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# Data Acquisition Methods and Collection Strategies

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REGIONAL TRAINING ON THE USE OF DRONES, SATELLITE IMAGERY AND GIS

JUNE 07, 2018

ANDREW STEELE

SALES ENGINEERING MANAGER, DIGITALGLOBE ASIA-PACIFIC

See a better world.



Size: 5.7 m (18.7 ft) x 2.5 m (8 ft)

Mass: 2800 kg (6200 lbs)

Mission Life: 7.25 years

Estimated Cost: \$500M



Size: 5.7 m (18.7 ft) x 2.5 m (8 ft)

- clear and detailed imagery
- agile collection system
- multi spectral imaging bands

Mass: 2800 kg (6200 lbs)

- extremely accurate
- daily capacity equivalent to India

Mission Life: 7.25 years

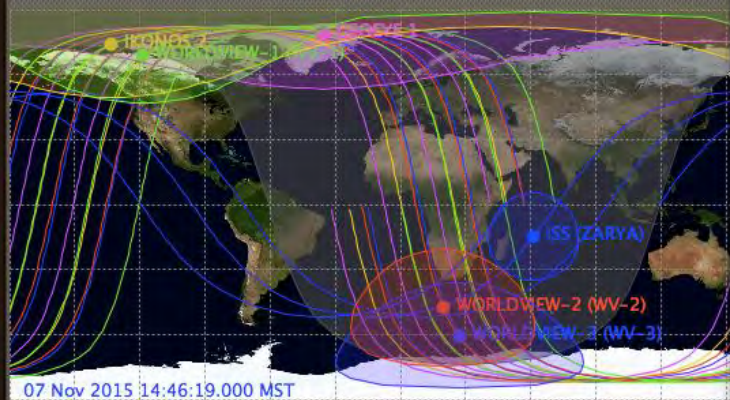
- estimated 12 year lifespan

Estimated Cost: \$500M

- 1000+ customers



2D Earth Window - 1

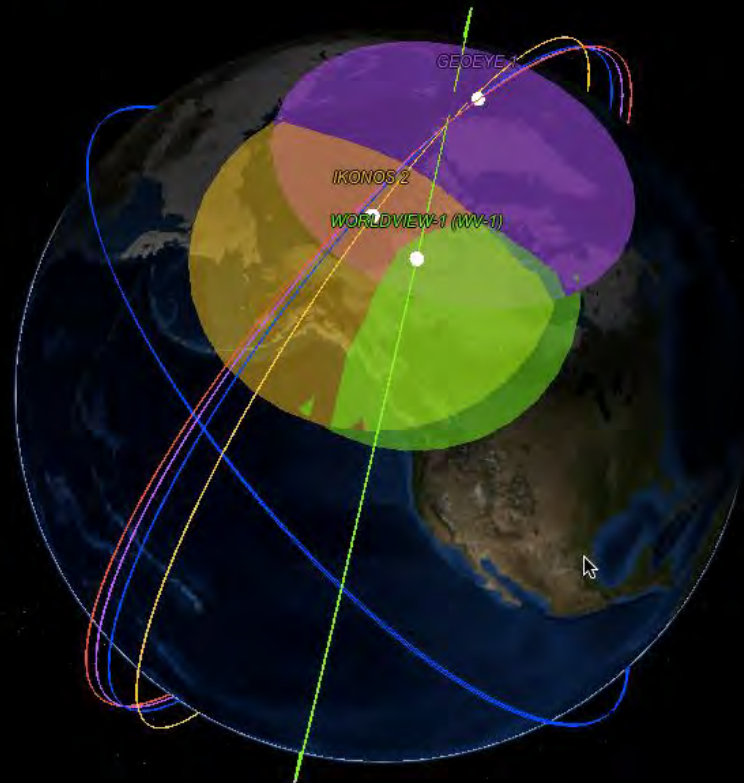


07 Nov 2015 14:46:19.000 MST

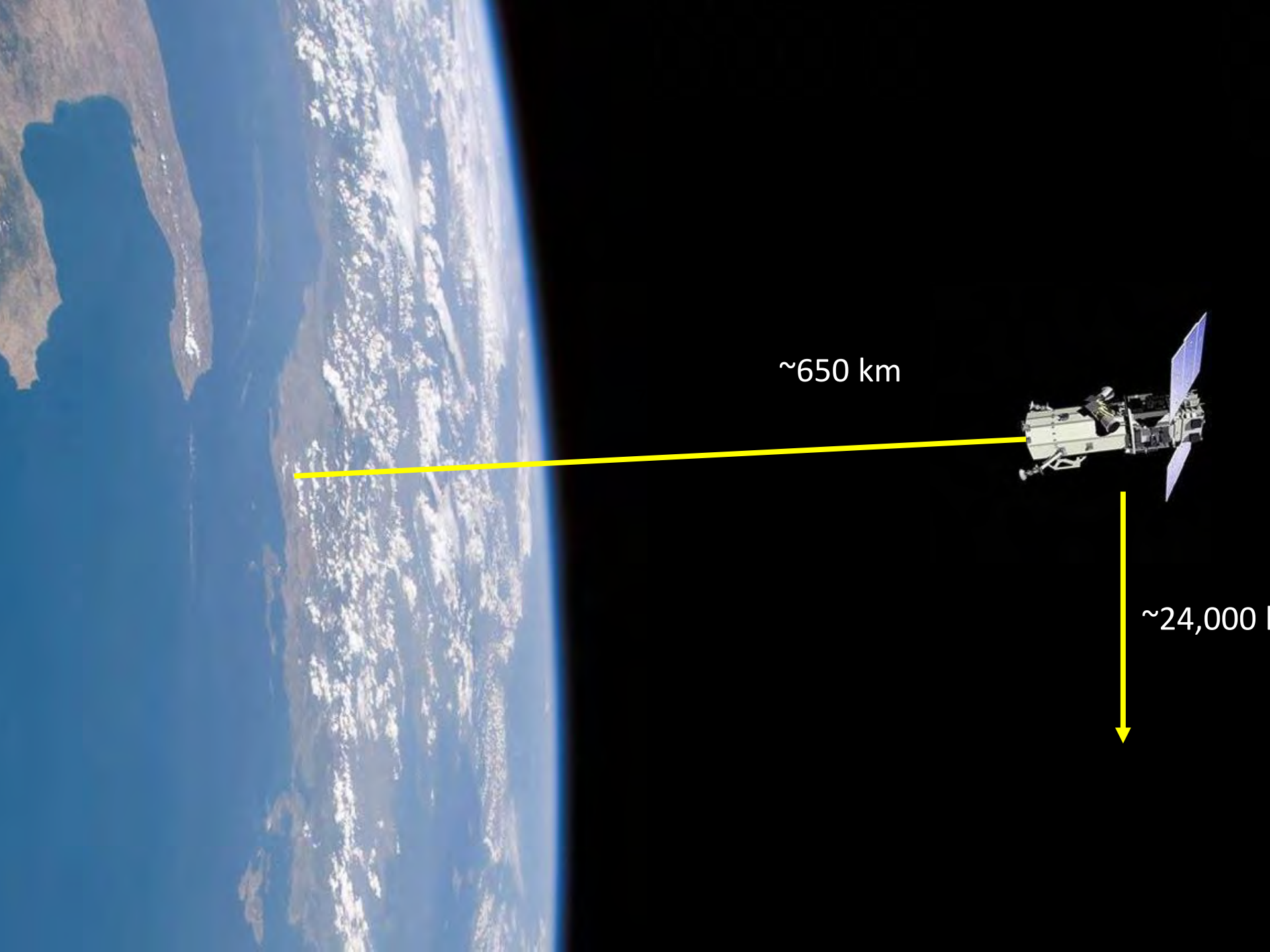
Object List

- Satellites
  - ISS (ZARYA)
  - IKONOS 2
  - WORLDVIEW-1 (WV-1)...
  - GEOEYE 1**
  - WORLDVIEW-2 (WV-2)...
  - WORLDVIEW-3 (WV-3)...
- Ground Stations

3D Earth Window - 1



2000 Km



~650 km

~24,000 km



WV3 Colorado

Kevin Bullock

2

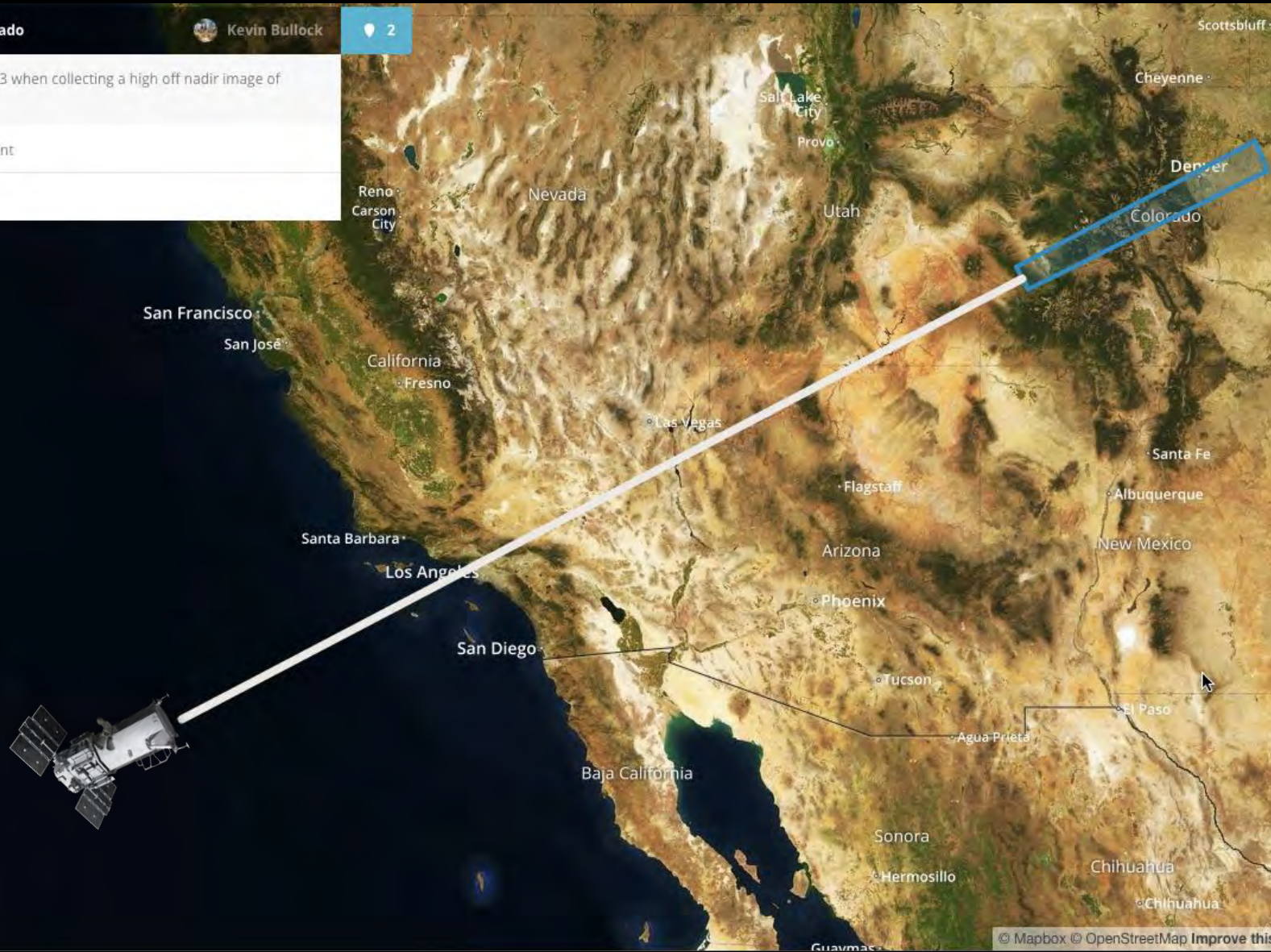
description of WV-3 when collecting a high off nadir image of Colorado

