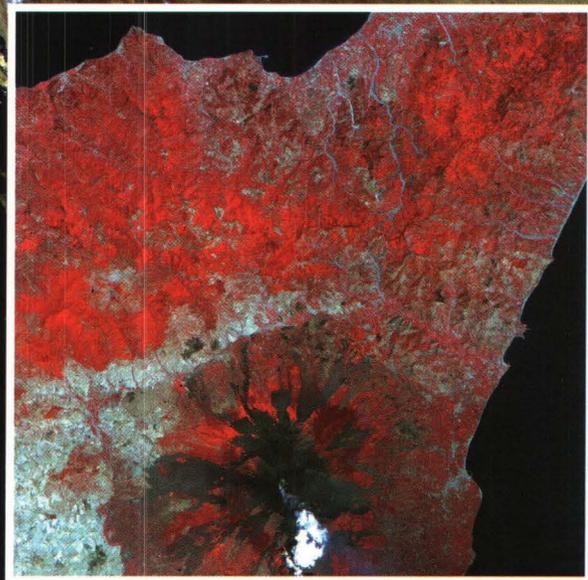
Background Image - The Mediterranean Sea physically separates – but in other ways unites—southern Europe, the Middle East, and northern Africa. (MODIS)



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MEXICO and CENTRAL AMERICA



29. Cancun - Known for its beaches and resort hotels, Cancun lies at the tip of Mexico's Yucatan Peninsula. Inland from this tourist mecca, however, lies a sparsely populated tropical scrub forest that shelters the ruins of ancient Mayan cities. (*ASTER*)

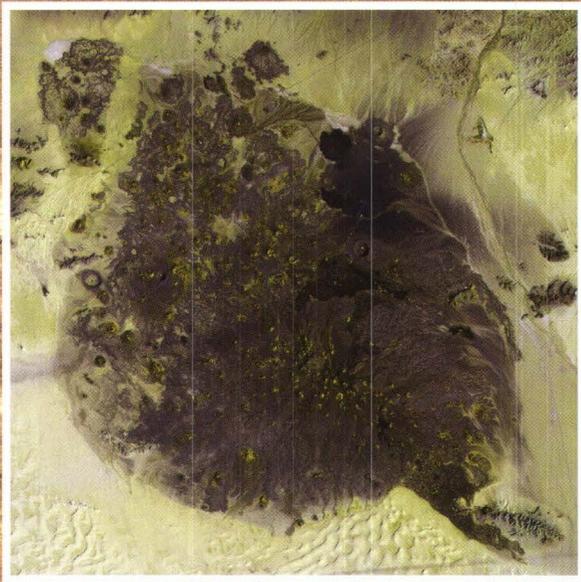
30. Pinacate Volcano Field - The pockmarked terrain of Pinacate National Park in Mexico's Sonora Province is evidence of a violent past. Among hundreds of volcanic vents and cinder cones are rare maar craters, formed when rising magma met underground water to create pockets of steam that blew nearly circular holes in the overlying crust. (*Landsat 7*)

31. Campeche - Named after the ancient Mayan Province of Kimpech, the state of Campeche comprises much of the western half of Mexico's Yucatan Peninsula. Rivers in southern Campeche drain into the immense Terminos Lagoon, the entrance to which is protected by a long barrier island, Isla Del Carmen. (*ASTER*)

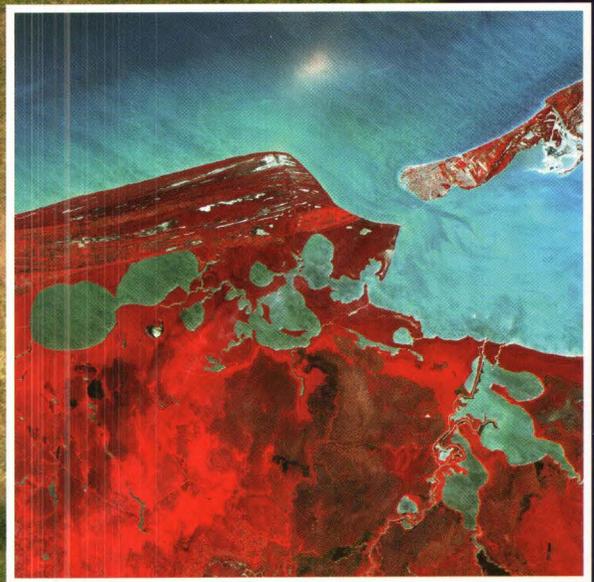
32. Colima Volcano - Snow-capped Colima Volcano, the most active volcano in Mexico, rises abruptly from the surrounding landscape in the state of Jalisco. Colima is actually a melding of two volcanoes, the older Nevado de Colima to the north and the younger, historically active Volcan de Colima to the south. Legend has it that gods sit atop the volcano on thrones of fire and ice. (*ASTER*)

