ICEYE

Accurate, near real-time Earth monitoring with SAR data

Monitor any location with SAR data and get unprecedented access to accurate images of any location on Earth – every few hours, day and night, in any weather.

ICEYE-BDS-BRO-339

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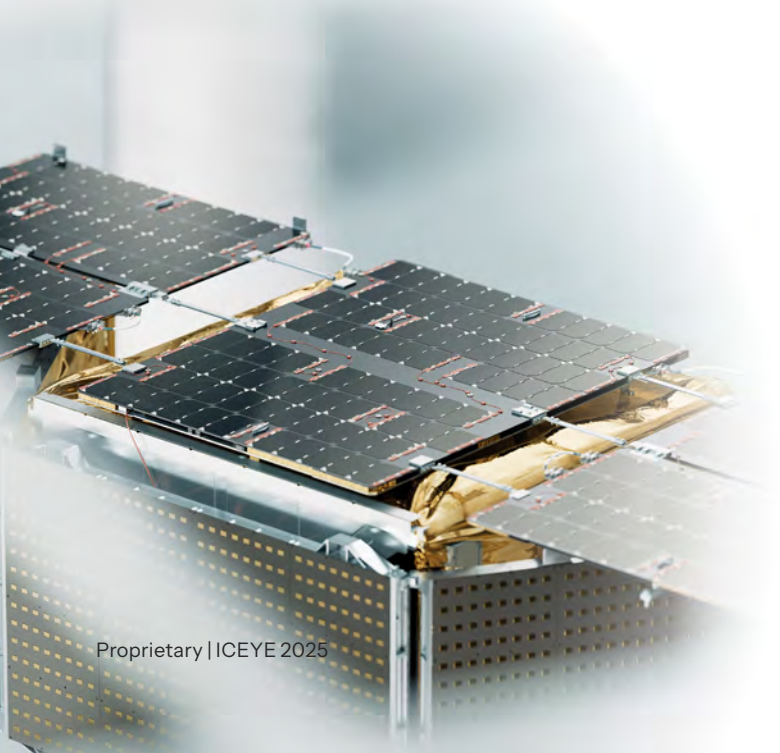
COVER IMAGE: DOHA, QATAR

Executive summary – welcome to a new era in SAR

Spaceborne Earth observation has been well established for decades, with synthetic aperture radar (SAR) satellites being the gold standard due to their ability to collect images from areas of interest day and night and in any weather. Traditional SAR satellites are very large and carry very large antennas with limited revisit frequency and flexibility.

Only ICEYE's small and agile SAR satellites are able to revisit the same location on Earth daily and even sub-daily, enabling a completely new level of change detection. ICEYE's large commercial constellation of SAR satellites now makes it possible for governments and commercial organizations to acquire data on any location on Earth – any time they need it, with very high resolution, high frequency revisits, and at an affordable price. A new era in SAR is being pioneered by ICEYE.



