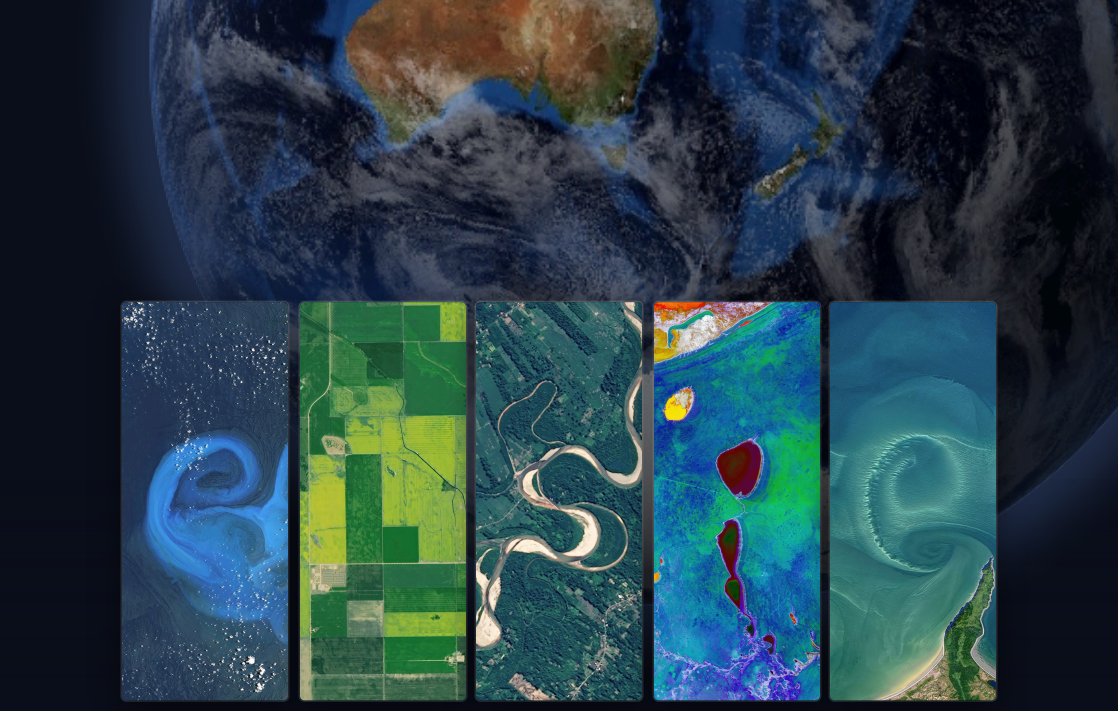


AN ATLAS OF 5 PLACES ON EARTH

Orbit Atlas

ELSIE, a name found across the Earth, letter by letter, in real satellite pictures.

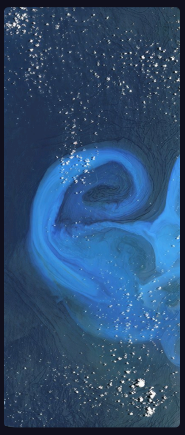
Spelled from orbit

ELSIE

Skylit Studio

ELSIE

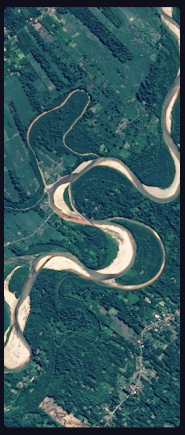
EVERY LETTER IS A REAL PLACE, SEEN FROM ORBIT.



