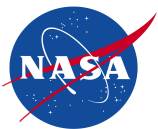




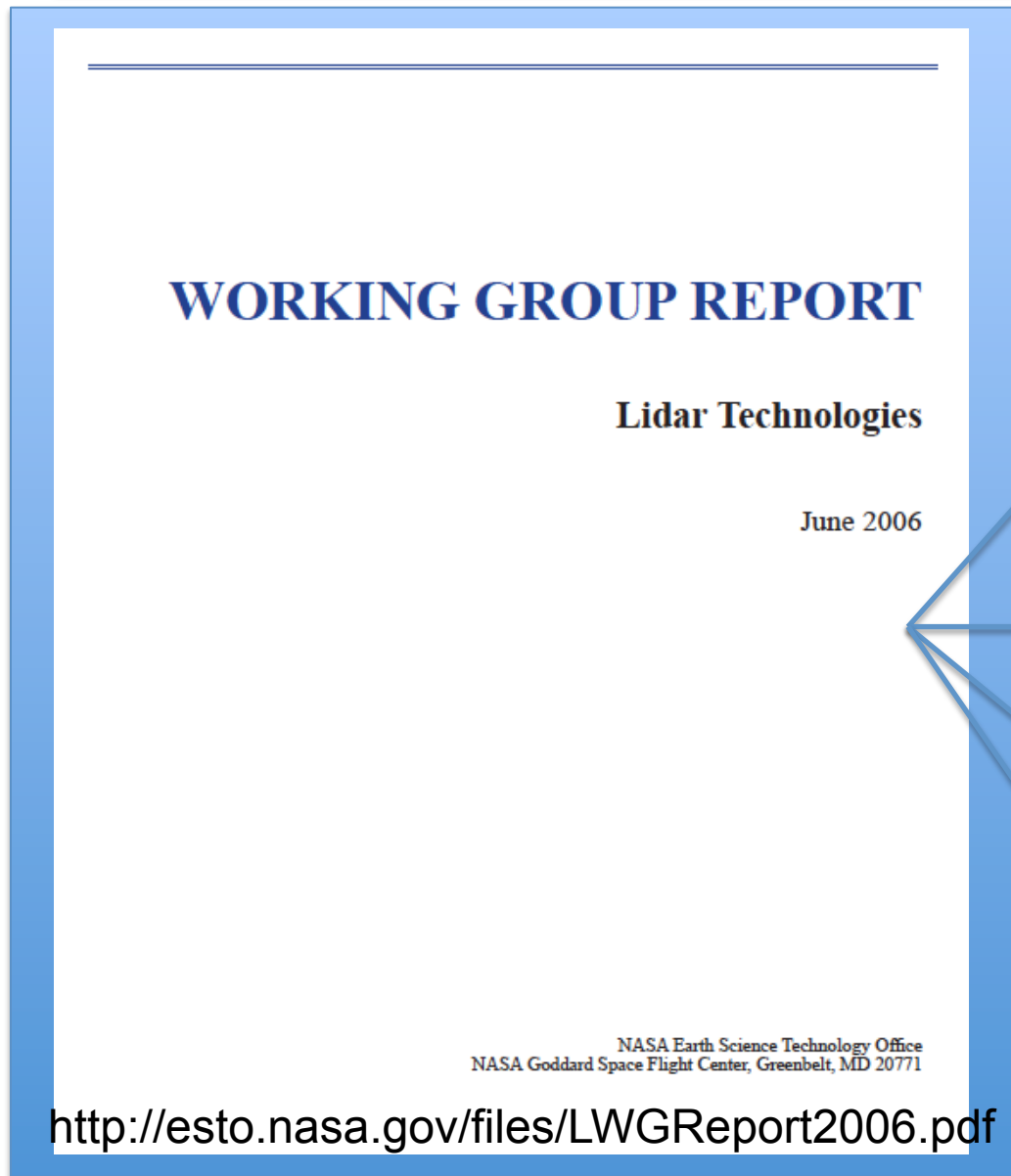
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# NASA ESTO Lidar Investment Strategy Update

