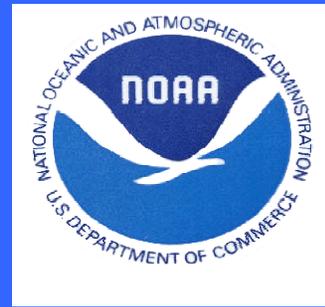




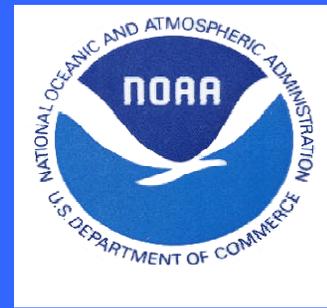
**JACIE – March 20, 2007**



**NOAA's Satellite and Information  
Service  
2005-2016  
International Remote Sensing  
Study**



# Table of Contents

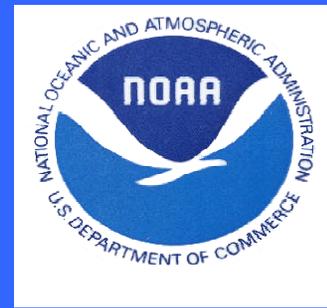


- 1. Project Overview**
- 2. Report Overview**
- 3. Cross Sector Study Overview**
- 4. High Resolution Data Overview**
- 5. Mid Resolution Data Overview**
- 6. Aerial Data Overview**
- 7. Summary**



# NOAA

## Project Overview



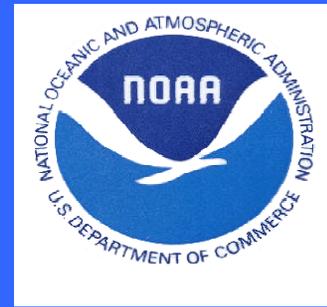
- Project time frame: 2005-2006

### Project Summary:

- On-line survey instrument and personal interviews utilized to collect data from eight sectors – focus U.S., Canada, Europe, Asia
- Generated over 3000 pages of statistics
  - Aerial Film
  - Aerial Digital
  - Aerial Sensor
  - Satellite
  - Hardware/Software Provider
  - Academic End User
  - Government End User
  - Commercial End User



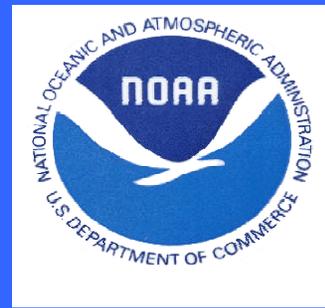
# NOAA Project Overview



- **Survey Instrument publicized:**
  - **47 Alliance Research Partners**
  - **8 Global Conferences**
  - **Advertising**
  - **Global Marketing Insights, Inc. international database of contacts for the remote sensing industry**



# NOAA Project Overview



**1,547 Online Surveys Western Study**

**+250 Personal Interviews**

**1,797 Total Surveys Completed-2005**

**408 Online Surveys Asian Study**

**+ 50 Personal Interviews**

**458 Total Surveys Completed-2006**



# NOAA Report Overview Western Study 2005



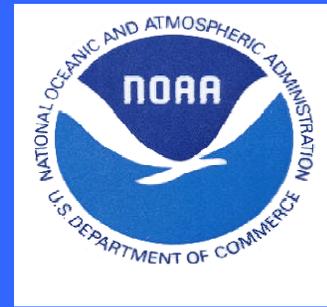
- **Task 1: Survey of International Remote Sensing Market Aerial and Spaceborne**
- **Task 2: Analysis of Domestic Aerial Sectors**
- **Report Deliverables:**
  - 74 Page Report



# NOAA Report Overview Asian Study 2006



- **Task 1: Overview and comparison to the Western Study**
- **Task 2: Analysis of Satellite and Government Sectors**
- **Report Deliverables:**
  - **45 Page Report**



# Cross Sector Research Overview



# Cross Sector Overview 2005-2006



<b># Responses – on line survey responses Globally</b>	<b>WEST/ASIA</b> <b>1547 / 408</b>
<b>-U.S. (India, Aus., China, Thail., S.Kor., Japan)</b>	<b>% Response</b> <b>59% / 38%</b>
<b>-International (split among over 20 countries)</b>	<b>41% / 62%</b>

### Majority or Career Position

CEO/President, Technical Mgr., General/Business Mgr.	46%
Technical Analysts, GIS Analysts	48%

### Majority of Experience

16+ Years	30%
<10 Years	58%



# Cross Sector Overview 2005-2006



- **The Government and Commercial Sectors provided the highest number of responses in both the Western and Asian studies.**
- **Asian responses in the Satellite and Hardware/ Software Sectors were double those of the same sectors in the Western Study.**
- **Asia focused on Global Warming, Environment.**