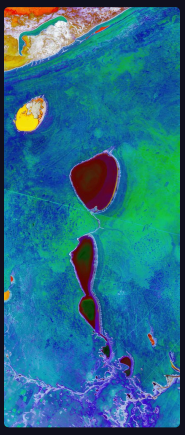
Bellona Plateau



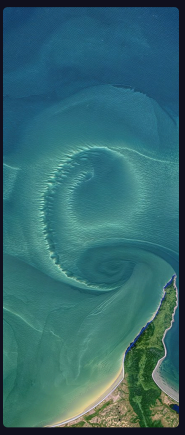
Prairie fields near Lajord



Chapare River



Etosha National Park



Sea of Okhotsk

5	5	5
LETTERS	PLACES	CONTINENTS

Every letter in this name is a real shape on the Earth's surface. Rivers, ice, volcanoes, tides and farmers made them without ever meaning to spell anything, and satellites passing hundreds of kilometres overhead caught them on camera. The chapters that follow visit each place in turn: where it is, what you are looking at, and how the shape came to be there.

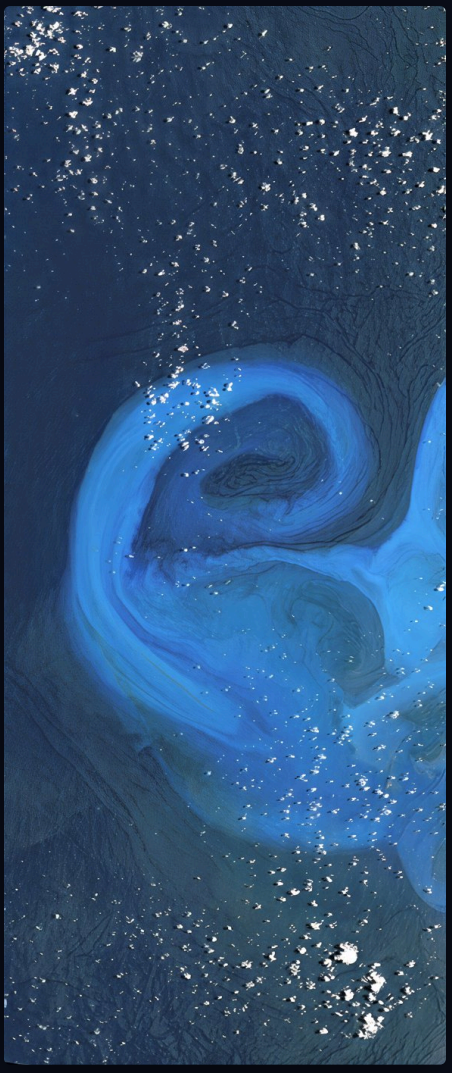
The Journey — LETTER BY LETTER

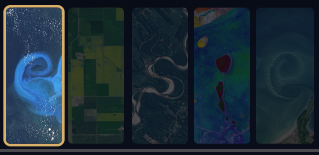


42,814 km

To spell ELSIE you would travel 42,814 km, about once round the world. A satellite at Landsat's height, moving at about 7.5 km every second, would cover it in about 95 minutes.

1	E	Bellona Plateau	
2	L	Prairie fields near Lajord	+12,274 km
3	S	Chapare River	+8,386 km
4	I	Etosha National Park	+8,542 km
5	E	Sea of Okhotsk	+13,612 km





Bellona Plateau

CORAL SEA, OFF NEW CALEDONIA

Landsat 9 · NASA / USGS · 12 February 2023

E

Bellona Plateau — CORAL SEA, OFF NEW CALEDONIA



LETTER IN ELSIE
E

WHERE ON EARTH
20°34'12.0 S 158°12'00.0 E · Oceania

PHOTOGRAPHED
12 February 2023 · Landsat 9

FLY THERE
See it from above →

E · An eddy of cyclone-stirred carbonate sediment curls into the E

In February 2023 a swirl of pale blue water curled into an E on the open Coral Sea, about 600 km west of Grande Terre, New Caledonia's main island. Tropical Cyclone Gabrielle had passed over the Bellona Plateau, a shallow bank now 25 to 50 metres under water, and churned up its carbonate sediment: fine mud and sand made from broken coral skeletons, coralline algae and shells. The milky water discoloured more than 13,000 square kilometres of sea, an area roughly the size of Puerto Rico, and it was only the second stir-up on that scale since the MODIS sensor on NASA's Terra satellite was launched in 1999. Landsat 9 caught it spinning into eddies on 12 February. Currents carried the sediment off over about a week, and by 20 February the sea above the plateau was its usual deep blue again. Those reefs sit on drowned land. During the Pleistocene ice ages, when sea levels were lower, the plateau was a sizeable island, and most of it went under as the seas rose after the last glacial maximum.