Game-changing technology

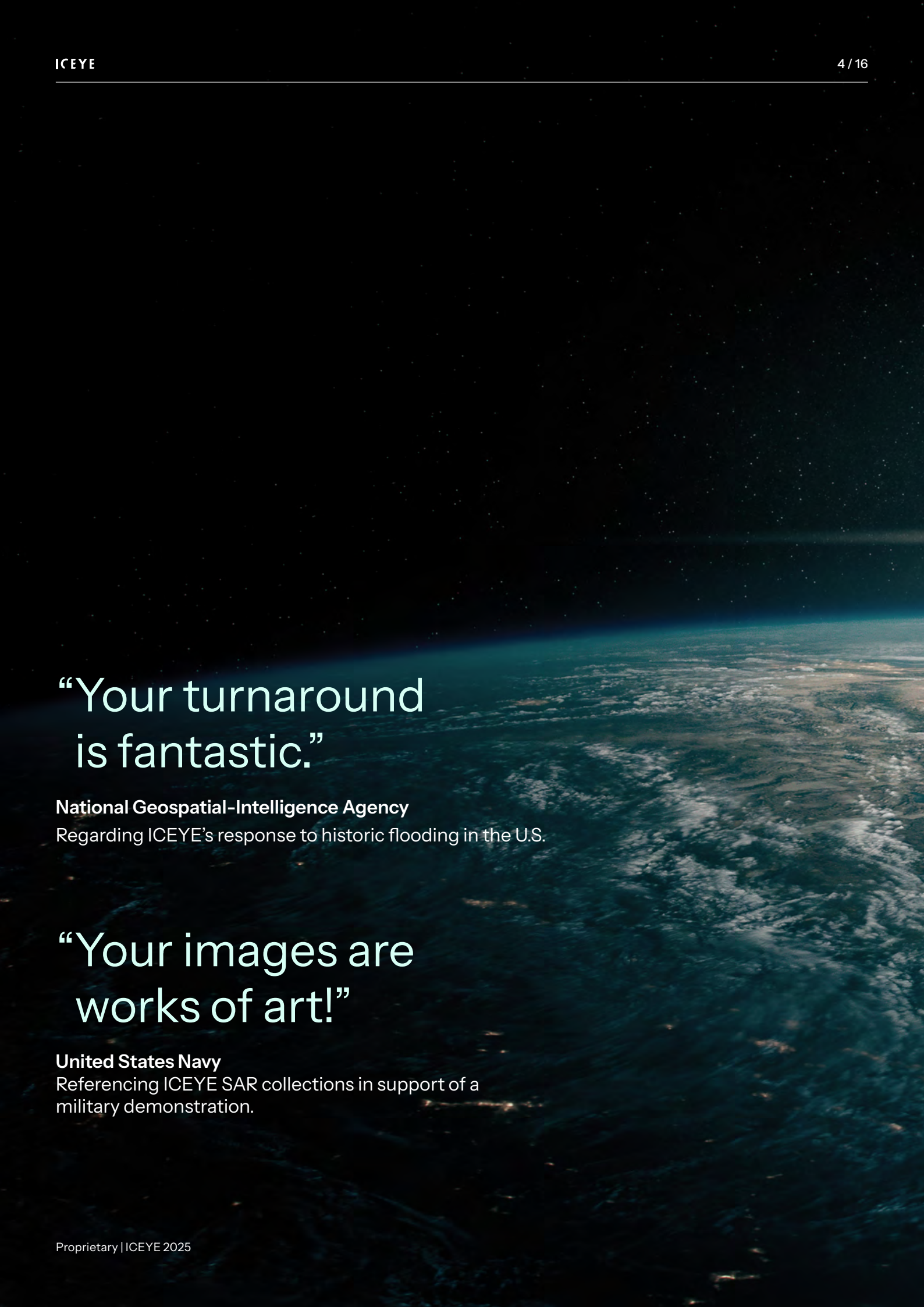
Our unique antenna is designed to enable an unprecedented range of operational approaches. Our Spot, Strip, Scan and Dwell modes allow us to move quickly and easily between scanning areas up to 84,000 km^2 in area in lower resolution and zooming into areas at much higher resolution.

Operationally proven

With the world's largest SAR constellation, ICEYE delivers unlimited global access and the highest frequency revisits on the market – measured in hours instead of days. We've launched over 40 satellites since 2018 with 20+ more planned for 2025 and beyond, enabling even faster and more frequent access and allowing SAR to be used in ways that have never been possible.

The only ready-made spacecraft solution

In addition to delivering data, we are also the only organization in the world to offer governments and organizations the chance to buy high-precision SAR satellites straight from our own production line. ICEYE is the only organization in the world today able to deliver this kind of groundbreaking and proven capability.



"Your turnaround is fantastic."

