

LONDON INSTITUTE OF SPACE POLICY AND LAW

SPACE POLICY AND LAW COURSE

ON-LINE

9 to 11 November 2020

MILITARY USE AND SECURITY

Mark Roberts CBE

RHEA Grp, ISPL Faculty

# MILITARY USES AND SECURITY



Mark Roberts

10 November 2020

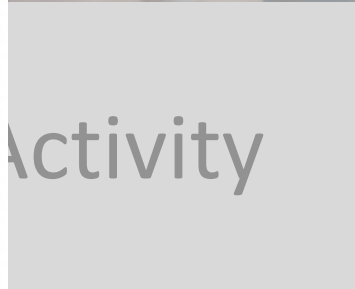
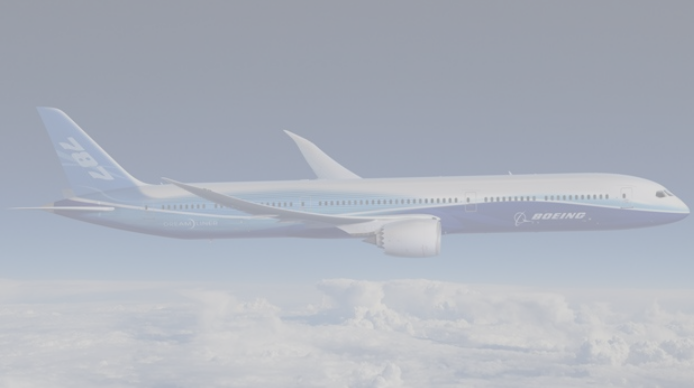
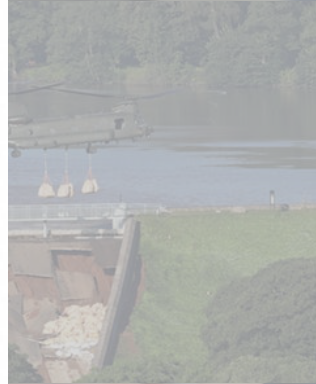
# MILITARY USES AND SECURITY

- Military support functions and Space Weapons
- Space a "war-fighting" domain
- Role of Cyber, Drones and Robotics
- Environmental and humanitarian factors
- Small Satellite Constellations potential and risks

Mark Roberts

10 November 2020





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Activity

# Space as a War-fighting Domain – Contested, Congested, Competitive

- In the future, our potential adversaries will have the capability to hold every one of our critically important national security satellites at risk. The US does not want to see a war that extends to space because nobody wins that war.<sup>1</sup>
- We rely on satellites to connect our global society, forecast the weather, manage our finances, access the internet, expand broadband coverage, trade, deliver television signals, underpin national security and assist aid efforts<sup>2</sup>. A loss or major degradation of space-based infrastructure would have devastating humanitarian and economic consequences, never mind the impact on our ability to conduct military operations on Earth.

1 Air & Space Power Journal – Summer 2018

2 HMG, 2015, National Space Policy

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## National Space Council<sup>3</sup>

Terms of Reference: To consider issues concerning prosperity, diplomacy and national security in, through and from Space, as part of coordinating overall Government policy.

Chancellor of the Exchequer (Chair)

Secretary of State for Foreign and Commonwealth Affairs, and First Secretary of State (Deputy Chair)

Chancellor of the Duchy of Lancaster, and Minister for the Cabinet Office Secretary of State for Defence

Secretary of State for Business, Energy and Industrial Strategy

Secretary of State for Digital, Culture, Media and Sport

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3 [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/896093/Cabinet\\_Committee\\_list\\_and\\_public\\_ToRs.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/896093/Cabinet_Committee_list_and_public_ToRs.pdf)

# Military Use of Space – A Story

Preparation:

- SatCom



# Military Use of Space – A Story

Preparation:

- SatCom
- In Country C<sup>4</sup>
- ImInt
- ComInt
- SigInt



# Military Use of Space – A Story

Preparation:

- SatCom
- Intra & Inter Theatre C<sup>4</sup>
- ImInt
- ComInt
- SigInt



# Military Use of Space – A Story

Operation:

- SatCom
- Intra & Inter Theatre C<sup>4</sup>
  - Command
  - Coordination
  - Control



# Weaponisation of Space

Cyber?!