FIELD NOTES

Across the picture, about 49 by 118 km

Water 100%

HEIGHT
At sea level

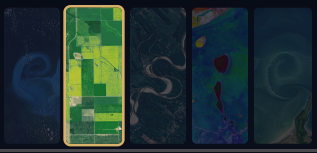
DAYLIGHT
Longest: 13 h 23 m in December
Shortest: 10 h 53 m in June

WATER SINCE 1984
94% of the picture has been under water at some point between 1984 and 2020, all of it water that comes and goes rather than staying.



Water since 1984: pale, always; deep blue, now and then





Prairie fields near Lajord

SASKATCHEWAN, CANADA

Landsat 8 · NASA / USGS · 23 July 2019

Prairie fields near Lajord

— SASKATCHEWAN, CANADA



LETTER IN ELSIE

L

WHERE ON EARTH

50°11'51.7 N 104°17'15.4 W · North America

PHOTOGRAPHED

23 July 2019 · Landsat 8

FLY THERE

See it from above →

L · An L-shaped field of a lighter crop in the prairie grid forms the L

Every summer, stretches of the Canadian prairie turn bright yellow as canola reaches peak bloom, and much of the yellow-green in this farmland south-east of Regina, Saskatchewan, is canola in flower. Here the L is simply a field: a strip of crop that catches the light differently from its neighbours. The tidy squares come from the Dominion Land Survey, begun in 1871, which divided most of western Canada into sections of one square mile, 36 to a six-mile township, with road allowances along their edges. The crop itself was bred in Canada. Farmers here first grew its parent crop, rapeseed, during the Second World War for an inedible oil used to lubricate steam engines. Plant breeders later developed 'double low' varieties, much lower in two unwanted natural compounds, and in 1978 Western Canada's oilseed crushers trademarked them as canola, shorthand for 'Canadian oil, low acid'.