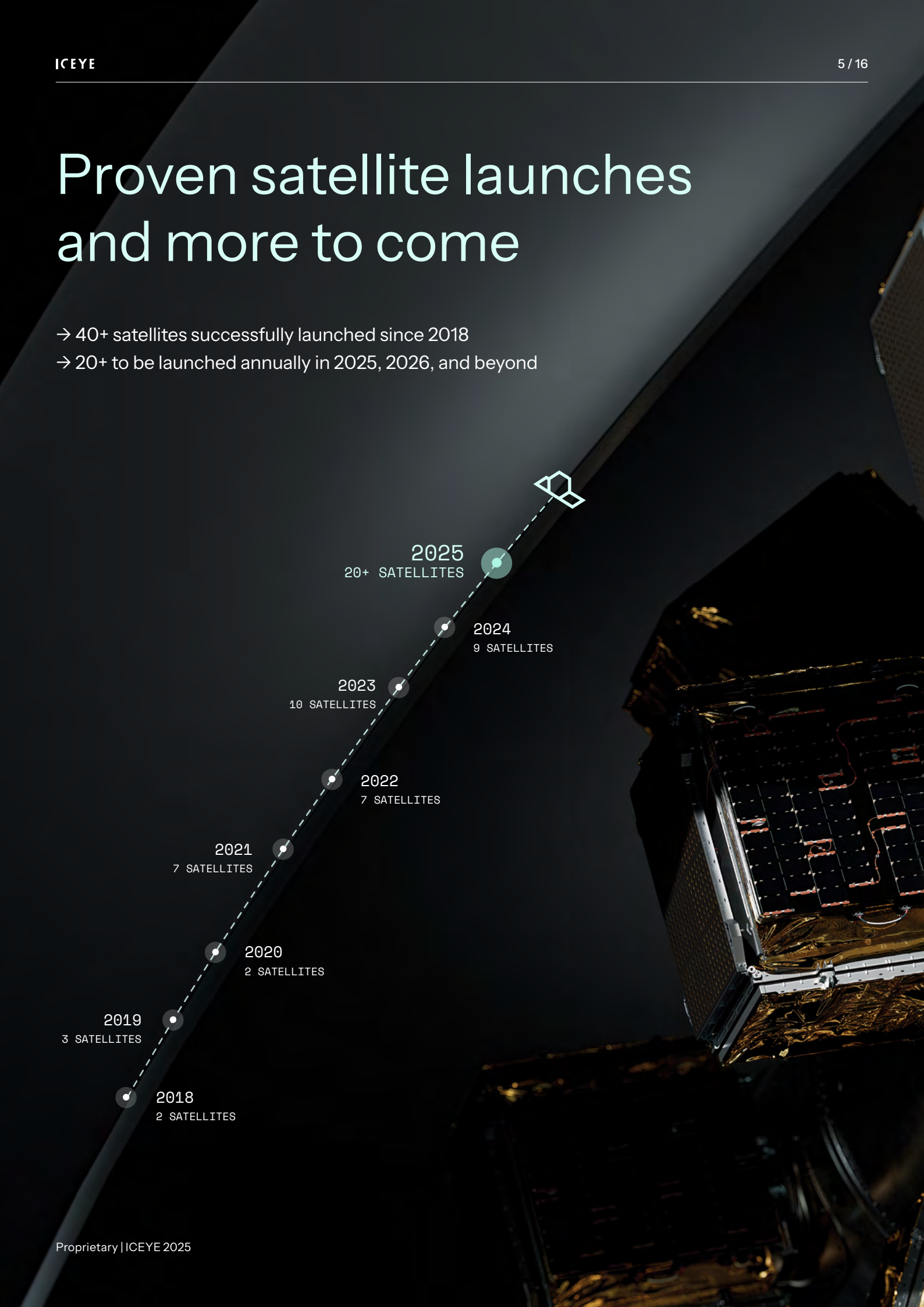
National Geospatial-Intelligence Agency
Regarding ICEYE's response to historic flooding in the U.S.

"Your images are works of art!"

United States Navy
Referencing ICEYE SAR collections in support of a military demonstration.

Proven satellite launches and more to come

→ 40+ satellites successfully launched since 2018
→ 20+ to be launched annually in 2025, 2026, and beyond