Image Footprint

WorldView-3



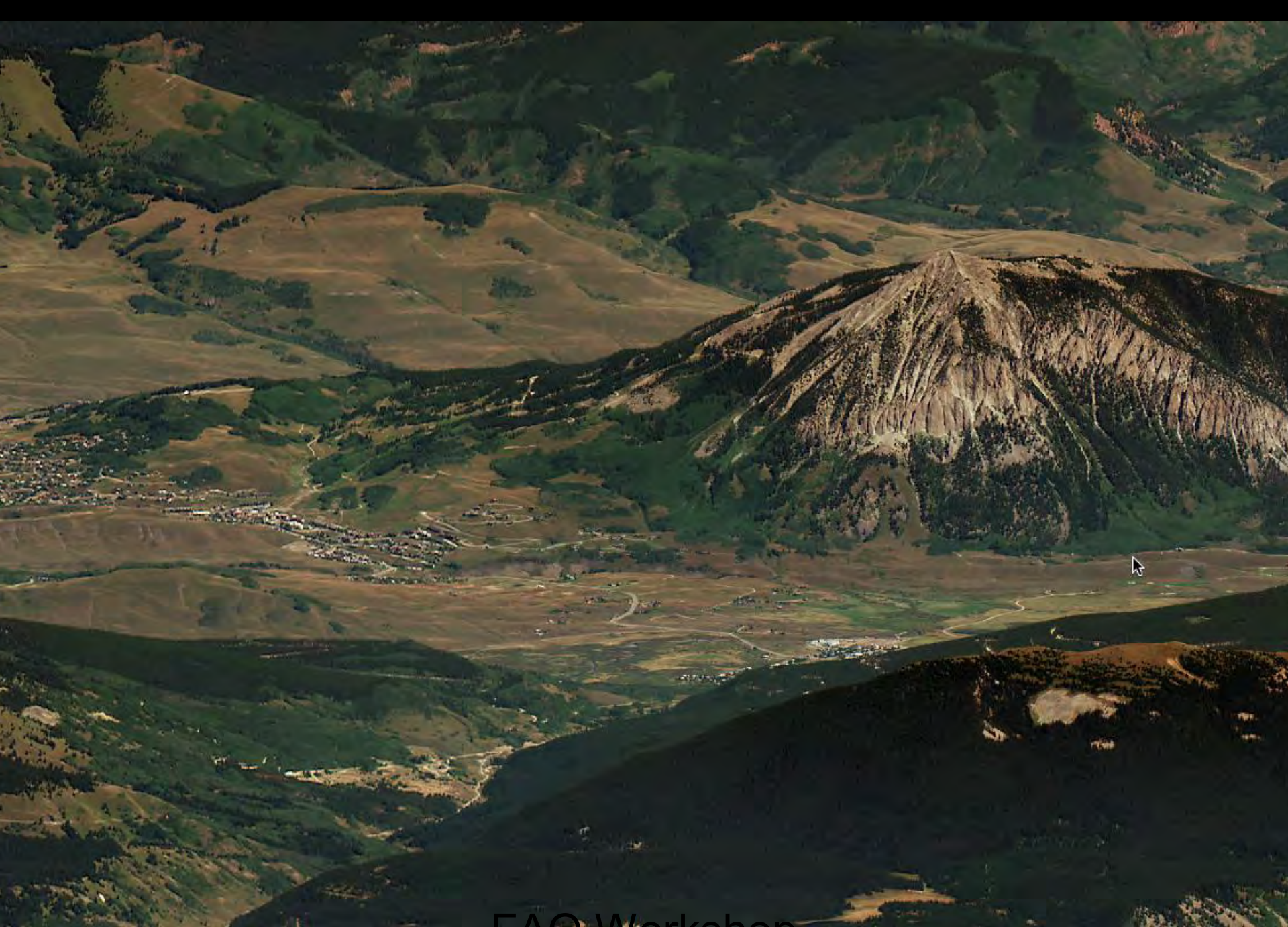
Mapbox

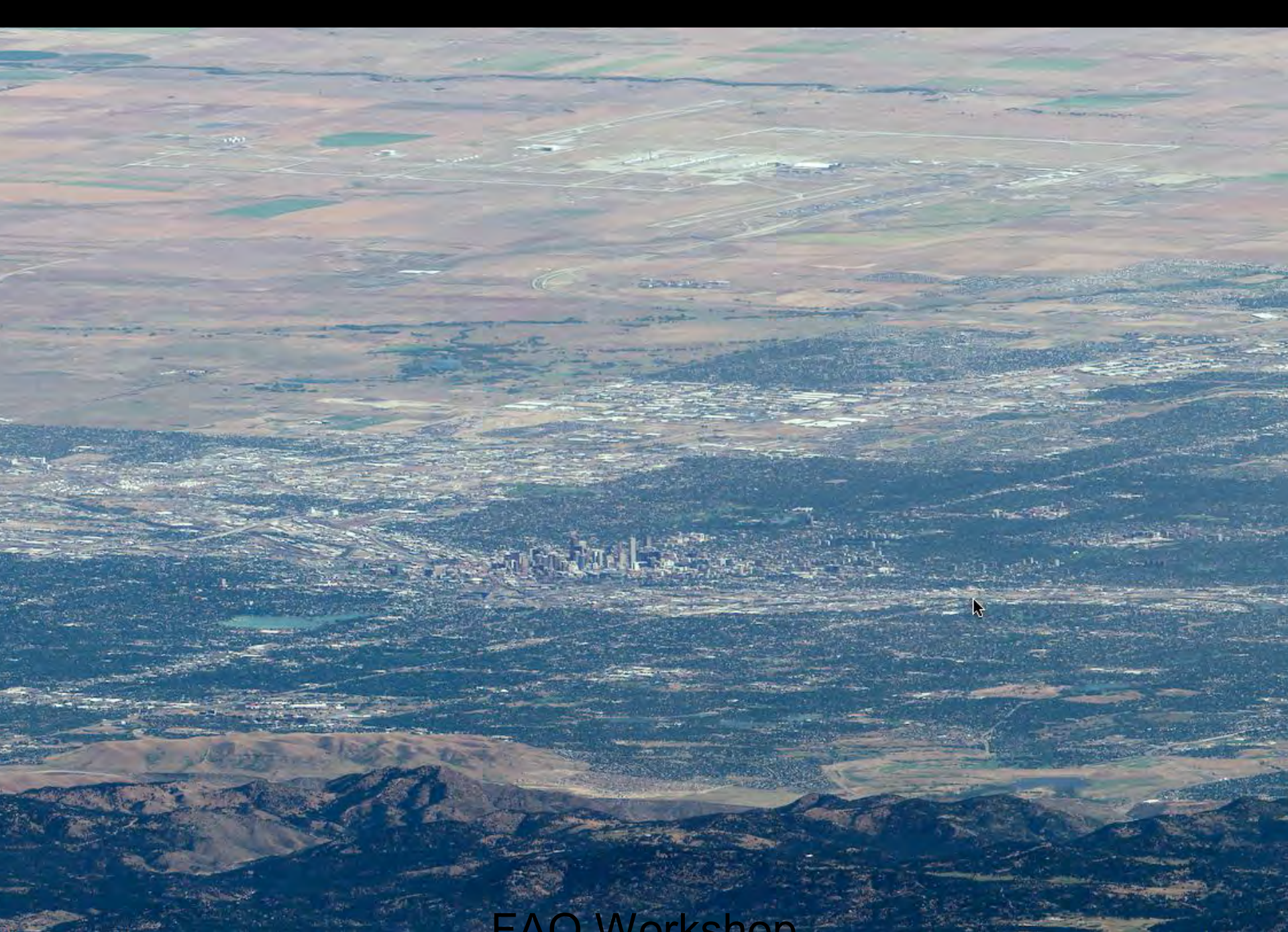




FAO Workshop







FAQ Workshop



# What is the Content Plan?



25 years of Climatology data analyzed at the quarter cell for EVERY landmass cell in the world.

Each cell includes multiple layers of demand detail such as resolution, bands, stereo vs mono, Off Nadir Angle, Cloud Cover, etc.



Each cell has been assigned a category and refresh schema: [Suburban](#), [Emerging](#), [Monitoring and Rural](#).

Each cell is assigned 3 types of 3 month primary tasking windows: [El Niño](#), [La Niña](#), and [Neutral](#) weather patterns.

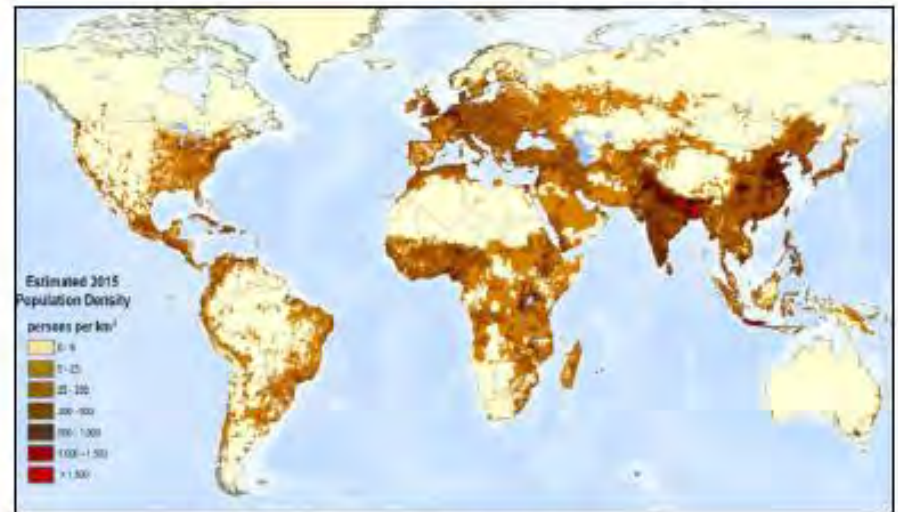
# The Cell Categories



Category	Sub Category	Population	Lights at Night	Tasking Window Uplift	Refresh	% Coverage within 365 days	30 CM Incremental Coverage					50 CM Color Incremental Coverage					Contains or Intersects +Metro
							1 Year	2 Year	3 Year	4 Year	5 Year	1 Year	2 Year	3 Year	4 Year	5 Year	
Suburban	High	1 Million +	High	3 months	Annual	90%	42%	60%	65%	80%	95%	65%	75%	85%	90%	95%	YES
	Med	500K - 1M	High	3 months	Annual	90%	38%	50%	60%	75%	90%	65%	75%	85%	90%	95%	YES
	Low	100K - 500K	High	3 months	Annual	90%	35%	45%	55%	70%	85%	60%	70%	80%	90%	95%	Some
Emerging	High	50K - 100K	High to Medium	3 months	Bi-Annual	80%	35%	45%	55%	70%	85%	60%	65%	75%	90%	95%	Some
	Low	20K - 50K	Medium to Low	3 months	Bi-Annual	80%	30%	40%	50%	65%	80%	60%	65%	75%	90%	95%	Some
Rural	High	10K-20K	Medium to Low	3 months	Tri-Annual	65%	25%	35%	45%	60%	75%	60%	65%	75%	85%	95%	NO
	Low	< 10K	Low	3 months	Tri-Annual	65%	25%	35%	45%	60%	75%	60%	65%	75%	85%	95%	NO
Monitoring	Standard	mix	mix	12 months	Continuous	90%	40%	55%	70%	85%	95%	60%	75%	85%	90%	95%	Some
	SecureWatch	mix	mix	12 months	Continuous	90%	40%	55%	70%	85%	95%	60%	75%	85%	90%	95%	Some
	Combination	mix	mix	12 months	Continuous	90%	40%	55%	70%	85%	95%	60%	75%	85%	90%	95%	Some



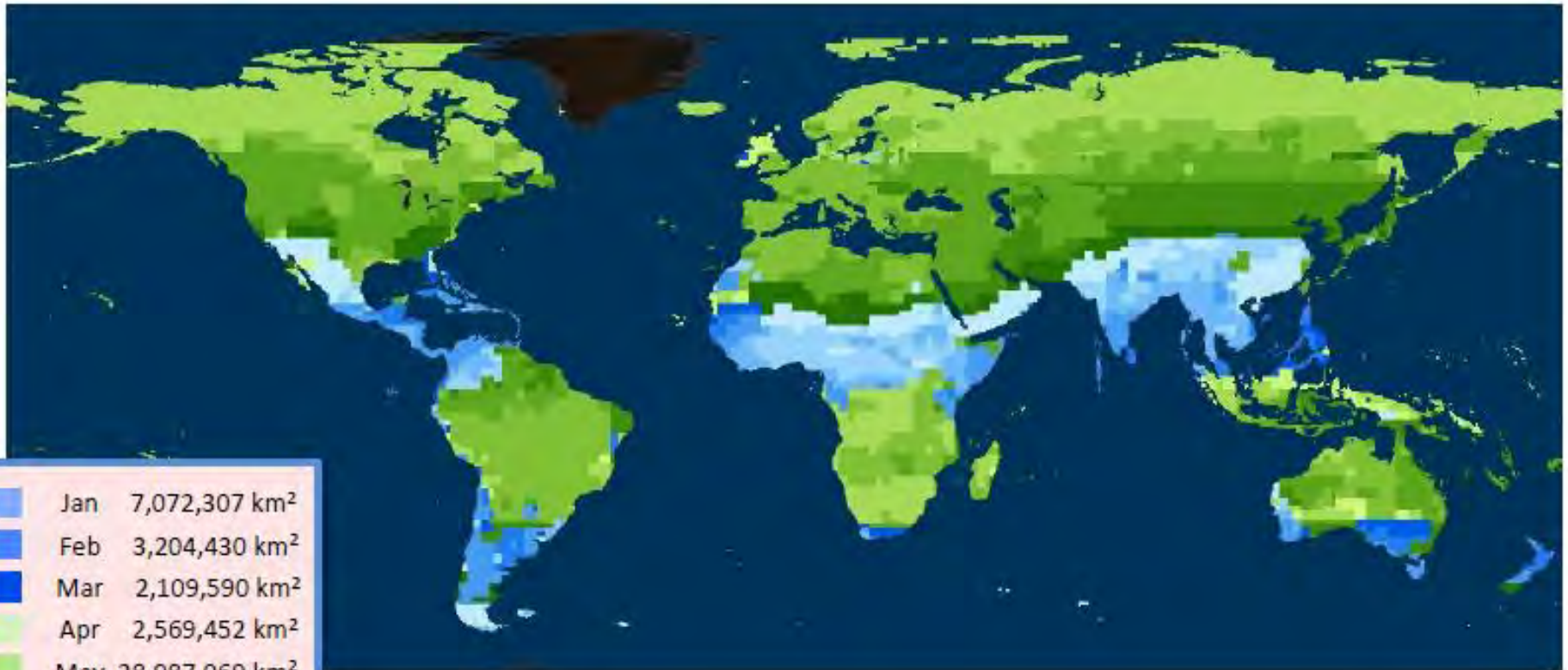
Lights at Night



2015 Population Density

# Global Tasking Strategy

Start Tasking by Month for a 'Neutral' year



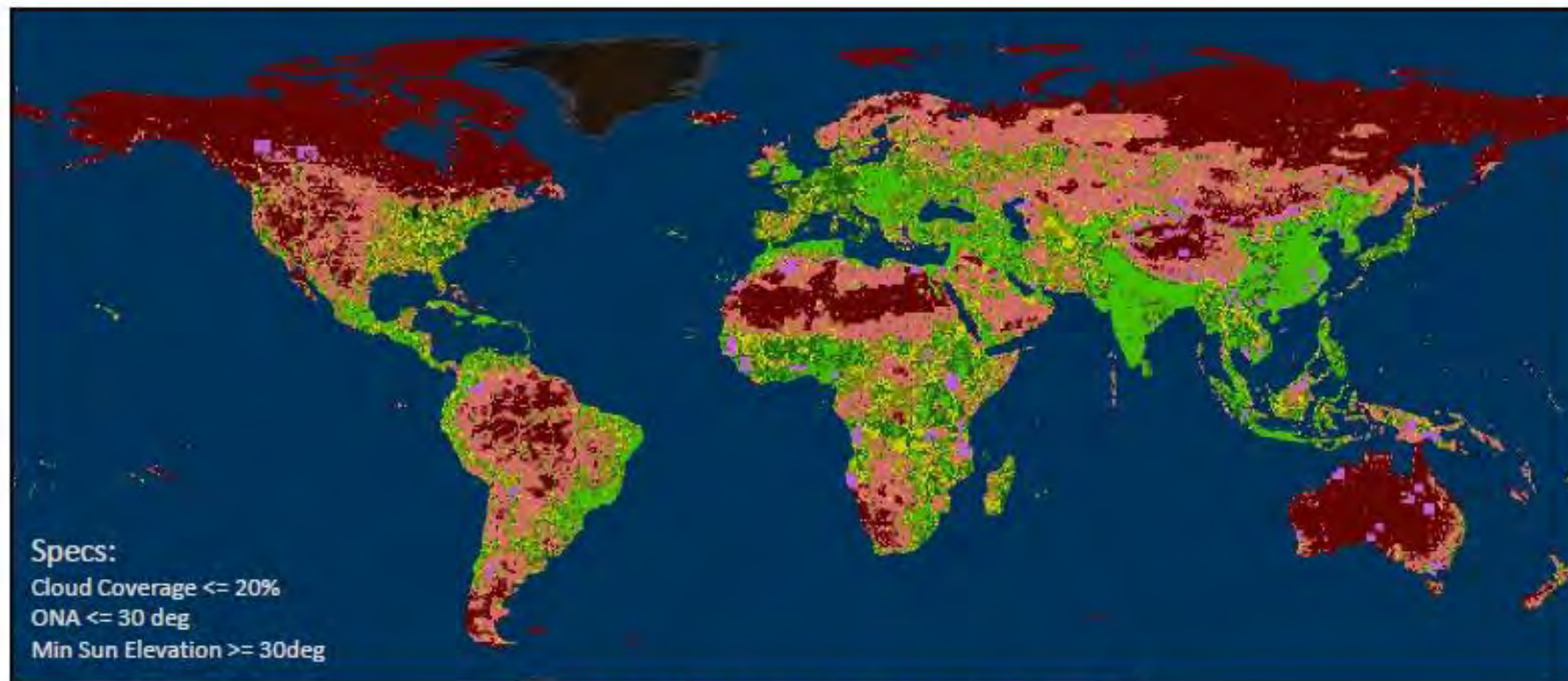
Jan	7,072,307 km <sup>2</sup>
Feb	3,204,430 km <sup>2</sup>
Mar	2,109,590 km <sup>2</sup>
Apr	2,569,452 km <sup>2</sup>
May	28,987,069 km <sup>2</sup>
Jun	31,950,867 km <sup>2</sup>
Jul	30,306,058 km <sup>2</sup>
Aug	13,595,918 km <sup>2</sup>
Sep	7,090,516 km <sup>2</sup>
Oct	8,971,348 km <sup>2</sup>
Nov	8,849,137 km <sup>2</sup>
Dec	6,873,939 km <sup>2</sup>

Tasking Area = 151,580,632 km<sup>2</sup>

Specs:  
Cloud Coverage <= 20%  
ONA <= 30 deg  
Min Sun Elevation >= 30deg

# Global Tasking Strategy Categories

DG Defined

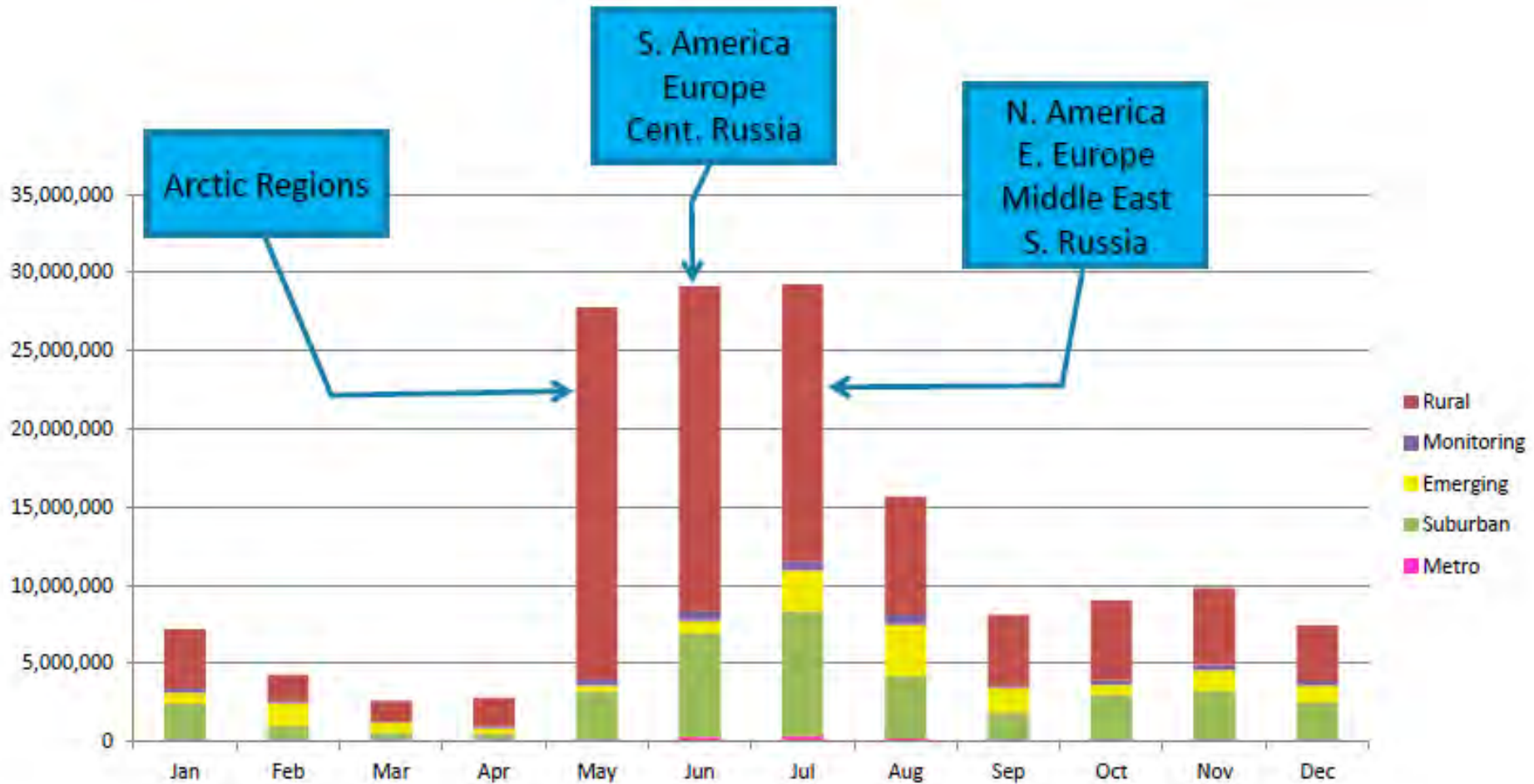


High Suburban	18,429,450 km <sup>2</sup>	12.9%	26.1%
Med Suburban	4,727,566 km <sup>2</sup>	3.3%	
Low Suburban	14,109,657 km <sup>2</sup>	9.9%	
High Emerging	9,952,316 km <sup>2</sup>	7.0%	16.1%
Low Emerging	12,976,490 km <sup>2</sup>	9.1%	
High Rural	36,999,826 km <sup>2</sup>	25.9%	55.1%
Low Rural	41,610,923 km <sup>2</sup>	29.2%	
Monitoring	3,915,098 km <sup>2</sup>	2.7%	2.7%
<b>Total</b>	<b>142,720,273 km<sup>2</sup></b>		

