# **Space Policy Issues**

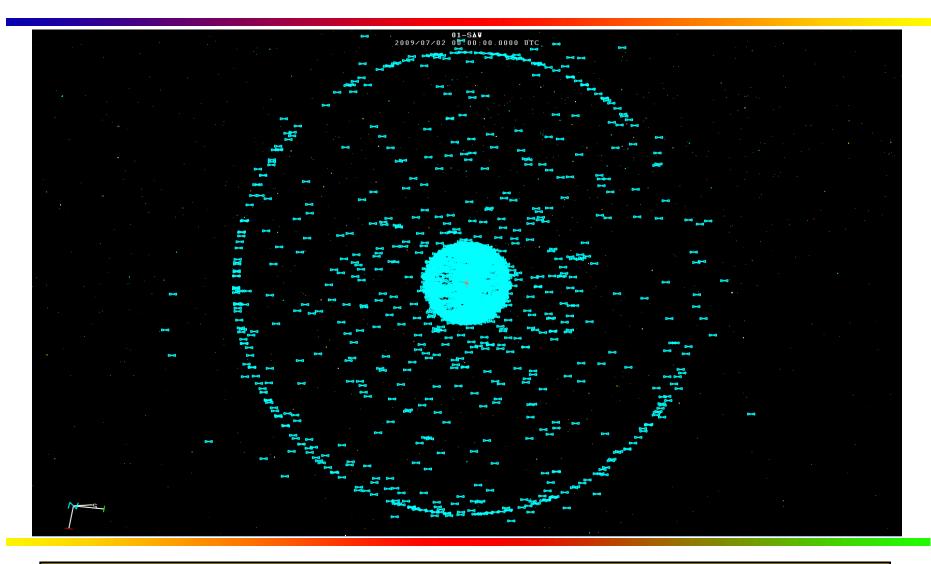
#### - Space Choke Points -

12 December, 2012

12/21/2012 10:32:06 AM Szymanski

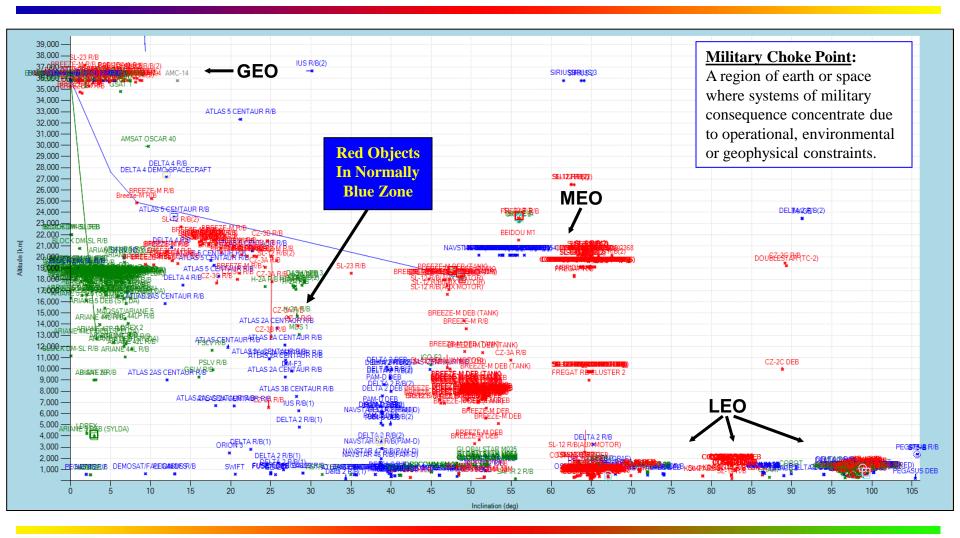
UNCLASSIFIED

## **Traditional Orbital View**



<sup>12/21/</sup> >13,000 Space Objects Confuses Users as to Possible Attack Patterns Developing <sup>lages</sup>