# Cross Sector Overview 2005-2006

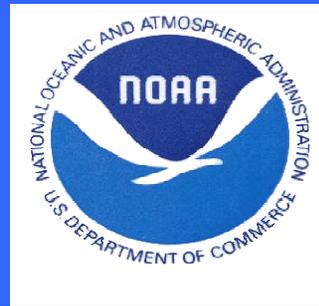


## 2005 Western Study & 2006 Asian Respondents Sector Comparison

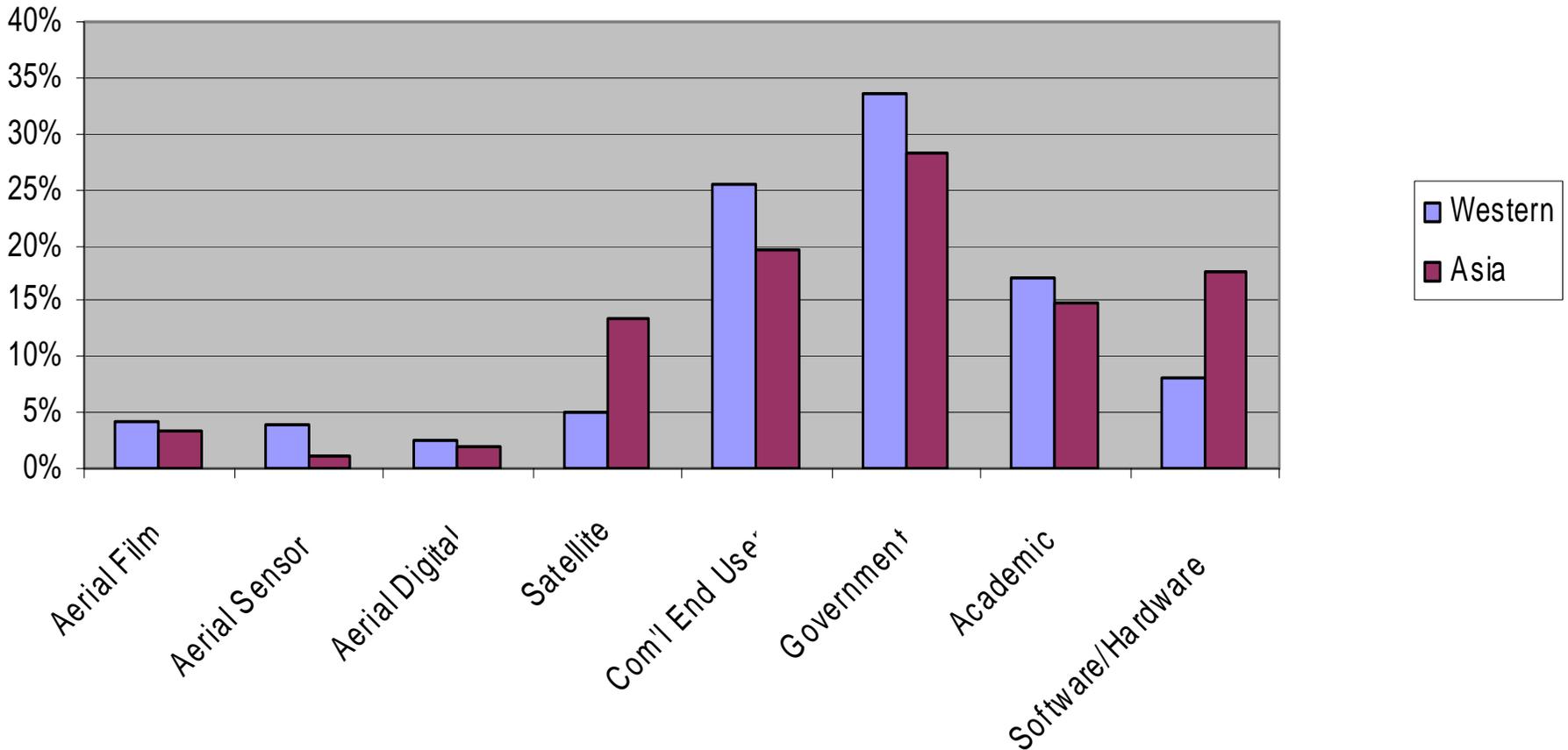
Geographic Region	Aerial Film	Aerial Sensor	Aerial Digital	Satellite	Com'l End User	Gov't	Academic	Software/Hardware	Total
Western Study-US, Canada, Europe, etc.	4%	4%	3%	5%	25%	34%	17%	8%	100%
Asia 2006	3%	1%	2%	13%	20%	28%	15%	18%	100%



# Cross Sector Overview 2005-2006

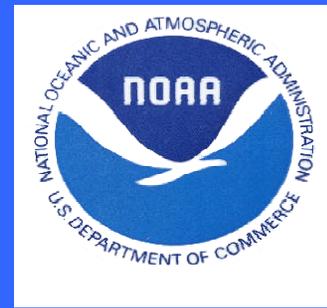


### Geographic Region Responses by Industry Sector





# Cross Sector Overview Technical Trends 2005-2006



- **Asia focused on development of faster processing and improved data storage capacity.**
- **Technology Integration was the focus of the West.**