Percentages are based on total area for the year

# Global Tasking Strategy

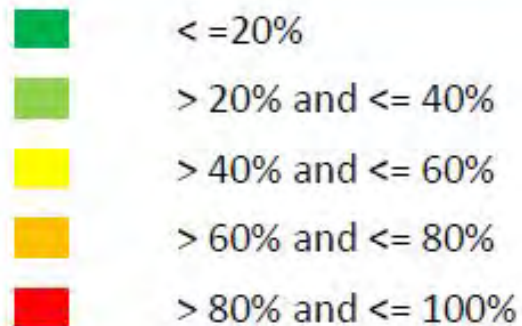
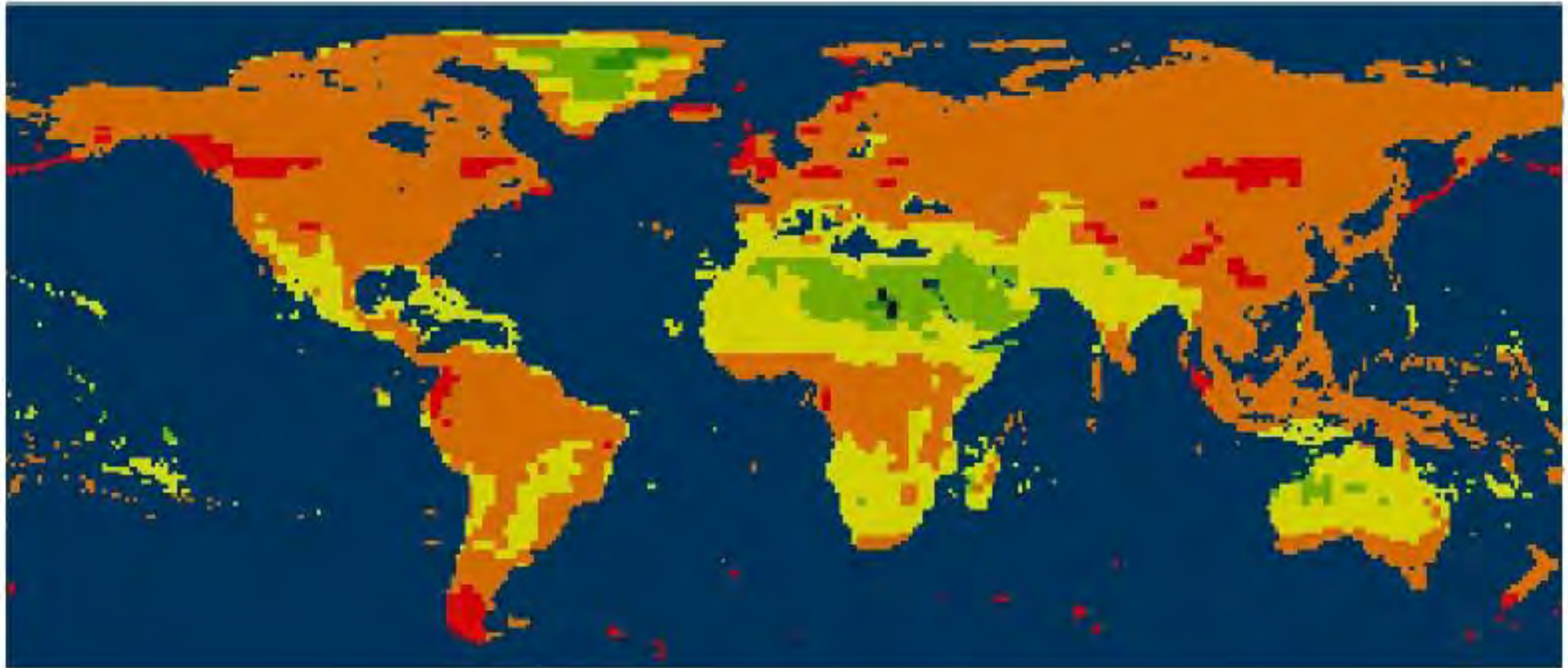
## Start Tasking Periods and Area





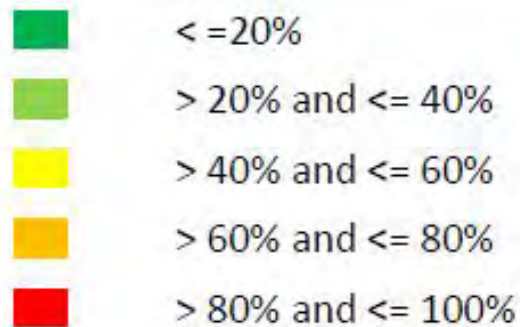
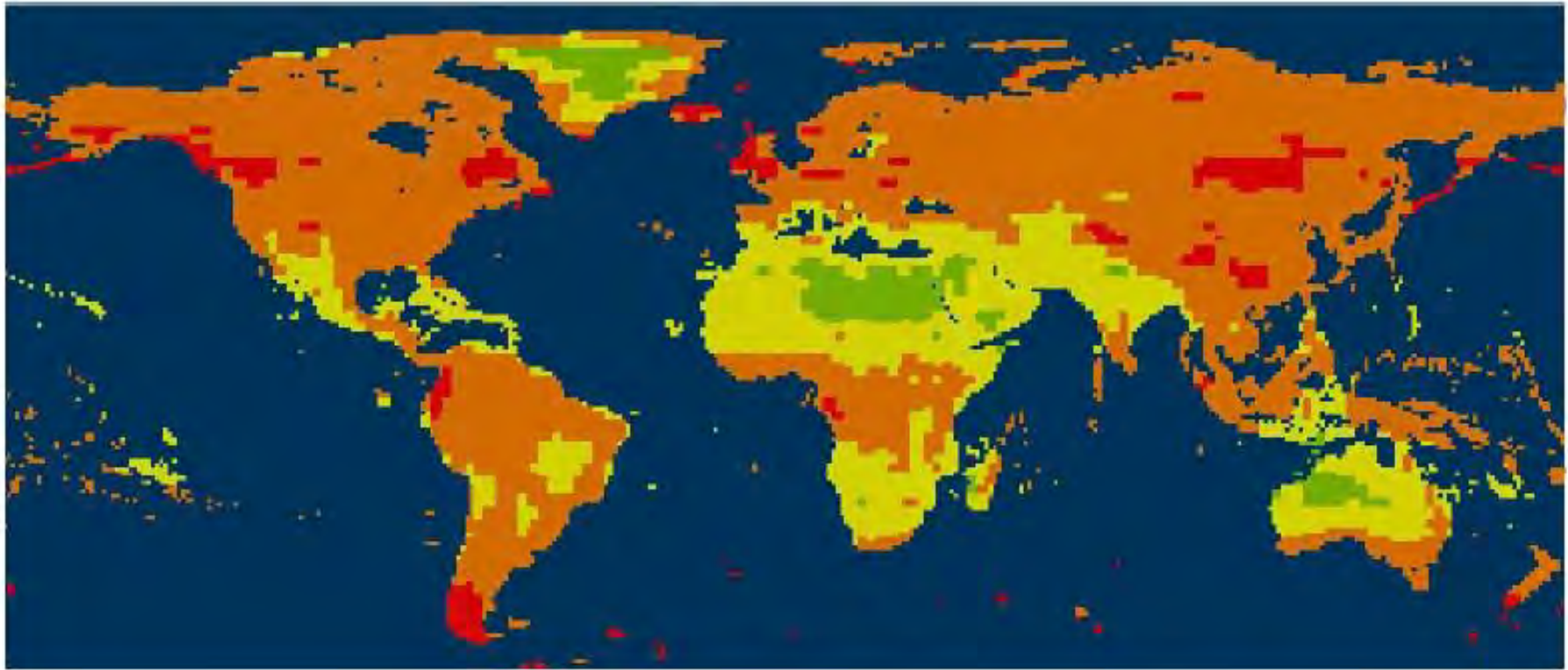
# Global Tasking Strategy

## Average Yearly Cloud Coverage for a 'Neutral' year



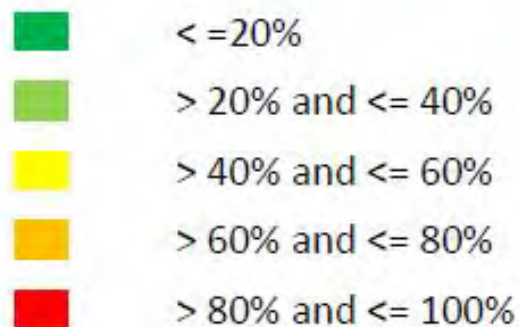
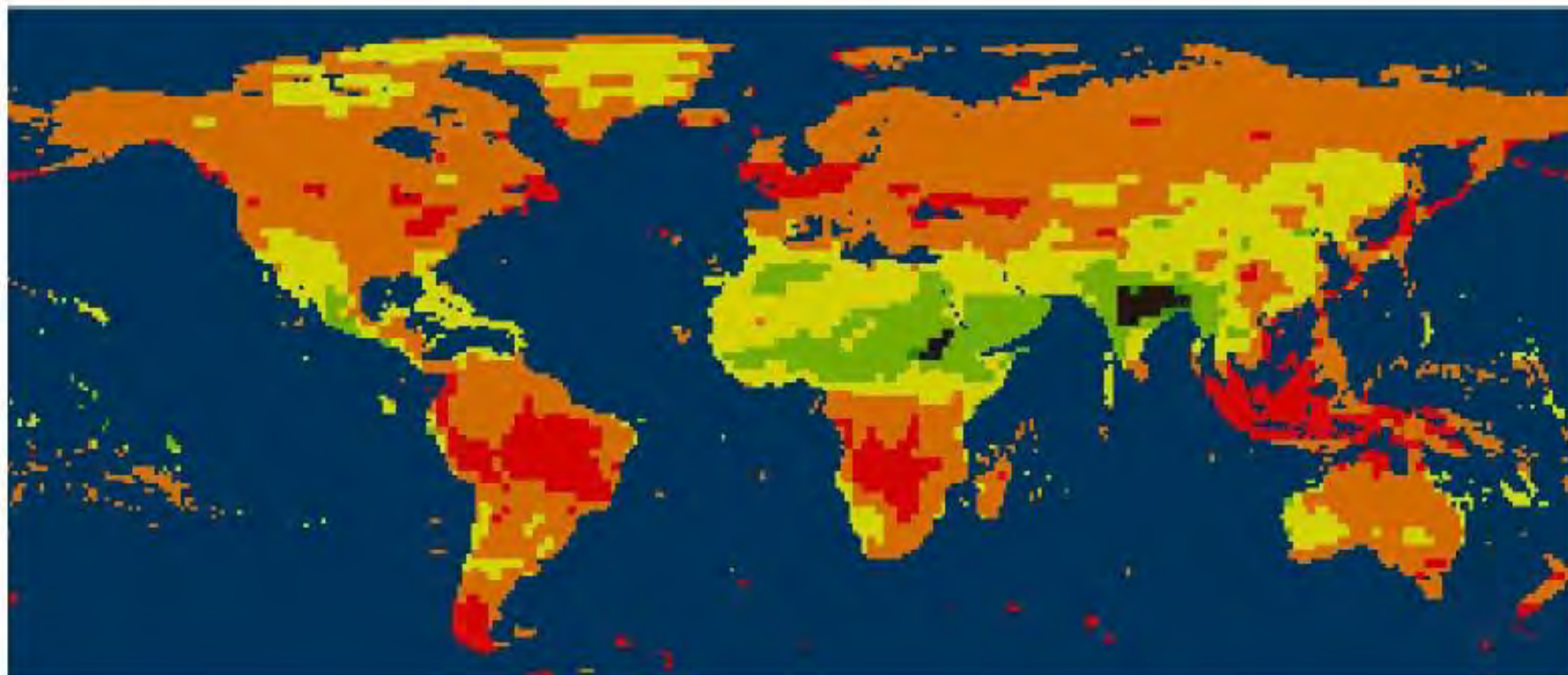
# Global Tasking Strategy

## Average Yearly Cloud Coverage for an 'El Niño' year



# Global Tasking Strategy

## Average Yearly Cloud Coverage for a 'La Niña' year





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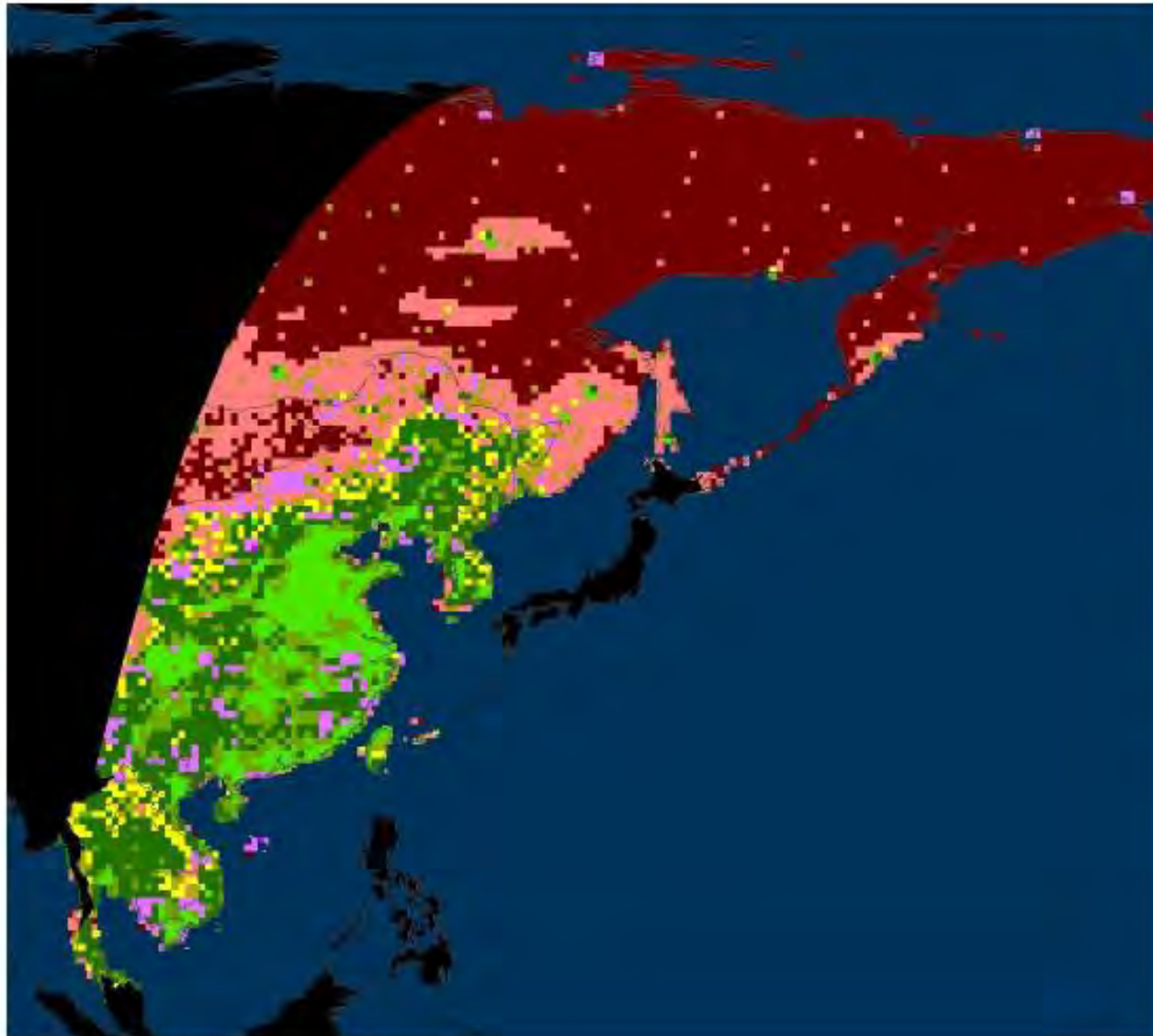
# Tasking Categories & Tasking by Month