- ASAT Missiles
- On-Orbit Kinetic Actions
- DEW
- Blinding

# Robotics

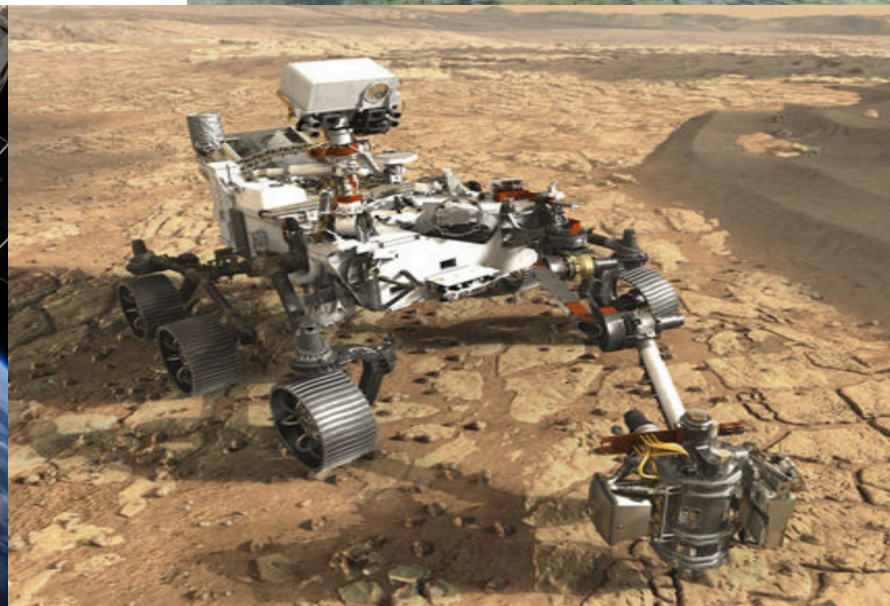
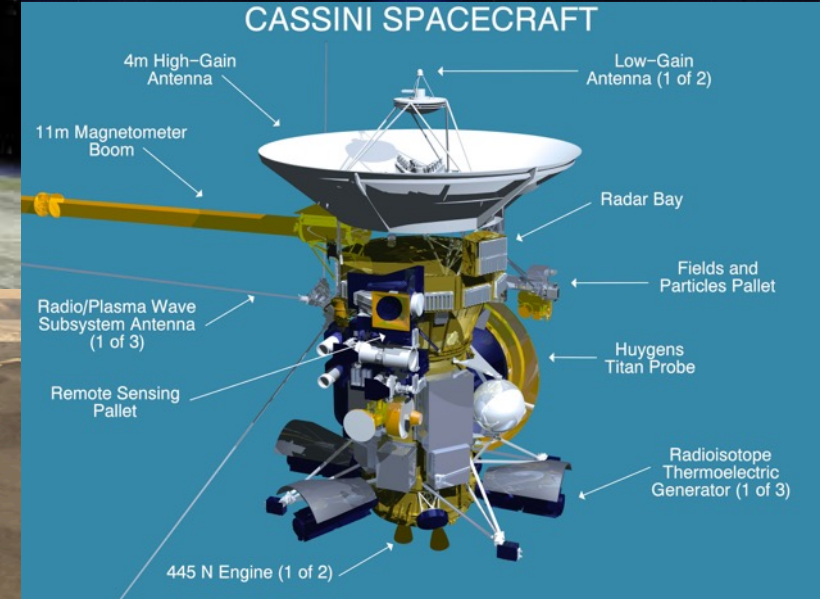
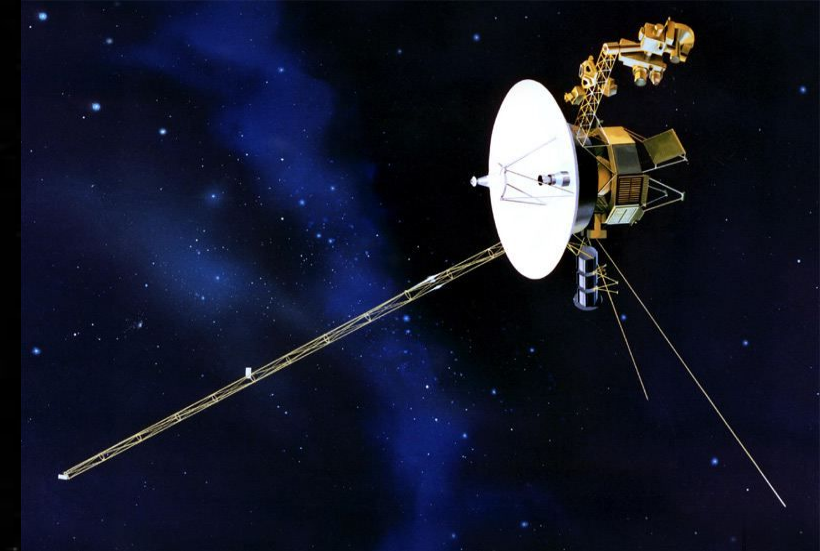


