



ORBIT



BUILDING A GLOBAL LAUNCH NETWORK

Extending the Reach of Dedicated Small Satellite Launch
Using New, Data-Driven Spaceport Assessment Tools

SmallSat Conference
August 5th, 2020

THE SPACE INDUSTRY HAS LEAPT FORWARD



REUTERS

Mars rover landing
“miracle of engineering,”
scientists say



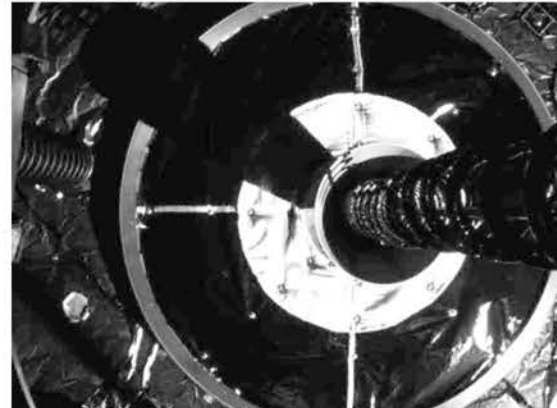
SPACE.com

US Air Force's X-37B
Space Plane Lands After
Record 780-Day Mission



POPULAR
MECHANICS

SpaceX Lands All Three
Falcon Heavy Boosters
for
the First Time



SPACE NEWS

Northrop Grumman's
MEV-1 servicer
docks with Internet
satellite

BUT UNRESTRICTED ACCESS TO ORBIT REMAINS A CHALLENGE



SPACE INTEL REPORT

A 2-MONTH-LONG
WEATHER DELAY: IS THAT
POSSIBLE? YES IT IS, SAY
ESA, ARIANESPACE.
VEGA LAUNCH SLIPS...



SPACE.com

Chinese Rocket
Launches 2 Satellites
(and Drops Debris on
Settlement)



yahoo! news

Troublesome boat
forces Orbital to scrub
rocket launch



THE VERGE

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AS COMMERCIAL SPACEFLIGHT
TAKES OFF, THE AVIATION
INDUSTRY GETS PROTECTIVE
OF AIRSPACE

LAUNCHERONE

*ANY ORBIT &
INCLINATION*

*YOUR SCHEDULE
AND TIMELINE*

*HIGH LAUNCH
CADENCE*

*LAUNCH FROM
ANY SPACEPORT*

*RESPONSIVE
LAUNCH*



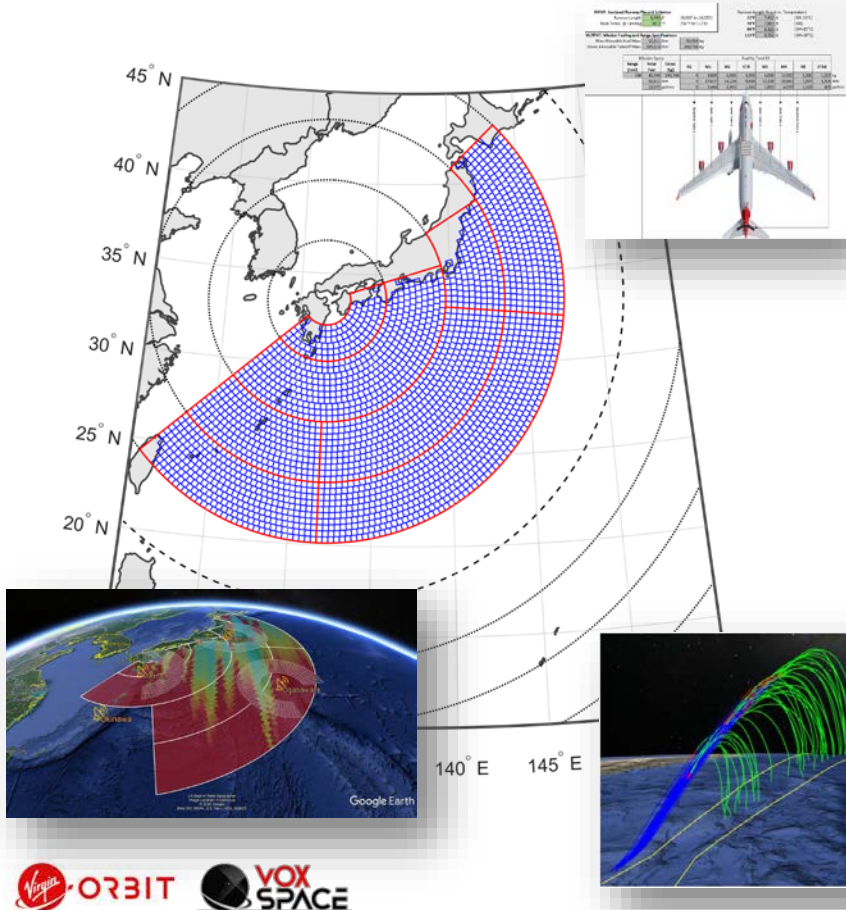
LAUNCHING TO ANY PLACE



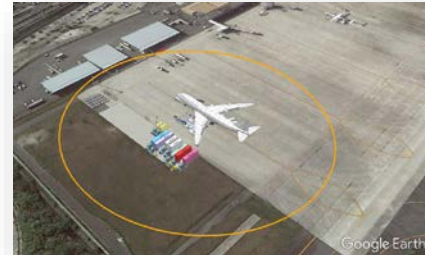
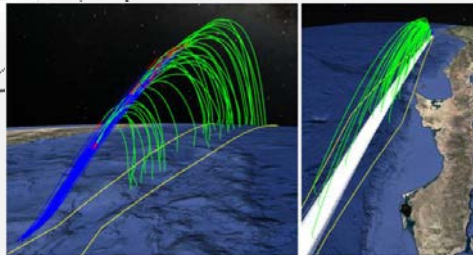
STARTING FROM ANY PLACE