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EAST ASIA 2017 PLAN

# Tasking Categories

All Months

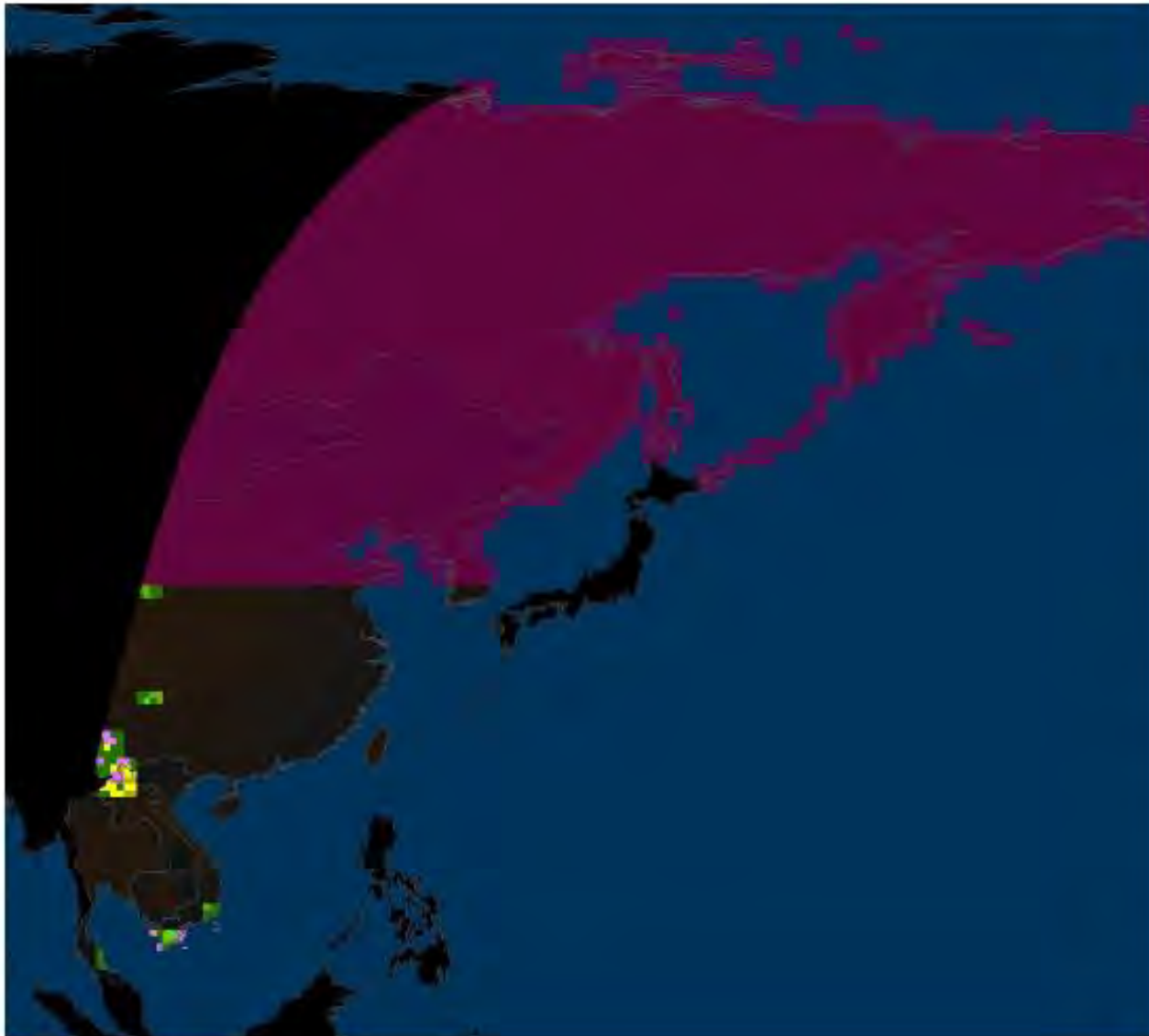


High Suburban
Med Suburban
Low Suburban
High Emerging
Low Emerging
High Rural
Low Rural
Monitoring

Based on neutral weather patterns

# Start Tasking Month – By Category

January



High Suburban
Med Suburban
Low Suburban
High Emerging
Low Emerging
High Rural
Low Rural
Monitoring
Out of Sun Elevation

Based on neutral weather patterns

Each cell will be designated a high priority for tasking for at least three months or until completed.

# Start Tasking Month – By Category

February



High Suburban
Med Suburban
Low Suburban
High Emerging
Low Emerging
High Rural
Low Rural
Monitoring
Out of Sun Elevation

Based on neutral weather patterns

Each cell will be designated a high priority for tasking for at least three months or until completed.

# Start Tasking Month – By Category

March



High Suburban
Med Suburban
Low Suburban
High Emerging
Low Emerging
High Rural
Low Rural
Monitoring
Out of Sun Elevation

Based on neutral weather patterns

Each cell will be designated a high priority for tasking for at least three months or until completed.



# Start Tasking Month – By Category

April



High Suburban
Med Suburban
Low Suburban
High Emerging
Low Emerging
High Rural
Low Rural
Monitoring
Out of Sun Elevation

Based on neutral weather patterns

Each cell will be designated a high priority for tasking for at least three months or until completed.

# Start Tasking Month – By Category

May



High Suburban
Med Suburban
Low Suburban
High Emerging
Low Emerging
High Rural
Low Rural
Monitoring
Out of Sun Elevation

Based on neutral weather patterns

Each cell will be designated a high priority for tasking for at least three months or until completed.

# Start Tasking Month – By Category

June



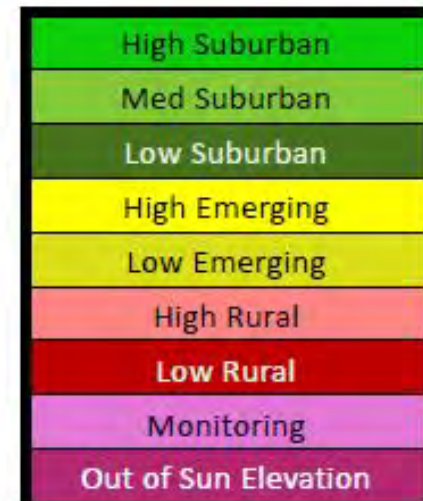
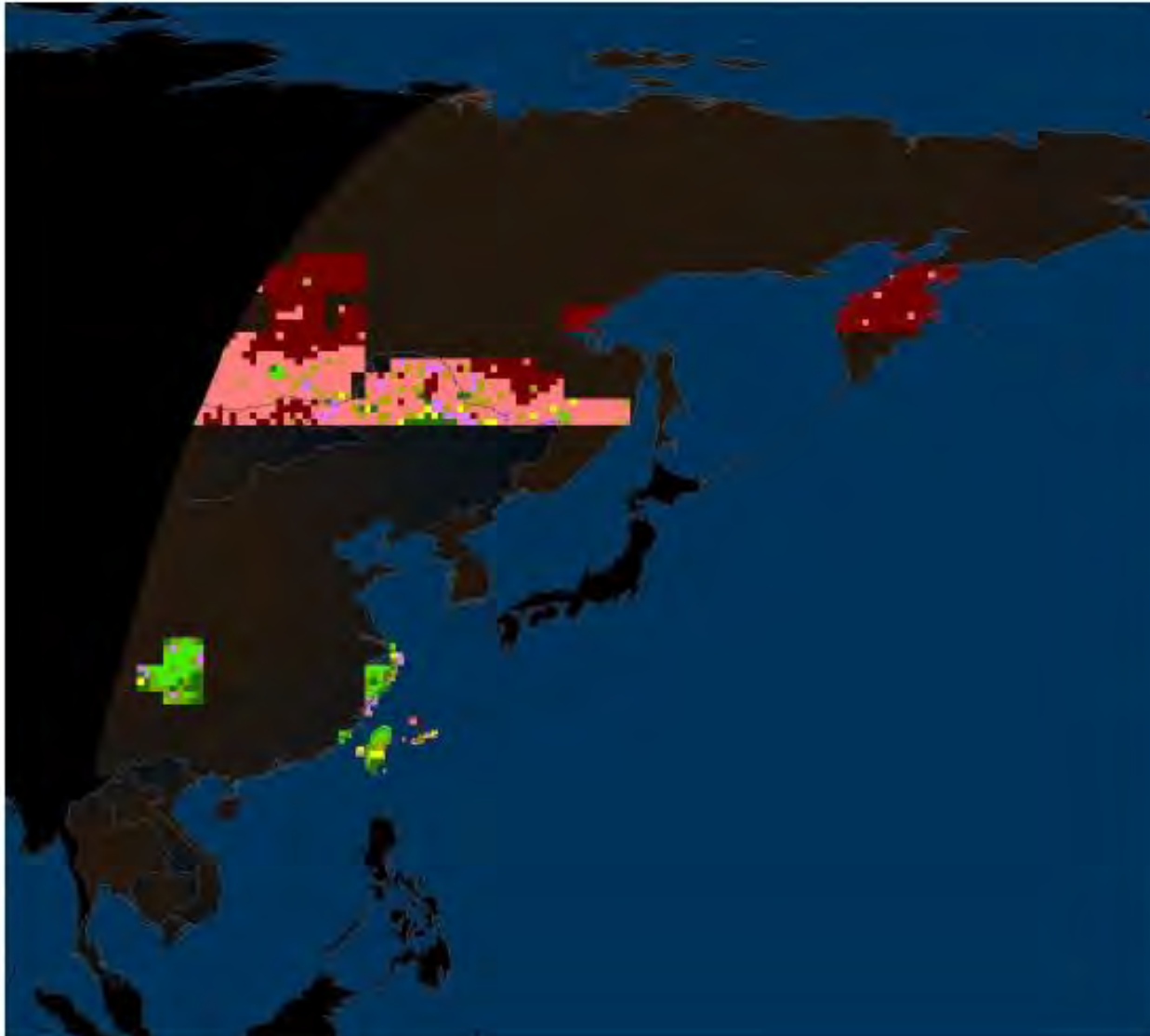
High Suburban
Med Suburban
Low Suburban
High Emerging
Low Emerging
High Rural
Low Rural
Monitoring
Out of Sun Elevation

Based on neutral weather patterns

Each cell will be designated a high priority for tasking for at least three months or until completed.

# Start Tasking Month – By Category

July

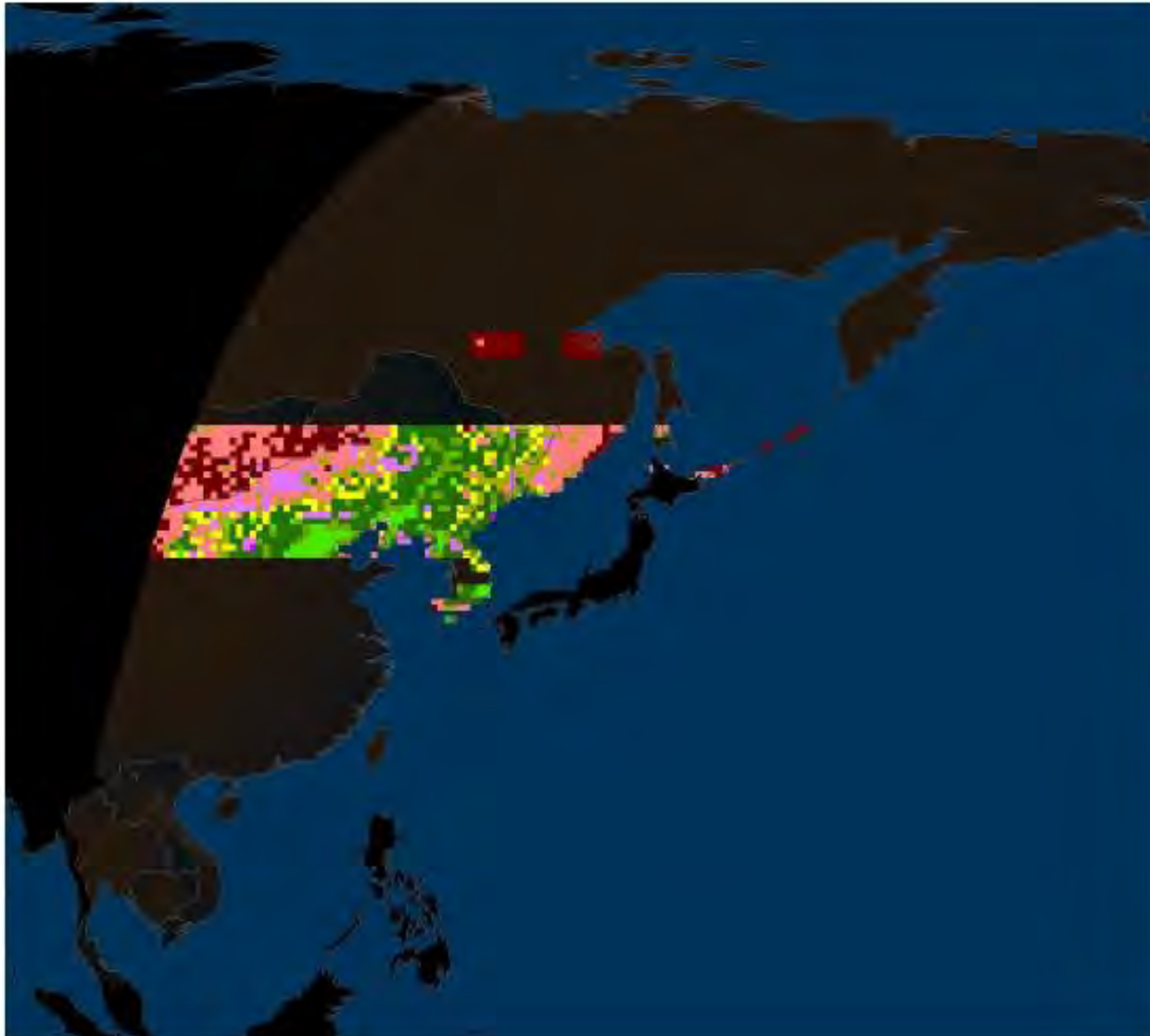


Based on neutral weather patterns

Each cell will be designated a high priority for tasking for at least three months or until completed.

# Start Tasking Month – By Category

August



High Suburban
Med Suburban
Low Suburban
High Emerging
Low Emerging
High Rural
Low Rural
Monitoring
Out of Sun Elevation

Based on neutral weather patterns

Each cell will be designated a high priority for tasking for at least three months or until completed.

# Start Tasking Month – By Category

September



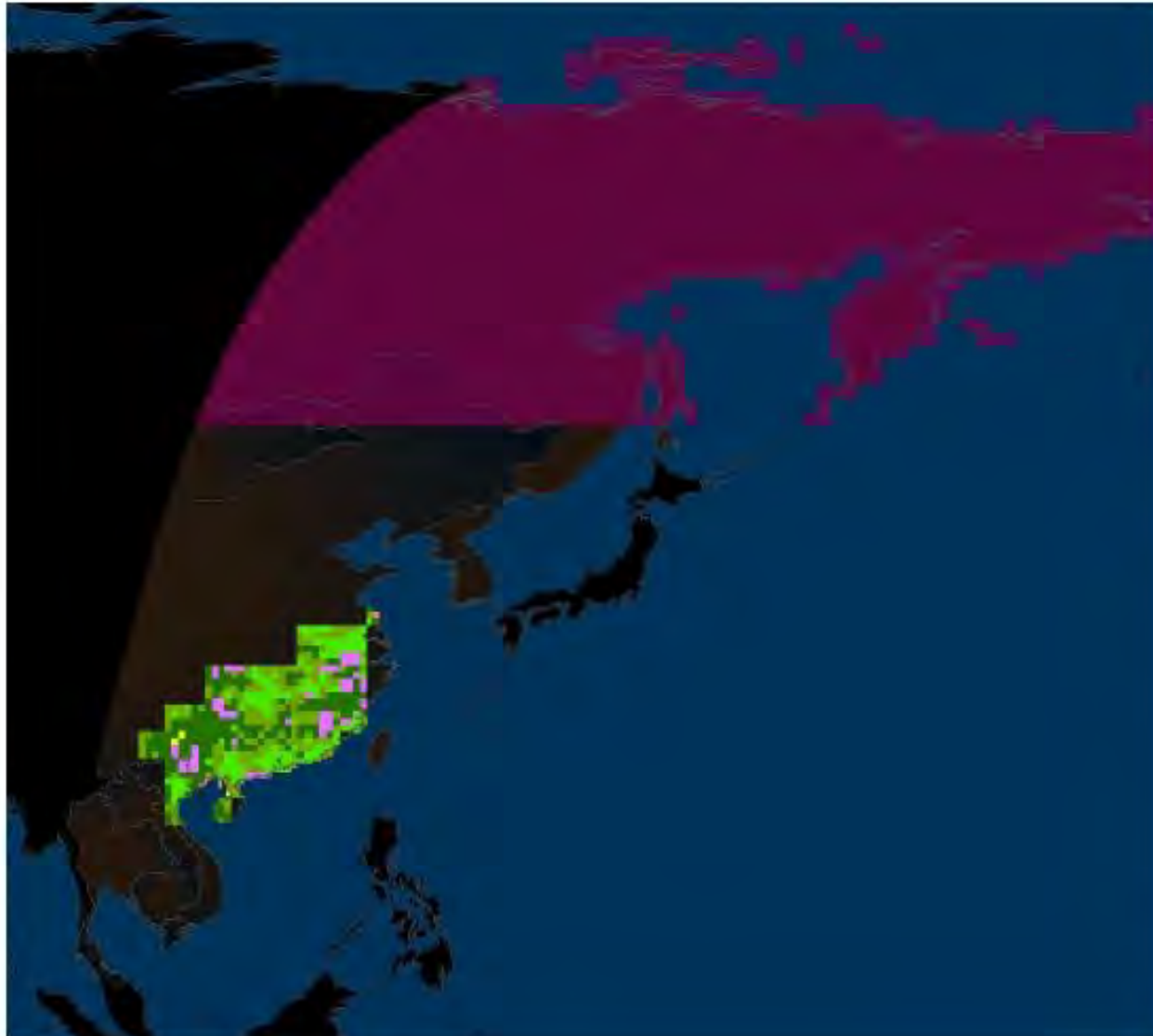
High Suburban
Med Suburban
Low Suburban
High Emerging
Low Emerging
High Rural
Low Rural
Monitoring
Out of Sun Elevation

Based on neutral weather patterns

Each cell will be designated a high priority for tasking for at least three months or until completed.

