ICEYE

C4ADS
innovation for peace

WINDWARD
The Power of Maritime AI



CASE STUDY

DARK VESSELS BROUGHT TO LIGHT: DETECTING OIL TRAFFICKING FROM SPACE

DISCOVER HOW ICEYE SAR SATELLITE DATA AND WINDWARD'S MARITIME AI™ ENABLED C4ADS TO DETECT A LIKELY SHIP-TO-SHIP OIL TRANSFER UNDER THE COVER OF NIGHT



THE CHALLENGE

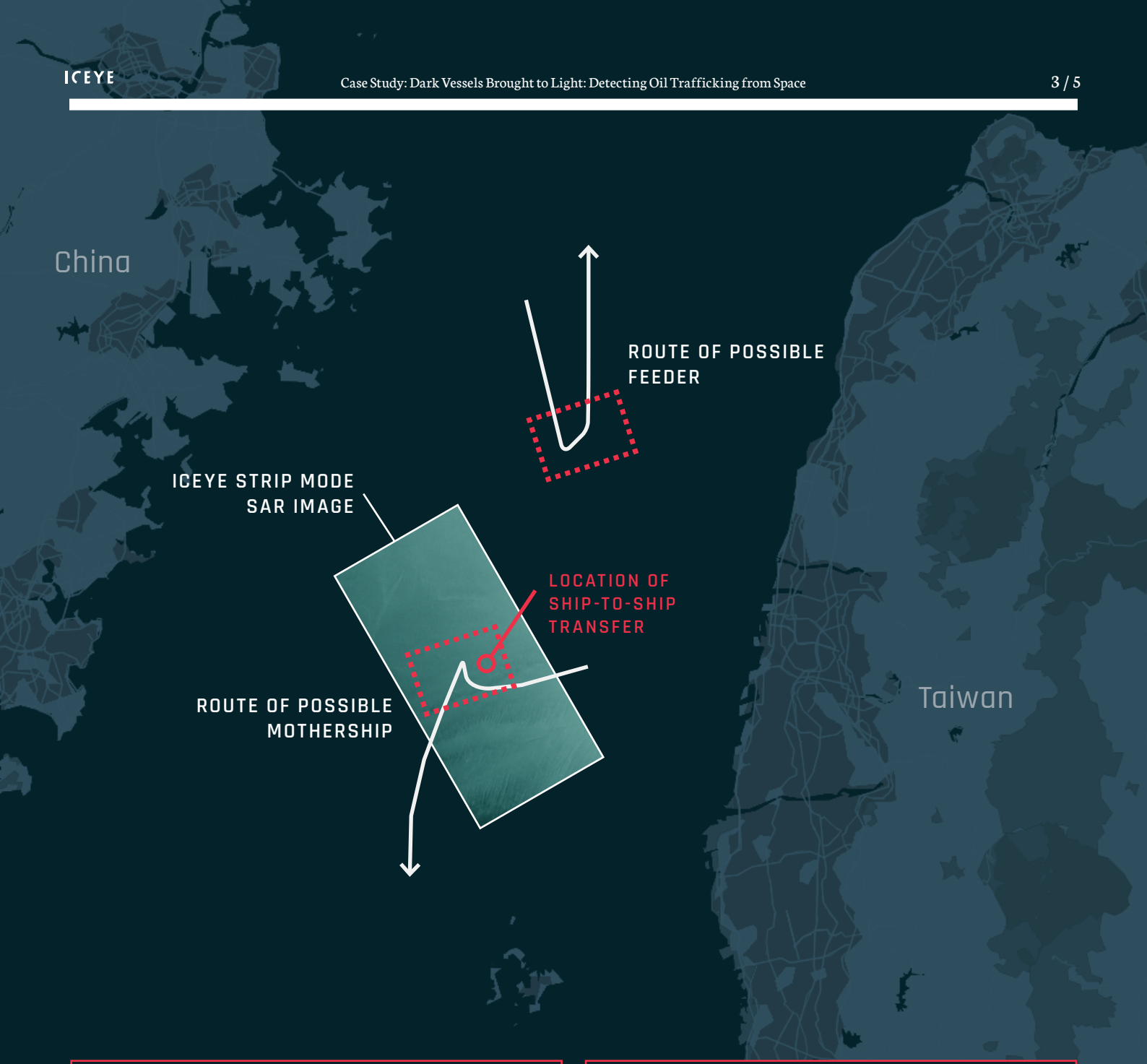
In May 2022, the Center for Advanced Defense Studies (C4ADS) detected on the Windward platform two oil tankers in the Taiwan Strait as they began to engage in a pattern of behavior suggesting an imminent transfer of oil. The window of time to detect the vessels in an expected ship-to-ship (STS) meeting was less than 12 hours.

Tankers involved in illegal oil trading typically switch off their automatic identification systems (AIS) to evade tracking and to conceal the origin and destination of the oil. It is common to transfer oil secretly from one tanker to another on the open sea. Illegal activities of this kind are difficult to detect using conventional methods. In many regions, including Asia, monitoring with optical sensors is a challenge due to cloudy conditions and nighttime activities.