FIELD NOTES

Across the picture, about 3.7 by 8.9 km



Cropland 97% Grassland 2% Water 1% Other under 1%

HEIGHT

577 m above sea level

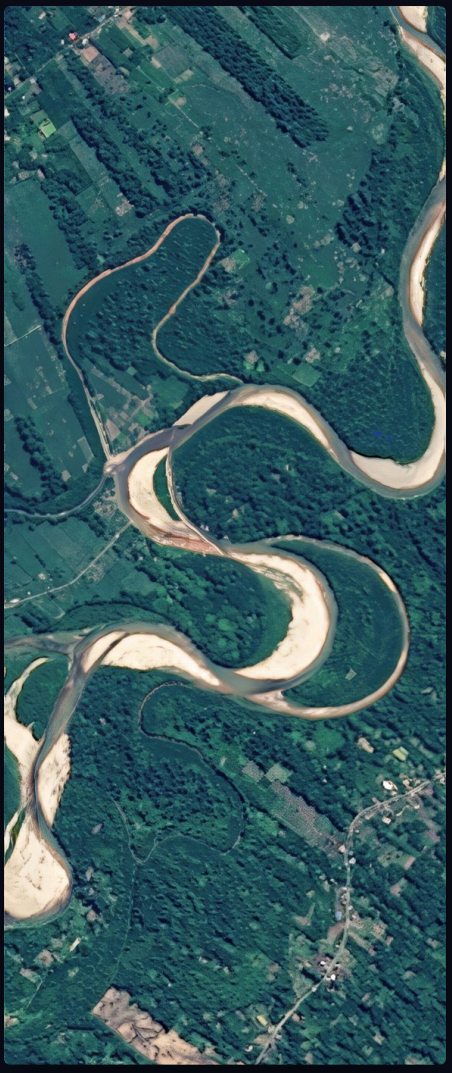
DAYLIGHT

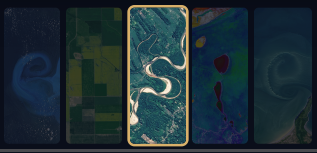
Longest: 16 h 24 m in June
Shortest: 8 h 02 m in December

WATER SINCE 1984

26% of the picture has been under water at some point between 1984 and 2020, all of it water that comes and goes rather than staying.

Ground cover: ESA WorldCover 2021, from Sentinel-1 and Sentinel-2. Height: Copernicus DEM. Water: EC JRC Global Surface Water, from every Landsat picture since 1984. Daylight: calculated for the solstices.





Chapare River

COCHABAMBA, BOLIVIA

Landsat 8 · NASA / USGS · 20 June 2023

Chapare River — COCHABAMBA, BOLIVIA



LETTER IN ELSIE
S

WHERE ON EARTH
16°56'04.7 S 65°13'44.2 W · South America

PHOTOGRAPHED
20 June 2023 · Landsat 8

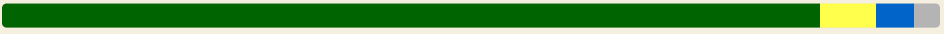
FLY THERE
See it from above →

S · Consecutive meander bends of the Chapare River with pale sandbars form the S

In the lowland rainforest at the foot of the Bolivian Andes, the Chapare River swings back and forth in looping bends, each edged with a pale bank of sand on the inside of the curve, and together they draw the S. Patches of cleared farmland break up the forest around it. The river begins upstream at Villa Tunari, where the San Mateo and Espíritu Santo rivers meet, and flows for 278 km as a tributary of the Mamoré in the Amazon basin. It is the main waterway of Chapare Province. Villa Tunari has a tropical rainforest climate with a long rainy season and a shorter dry one, and the air stays humid, at about 85% relative humidity averaged across the year. Rain is what defines this place. The area gets some of the heaviest rainfall in Bolivia, and the weather station at Villa Tunari averaged about 4,837 mm a year between 1970 and 2011: almost five metres of water in twelve months.

FIELD NOTES

Across the picture, about 2.8 by 6.7 km

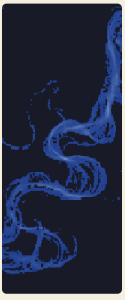


Trees 87% · Grassland 6% · Water 4% · Bare ground 3% · Other under 1%

HEIGHT
214 m above sea level
210 to 251 m across the picture

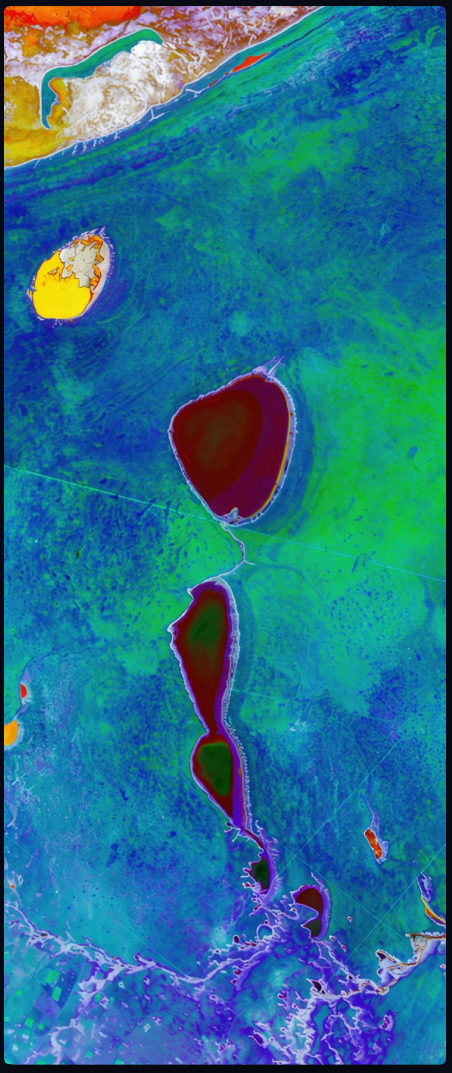
DAYLIGHT
Longest: 13 h 08 m in December
Shortest: 11 h 07 m in June