### Satellite Attack Warning (SAW)

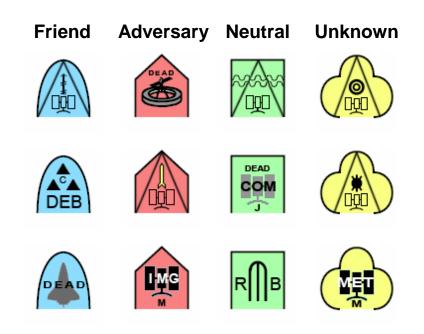


<sup>12/21</sup> Space Has Choke Points As In Terrestrial Systems – They Just Are Not Stationary

ges

# SAW – Icons

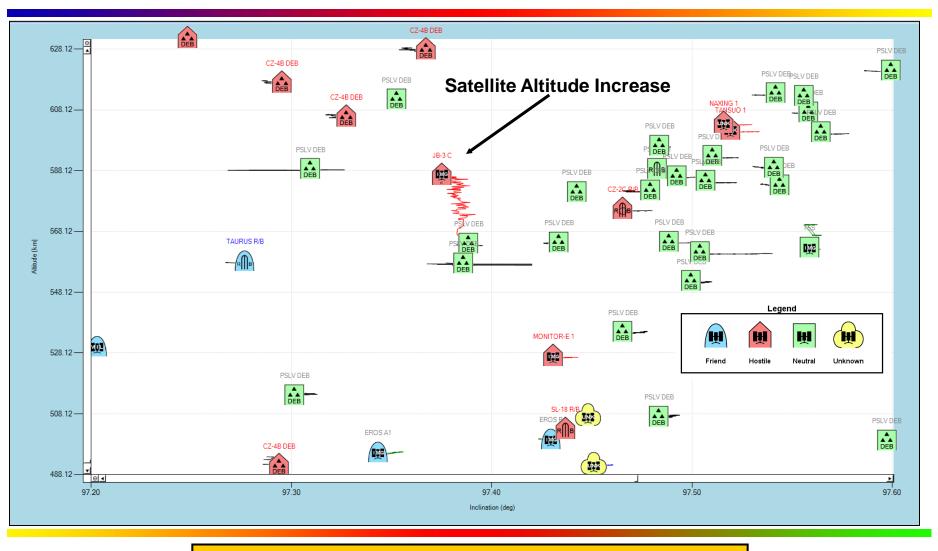
- Based on Mil-Std-2525B
- 220 New Space Icons



12/21/2012 10:32:06 AM Szymans Make SAW Maps Similar to Terrestrial Situation Maps