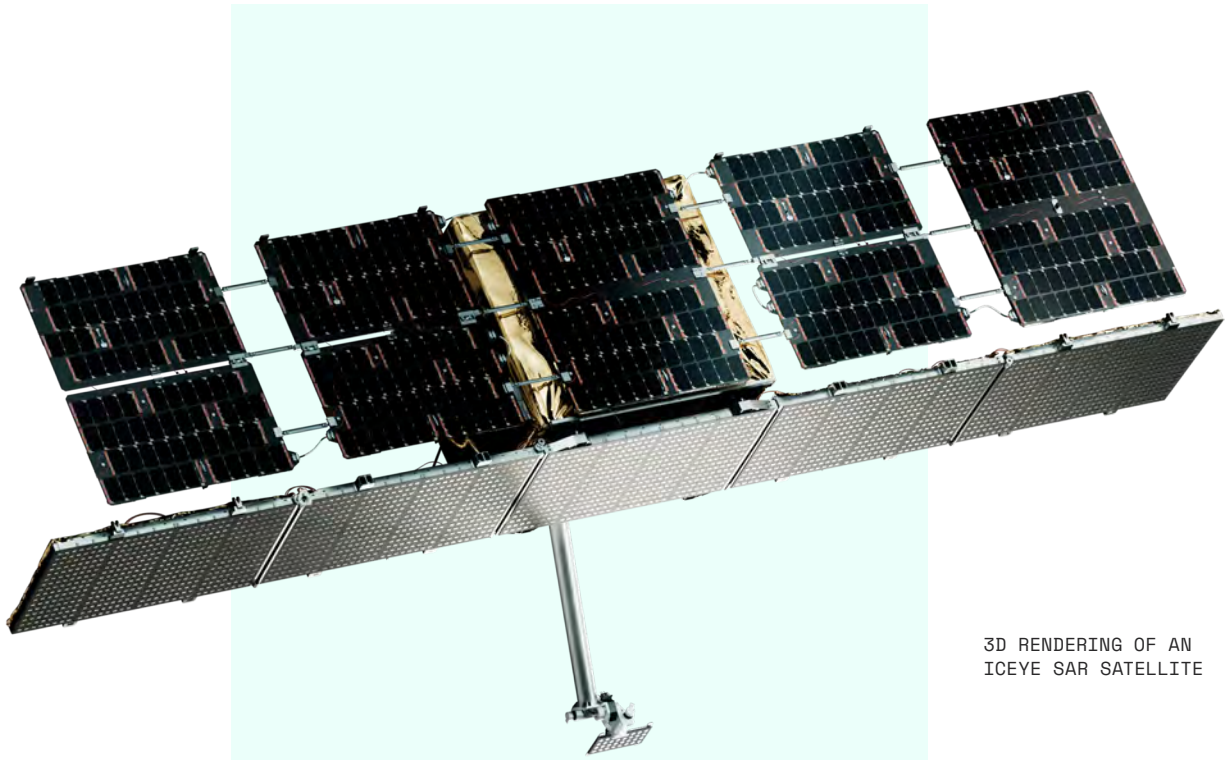


A revolutionary SAR satellite design

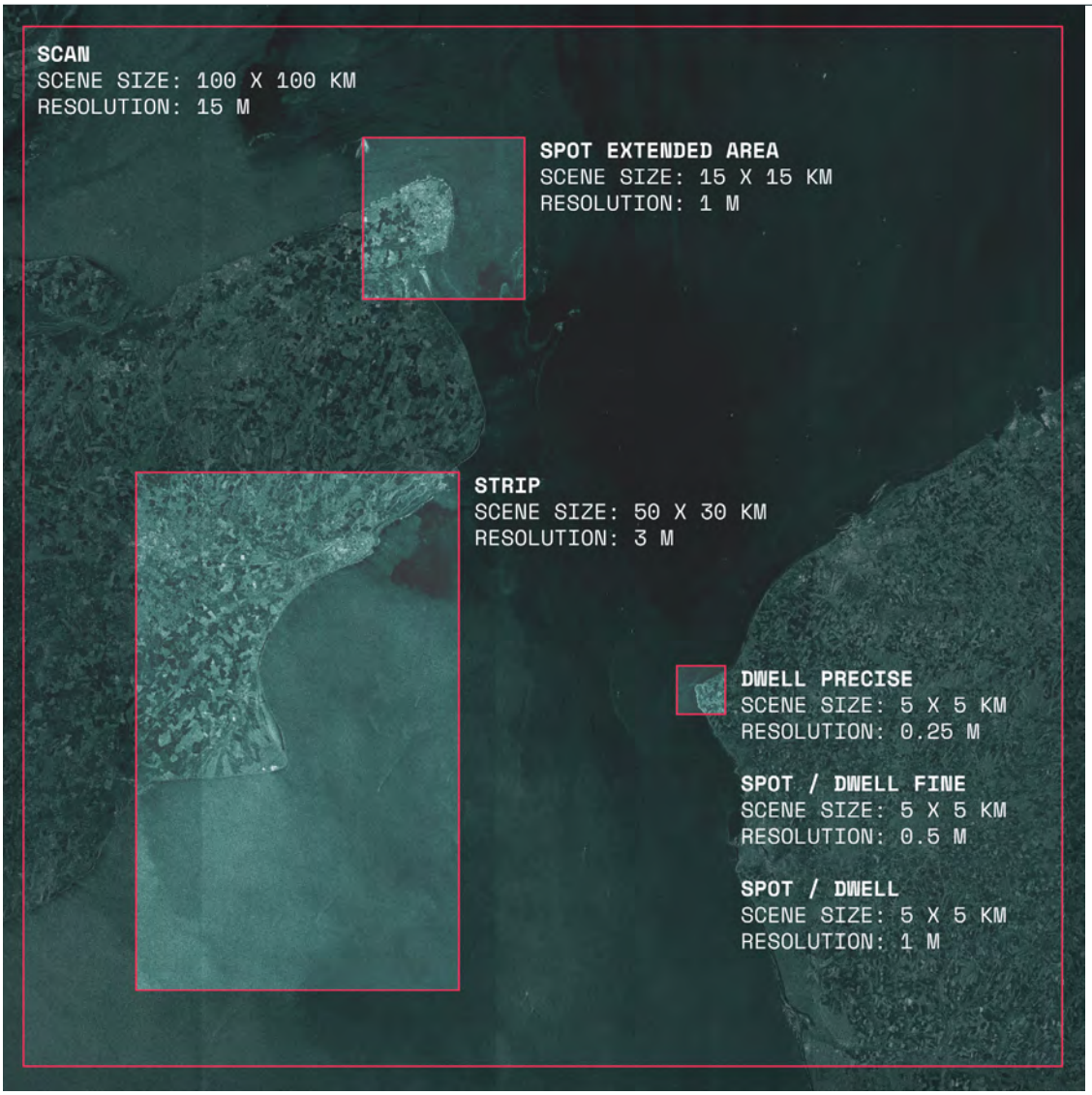
ICEYE satellites are designed to deliver high-performance persistent monitoring capabilities at a significantly lower weight and cost than traditional SAR satellites. With the unique combination of a miniaturized SAR sensor payload integrated onto a high-performance lightweight platform, ICEYE satellites deliver a level of performance that has never been possible before.