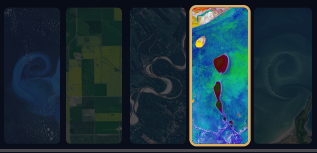
WATER SINCE 1984
20% of the picture has been under water at some point between 1984 and 2020, all of it water that comes and goes rather than staying.



Water since 1984: pale, always; deep blue, now and then

Ground cover: ESA WorldCover 2021, from Sentinel-1 and Sentinel-2. Height: Copernicus DEM. Water: EC JRC Global Surface Water, from every Landsat picture since 1984. Daylight: calculated for the solstices.





Etosha National Park

NAMIBIA

Landsat 8 · NASA / USGS · 4 March 2014

I

Etosha National Park — NAMIBIA



LETTER IN ELSIE

I

WHERE ON EARTH

18°29'15.2 S 16°10'14.6 E · Africa

PHOTOGRAPHED

4 March 2014 · Landsat 8

FLY THERE

See it from above →

I · A chain of small dry salt pans (the stem) and a rounded pan (the dot) north of Etosha Pan form the I

'Great White Place' is what Etosha means, a name for the enormous salt pan at the heart of this Namibian park. This I, shown here in false colour, lies just beyond the rim of that pan on the northern edge of Etosha National Park, where a rounded pan and a chain of narrow ones line up as the dot and the stem. A salt pan forms where a lake or pond dries out in a desert climate and leaves a crust of salt and minerals behind. Etosha Pan itself is about 120 km long and covers some 4,800 square km. The Kunene River is thought to have fed a lake here long ago, until movements of the Earth's crust turned the river away and the water dried to salt. In especially good rainy seasons the pan still becomes a shallow lake, about 10 cm deep, and flamingos arrive in their thousands to breed. The park around it covers 22,270 square km and was first proclaimed a game reserve in March 1907.

FIELD NOTES

Across the picture, about 12 by 29 km



Shrubland 53% Grassland 35% Bare ground 12% Other under 1%

HEIGHT

1,083 m above sea level

1,070 to 1,121 m across the picture

DAYLIGHT

Longest: 13 h 14 m in December

Shortest: 11 h 01 m in June

WATER SINCE 1984

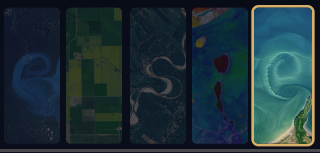
7% of the picture has been under water at some point between 1984 and 2020, all of it water that comes and goes rather than staying.



Water since 1984: pale, always; deep blue, now and then

Ground cover: ESA WorldCover 2021, from Sentinel-1 and Sentinel-2. Height: Copernicus DEM. Water: EC JRC Global Surface Water, from every Landsat picture since 1984. Daylight: calculated for the solstices.