# Start Tasking Month – By Category

October



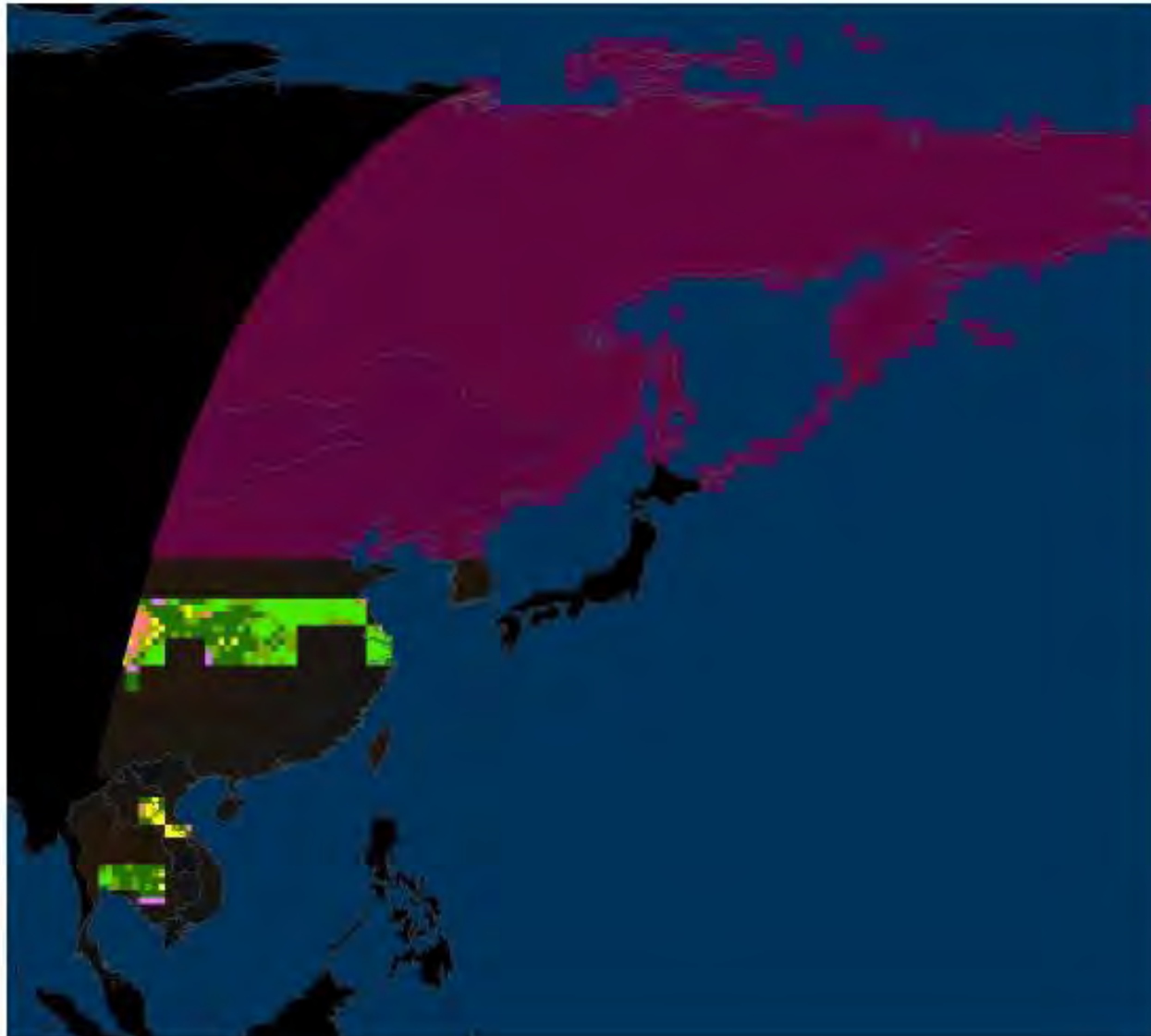
High Suburban
Med Suburban
Low Suburban
High Emerging
Low Emerging
High Rural
Low Rural
Monitoring
Out of Sun Elevation

Based on neutral weather patterns

Each cell will be designated a high priority for tasking for at least three months or until completed.

# Start Tasking Month – By Category

November



High Suburban
Med Suburban
Low Suburban
High Emerging
Low Emerging
High Rural
Low Rural
Monitoring
Out of Sun Elevation

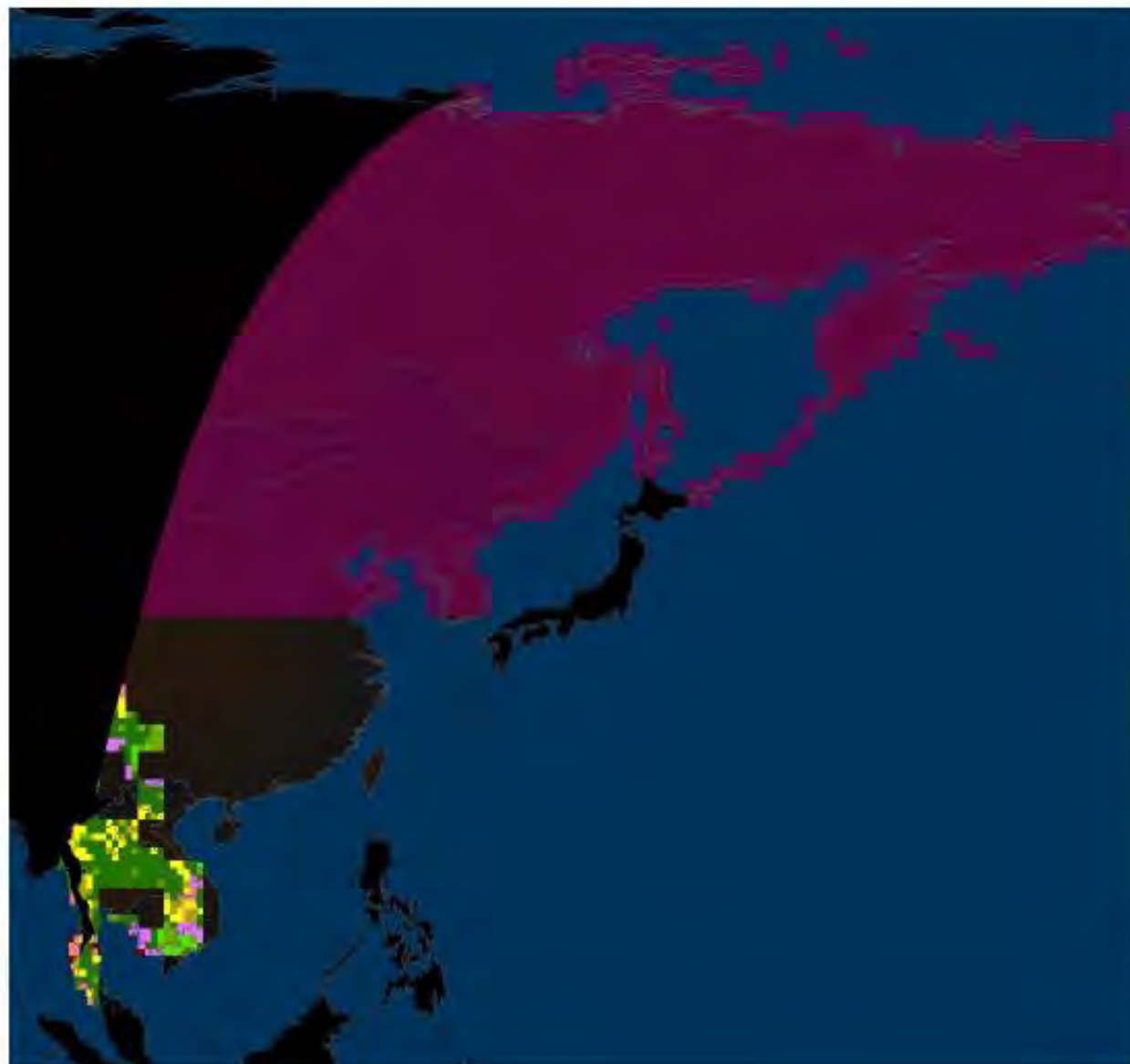
Based on neutral weather patterns

Each cell will be designated a high priority for tasking for at least three months or until completed.



# Start Tasking Month – By Category

December



High Suburban
Med Suburban
Low Suburban
High Emerging
Low Emerging
High Rural
Low Rural
Monitoring
Out of Sun Elevation

Based on neutral weather patterns

Each cell will be designated a high priority for tasking for at least three months or until completed.



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# Monthly Weather – East Asia

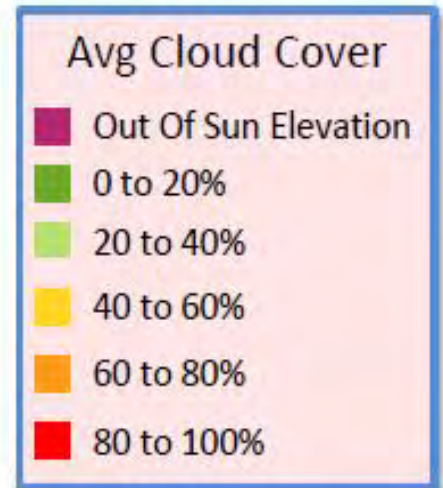
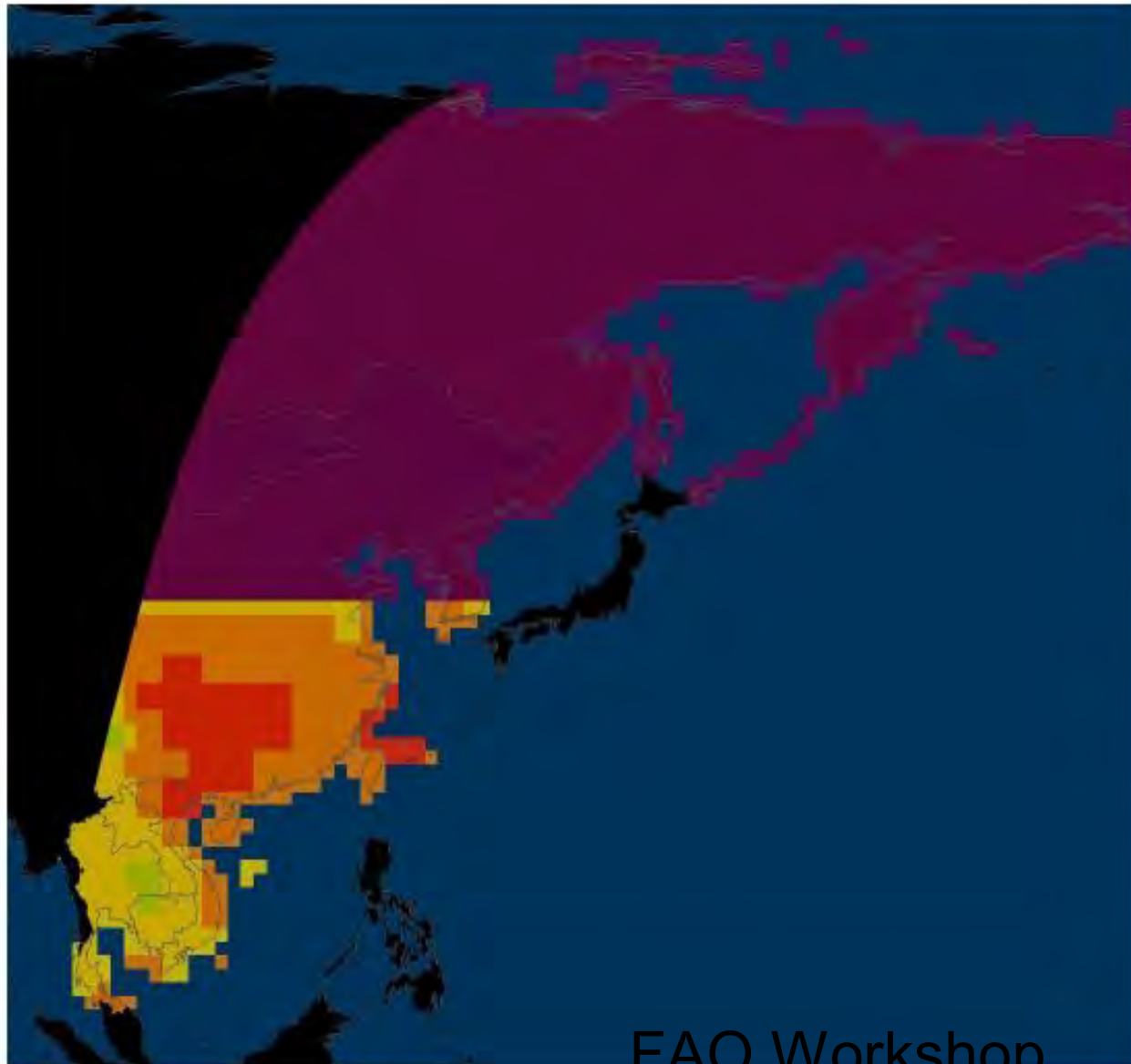
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NEUTRAL PATTERN

# Monthly Average Cloud Cover - Neutral



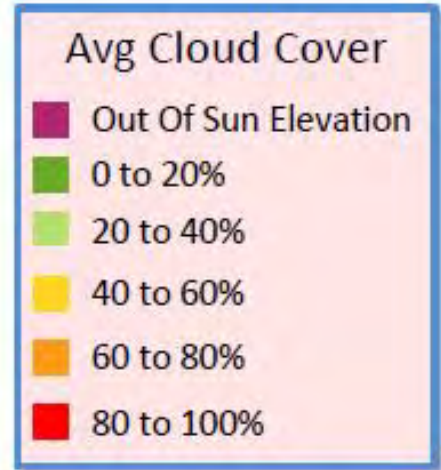
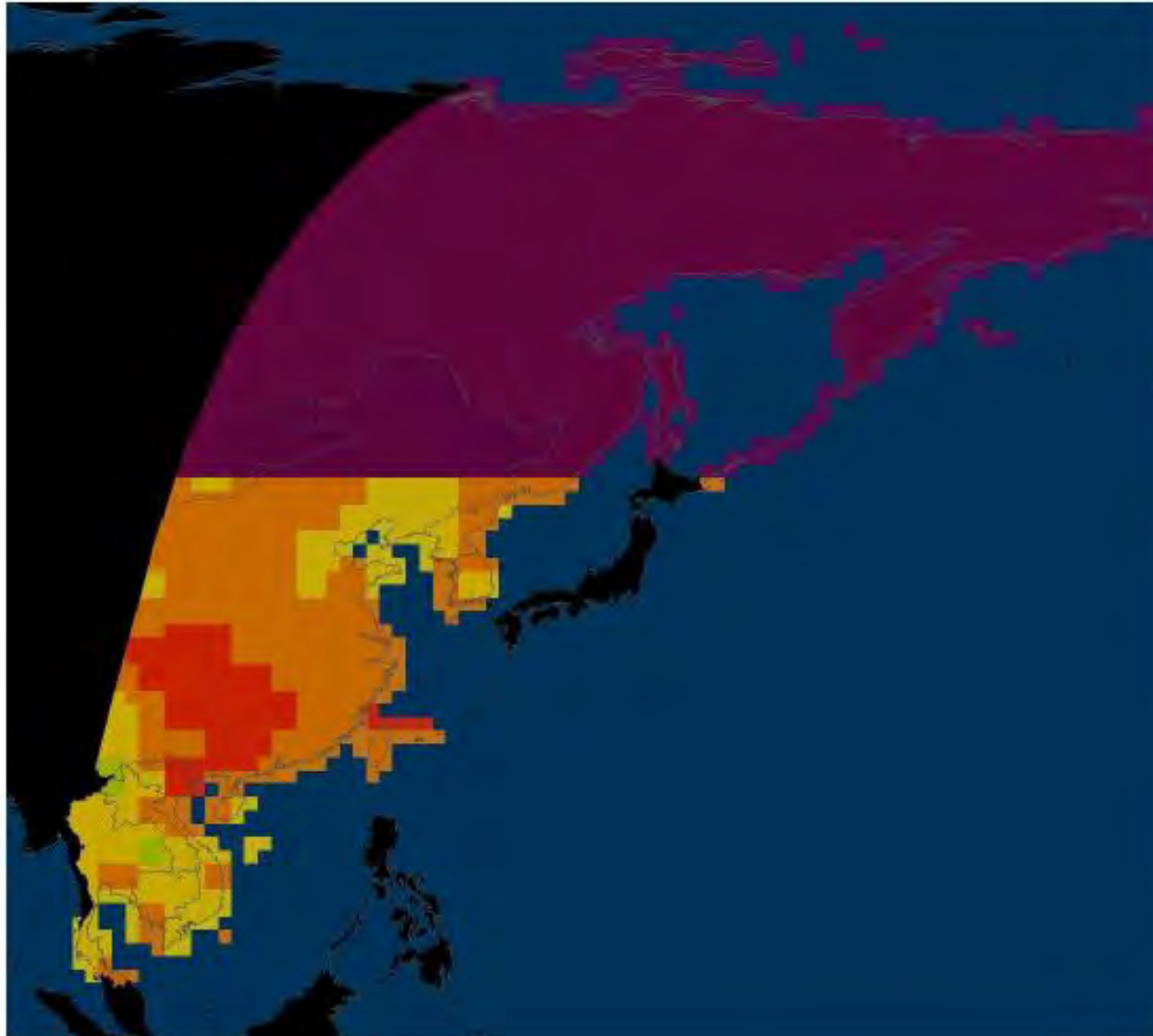
January