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## SAW – View 1

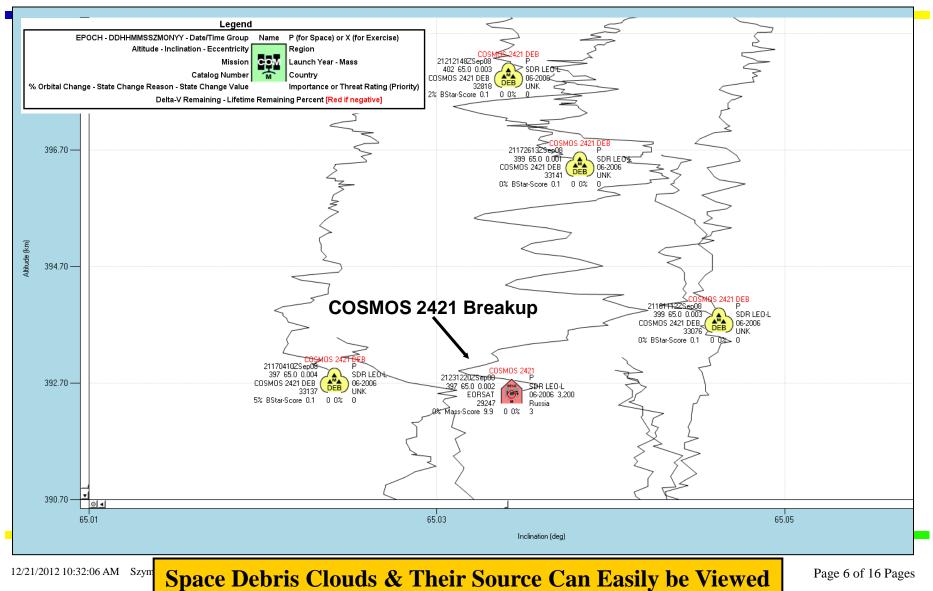


12/21/2012 10:32:06 AM Szymanski

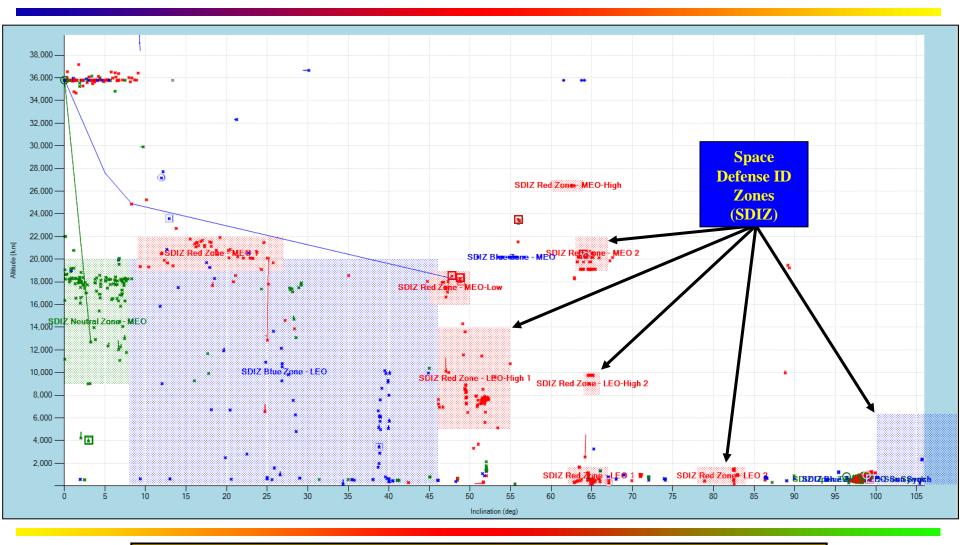
**Space Objects Orbital Changes Are Easy to Identify** 

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### SAW – View 2



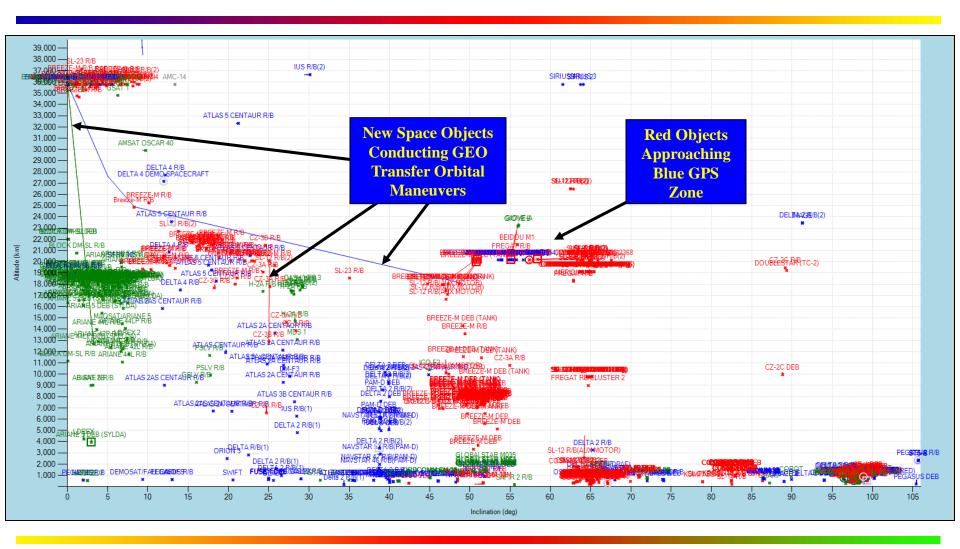
# SAW – SDIZ



12/21/2012 10:32:06 AM SSA Detection Zones Help Partial Out Operational Responsibility