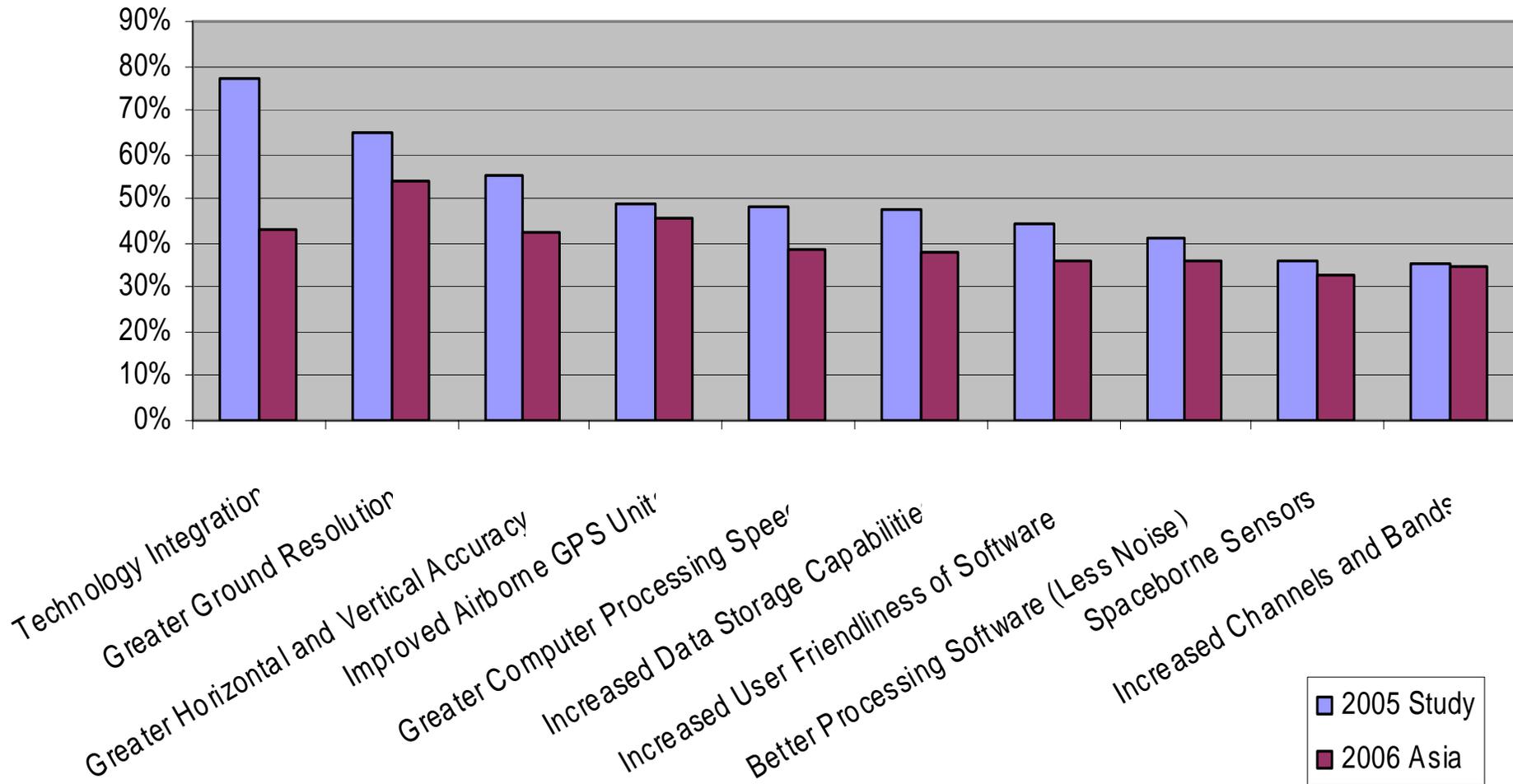


# Cross Sector Overview

## Technical Trends 2005-2006



### 5 Year Projections: Technical Advances

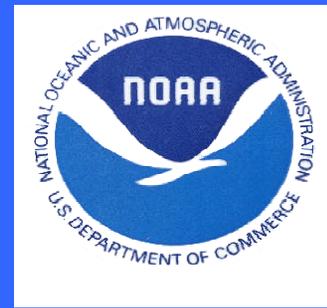




# Cross Sector Overview

## Political Trends

### 2005-2006



- **Asian respondents selected “Remote Sensing Data Becoming a Commodity.”**
- **Asian Satellite Sector respondents chose “National Defense/Homeland Security” as the top trend impacting their future.**
- **Ranking third in the Asian Study and fifth in the Western Study is “Global Warming.”**
- **In the Aerial Sectors for both the Western and Asian studies, one of their main selections of a high impact trend was “Outsourcing/Privatization.”**