Background Image - Mexico and Central America together form the southern half of the North American continent. From the rugged deserts of the Baja Peninsula to the steamy rain forests of Panama, the region is a land of great contrasts. (*MODIS*)

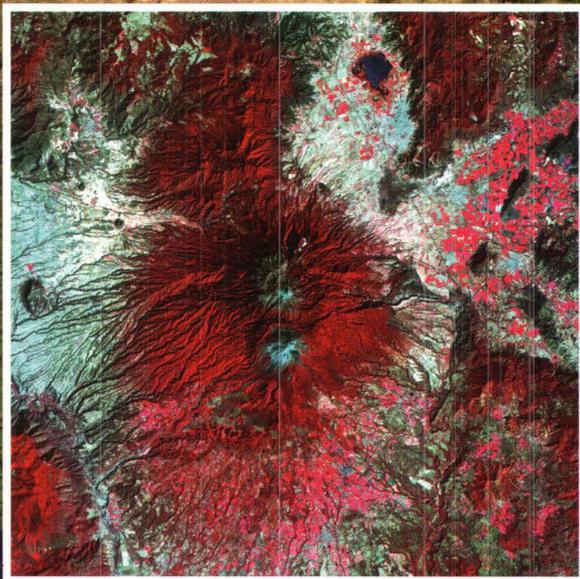




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AUSTRALIA



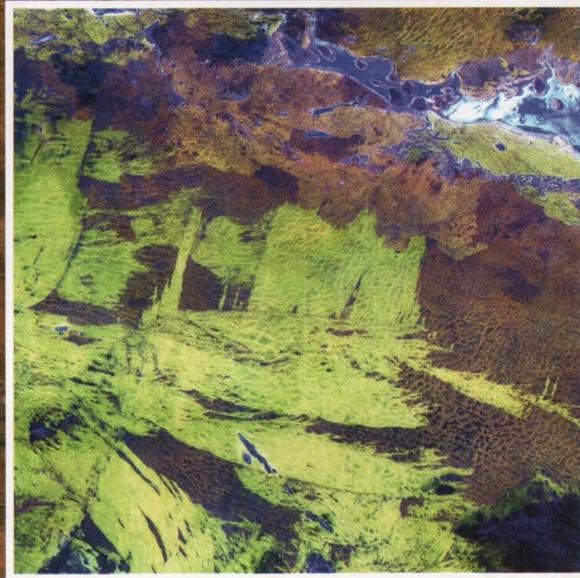
33. Lake Amadeus - Like frantic brushstrokes, fire scars cover the arid landscape near Lake Amadeus (upper right) in Australia's Northern Territory. Lake Amadeus is rich in salts that have been leached out of underlying sediments. When dry, its lake bed is transformed into a glistening sheet of white salt crystals. (*ASTER*)

34. Lake Disappointment - Surrounded by sand dunes, Lake Disappointment is an ephemeral salt lake in one of the most remote areas of Western Australia. An early explorer supposedly named the lake in 1897 after following a number of creeks that he thought would lead to a large lake; they did, but the lake's extremely salty water was not drinkable. (*ASTER*)

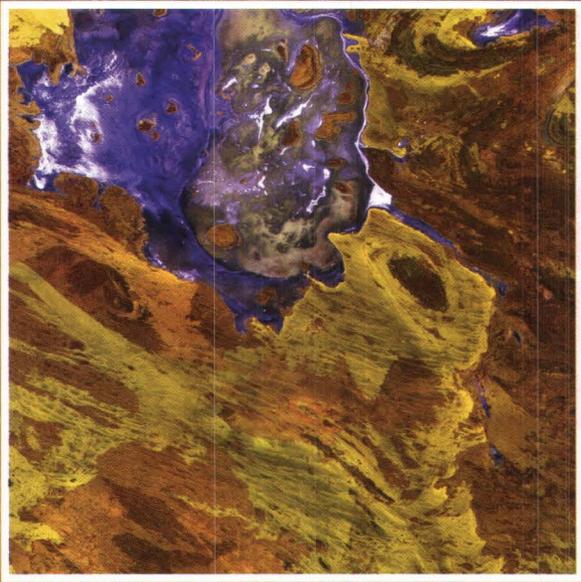
35. Shoemaker Crater - Resembling splotches of yellow and green paint, salt-encrusted seasonal lakes dot the floor of Western Australia's Shoemaker impact structure. The structure was formed about 1.7 billion years ago and is currently the oldest known impact site in Australia. (*Landsat 7*)