NEW SPACEPORT & AIR-LAUNCH FORECAST TOOLS



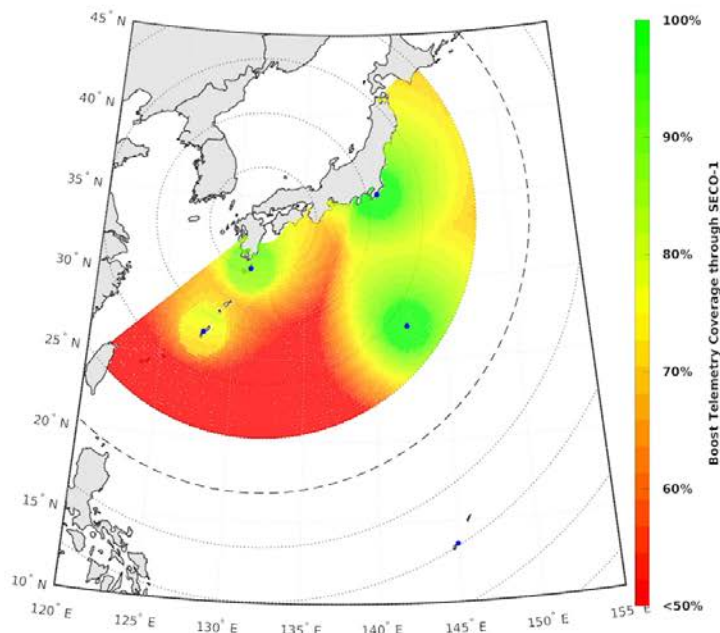
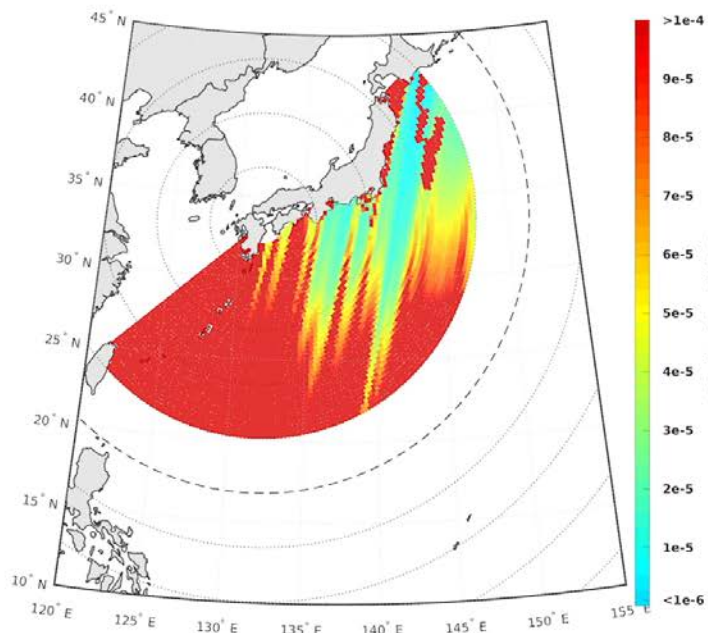
- ❑ Model-based suite of tools specific to the LauncherOne application have been devised and implemented
- ❑ Numerical characterization of air-launch access & availability from any hosting spaceport in the world
- ❑ Primary features:
 - Trajectory & inclination access analysis
 - Population overflight casualty expectation (Ec)
 - Telemetry coverage assessment
 - Aircraft range and CONOPS requirements
 - Spaceport infrastructure analysis
- ❑ Affords mission planners substantial insight into what capabilities are achievable via terabytes' worth of results data