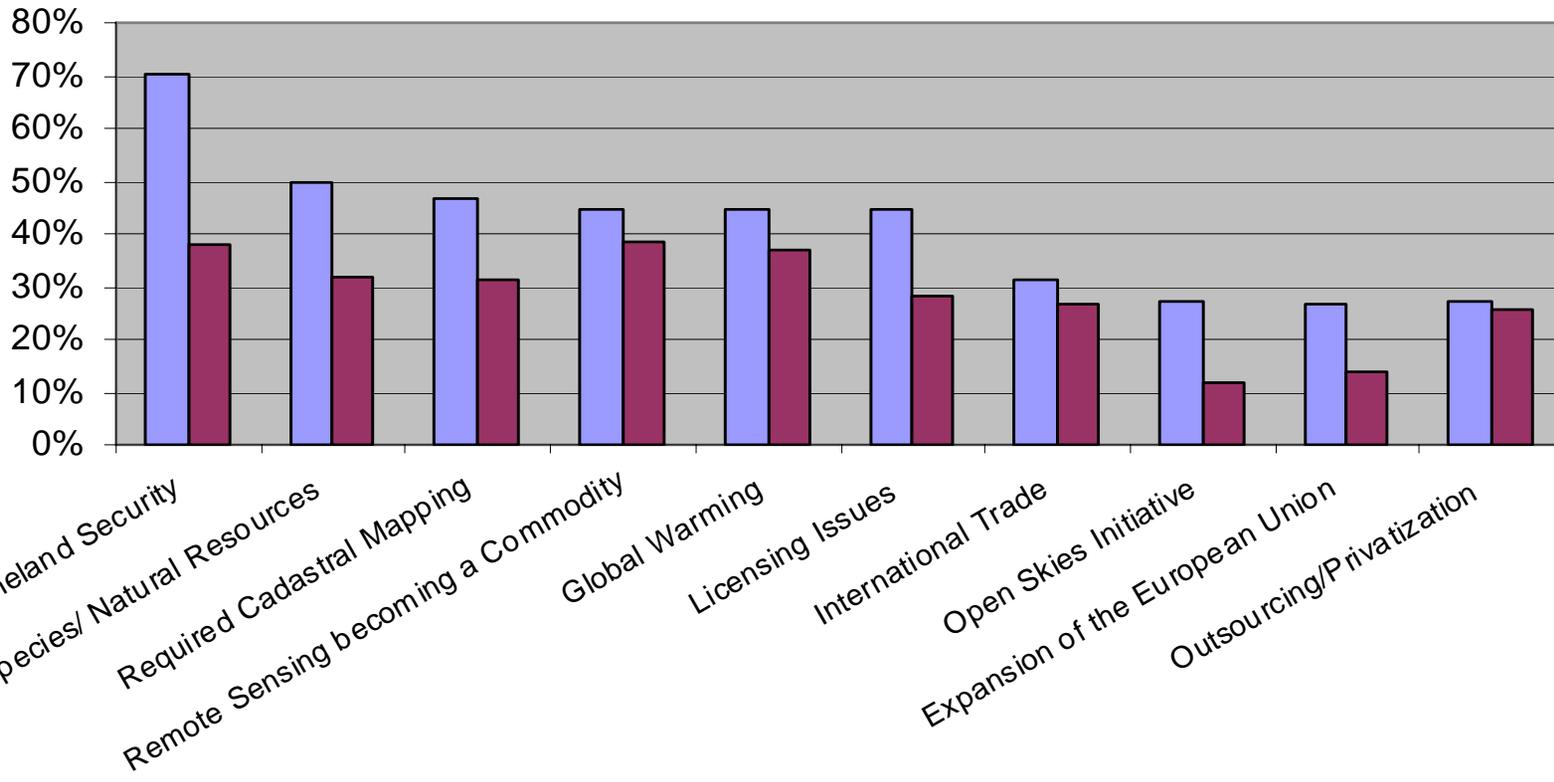


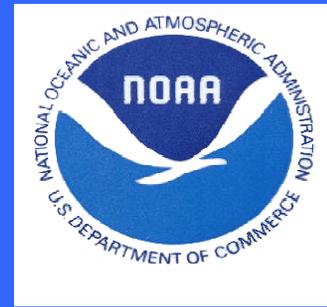
# Cross Sector Overview Political Trends 2005-2006



## 5 Year Projections: Political, Economic, Environmental Trends

Phase 1  
Asia

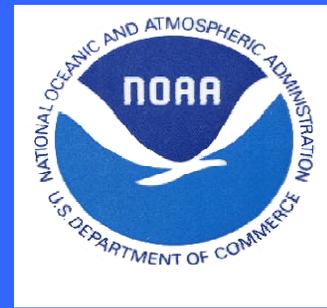




# Overall Data Usage Results



# Overall Data Usage West 2005 & Asia 2006



- **Satellite data usage at 83% in Asia and at 68% in the West.**
- **Western Aerial Usage 30% and Asian Aerial Usage 16%.**
- **Landsat the overall winner for most utilized data.**