## Space Robots

- Capable of surviving environment
- Performing exploration
- Construction, maintenance, servicing
- Designed to be multi-tasking
- *Cheaper* than humans
- Controlled 'locally' or 'remotely' from earth

## Future (actually now)

- Autonomy and AI
- Navigation/path planning
- Task sequencing
- Task perfection



# Environmental Monitoring

- Atmospheric Characterisation
- Oceanic Characterisation
- Space Characterisation
- Land Characterisation
- Civil-Military

13:20:00 UTC

Temperature

30

20

20

10

0

-10

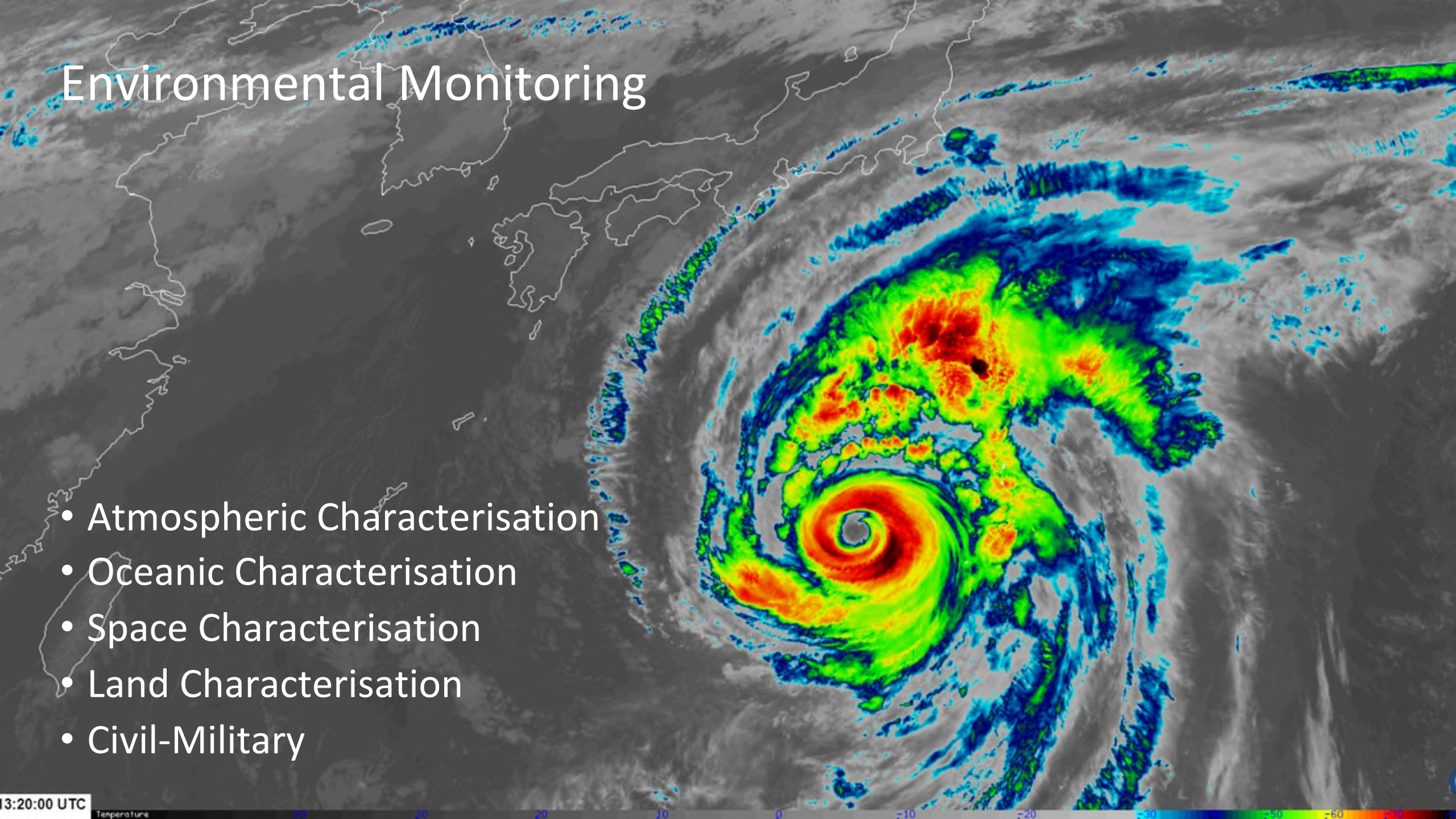
-20

-30

-50

-60

-70



## Atmospheric Characterisation

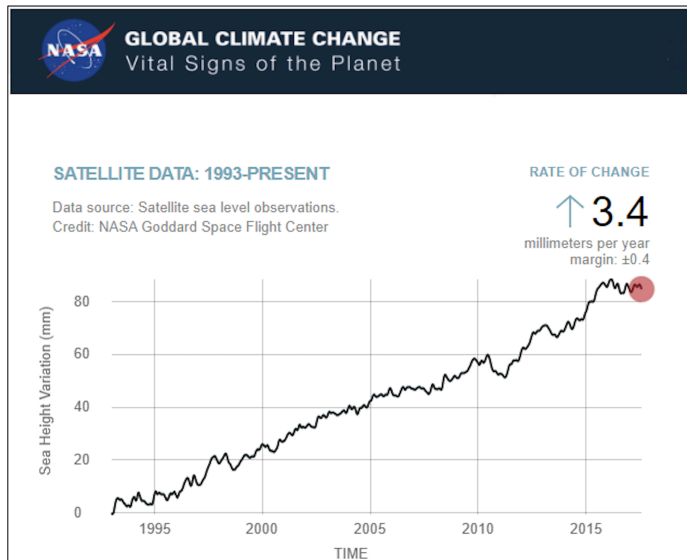
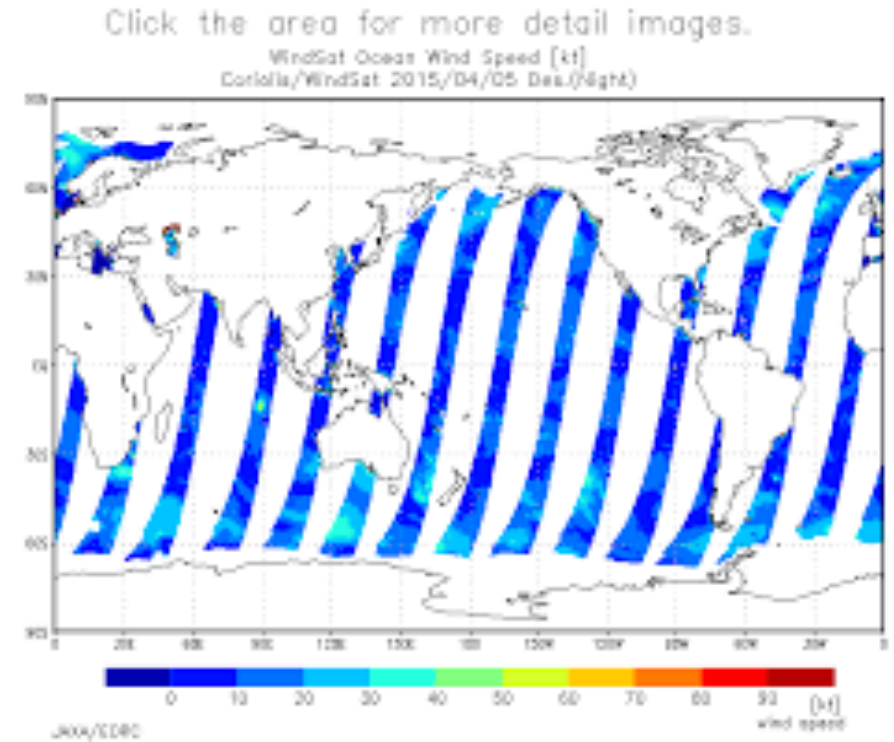
- Wind – WindSat – Microwave
- Comms/Nav Outage Forecasting