Based on neutral weather patterns

# Monthly Average Cloud Cover - Neutral

February

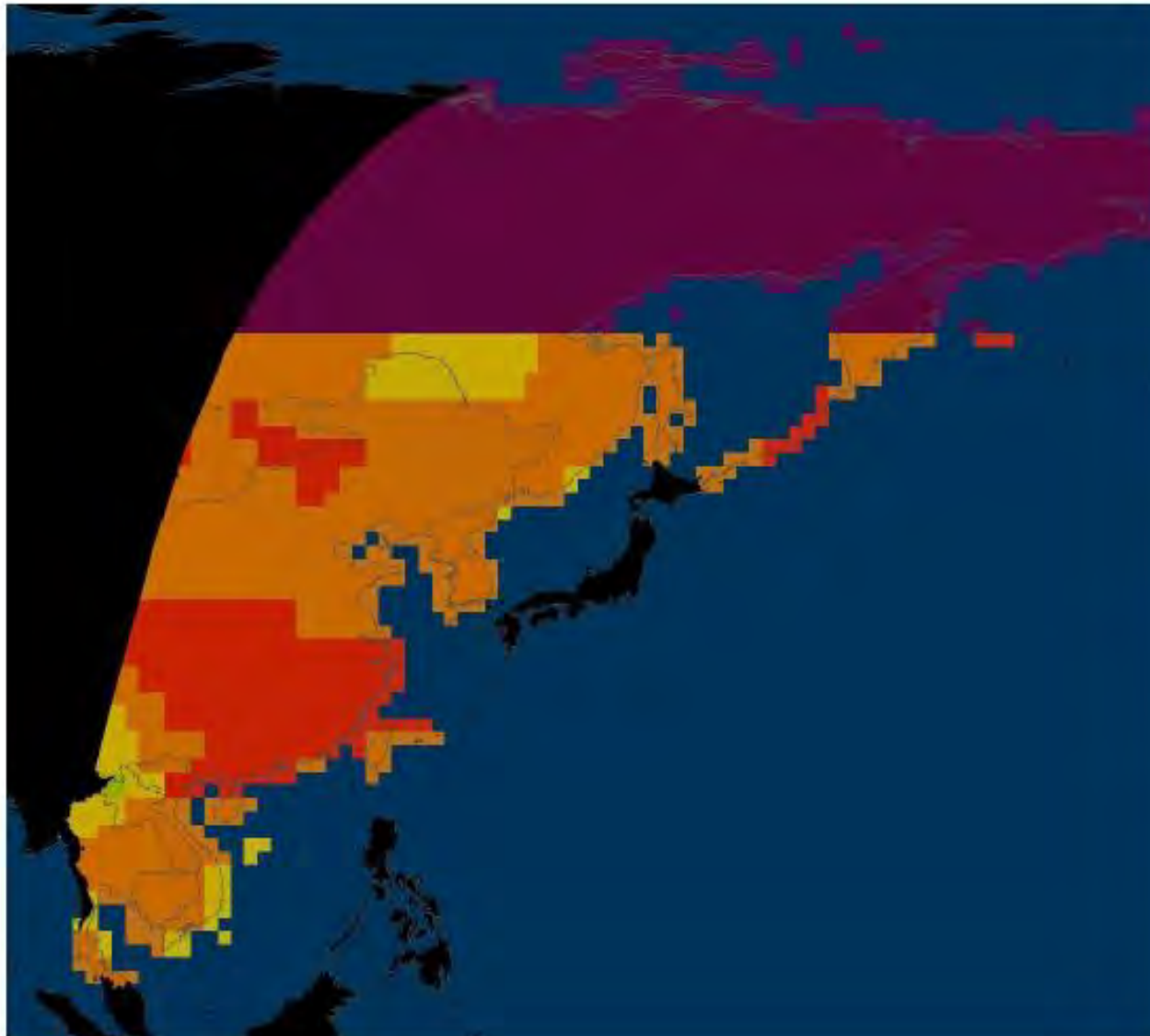


Based on neutral weather patterns

# Monthly Average Cloud Cover - Neutral



March



## Avg Cloud Cover

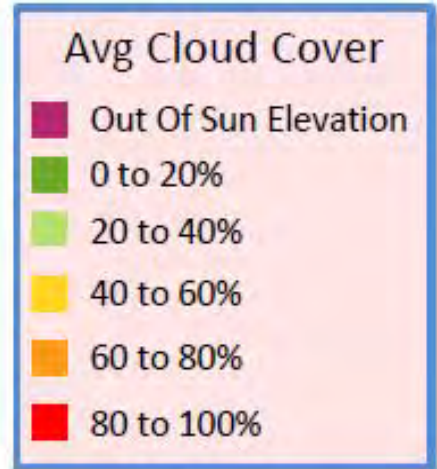
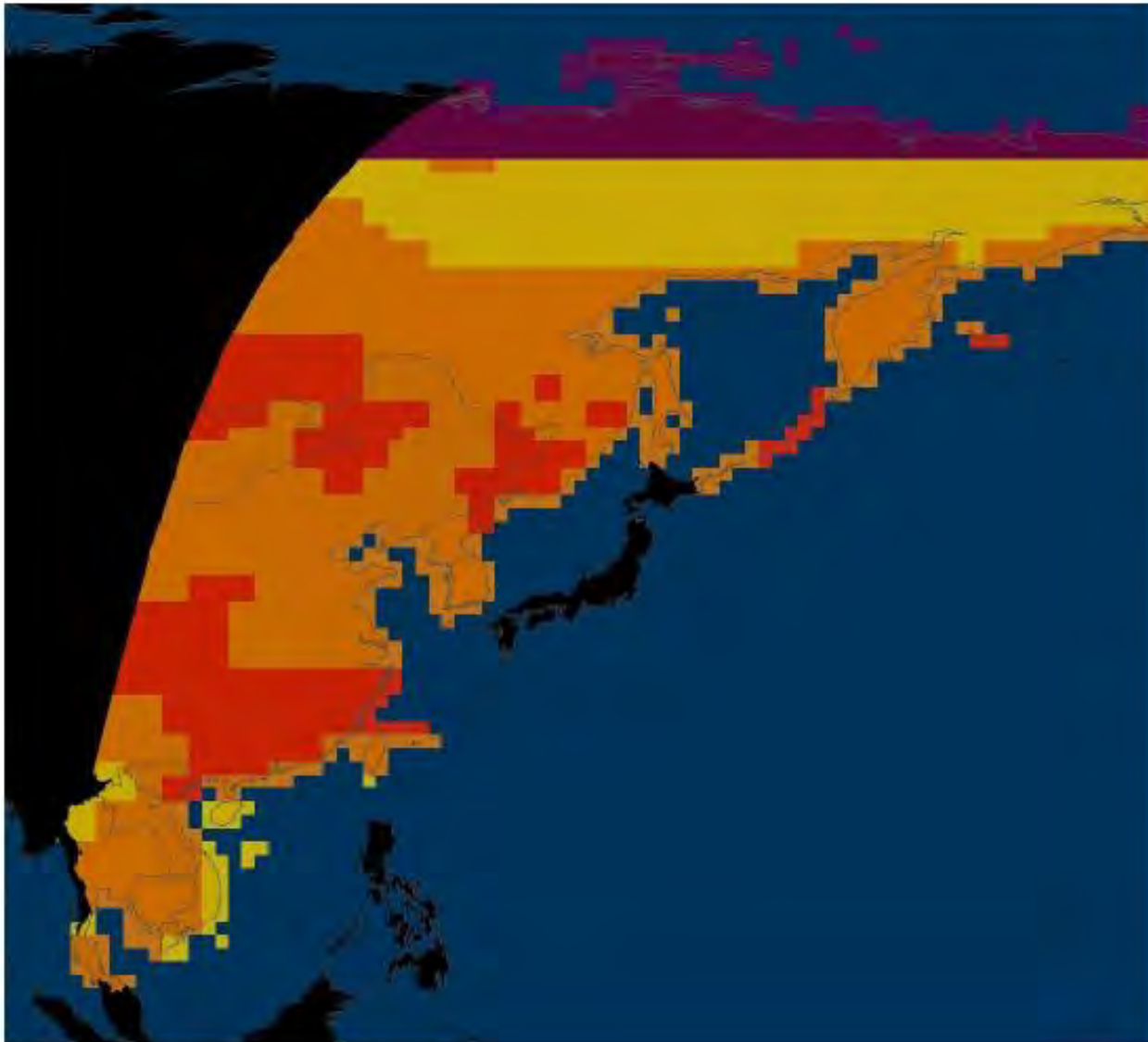
- Out Of Sun Elevation
- 0 to 20%
- 20 to 40%
- 40 to 60%
- 60 to 80%
- 80 to 100%

Based on neutral weather patterns

# Monthly Average Cloud Cover - Neutral



April

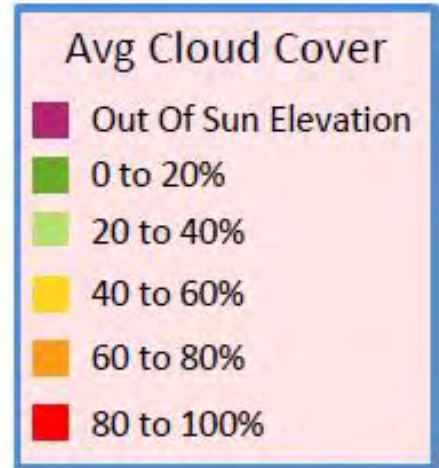
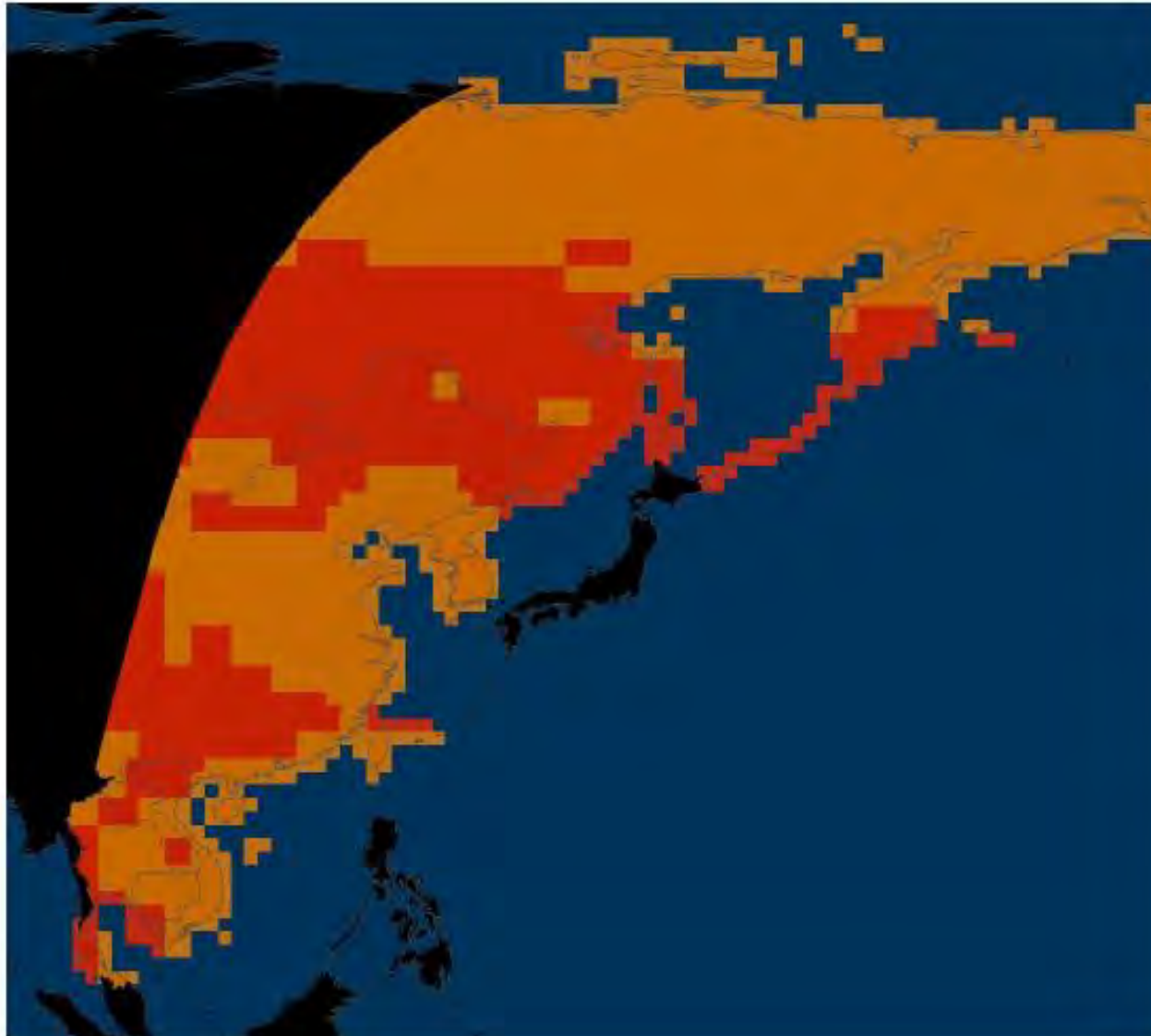