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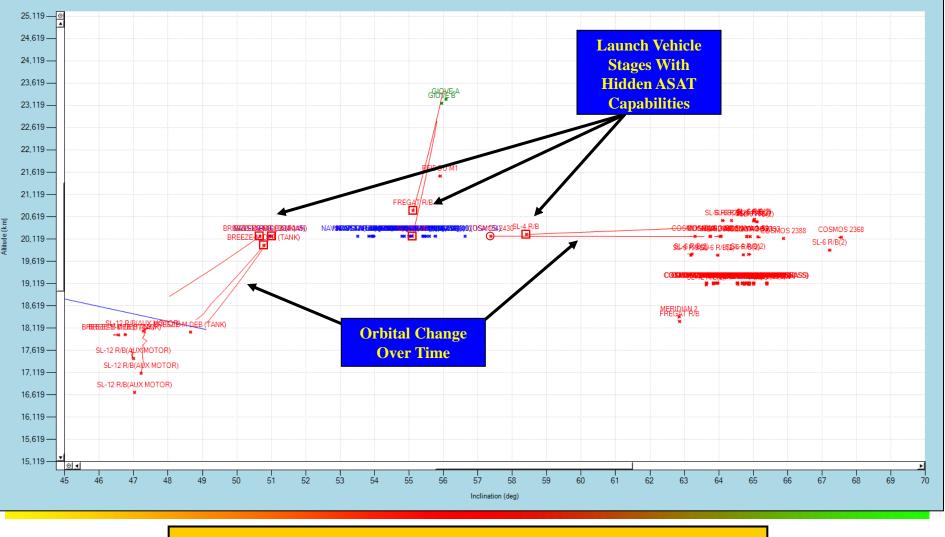
### **SAW – Simulated Attack Against GPS**



12/21/2012 10:32:06 AM Szyman Major Maneuvers of Space Objects are Easily Visualized

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### SAW – "Dead" Stages as Anti-Satellites (ASATS)

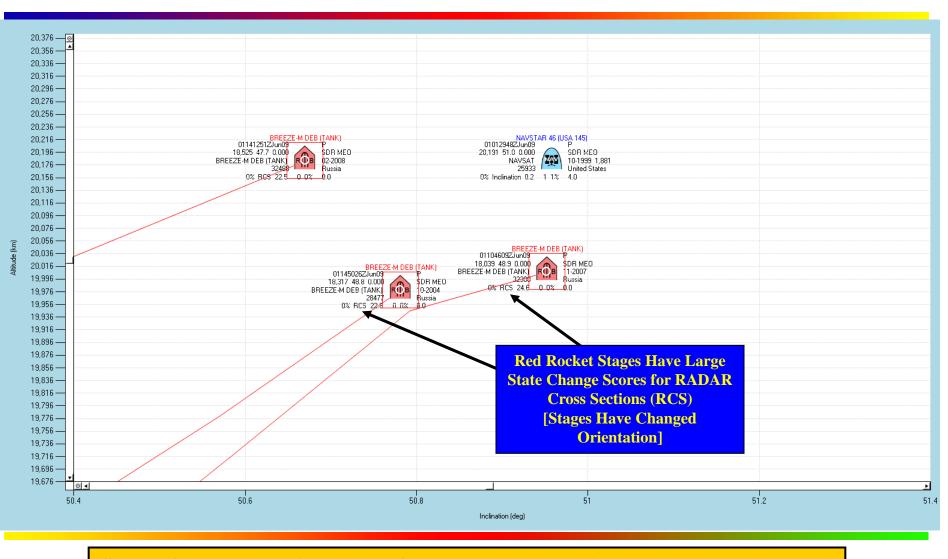


12/21/2012 10:32:06 AM Szymans

**Simultaneous Attack Maneuvers Can Easily be Detected** 

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#### SAW – Multiple Attacks Against One GPS