SPACEPORT LAUNCH FORECAST

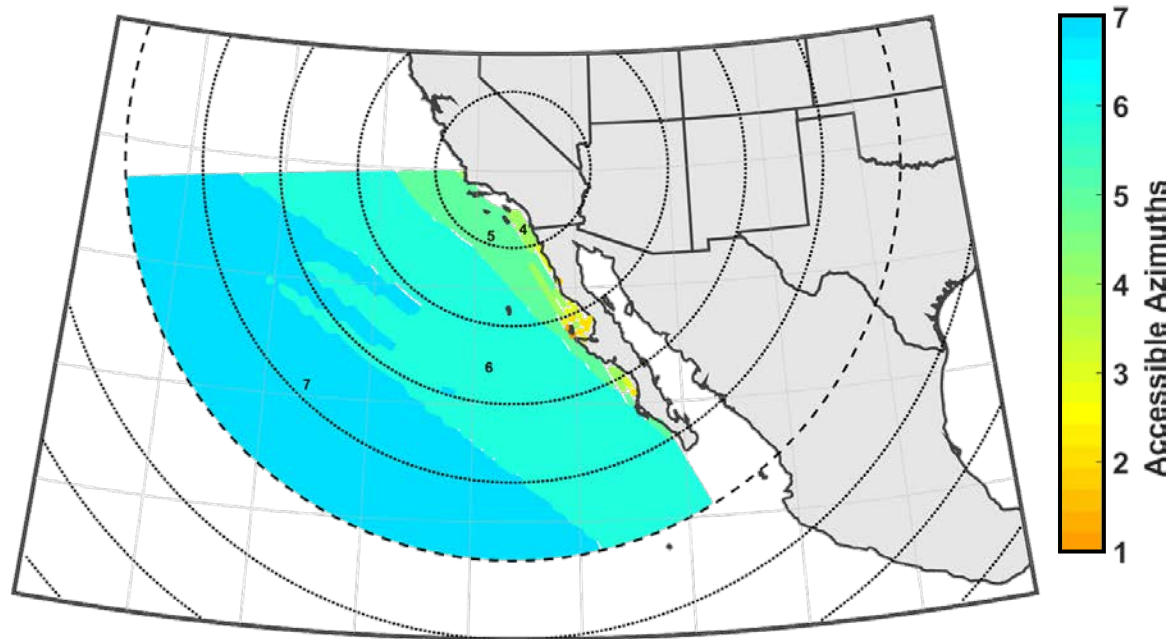
FORECAST DATA INTRODUCTION





SPACEPORT LAUNCH FORECAST

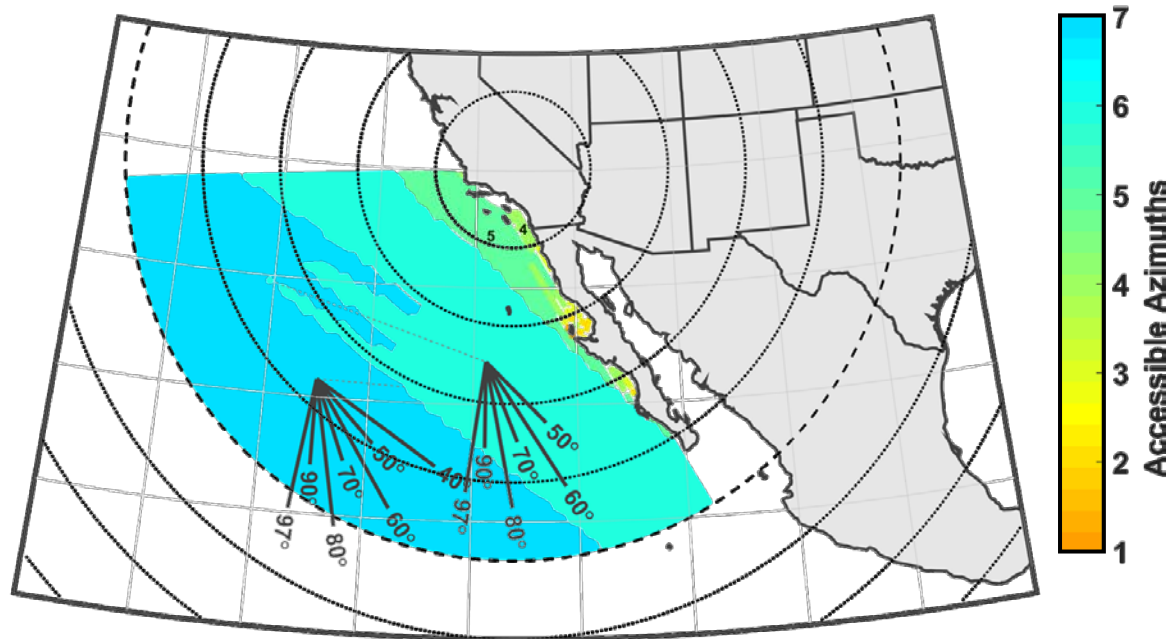
MOJAVE AIR & SPACE PORT

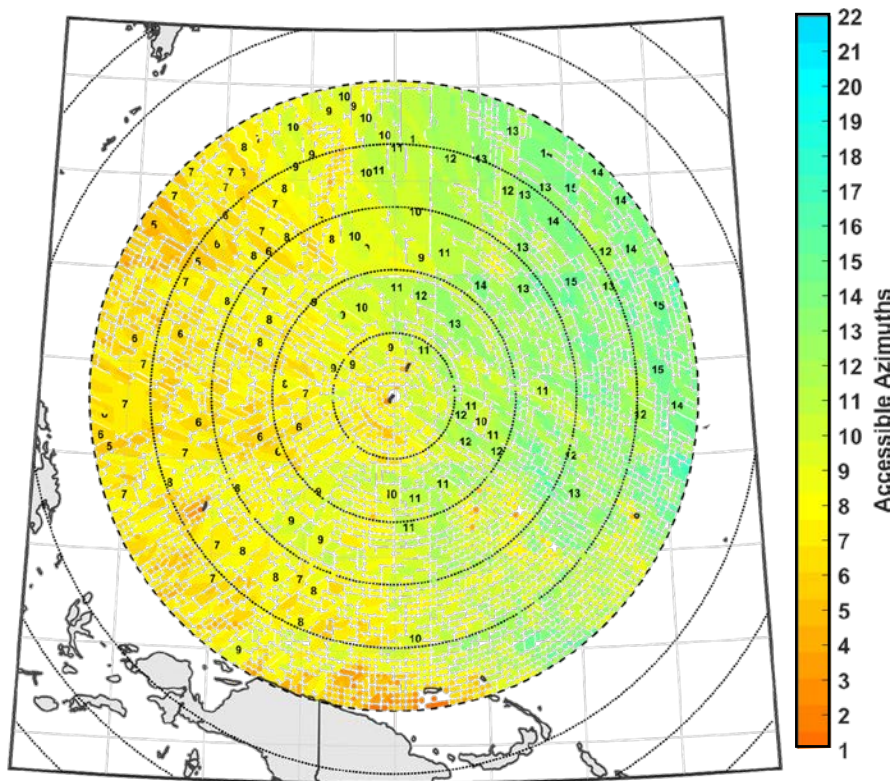


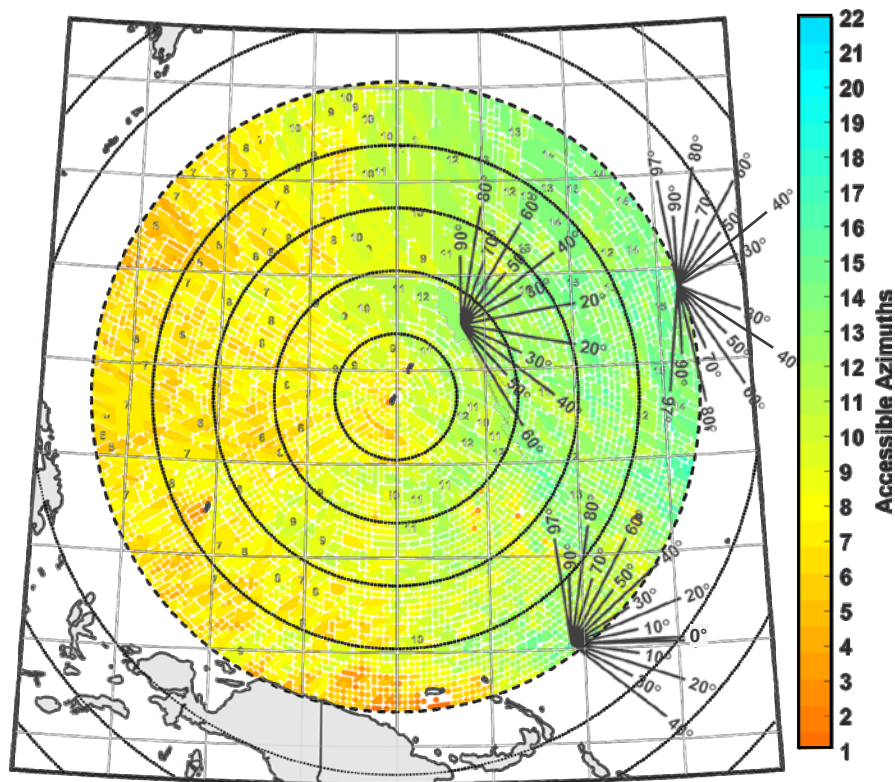