- **IKONOS the overall winner for most utilized High Resolution data.**



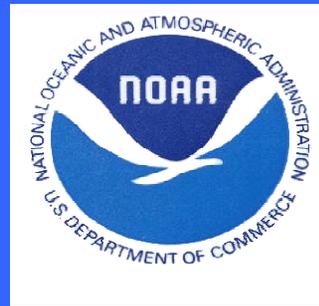
# Overall Data Usage



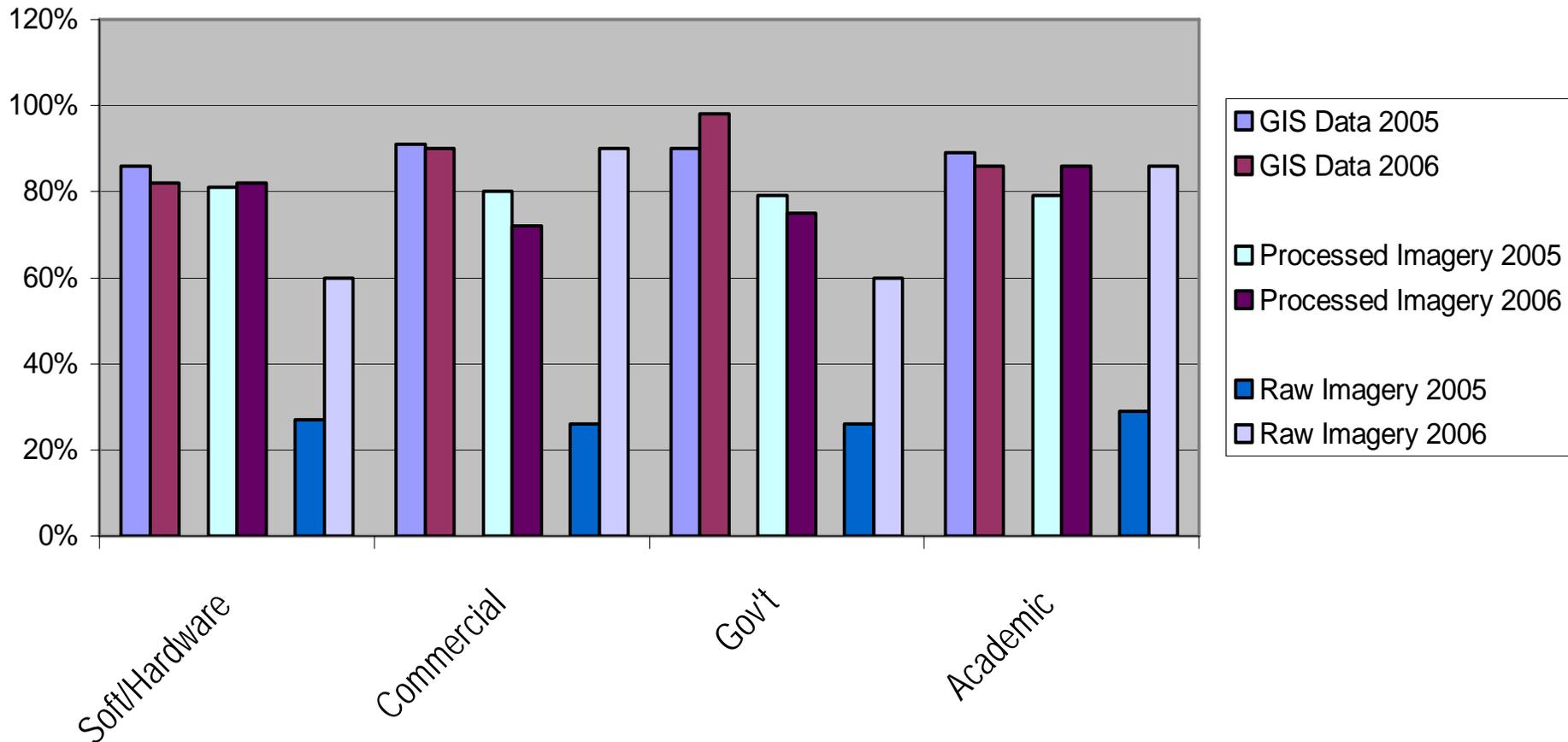
DATA USAGE Comparison	Western 2005 Respondents	Asian 2006 Respondents
<b>Aerial Data:</b>		
-Aerial Digital/Scanned Film	-	6%
-Aerial Digital	19%	5%
-Aerial Sensors	1%	2%
-Aerial Film/Analog	10%	3%
<b>SUB-TOTAL</b>	<b>30%</b>	<b>16%</b>
<b>Satellites:</b>		
-High-Resolution	23%	26%
-Mid-Resolution	22%	35%
<b>Other:</b>		
-Radar	25%	23%
-Optical		
<b>Totals:</b>	<b>100%</b>	<b>100%</b>