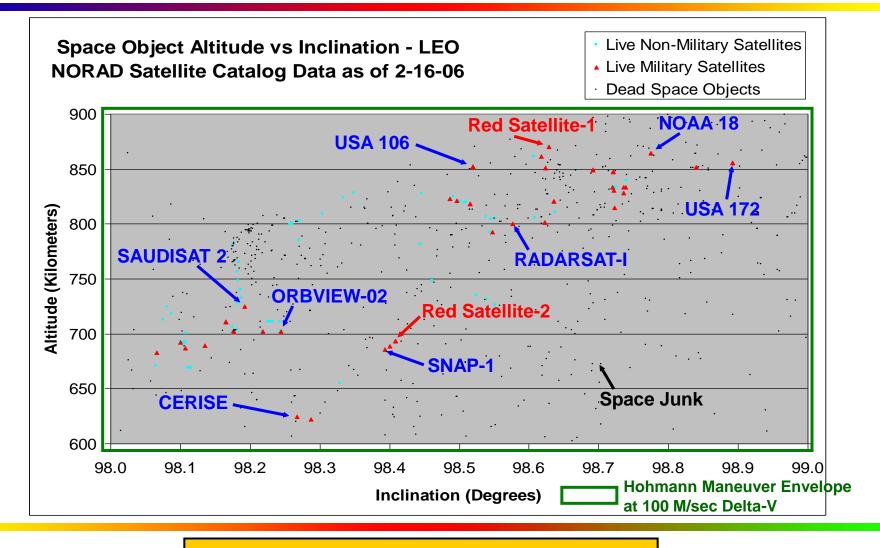


12/21/2012 10:32:

**Space Objects Playing Dead Can be Detected With Unusual Movements** 

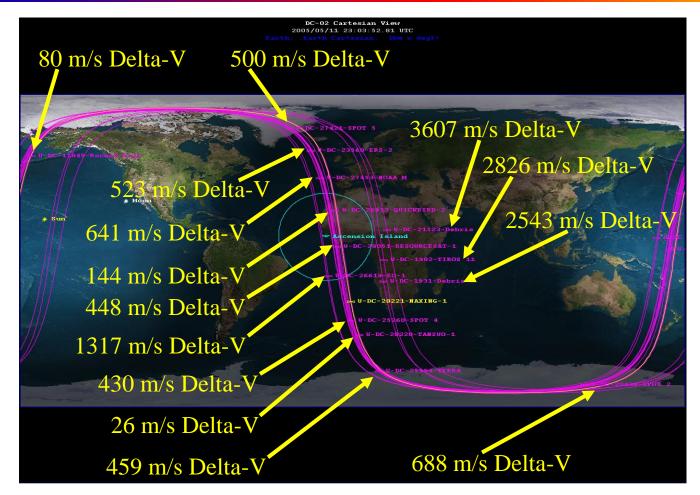
of 16 Pages

# **Space Choke Points**



**There are Many Potential Sources of Attack** 

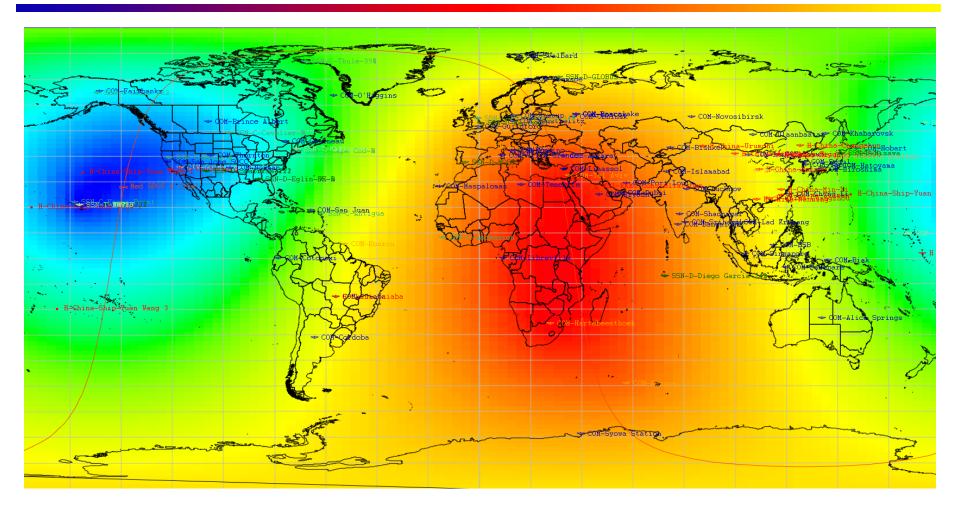
# **Sun-Synchronous Choke Points**



Delta-V Required for 2-Burn Hohmann Transfer Rendezvous to Appear Like Another Satellite