36. Gosses Bluff - 142 million years ago, an asteroid or comet slammed into what is now the Missionary Plains in Australia's Northern Territory, forming a crater 24 kilometers in diameter and 5 kilometers deep. Today, like a bull's eye, the circular ring of hills that defines Gosses Bluff stands as a stark reminder of the event. (*Landsat 7*)

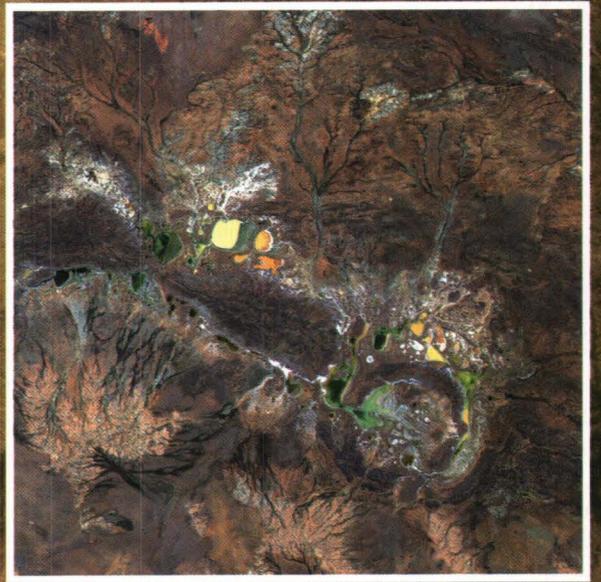
Background Image - Australia is the smallest, and flattest, of all the continents. Its surface details are largely the result of erosion. Many rivers drain into the continent's harsh, arid interior, where they terminate in salt lakes that are dry for most of the year. Australia's coastal regions, however, are famous for astounding biodiversity, from the Great Barrier Reef in the northeast to Shark Bay in the west. (*MODIS*)



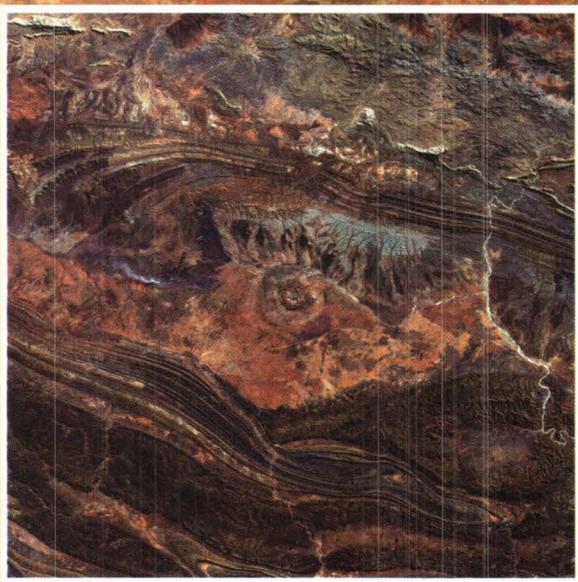
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Contributors...

Creating the Earth as Art 2 exhibit was a multi-faceted task that drew upon the time and talents of many people.

Special thanks to the following individuals who contributed to the production of the Earth as Art 2 exhibit:

Image Research and Enhancement

Ron Hayes
Pat Scaramuzza
Jane Zhang
Calli Jenkerson

Image Selection

Lee McManus
Jan Nelson
Shannon Loveland

Exhibit Image Production

Kelly Feistner
Brian Granneman
Carolyn Gacke

Many thanks to the following people who contributed to the production of the Earth as Art 2 booklet:

Design and Concept

Lee McManus

Production and Print Coordination

Jan Nelson

Image and Copy Research

Shannon Loveland

Writer/Editor

Rebecca Johnson

Content Editor

Charlie Trautwein
John Dwyer
Mike North