The design enables long imaging dwell times at extremely high resolution and the ability to flexibly maneuver the antenna and scan the radar beam across wide areas. This enables ICEYE to deliver multiple imaging modes that enable the broadest possible range of operational applications.

The engineering breakthroughs we've made have significantly reduced the weight, manufacturing time and cost of our satellites compared to the traditional approach, enabling governments, organizations and commercial companies to use SAR data in ways that have been impossible until now.



3D RENDERING OF AN ICEYE SAR SATELLITE



ICEYE SAR imaging modes:

Up to 25 cm
Resolution.

Up to 84.000 km²
Scene size.

ICEYE's unique Antenna is an electronically-steered phased array that can be controlled to enable a range of imaging modes for demanding operational needs.

Location:
English Channel

Resolution	25cm	50cm	50cm
Imaging mode	Dwell Precise	Dwell Fine	Spot Fine
NOMINAL SWATH WIDTH X LENGTH [KM]	5 X 5	5 X 5	5 X 5
SLANT RESOLUTION(AZIMUTHX RANGE) [M]	0.05 X 0.125	0.05 X 0.25	0.1 X 0.25
NOMINAL COLLECTION DURATION [SEC]	25	25	15
AZIMUTH LOOKS	5	10	5
MAXIMUM IMAGE LENGTH [KM]	5	5	5

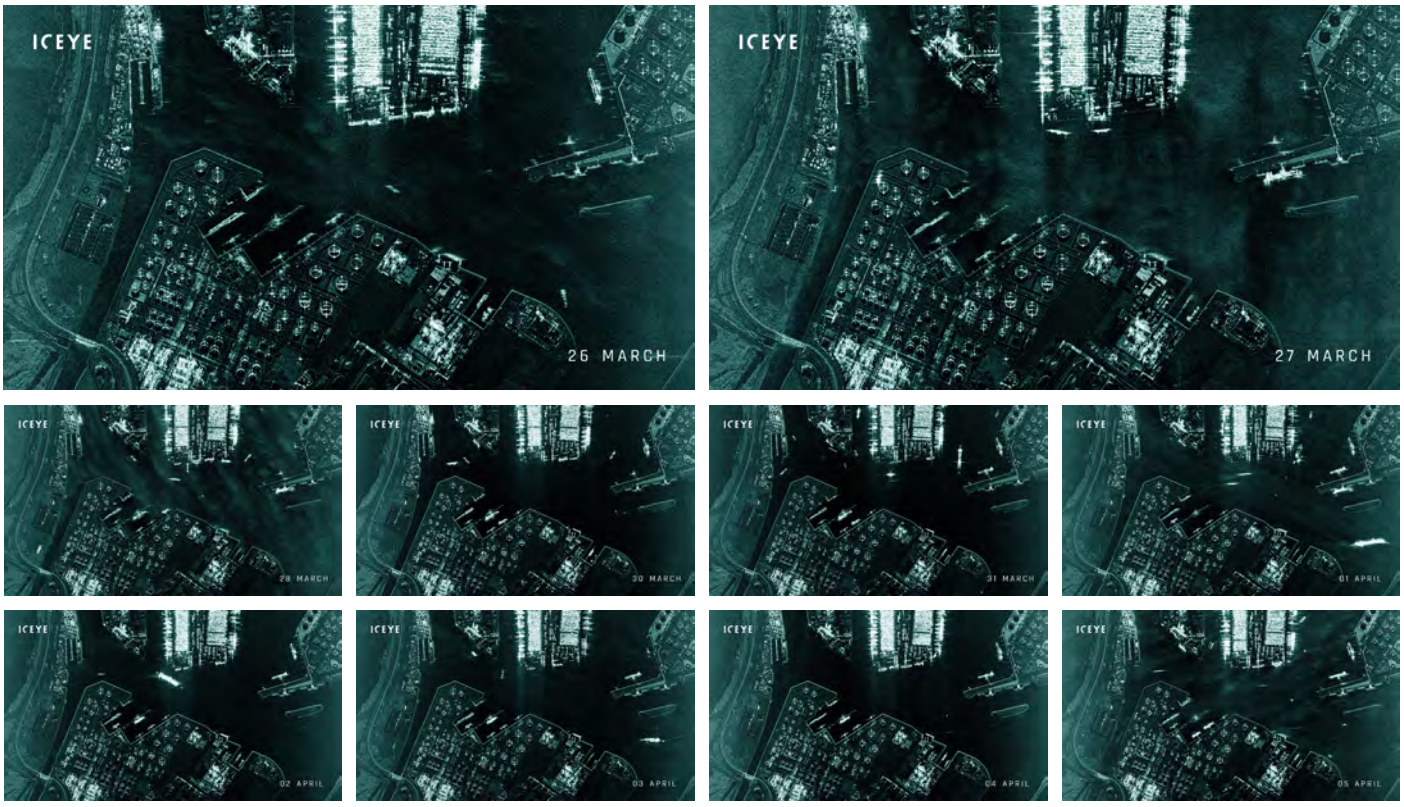
Imaging mode	Dwell	Spot	SLEA	Strip	Scan
GROUND RESOLUTION [M]	1	1	1	3	15
NOMINAL SWATH WIDTH X LENGTH [KM]	5 X 5	5 X 5	15 X 15	30 X 50	100 X 100
SLANT RESOLUTION (AZIMUTHX RANGE) [M]	0.05 X 0.5	0.25 X 0.5	0.5-0.5	3 X 0.5-2.5	N/A
NOMINAL COLLECTION DURATION [SEC]	25	10	10	10	15
AZIMUTH LOOKS	20	4	2	1 TO 2	1
MAXIMUM IMAGE LENGTH [KM]	5	5	15	840	840