# Remote Sensing Data Type Usage



### Remote Sensing Data Usage

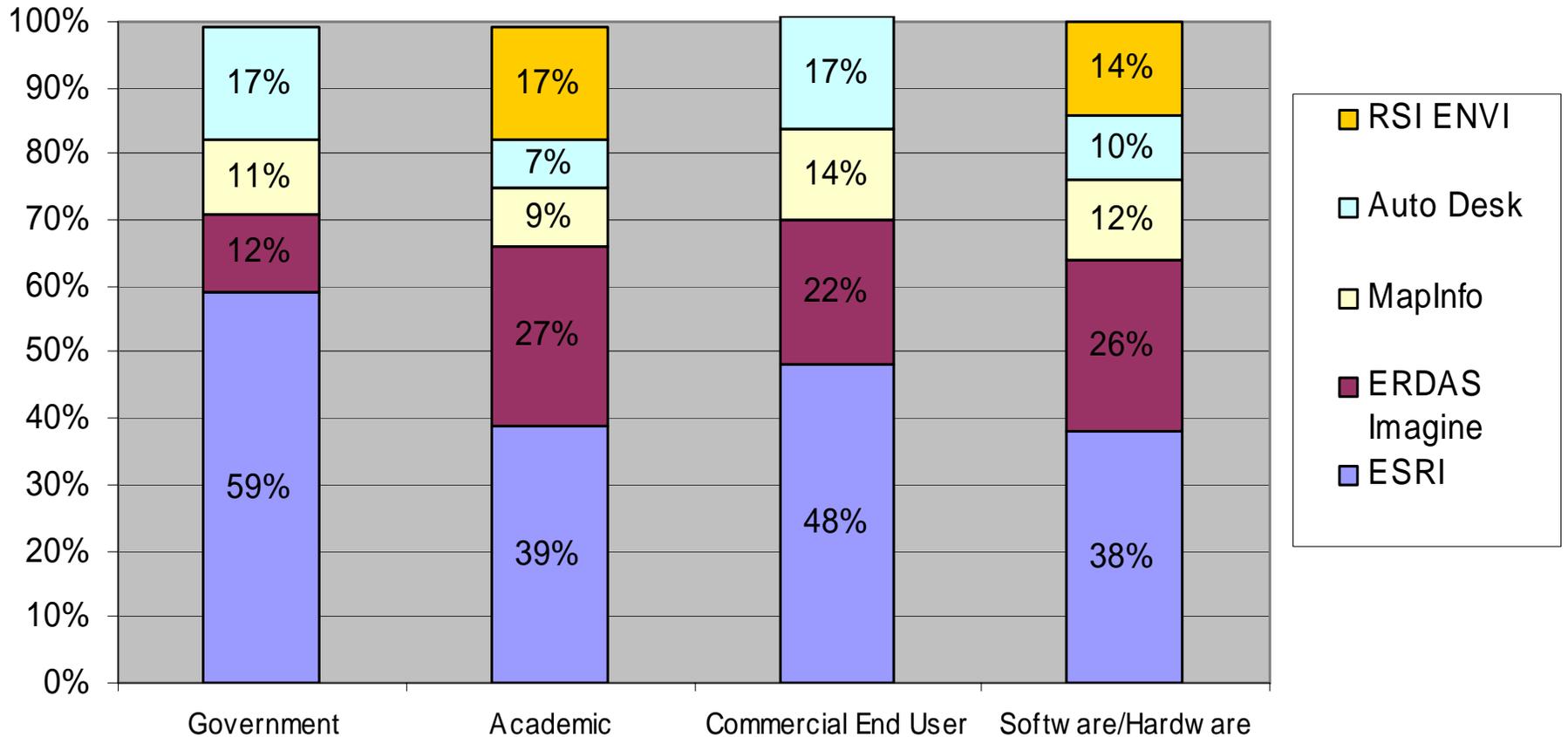




# Software Usage Western 2005



**Western Respondents Software Purchased  
Government, Academic, Commercial and Software/Hardware Sectors**



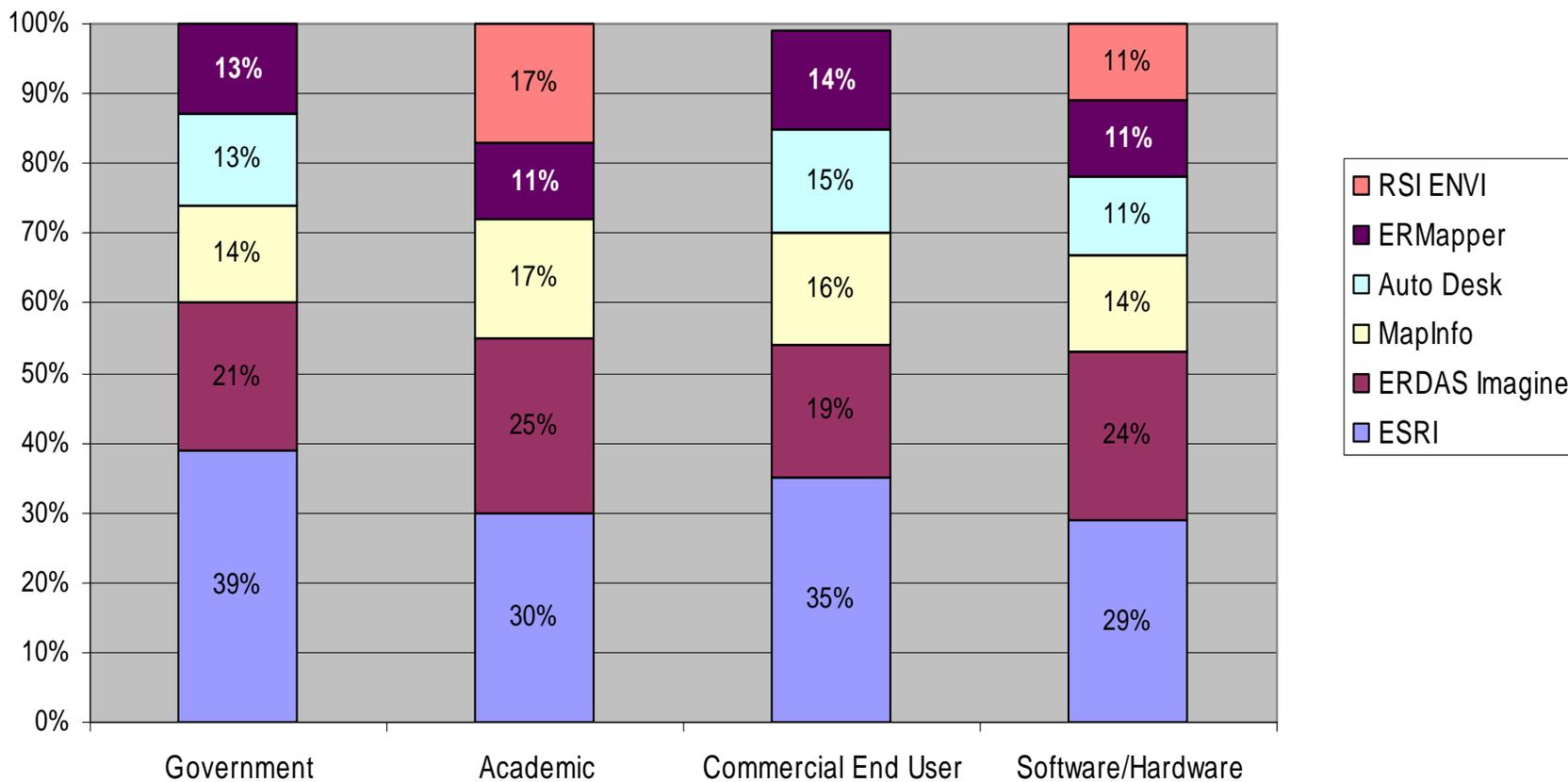


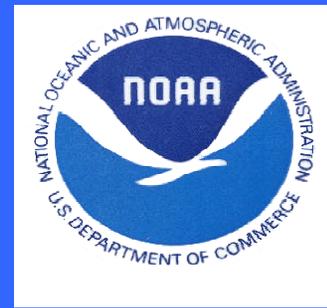
# Software Usage

## Asian 2006



**Asian Respondents Remote Sensing Software Purchased  
Government, Academic, Commercial and Software/Hardware Sectors**

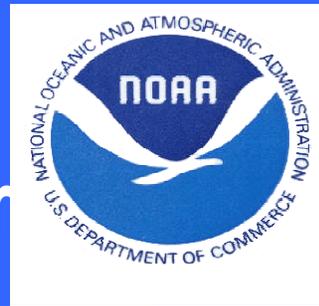




# High Resolution Data Usage Results



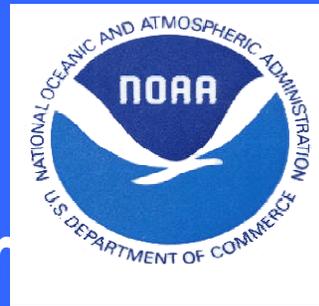
# High Resolution Usage Within the Government Sector



<b>DATA</b>	<b>Western Government-2005</b>	<b>Asian Government-2006</b>
<b>IKONOS</b>	31%	36%
<b>QuickBird</b>	22%	28%
<b>SPOT 5</b>	10%	21%
<b>IRS- CartoSat1</b>	-	24%
<b>OrbView</b>	3%	.4%