SPACEPORT ***LAUNCH FORECAST***

MOJAVE AIR & SPACE PORT



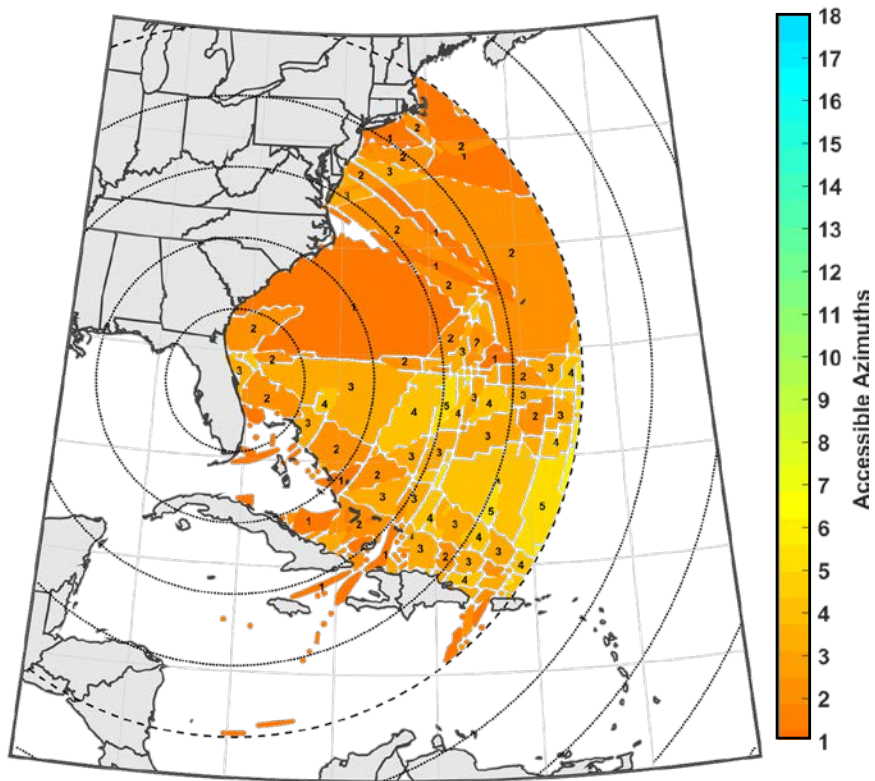






SPACEPORT ***LAUNCH FORECAST***

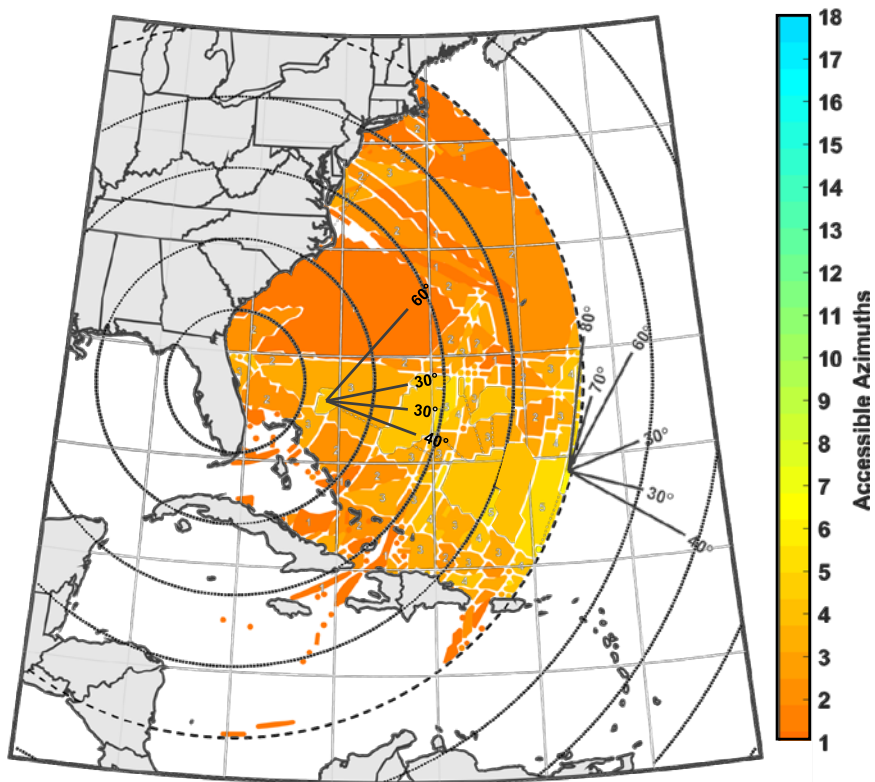
KENNEDY SPACE CENTER, FLORIDA





SPACEPORT ***LAUNCH FORECAST***

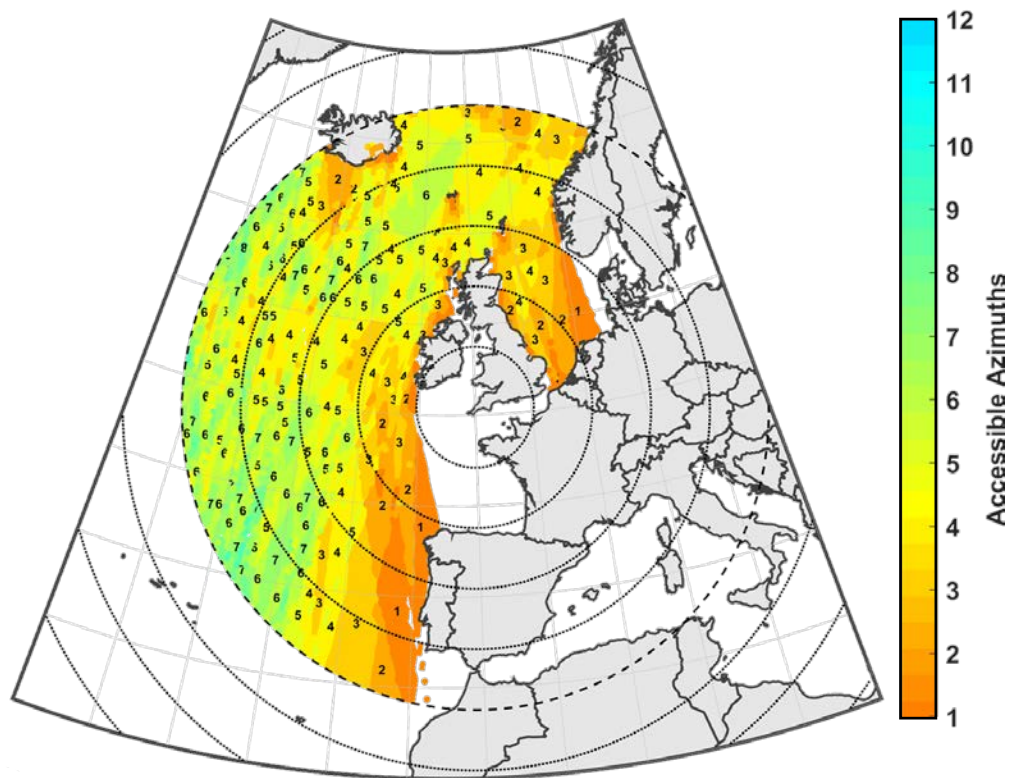