More satellites, more coverage

ICEYE runs the largest operational SAR satellite constellation in the world with the largest number of satellites. This enables capabilities like Daily Coherent Ground Track Repeat (GTR) and Persistent Monitoring, a capability that hasn't been possible before.

Very frequent revisit

For the first time, it is now possible to persistently monitor an area of interest (AOI) frequently. This is only possible because ICEYE's constellation has a high enough number of satellites in the precise orbits needed to achieve this world-first.



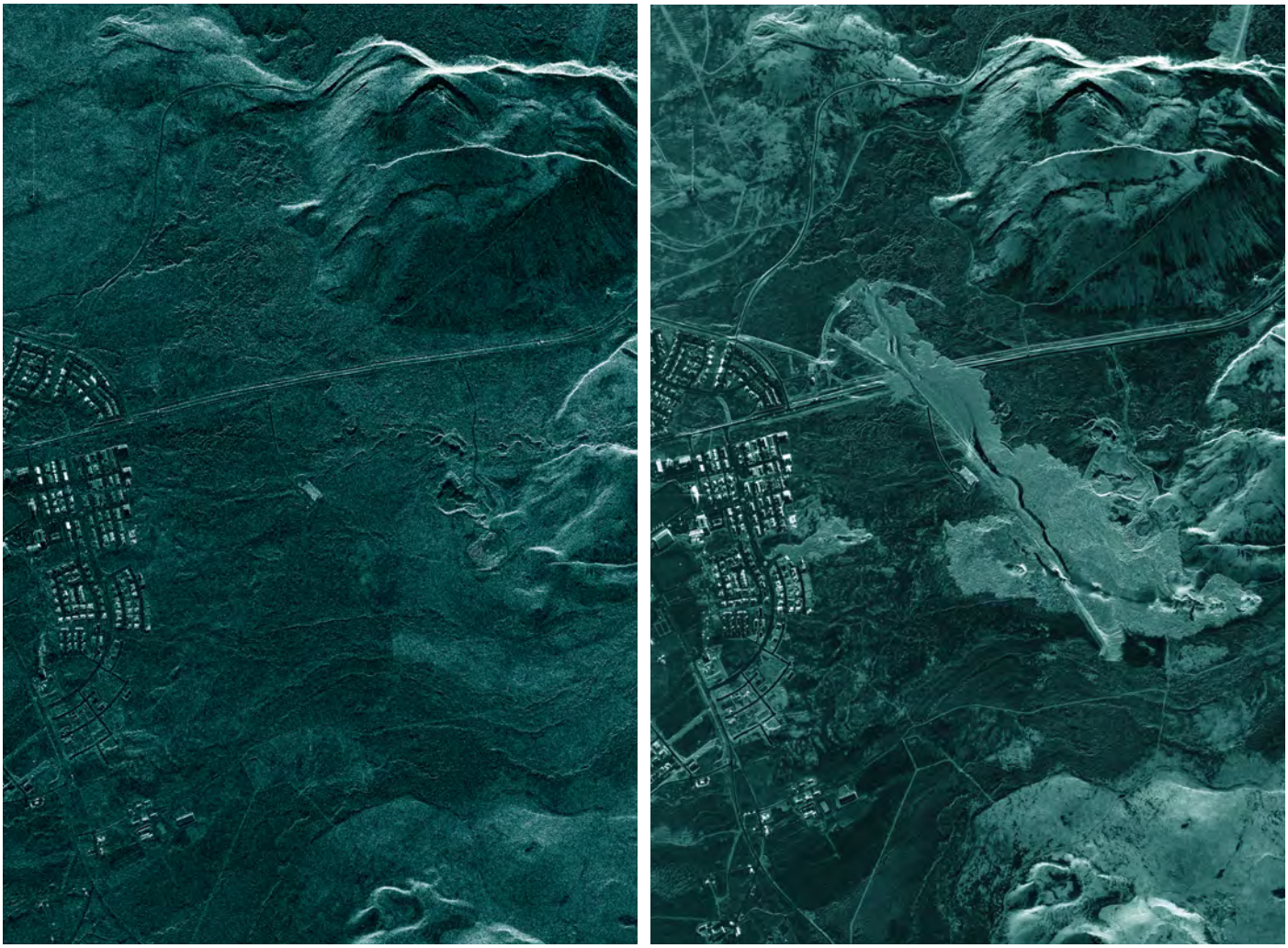
PORT OF ROTTERDAM, NETHERLANDS

SHOWS 10 OF A 58 DAY COHERENT IMAGE STACK
USING SPOT IMAGING MODE @ 1 M RESOLUTION,
TAKEN BETWEEN 26-03-2021 AND 05-04-2021.

More satellites, more coverage

Very precise change detection

Utilizing change detection techniques, it's possible to identify highly accurate ground change every 24 hours, including things like movement of a vehicle along a track or lava flow during a volcano eruption. Each image in a stack has the exact same geometry, radiance and phase, which enables millimeter-level change detection.



GRINDAVIK VOLCANO ERUPTION, ICELAND

A COMPARISON BETWEEN TWO ICEYE SAR SATELLITE IMAGES OF AN ERUPTING VOLCANO ON THE REYKJANES PENINSULA IN ICELAND, ACQUIRED ON DECEMBER 19, 2023(LEFT) AND JANUARY 14, 2024(RIGHT), USING SPOT EXTENDED AREA MODE (LEFT) & DWELL MODE (RIGHT). SEE HOW THE LANDSCAPE NEAR THE ERUPTING VOLCANO HAS CHANGED, DUE TO THE SPREAD OF LAVA.

More satellites, more coverage

Very high resolution

ICEYE's high-performance SAR satellites are capable of imaging 25 cm resolution in Dwell Precise mode, which allows you to detect and classify objects like vehicles and vessels. And Strip mode at 3 m resolution and Scan mode at 15 m resolution are also available if greater image area is required at high resolution.

IMAGE MODE: SPOT @ 1 M RESOLUTION,
TAKEN ON 25-03-2021 AT 19:58 UTC DURING NIGHTTIME.

Ever Given container ship,
Suez Canal, Egypt

IMAGE MODE: STRIP @ 3 M RESOLUTION,
TAKEN ON 24-03-2021 AT 09:37 UTC.

More satellites, more coverage

Possible applications using SAR data

Defence and security

Natural catastrophe assessments

Dark vessel detection

Deforestation

Oil spill tracking

and countless other applications

“The ability to persistently monitor locations with SAR means you can now make critical decisions without guessing or hoping to predict an event. Now you know.”