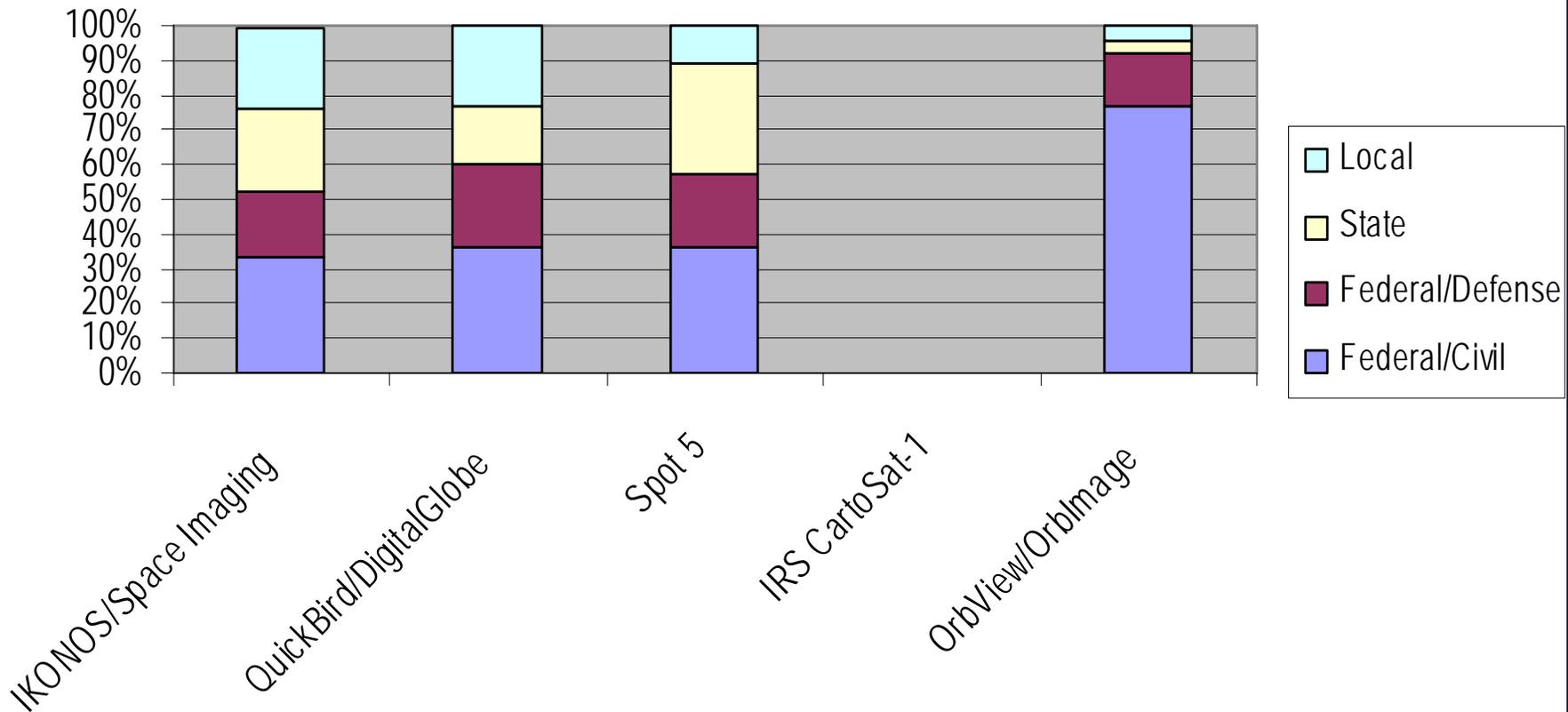


# High Resolution Usage Western 2005



## Within the Government Sector

Western 2005  
Government High Resolution Data

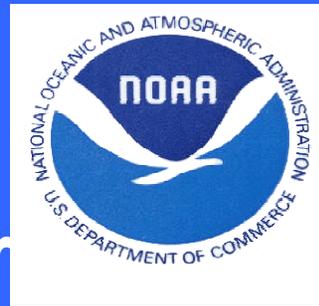




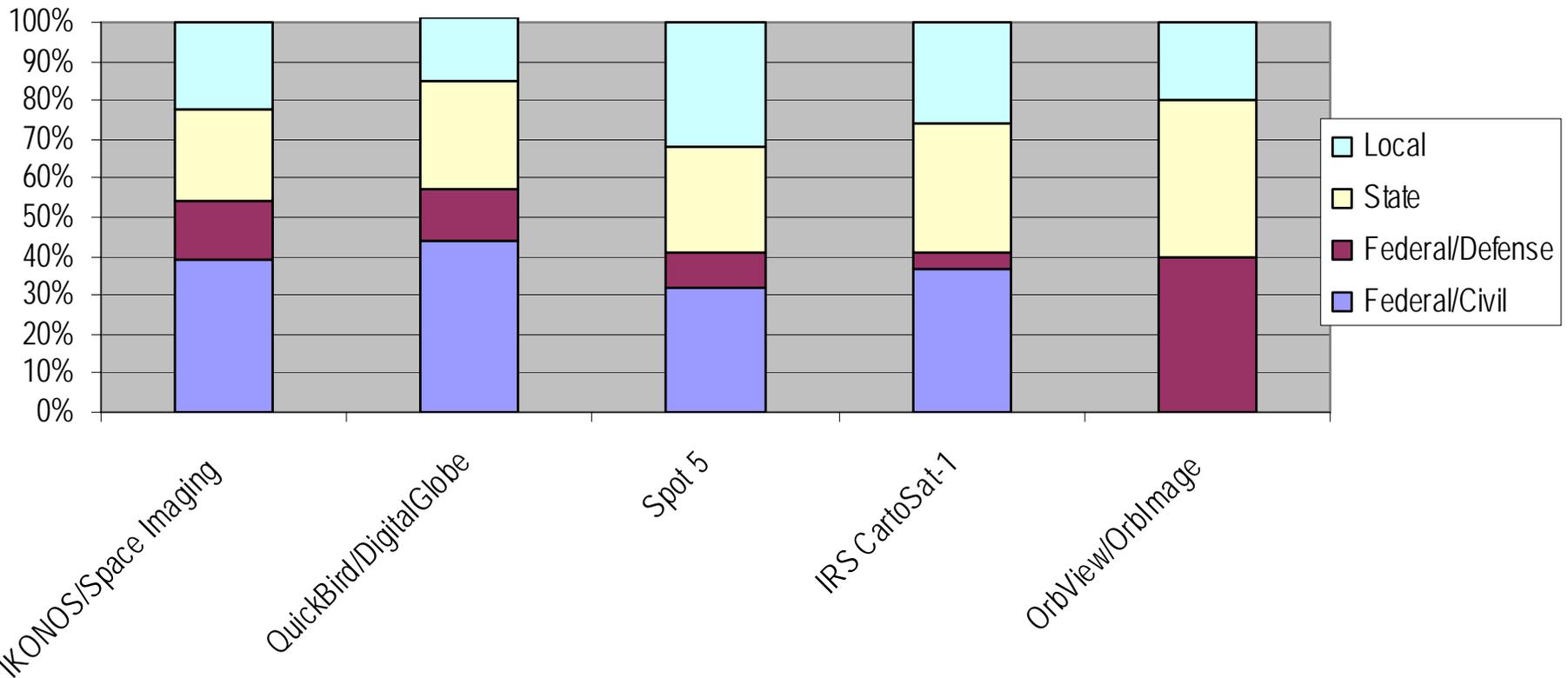
# High Resolution Usage

## Asia 2006

### Within the Government Sector



Asian 2006  
Government Unit High Resolution Data





# Mid-Resolution Data Usage Results



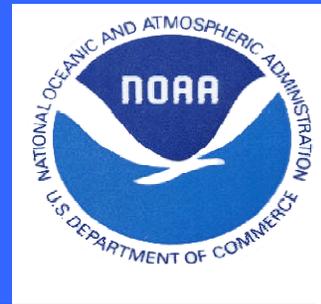
# Mid-Resolution Usage West 2005 & **Asia 2006** Within Each Sector



- **Western and Asian highest use of satellite imagery across all sectors was in the mid-resolution category with Landsat 5 and 7.**