KENNEDY SPACE CENTER, FLORIDA





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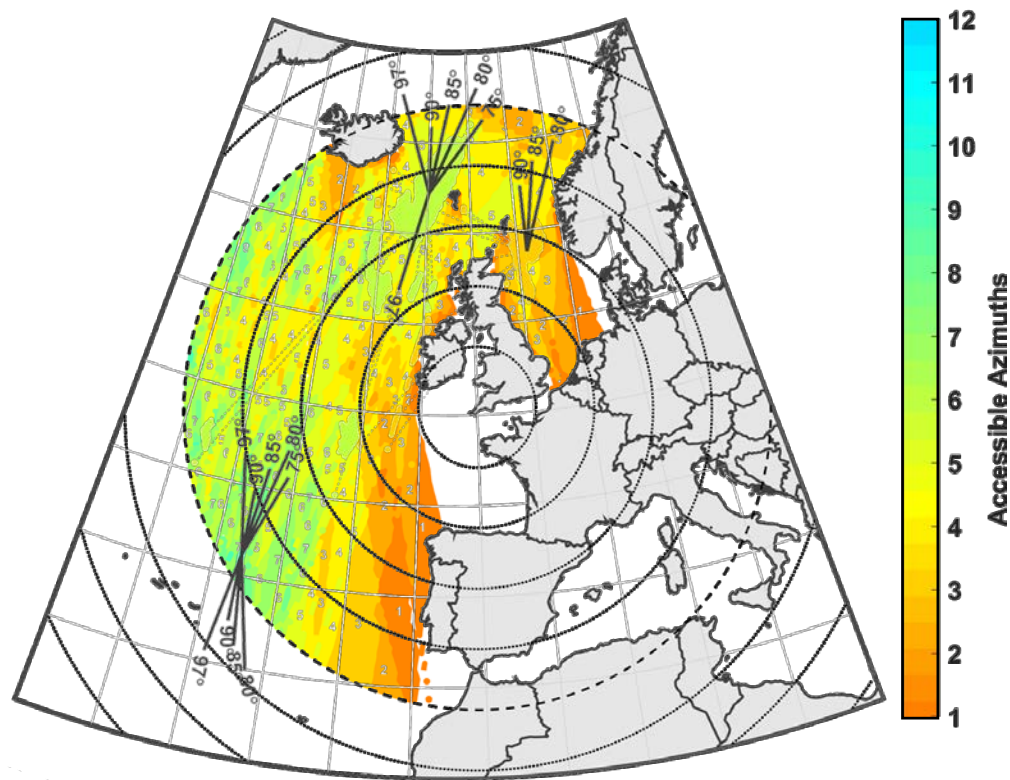
SPACEPORT CORNWALL, U.K.





SPACEPORT ***LAUNCH FORECAST***

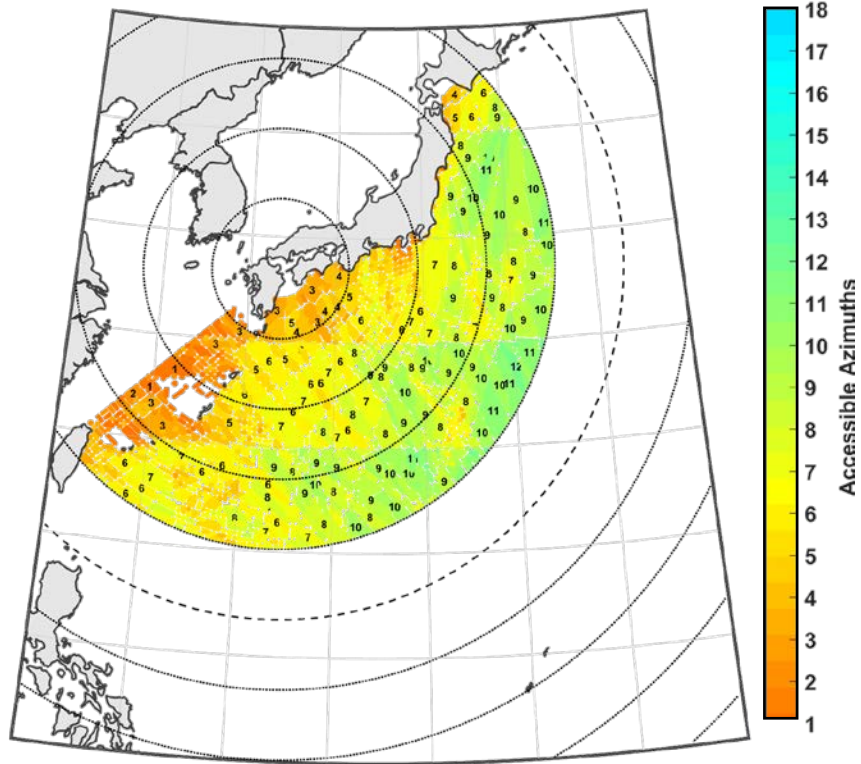
SPACEPORT CORNWALL, U.K.