Azita Valinia  
NASA ESTO



# Background

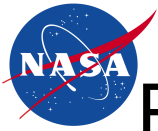


NRC Decadal Survey

ESTO IIP Call

ESTO ACT Call

ESTO AIST Call



## Purpose of the ESTO 2015 Lidar Strategy Update

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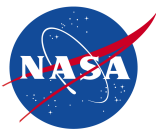
- The last ESTO Lidar investment strategy is almost a decade old. **State of the art has progressed and new areas have been entering the scene** (e.g. SmallSat instruments)
- **Update strategy** by identifying and summarizing key technology requirements and performance parameters based on measurement themes: **Atmospheric chemistry, Atmospheric dynamics, Ocean and Land topography**
- Opportunity for **community to give input and play a role in shaping ESTO's future investment strategy**



# How will the final report be used?

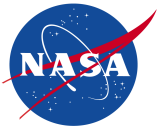
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- Help **ESTO** to update its investment strategy for the next decade
- Use the input for **upcoming ESTO AOs**
- **Inform the decadal survey** on the status of technology maturity
- Seek **partnership opportunity** with other agencies, industry, academia
- Identify **emerging new technology trends** and help infuse it into existing and future concepts



# 2006 Report Structure

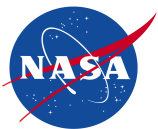
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# Approximate 2016 Report Structure

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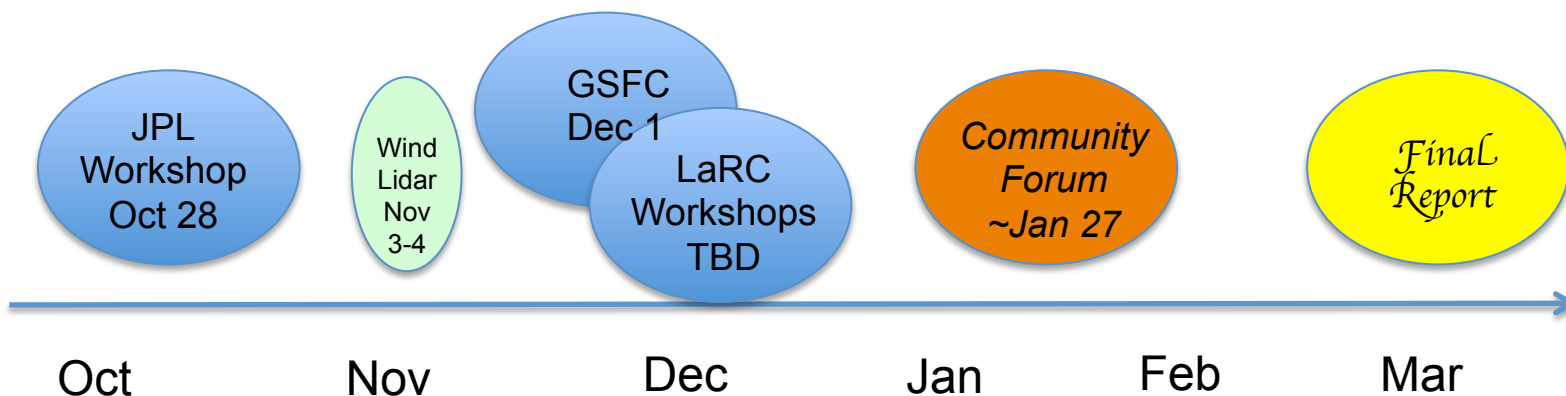
- Summary of the 2006 report
- Measurement areas
- Technology options with performance parameters
- Prioritization
- Strategic Plan Forward

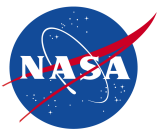


# Process & Timeline

- 3 1-day workshops
  - GSFC, JPL, LaRC
- 1 Community Forum (*Y'all come!*)
  - Likely on the **East** coast

Target date: January 27, 2016 or sooner





# Lidar Technologies White Paper Input Site Available online ~ mid November to Jan 31

Technology Empowers Our Future

[Back To ESTO](#)

### ESTO Lidar Technology Investment Strategy Update White Paper Upload

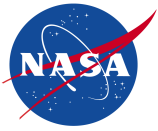
**Please upload your White Paper:** (The file must be in PDF, Doc or Docx format.)