Sea of Okhotsk

KHABAROVSK KRAI, RUSSIA

Landsat 8 · NASA / USGS · 24 September 2021

E

Sea of Okhotsk — KHABAROVSK KRAI, RUSSIA



LETTER IN ELSIE

E

WHERE ON EARTH

54°42'50.3 N 136°34'20.4 E · Asia

PHOTOGRAPHED

24 September 2021 · Landsat 8

FLY THERE

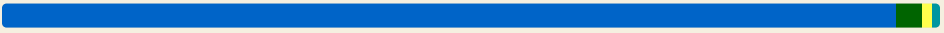
See it from above →

E · A tidal eddy swirling in the lee of a headland forms the E

A whirl of seawater near the mouth of Uda Bay, on the western edge of the Sea of Okhotsk off Russia's Pacific coast, makes this E. Landsat 8 captured the scene on 24 September 2021. Tidal currents here often flow smoothly, but where they sweep past pointed headlands and islands they break into turbulent patterns like this eddy, curling beside the headland at the lower right. Nearby lie the Shantar Islands, a group of fifteen islands where bowhead whales, western gray whales and belugas can be seen offshore, and where a national park was created at the end of 2013 to protect their wildlife. The Sea of Okhotsk covers about 1,583,000 square kilometres. For all its size, it is the southernmost sea in the Northern Hemisphere to freeze over seasonally, and around the Shantar Islands the coastal waters are frozen for about eight months of the year on average.

FIELD NOTES

Across the picture, about 12 by 28 km



Water 95% · Trees 3% · Grassland 1% · Wetland 1% · Other under 1%

HEIGHT

At sea level

0 to 239 m across the picture

DAYLIGHT

Longest: 17 h 18 m in June

Shortest: 7 h 13 m in December

WATER SINCE 1984

95% of the picture has been under water at some point between 1984 and 2020; 95% almost all the time.



Water since 1984: pale, always; deep blue, now and then

Ground cover: ESA WorldCover 2021, from Sentinel-1 and Sentinel-2. Height: Copernicus DEM. Water: EC JRC Global Surface Water, from every Landsat picture since 1984. Daylight: calculated for the solstices.

Who Took the Pictures

THE SATELLITES BEHIND EVERY LETTER IN ELSIE.



Landsat 9

Took the E

Launched 27 September 2021
NASA / USGS

Illustration: NASA/Goddard Space Flight Center/Conceptual Image Lab



Landsat 8

Took the L, S, I and E

Launched 11 February 2013
NASA / USGS

Illustration: NASA's Goddard Space Flight Center Conceptual Image Lab

From Orbit — HOW THESE PICTURES WERE TAKEN

Since 1972, the Landsat satellites, run by NASA and the US Geological Survey, have photographed every part of the Earth's land, over and over. It is the longest unbroken record of our planet's surface ever made. Today Landsat 8 and Landsat 9 circle about 705 km up, each passing over the same spot every 16 days, so between them they return every eight.

Europe has its own pair of eyes: the Sentinel-2 satellites, built and flown by the European Space Agency (ESA) for the European Union's Copernicus programme. They circle at about 786 km and pick out detail as small as 10 metres across, three times finer than Landsat's 30 metres.

✦ AN ALPHABET FROM SPACE

The idea of hunting for letters in the landscape comes from NASA's Landsat team, who gathered a whole alphabet from the archive: rivers, lakes, islands, ice and fields that happen to form letters. Our letters start from that collection, and where a sharper picture makes a better print we photograph the same spot again with ESA's Sentinel-2. Every letter in ELSIE comes from Landsat. Each picture has been carefully enlarged and colour-balanced from the original satellite image so it prints crisply at full size.

DID YOU KNOW?

Landsat sees in colours our eyes cannot, from near infrared to heat. Scientists use the same pictures that made these letters to track crops, forests, glaciers and growing cities, year after year.

THANK YOU

The Earth wrote ELSIE. Satellites found the letters.

KEEP EXPLORING

Step aboard the Skylit Station

Our virtual space station, free to explore from your sofa. Wander its gallery, then visit the orrery to view the whole solar system.

SCAN TO STEP ABOARD

ship.skylitstudio.co.uk