Shay Strong
Vice President of Analytics, ICEYE

Changi Airport, Singapore

IMAGE MODE: SPOT EXTENDED AREA @ 1 M RESOLUTION,
TAKEN ON 24-11-2021 AT 19:19 UTC.

ICEYE's Spot Extended Area is the world's largest high-resolution SAR satellite image, a significant increase in area coverage with the same ground resolution.

Typical data solution

Data for your operational needs

ICEYE's core mission is to make Earth observation with SAR imagery easy and more accessible. We are happy to tailor a package to your operational needs, taking into account the location and size of your AOIs, the frequency and quantity of images you require, image modes, and resolution.

A data order commitment

This gives you the flexibility to request imagery as you need it, choosing various locations, changing resolutions or modes, and drawing images from an agreed repository. The value of this commitment can be sized as you wish, with discounts for larger commitments.

Persistent monitoring of any AOI

If you need to increase your situational awareness by persistently monitoring a specific AOI or multiple AOIs, day or night and in any weather, we can offer a bespoke quotation for this service.

Archive imagery

ICEYE has over 60,000 archive images covering locations around the world. The technical characteristics and global coverage of ICEYE products provide extremely valuable inputs for a variety of studies and application developments. The archive data used alongside new imagery is well-suited for things like change detection on the ground, the assessment of damages caused by natural catastrophes, and the monitoring of infrastructure integrity.

Why ICEYE?

A typical satellite solution would include:

ICEYE has completely revolutionized the use of SAR Earth observation for governments and organizations, offering unprecedented access to critical and timely information on changes and activities. SAR provides highly accurate, reliable, and timely data for a variety of applications on land and at sea, day or night, and in any weather.

The world's largest SAR constellation

ICEYE operates and will continue to maintain the world's largest operational SAR satellite constellation, giving you unrivalled global access and revisit frequency measured in hours, not days or weeks. No other NewSpace SAR provider has launched as many satellites, with 20+ more planned for 2025 and beyond.