Based on neutral weather patterns

# Monthly Average Cloud Cover - Neutral



May

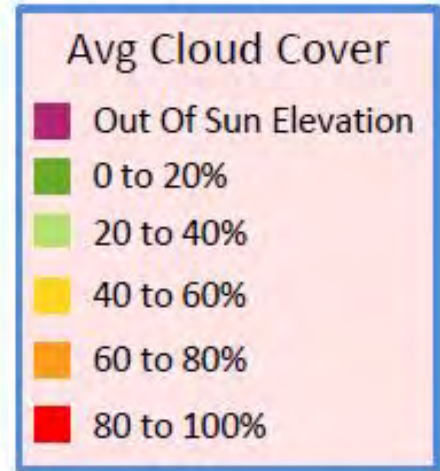
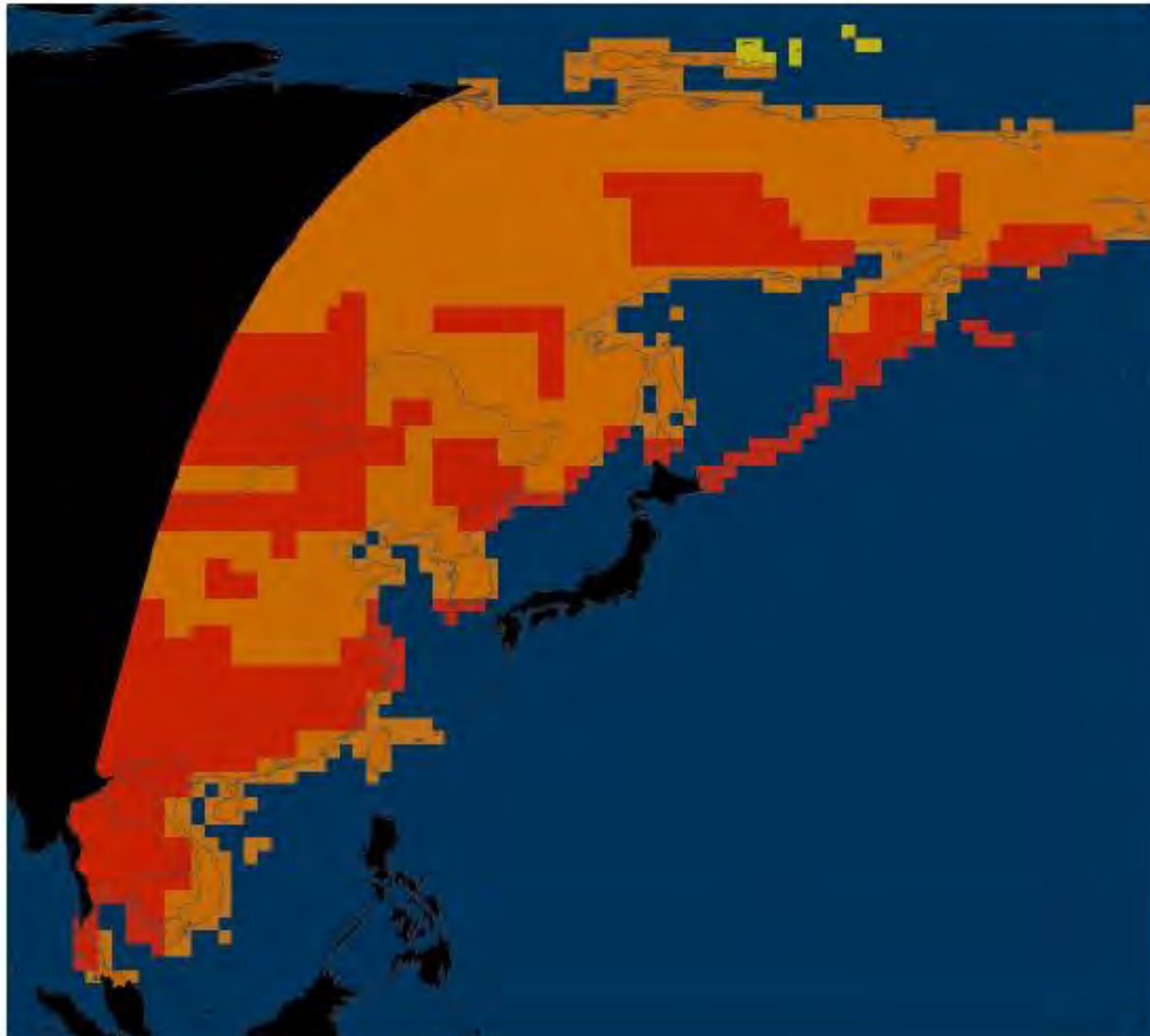


Based on neutral weather patterns

# Monthly Average Cloud Cover - Neutral



June



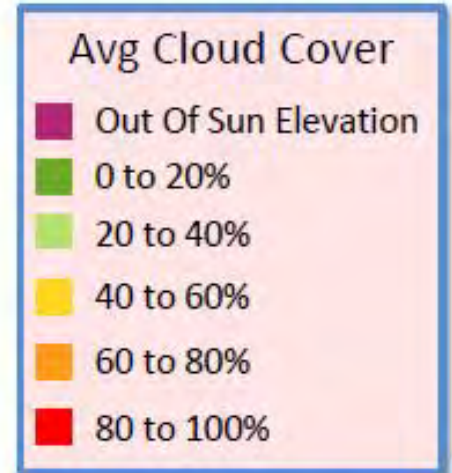
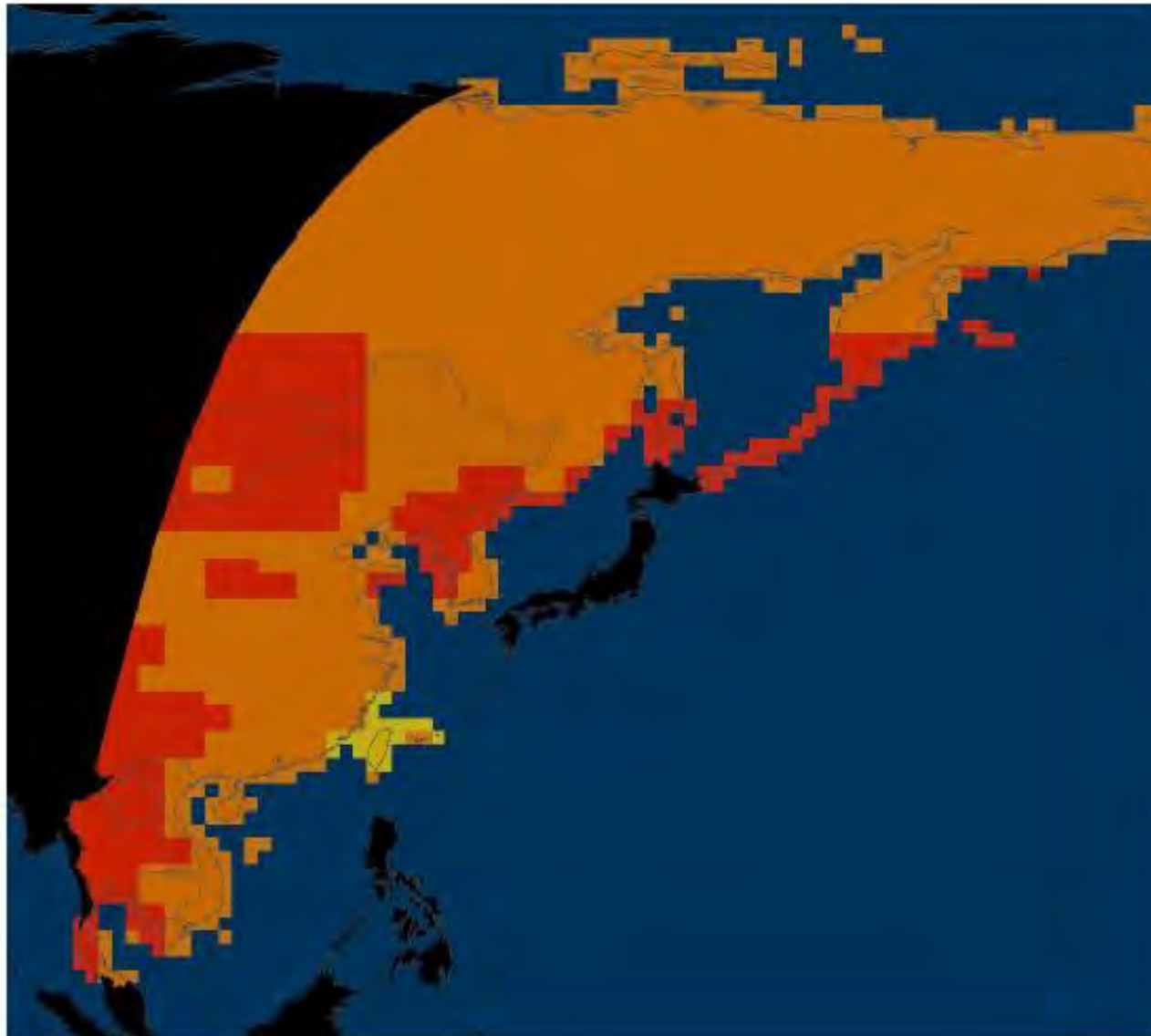
Based on neutral weather patterns



# Monthly Average Cloud Cover - Neutral



July

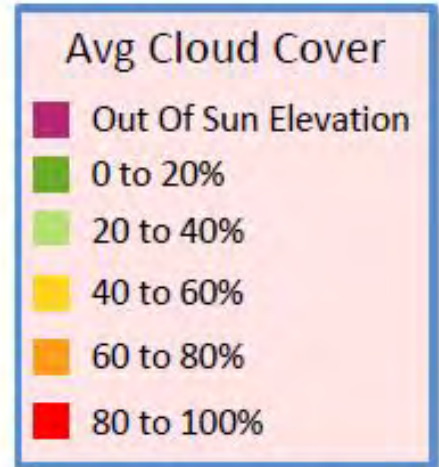
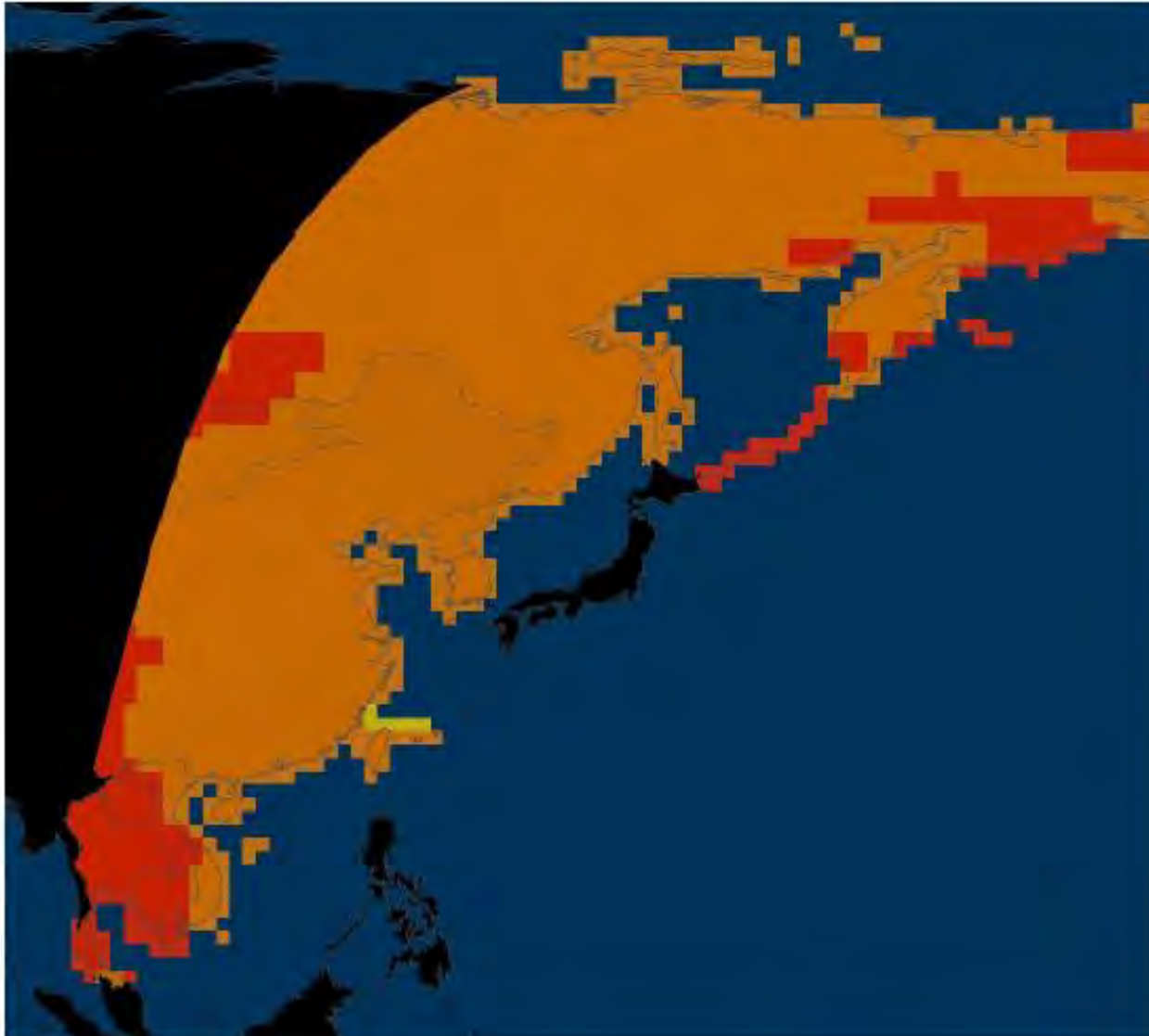


Based on neutral weather patterns

# Monthly Average Cloud Cover - Neutral



August

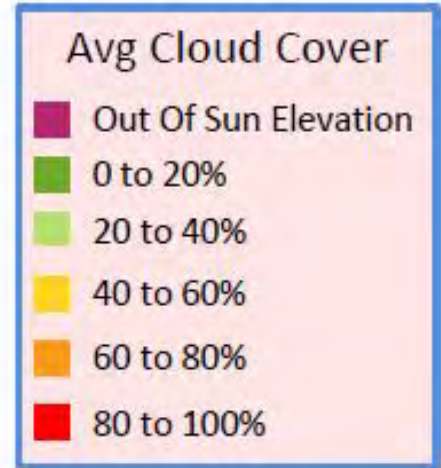
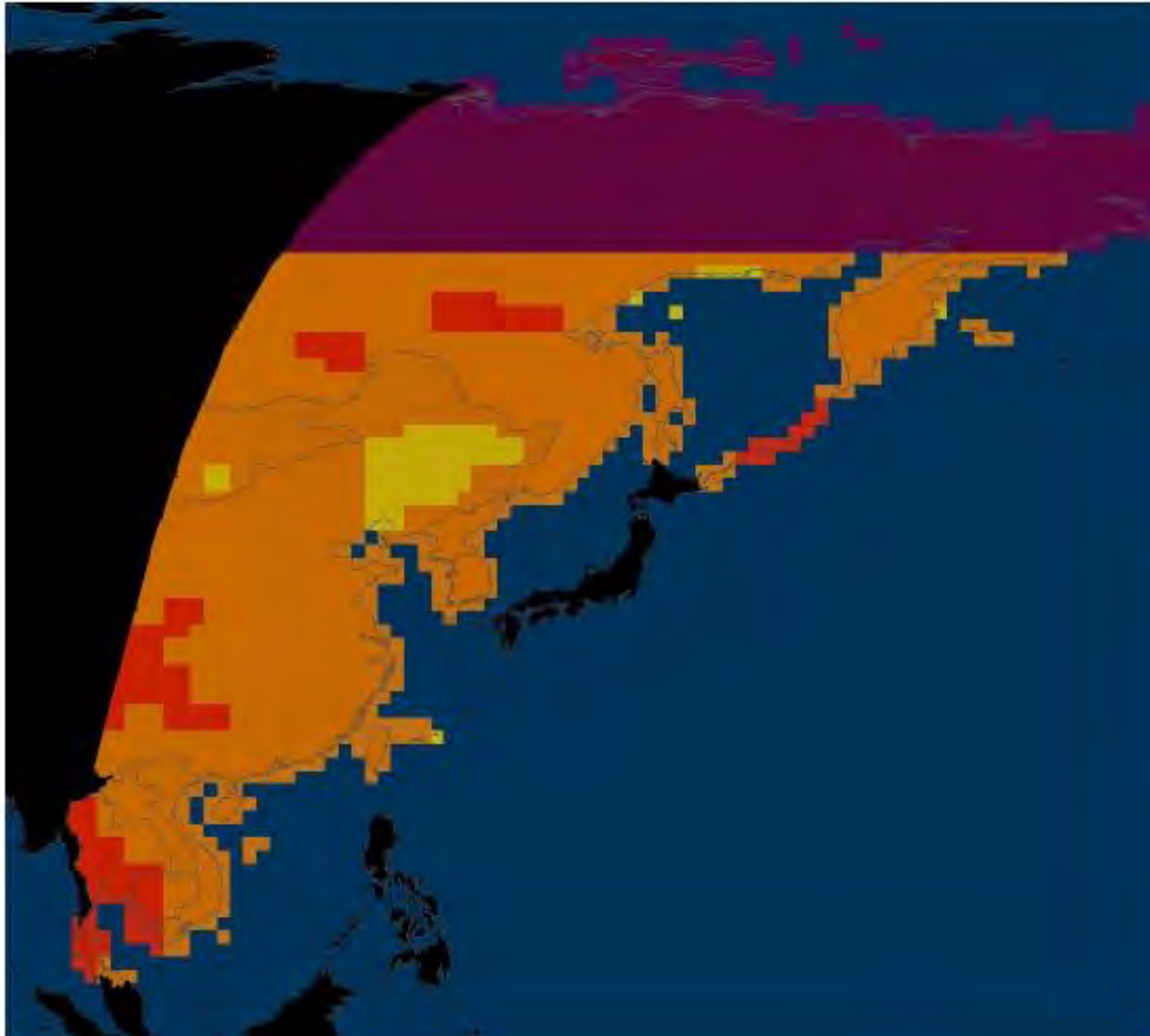