No file selected.

**Please enter the letters displayed:** HODCED

Click to change security code

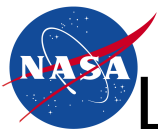




# Lidar Study Team POCs

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- Azita Valinia – NASA/ESTO Study Lead
- Jason Hyon – JPL Lead
- Terry Doiron – GSFC Lead
- Keith Murray – LaRC Lead
- Dave Tratt – Aerospace Lead
- William Lotshaw – Aerospace Transmitter SME
- Kevin Gaab – Aerospace Receiver SME
- Lesley Pearson – Aerospace Data Systems SME
- Pavel Ionov – Aerospace Winds POC
- David Mayo – Aerospace Coordinator



# Laser Remote Sensing Techniques & Applications

## Differential Absorption Lidar (DIAL)

- Carbon Dioxide
- Ozone, Water Vapor

## Doppler Lidar

- Wind Field

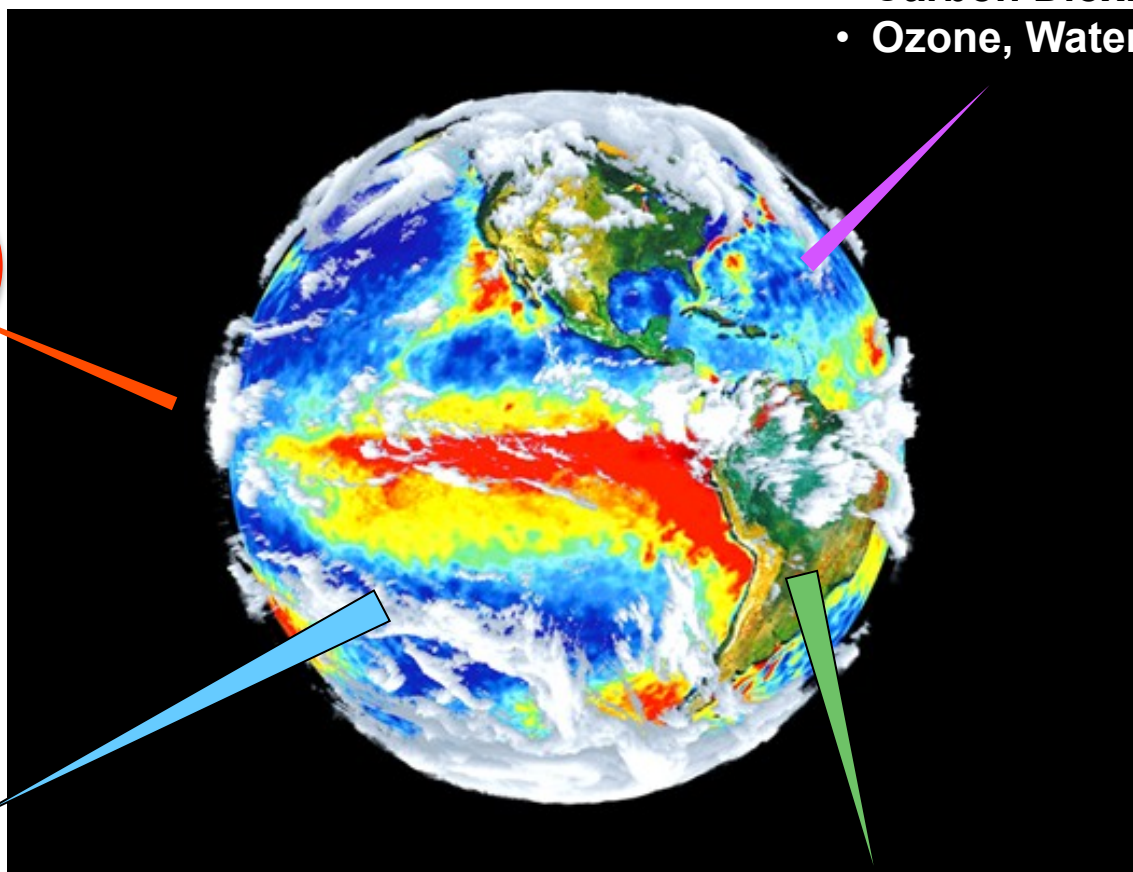
Our focus today...