12/21/2012 10:32:06 AM Satellites Can Maneuver to Confuse Targeting Assets

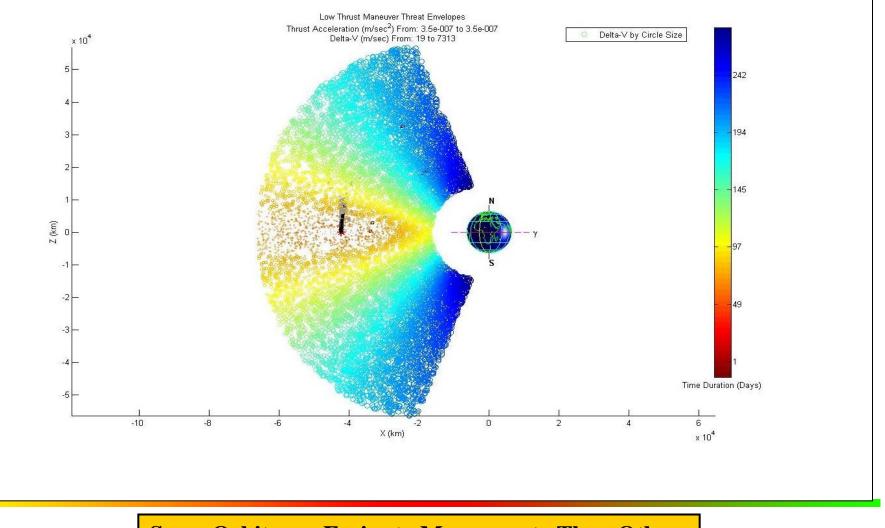
### **Example Attack Locations Optimized for Space Surveillance**



12/21/2012 10:32:0 Some Parts of a Satellite's Orbit May Be More Vulnerable than Others

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### **Threat Envelope Chart (TEC) View 1**

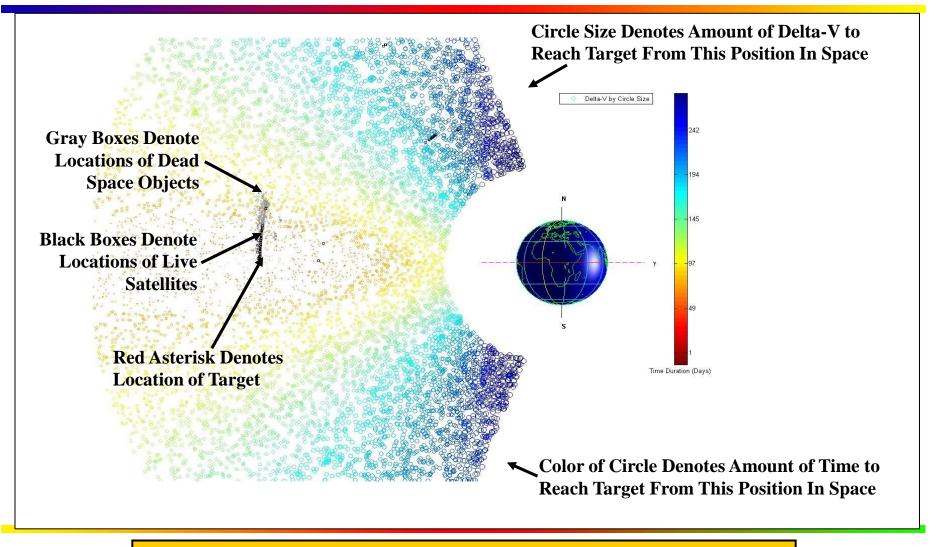


12/21/2012 10:32:06 AM Szymanski

**Some Orbits are Easier to Maneuver to Than Others** 

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### **Example Threat Envelope View 2**



12/21/2012 10:32:06 AM

**Some Regions of Space May be More Threatening than Others** 

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### **Example Threat Envelope View 3**