Based on neutral weather patterns

# Monthly Average Cloud Cover - Neutral



September

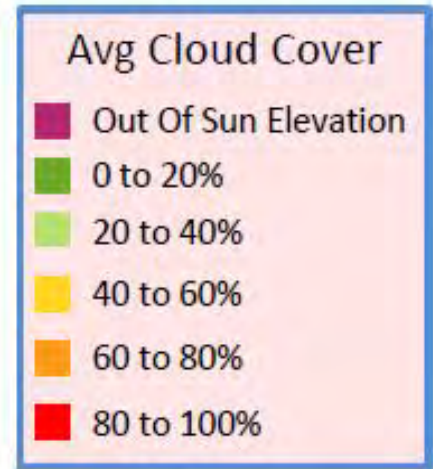
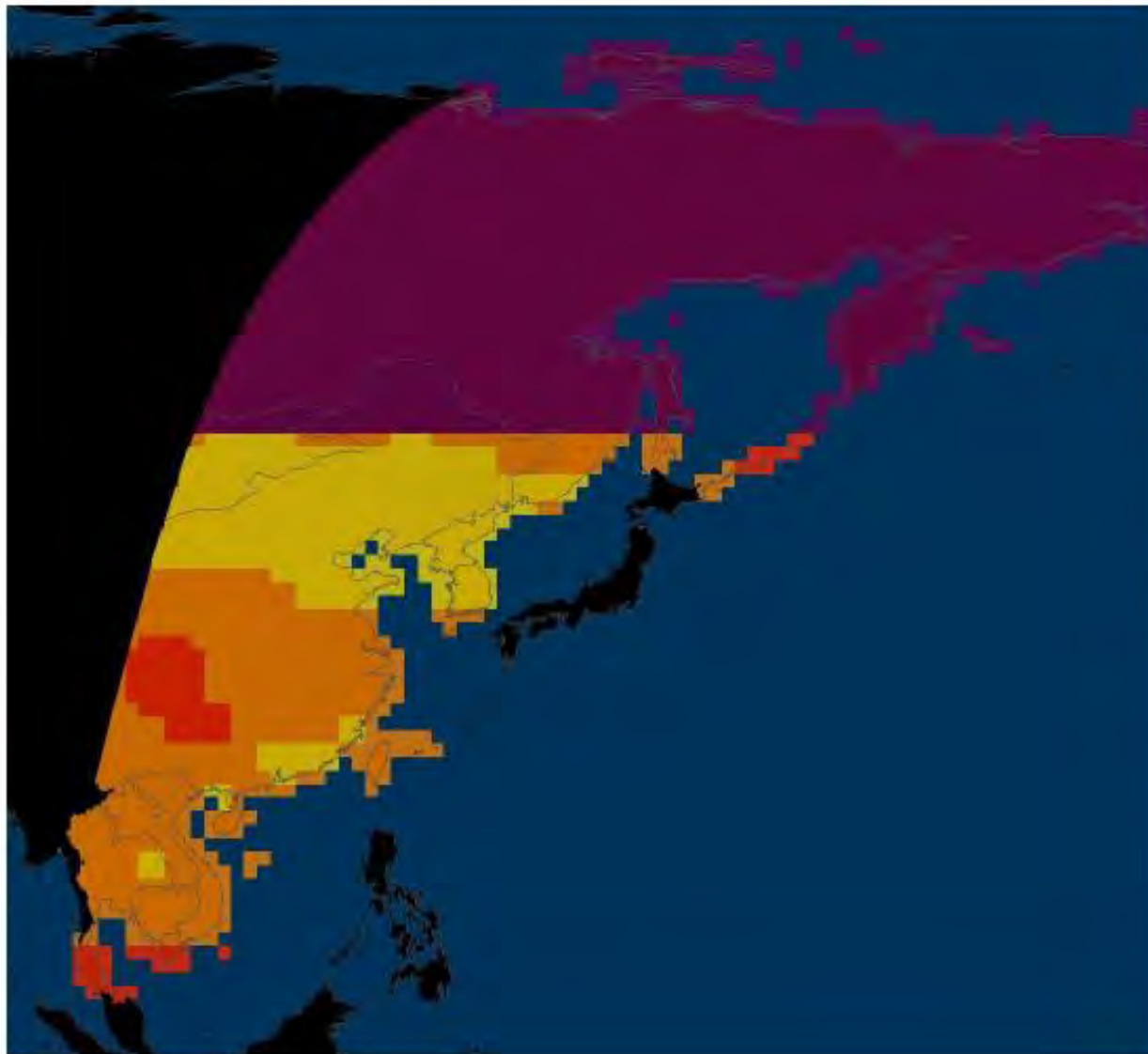


Based on neutral weather patterns

# Monthly Average Cloud Cover - Neutral



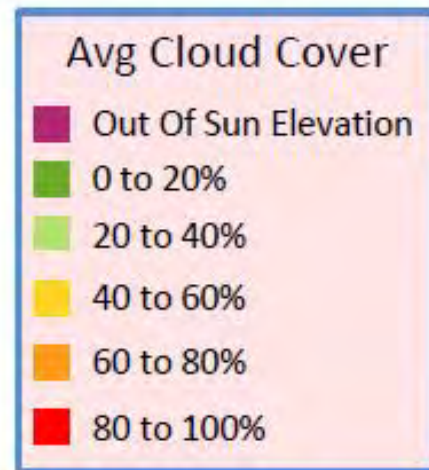
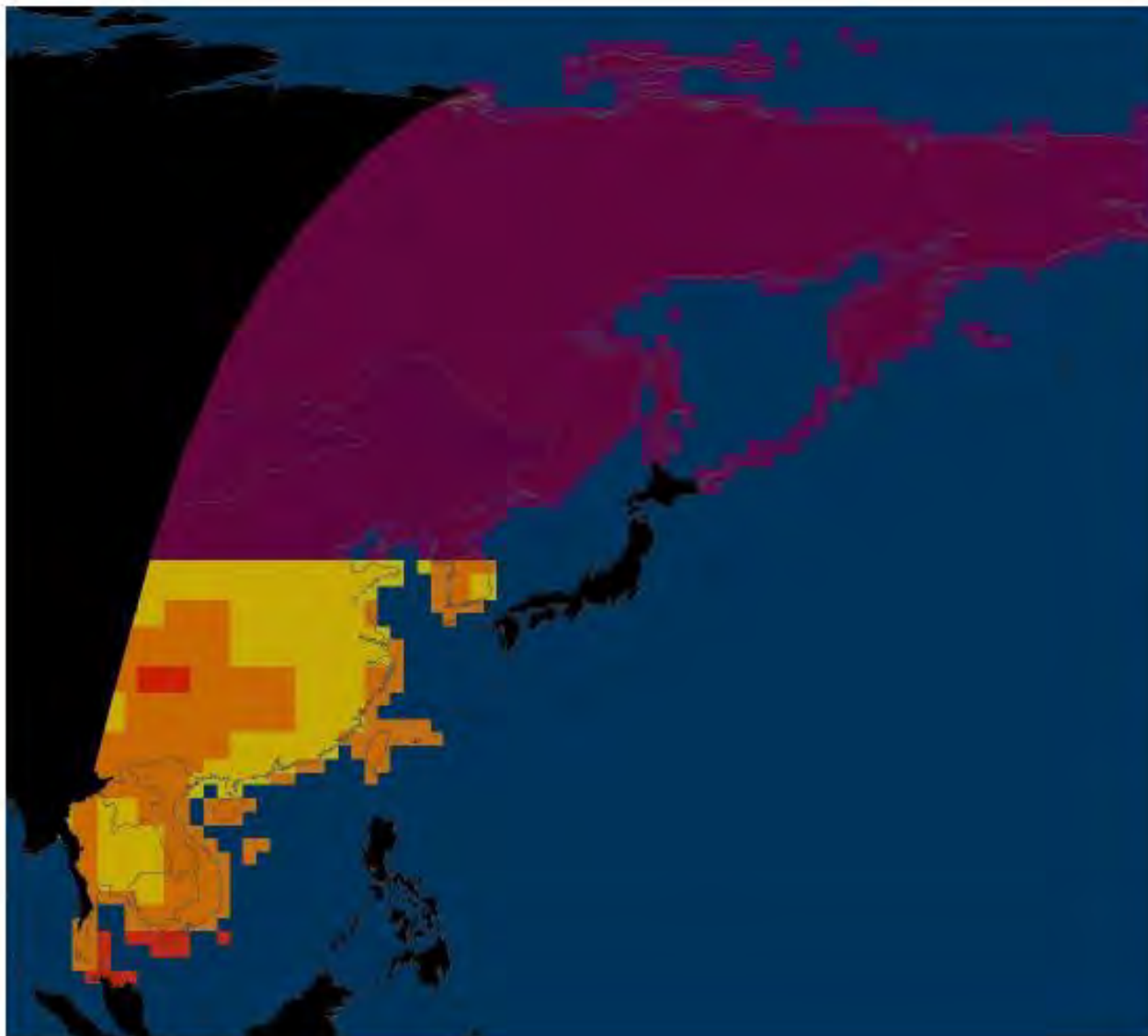
October



Based on neutral weather patterns

# Monthly Average Cloud Cover - Neutral

November

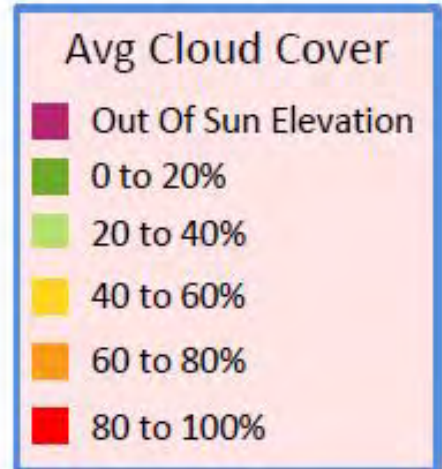
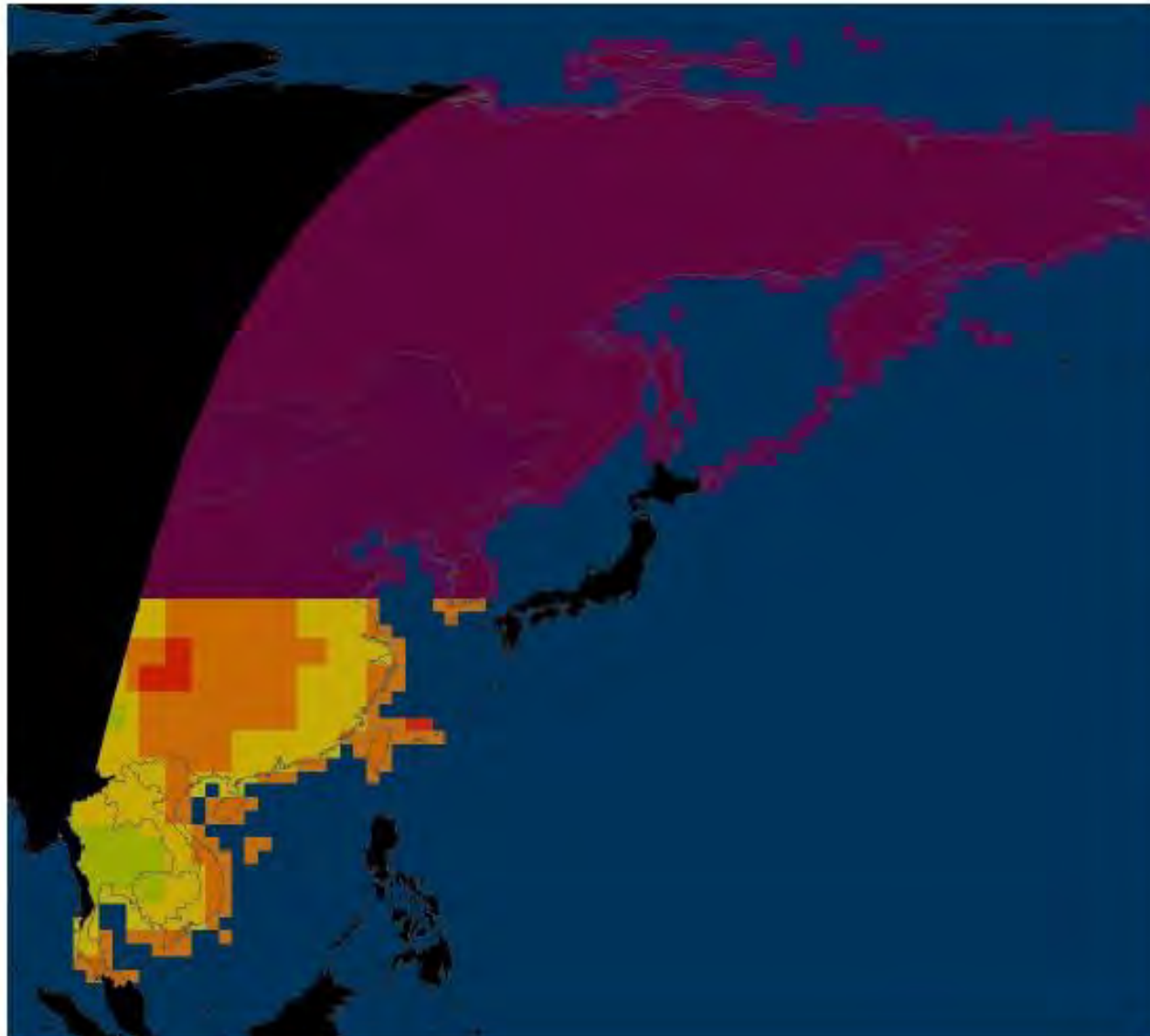


Based on neutral weather patterns

# Monthly Average Cloud Cover - Neutral



December



Based on neutral weather patterns

# The Content Plan Refresh Rate



Country



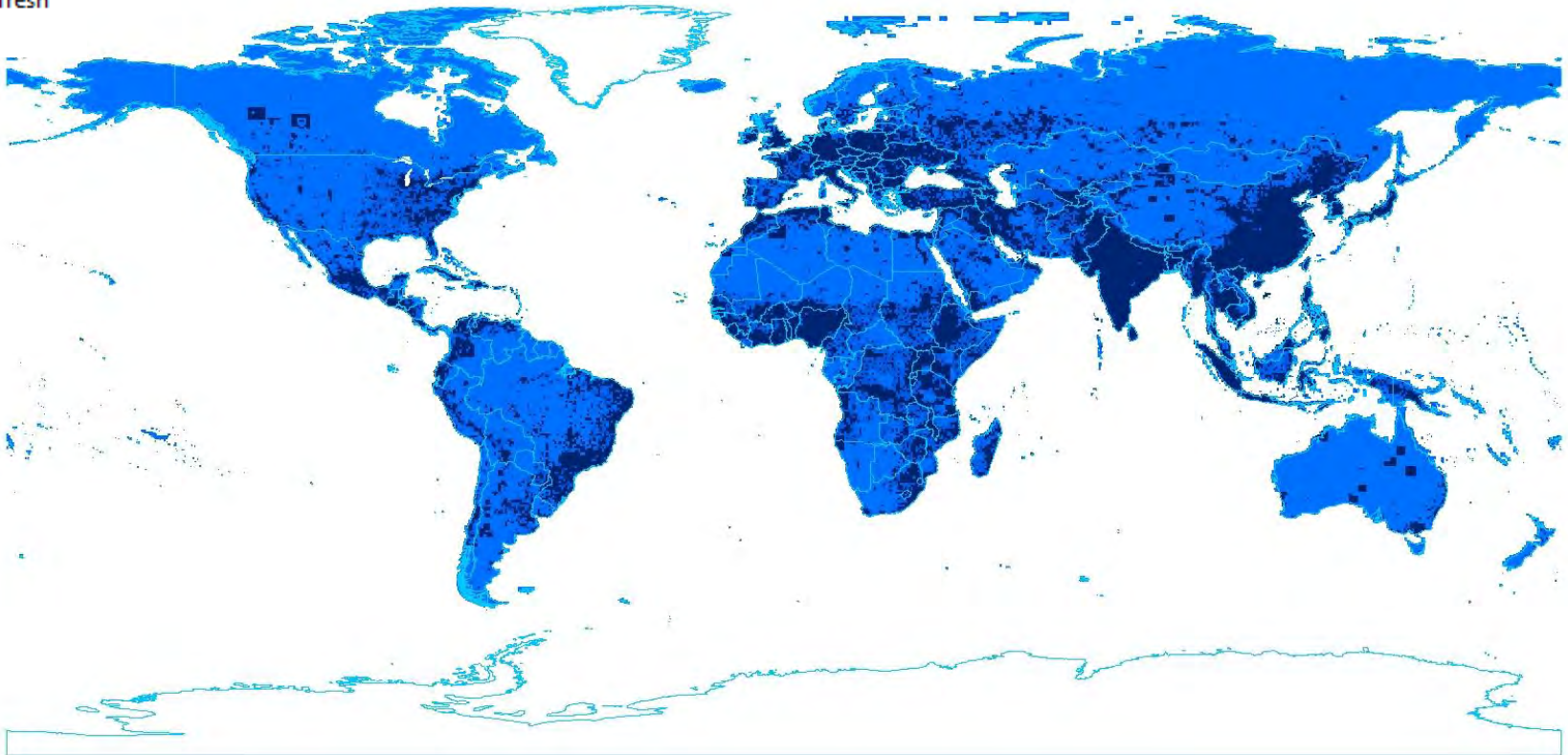
1 Year Refresh



2 Year Refresh



3 Year Refresh



# DigitalGlobe Content Plan – 6 Ways You Can Benefit



- **Predictability:** Plan for future projects
- **Timing:** Prepare your data according to image availability
- **Repeat Collections:** Implement change detection
- **Quality:** Highest resolution, best accuracy, most spectral bands
- **Budgeting:** Secure resources to optimize operations
- **Dynamic Updates:** You have a voice. Imagery not available? Request tasking