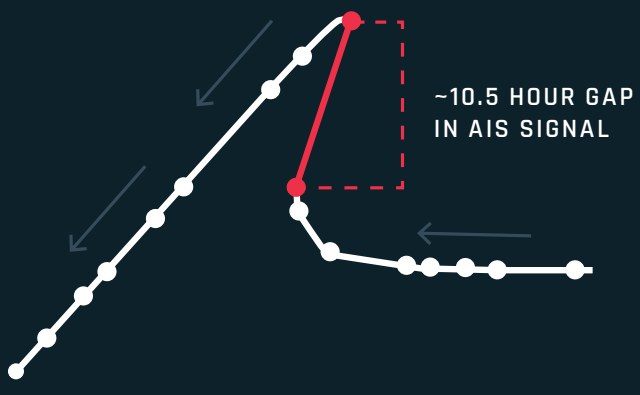
Automatic Identification System (AIS): *a tracking system used to provide identification and positioning of vessels.*

Dark Vessels: *when involved in illegal activities vessels typically "go dark", which means they operate with automatic identification system (AIS) and other identification systems switched off. Such vessels can be detected with SAR satellite data.*

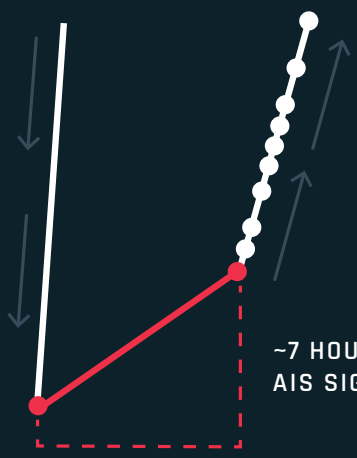
Ship to ship (STS) transfer: *a term used to describe transfers of goods at sea between two or more vessels positioned alongside each other. Such transfers are used for both legal and illicit trade.*



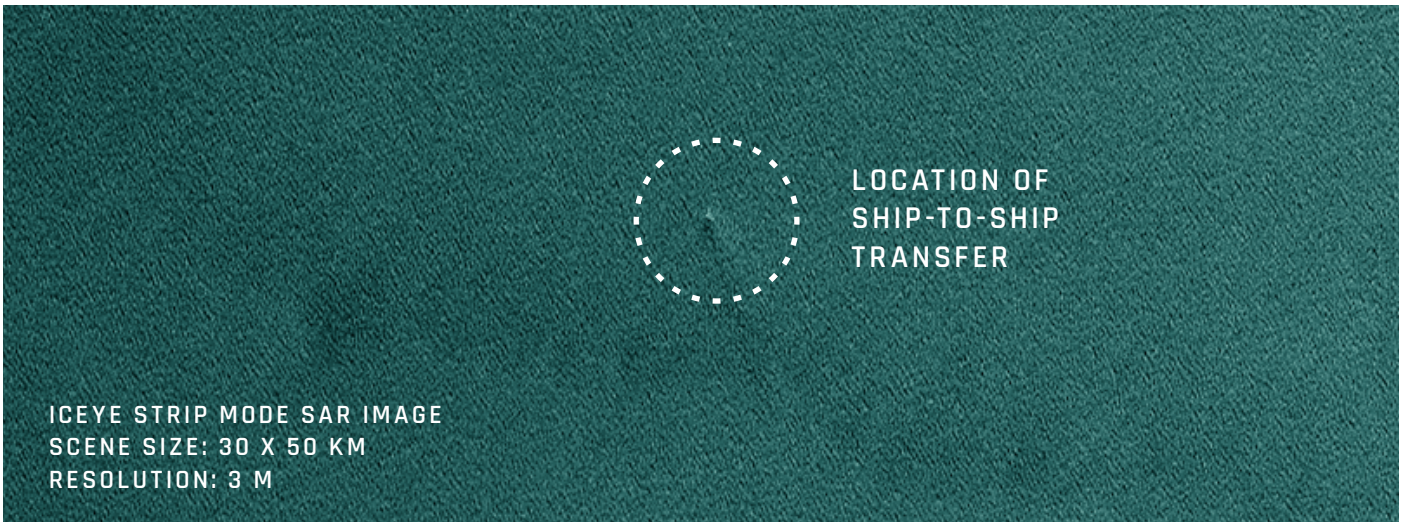
ROUTE OF POSSIBLE MOTHERSHIP



ROUTE OF POSSIBLE FEEDER



AIS CREDIT TO WINDWARD



THE ICEYE SOLUTION

ICEYE SAR satellite data played a critical role in the timely detection of a suspected oil transfer between two tankers on the open sea at night.

C4ADS leveraged ICEYE's SAR satellite constellation to acquire critical images which would corroborate the nefarious maritime activities. ICEYE's Strip imaging mode was selected, as it covers an area large enough to locate vessels after they switch off their identification systems (30 km x 50 km). Strip mode also offers a ground resolution of 3 meters, sufficient to detect vessels transferring goods in the STS formation.