## Backscatter Lidar

- Clouds
- Aerosols
- Phytoplankton Physiology
- Ocean Carbon/Particle Abundance

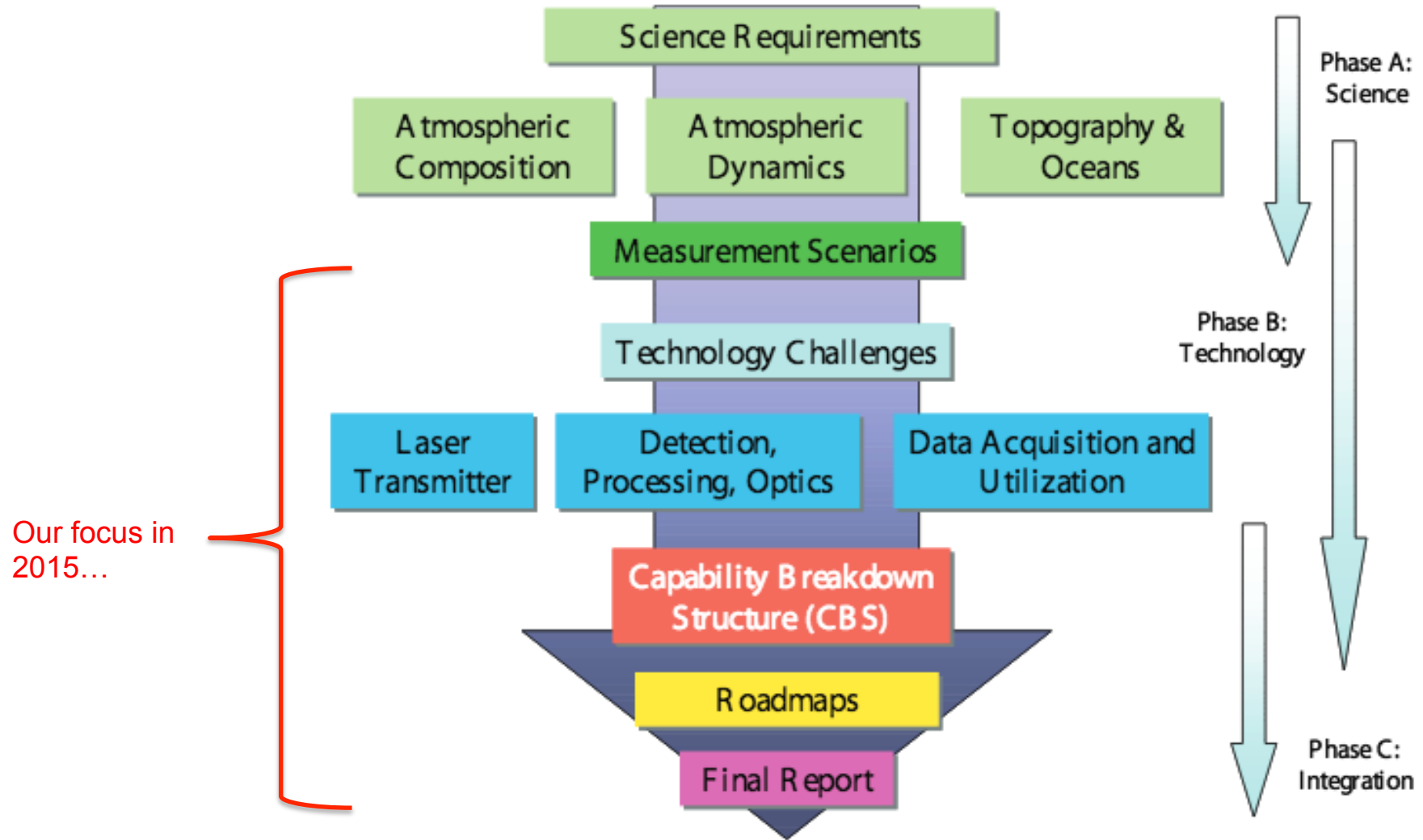
## High-Precision Ranging & Altimetry

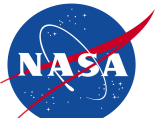
- Geodetic Imaging
- Vegetation Structure/Biomass
- Earth Gravity Field