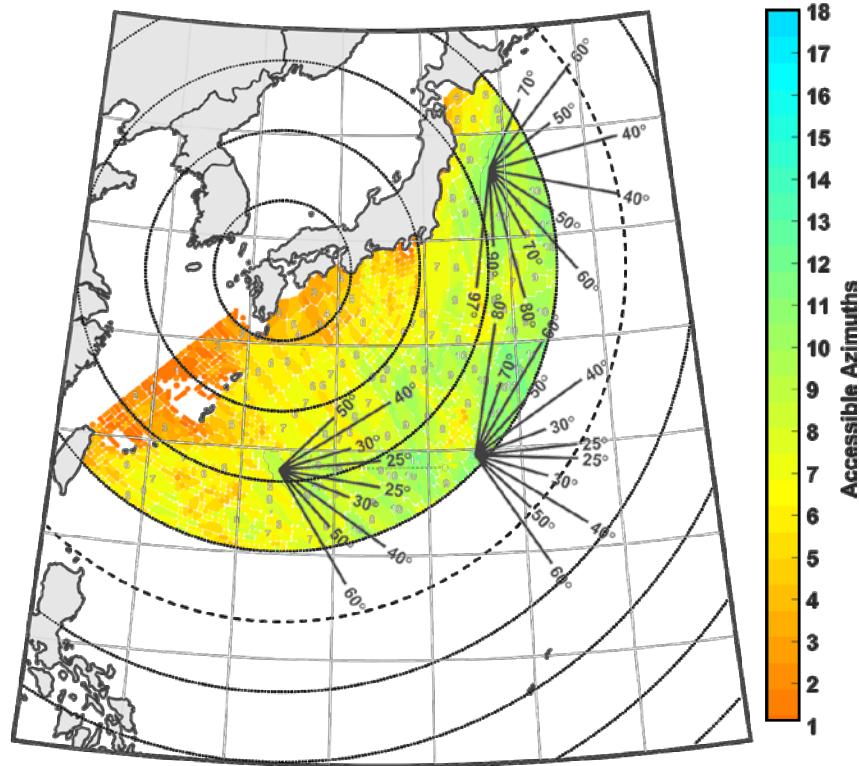




SPACEPORT ***LAUNCH FORECAST***

OITA, JAPAN

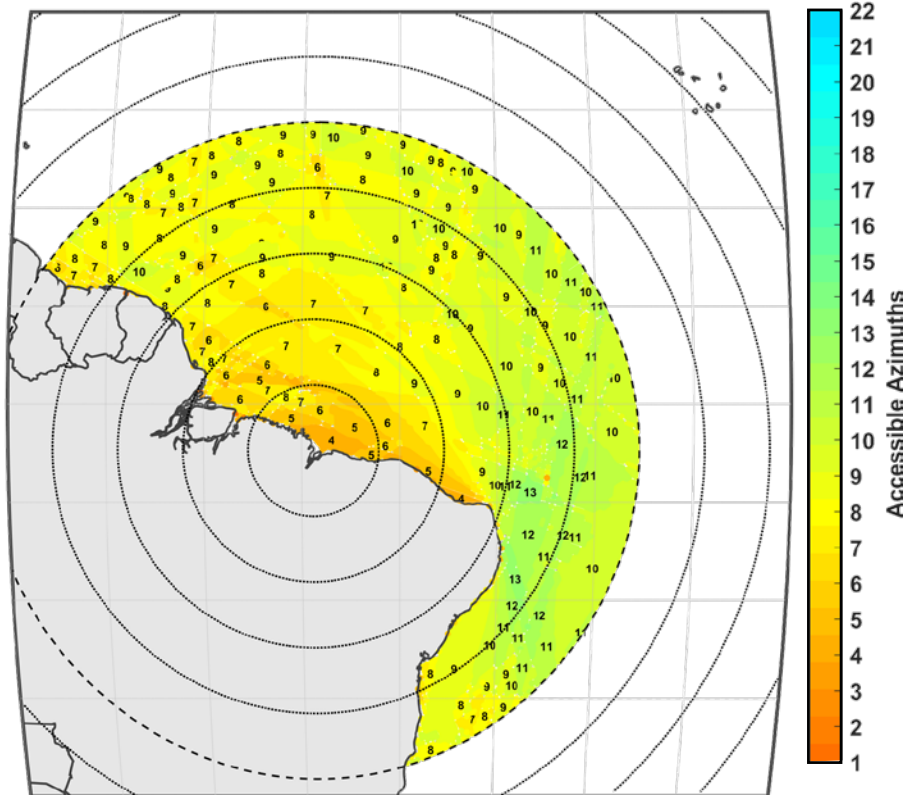






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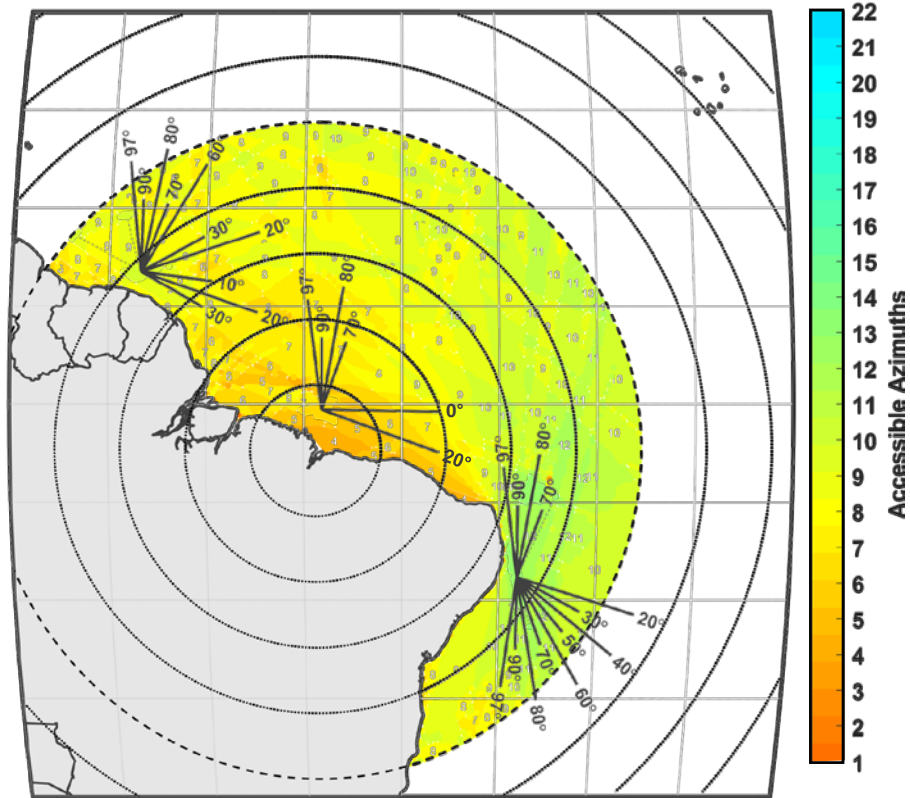