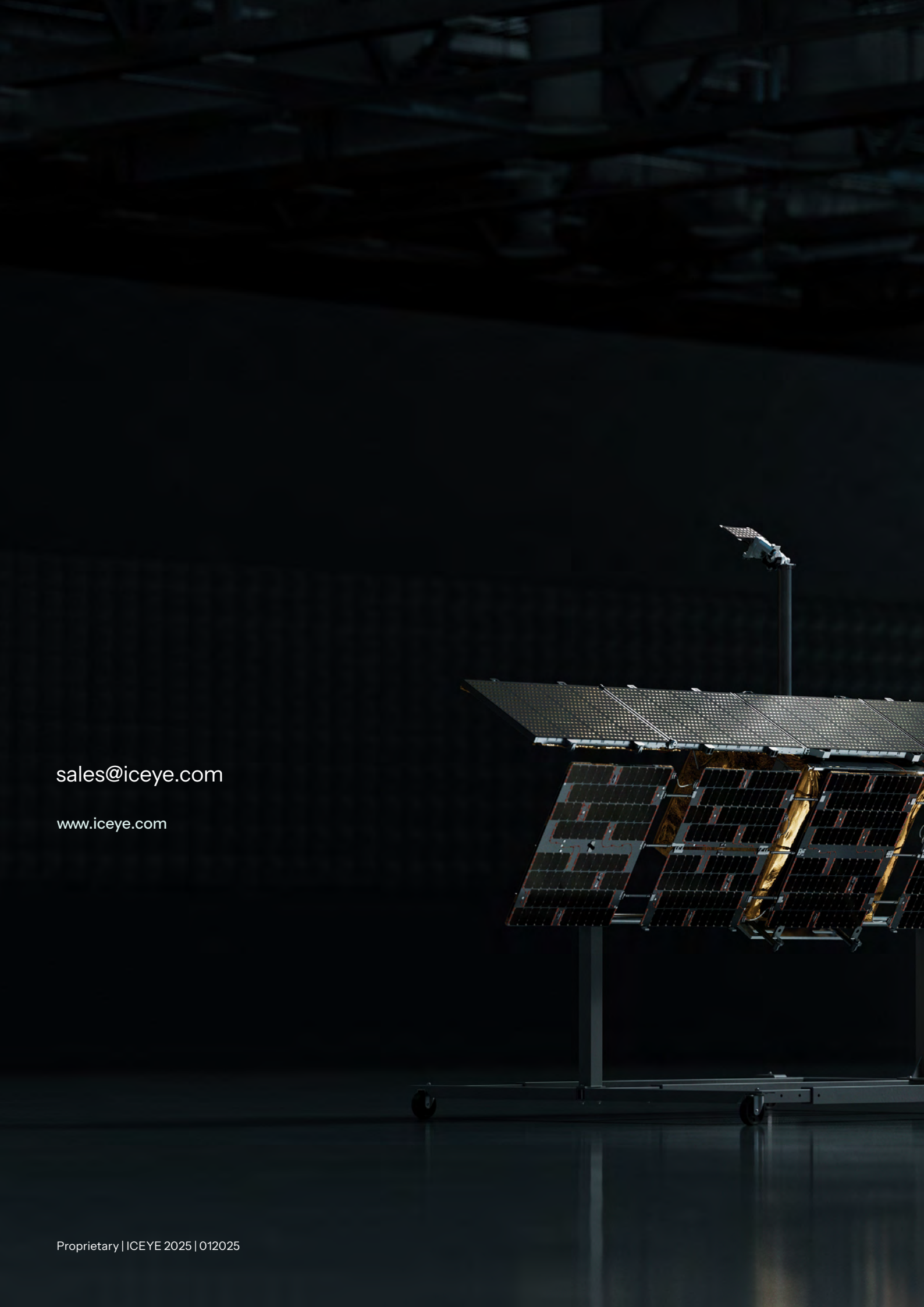
Groundbreaking technology

ICEYE's unique ability to make rapid technological advances designed to meet real operational needs has led to the creation of world-first capabilities like our Scan, Strip, Spot and Dwell modes, which provide images from 0.25 m resolution to 100 km in width and up to 84,000 km2 in area. This flexibility is not possible with other SAR NewSpace satellite designs.

Operationally proven

Over 40 ICEYE satellites have been launched since 2018, and we have operated our commercial constellation since December 2018. We are the only NewSpace SAR company with such a vast level of proven experience. And we are the only organization in the world with the proven ability to supply new-era Earth observation satellites from our own production line.

If you are interested in procuring ICEYE SAR imagery, please get in contact and we would be happy to provide a solution tailored to meet your needs.



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