## Oceanic Characterisation

- Sea Levels – Jason 2 - RAlt

## Space Characterisation

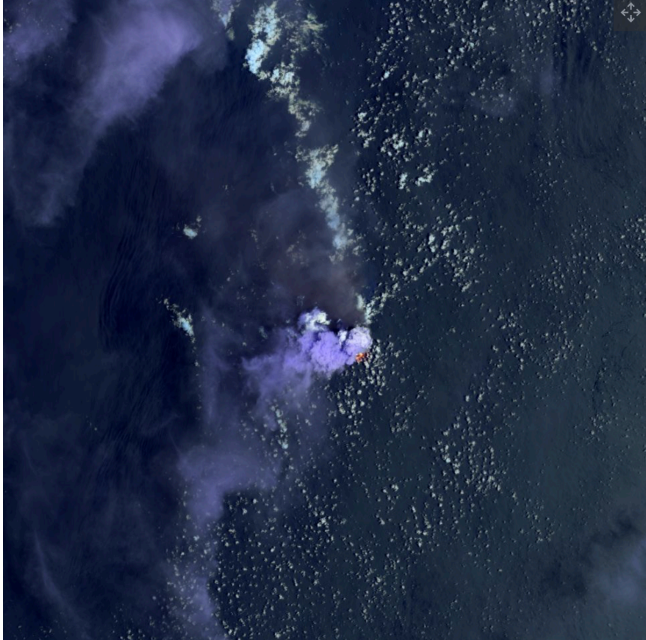
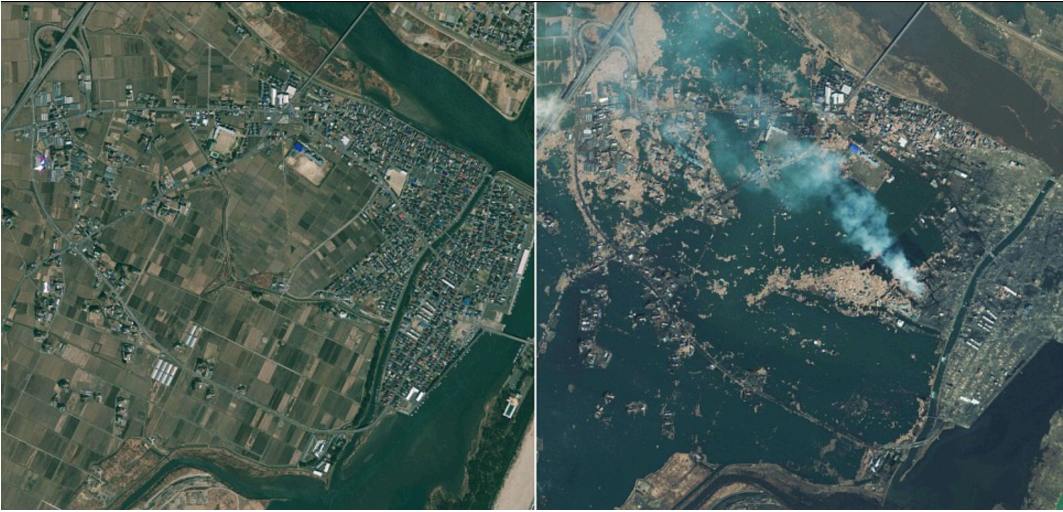
- Flares / Radiation
- Anomaly resolution





# Civil-Military

- Forest Fires
- Tsunami Flooding
- Volcanic Activity



# Humanitarian

- Remotely sensed data
- Communications
- Logistical planning
- Rapid decision-making
- Resource allocation



# Small Sat Constellations – National Security

## Positive

### Enhancement of Security-Oriented Applications:

- Intelligence
- SIGINT
- Bandwidth
- Navigation
- Timing

### Provision of Anti-Satellite (ASAT) Capability

- Kinetic – Direct Impact Attack
- Kinetic – Proximity Attack – Explosion
- Kinetic – Proximity Attack – Capture
- Data Disruption