ALCÂNTARA, BRAZIL





SPACEPORT LAUNCH FORECAST

ALCÂNTARA, BRAZIL



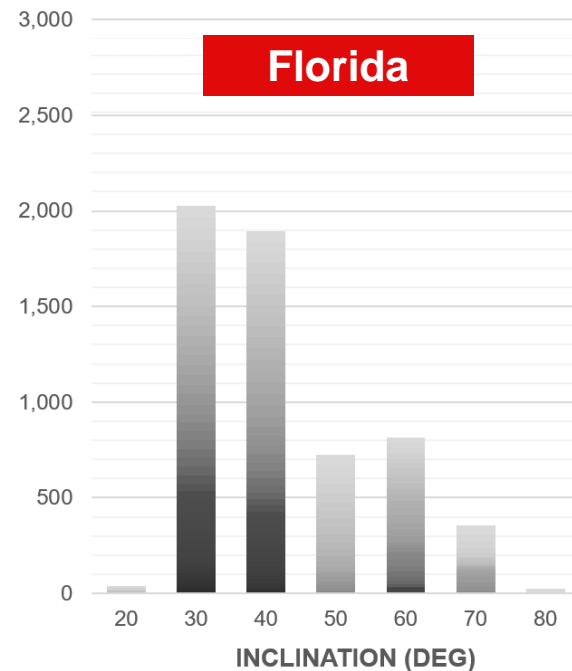
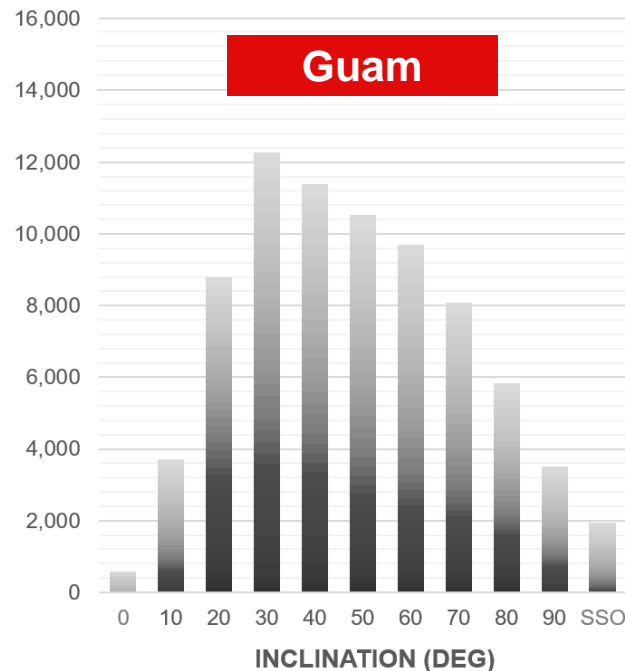
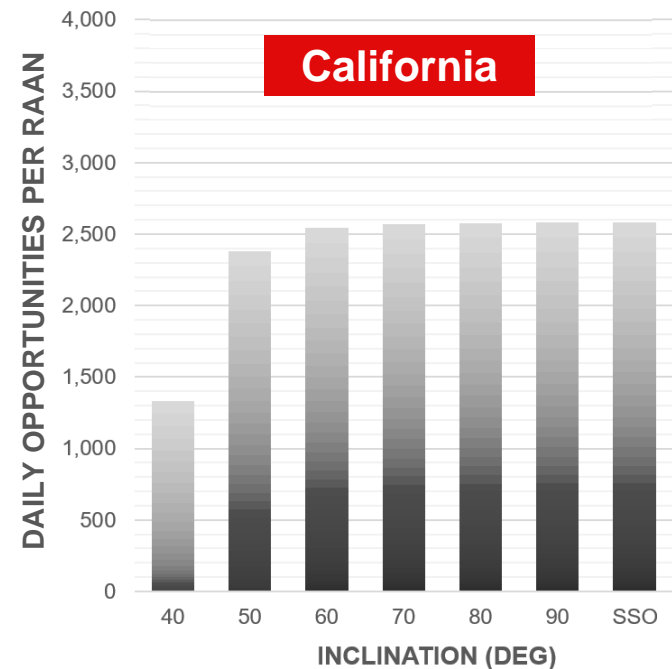
ANY ORBIT, ANY TIME

AIRCRAFT RANGE (NMI)