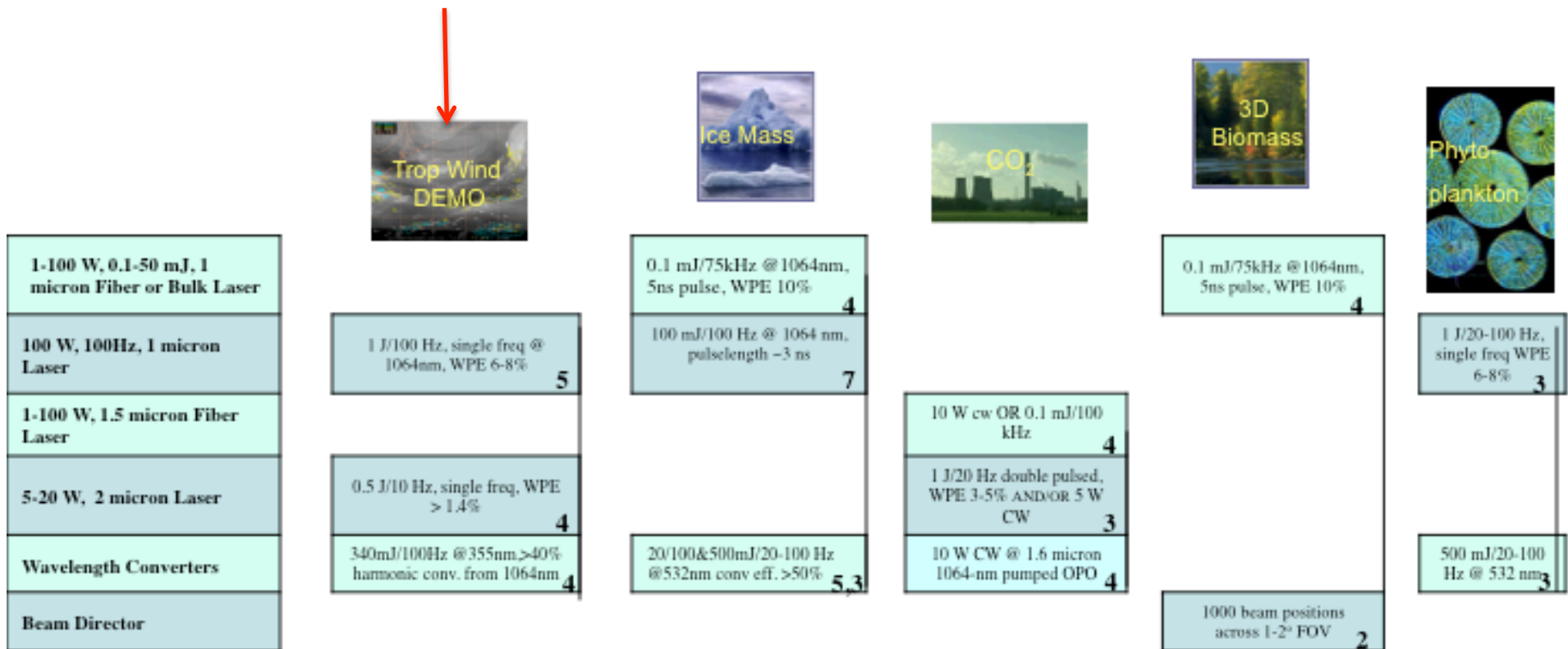


# Requirement Generation (2005)





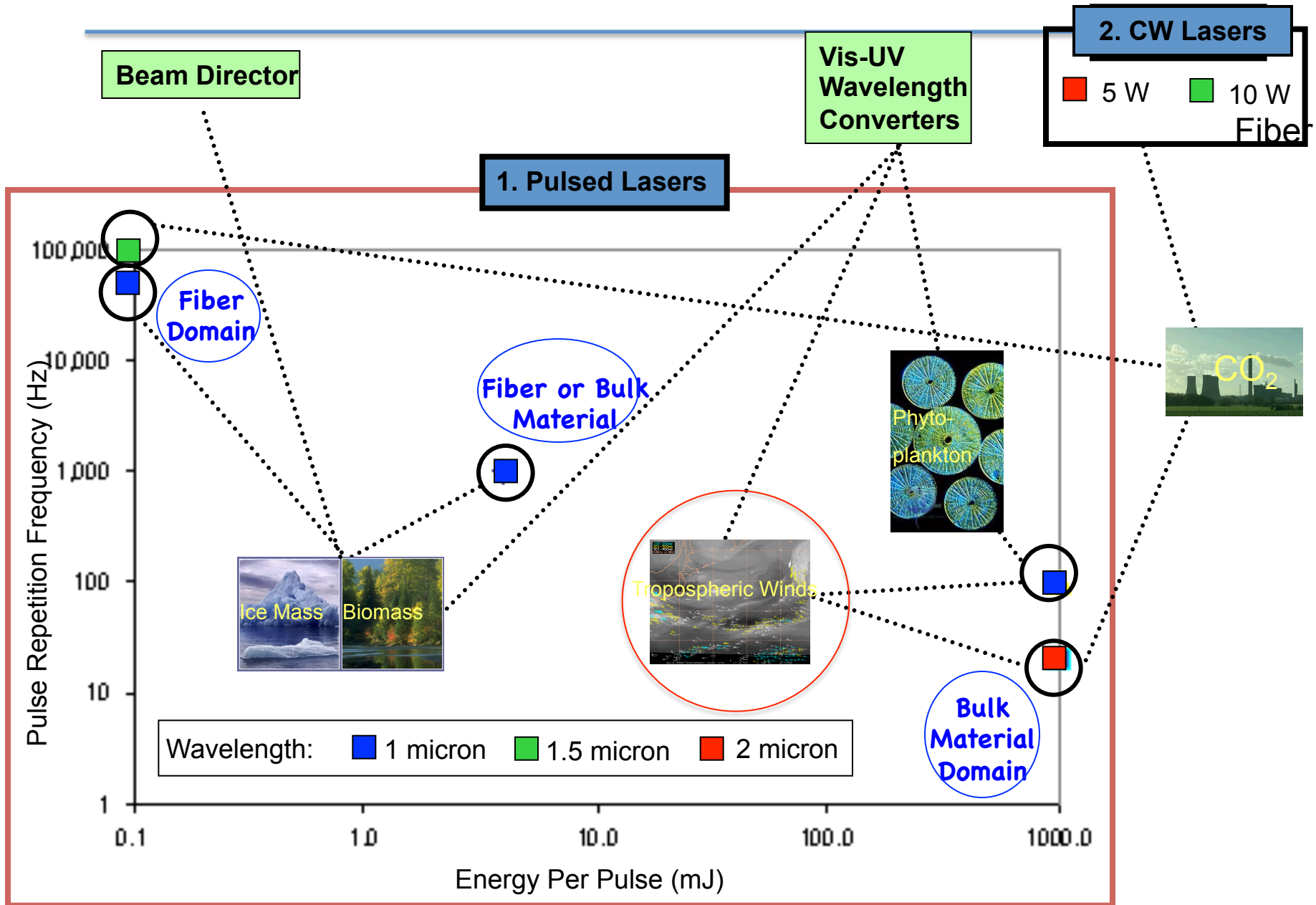
# Laser Transmitter Priorities (2005)

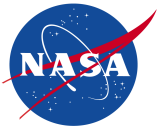


\* Current TRL designated in lower right corner.