THE RESULTS

Despite the tankers' efforts to conceal their activities by going "dark" for approximately 10 hours, ICEYE satellites enabled C4ADS to detect a suspected STS transfer underway through timely and accurate remote sensing.

By analyzing the patterns of life of both vessels before and after they went dark with Windward's behavioral analysis, C4ADS was able to determine where to accurately take ICEYE's Strip SAR image, and was able to identify which one was the likely feeder and which one the mothership.

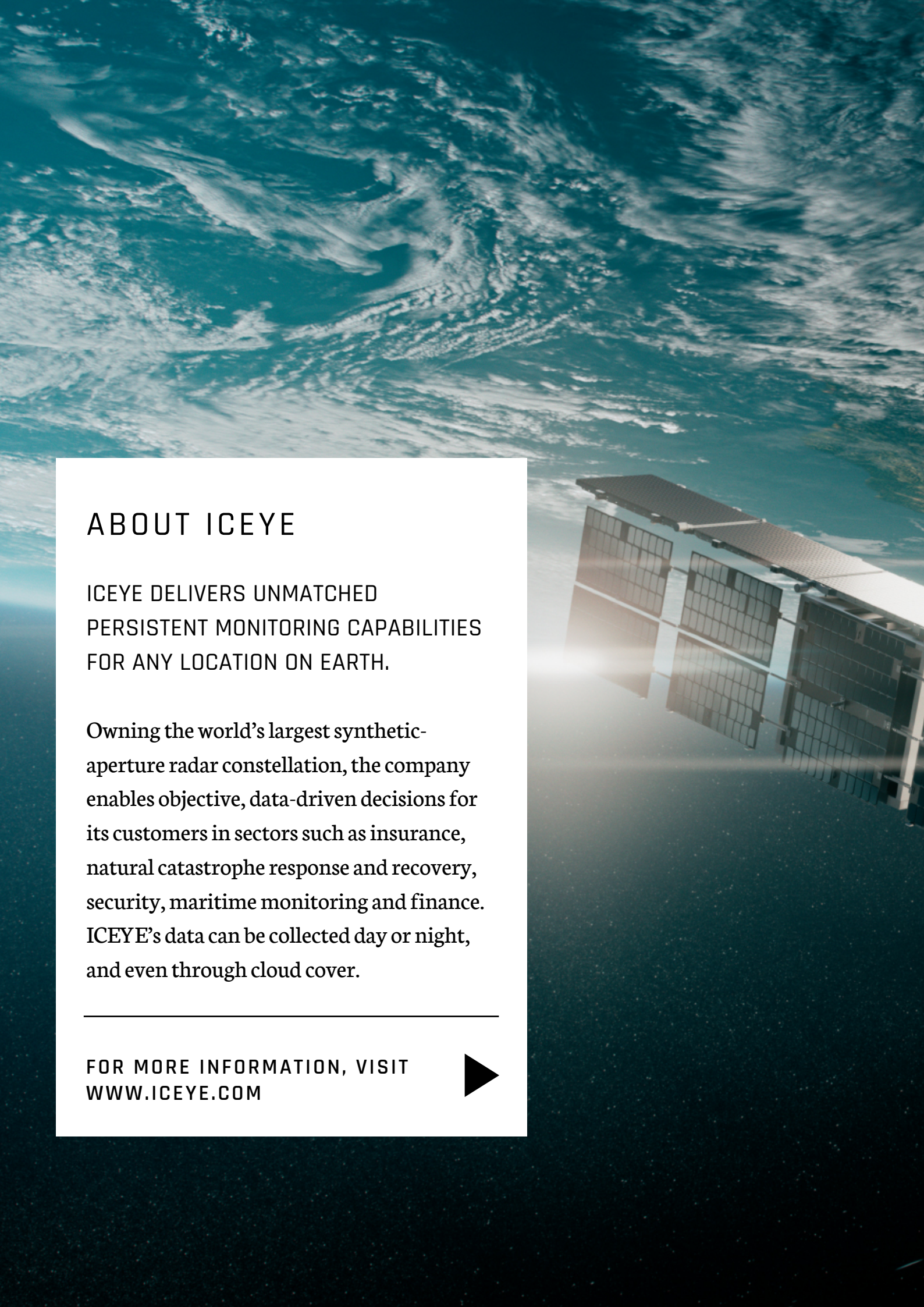
KEY BENEFITS

A NEW LEVEL OF MARITIME AWARENESS

TIMELY RESPONSE TO SECURITY THREATS AND ILLEGAL ACTIVITIES

PERSISTENT VISIBILITY REGARDLESS OF DARKNESS OR CLOUD COVER

FREQUENT AND GLOBAL COVERAGE



ABOUT ICEYE

ICEYE DELIVERS UNMATCHED PERSISTENT MONITORING CAPABILITIES FOR ANY LOCATION ON EARTH.

Owning the world's largest synthetic-aperture radar constellation, the company enables objective, data-driven decisions for its customers in sectors such as insurance, natural catastrophe response and recovery, security, maritime monitoring and finance. ICEYE's data can be collected day or night, and even through cloud cover.

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