### Rapid Upgrade Potential

### Enhanced Resilience of Space Systems

### Reconstitution of Space System Functionality

### Launch Speed of Development and COTS

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## Negative

### Increased Orbital Congestion

- Numbers
- Mission Life of Small Satellites
- Insufficient Tracking Capabilities and ‘Stealth’ Satellites
- Manoeuvrability

### Overcrowded Radio Frequencies

### Danger to People, Property and the Environment

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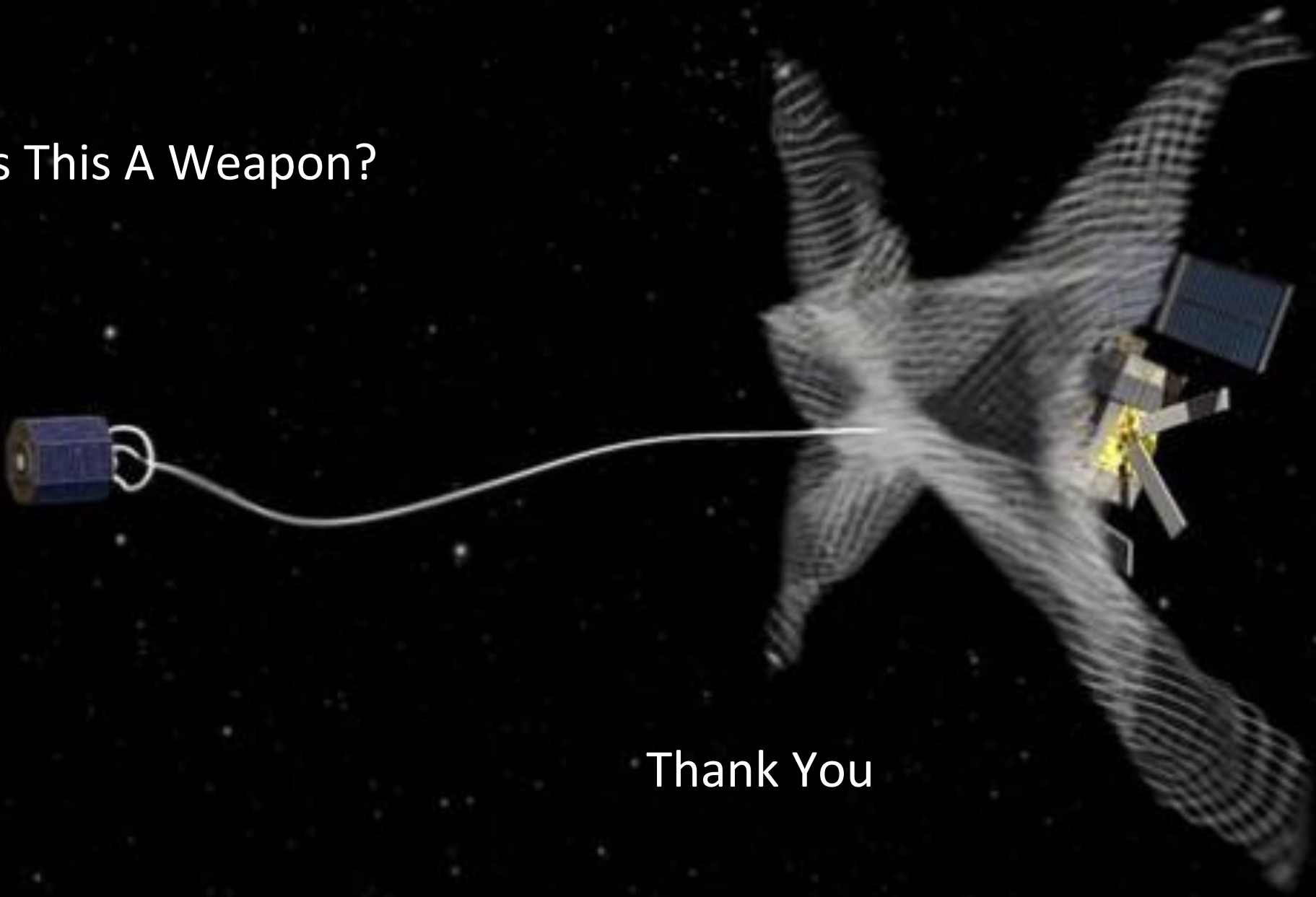
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## On Balance – GOOD! with caution

Is This A Weapon?



Thank You