# Required Laser Transmitter Capabilities (2005)





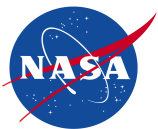
## Also, we'll capture emerging technologies

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Component	Sub system	SOA	Future	Infusion Gap
Fiber amplifier	Transmitter	10 Watt	18 Watt	Space qualification

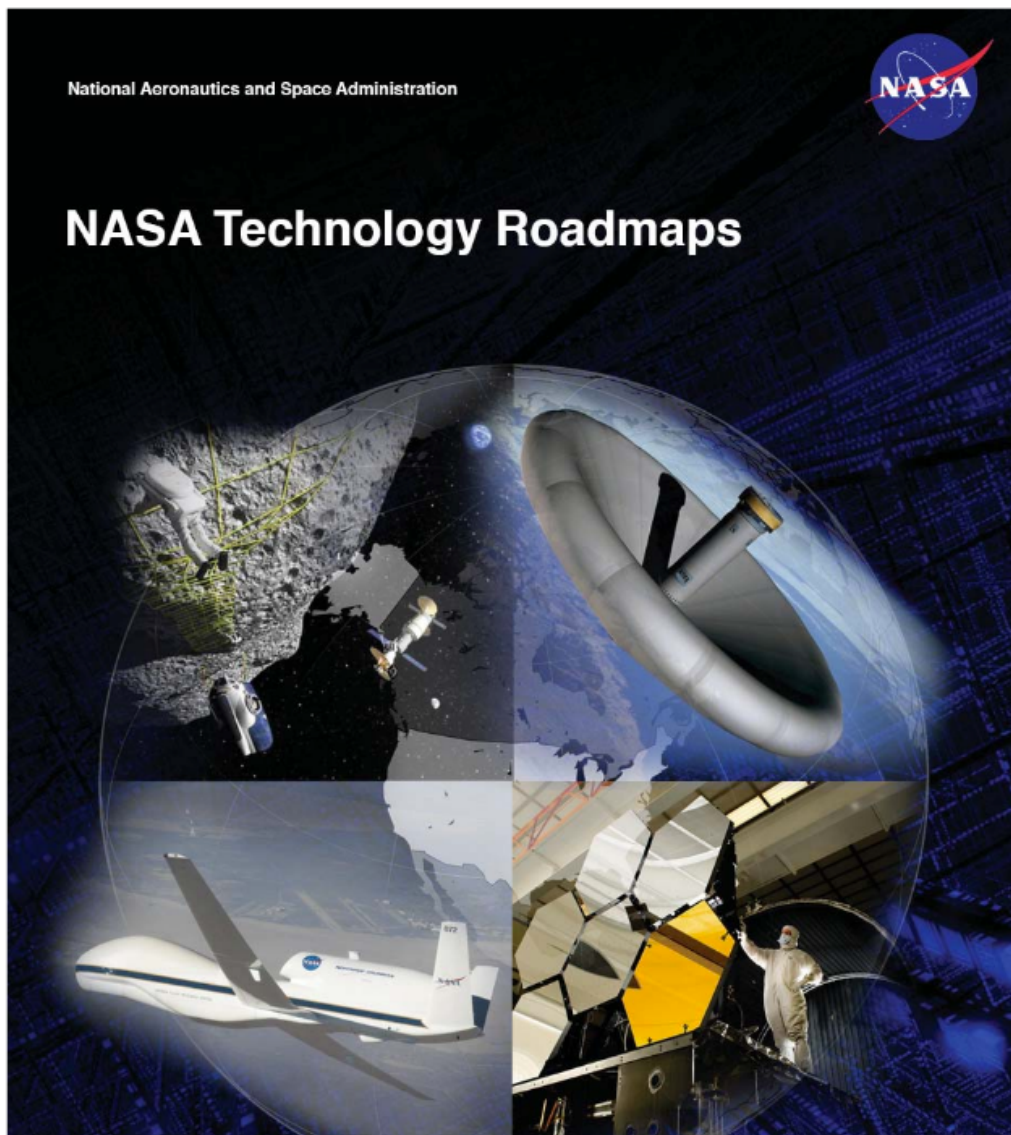
Other examples:

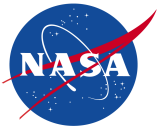
SmallSat Lasers



# We'll also mine NASA Tech Roadmaps

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# Summary

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- Play a role in shaping ESTO's investment strategy
- Several ways to contribute (direct input to ESTO website, community forum)
- Or reach out to me and our Aerospace team with your inputs today