≤100

500

1000



**U.S. Domestic Launch: Tens of Thousands of Daily Opportunities
0° through SSO**

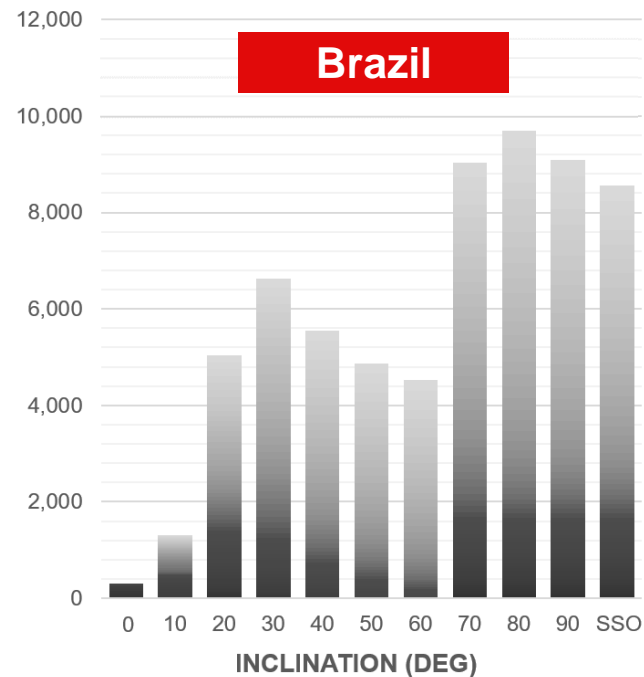
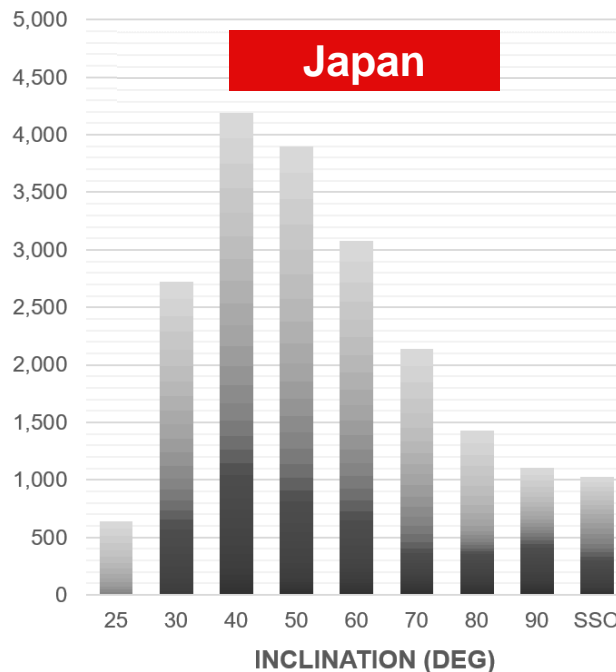
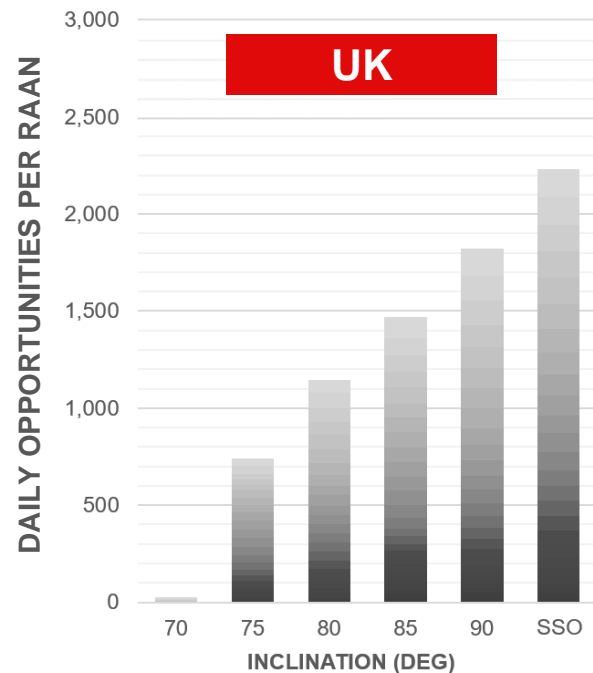
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**Ability to Launch Abroad to More Orbits:
Igniting the New Space Economy Worldwide**

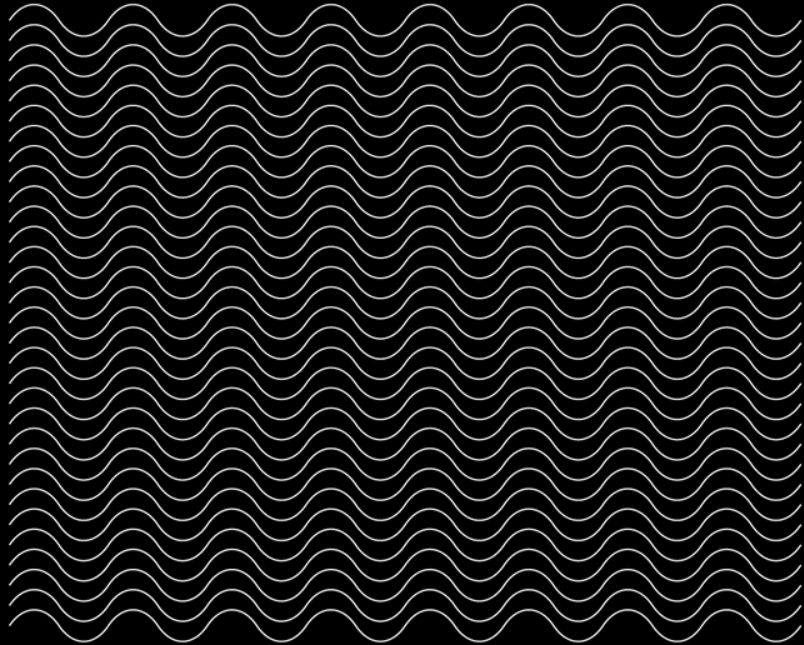
A GLOBAL LAUNCH NETWORK WITH UNMATCHED ACCESS

New spaceport forecast tools prove the potential of transportable air-launch capability

- Explicit, increased range of inclination access relative to fixed-site launch
- Launch availability expansion via backup or alternative launch release sites
 - Northern + southern azimuths to reduce day-of-launch restrictions such as COLA, weather issues, or other scenarios normally ending in a mission scrub
- Established benefit in mission confidence based on increased flexibility
- Substantially increased insight into mission planning aspects such as telemetry asset down-selection, iterative launch opportunity analysis, customer mission profile design, etc.
- Total mission optimization and assurance, predictively avoiding downrange populations, air and sea traffic routes, and potentially restrictive weather



ORBIT



QUESTIONS?

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