- **Asian Government IRS usage also high.**



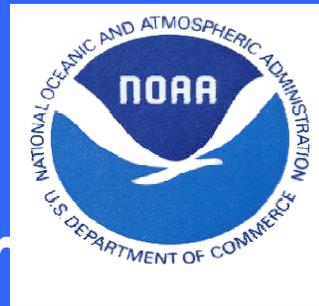
# Mid-Resolution Usage West 2005 & Asia 2006 Within Each Sector



DATA	GOV'T	COMMERCIAL	ACADEMIC
Landsat	42% 69%	40% 51%	41% 60%
IRS	10% 82%	12% 11%	10% 23%
SPOT 2,4	10% 36%	19% 12%	18% 25%

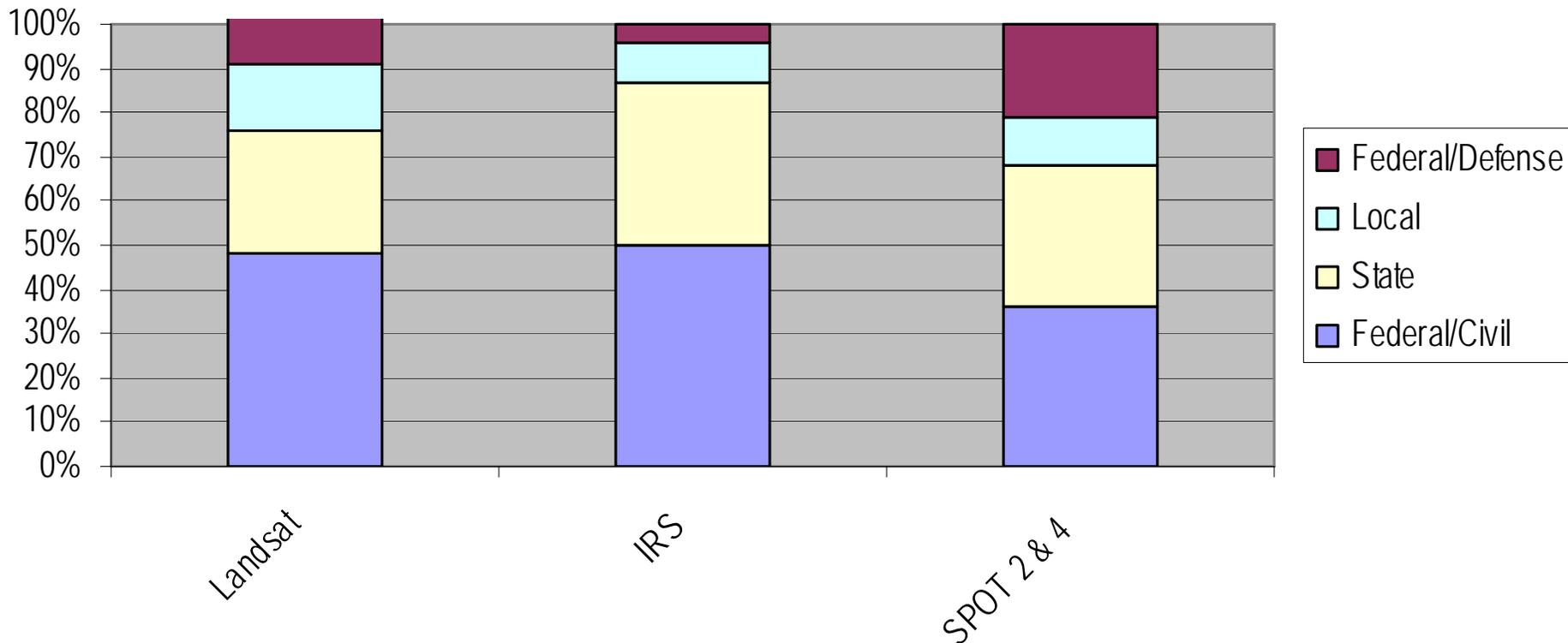


# Mid-Resolution Usage Western 2005



## Within the Government Sector

Western 2005  
Government Unit Mid Resolution Data

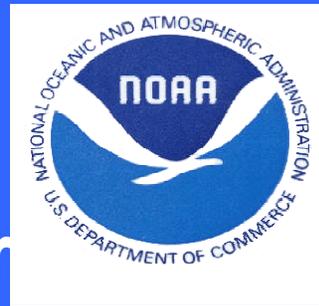




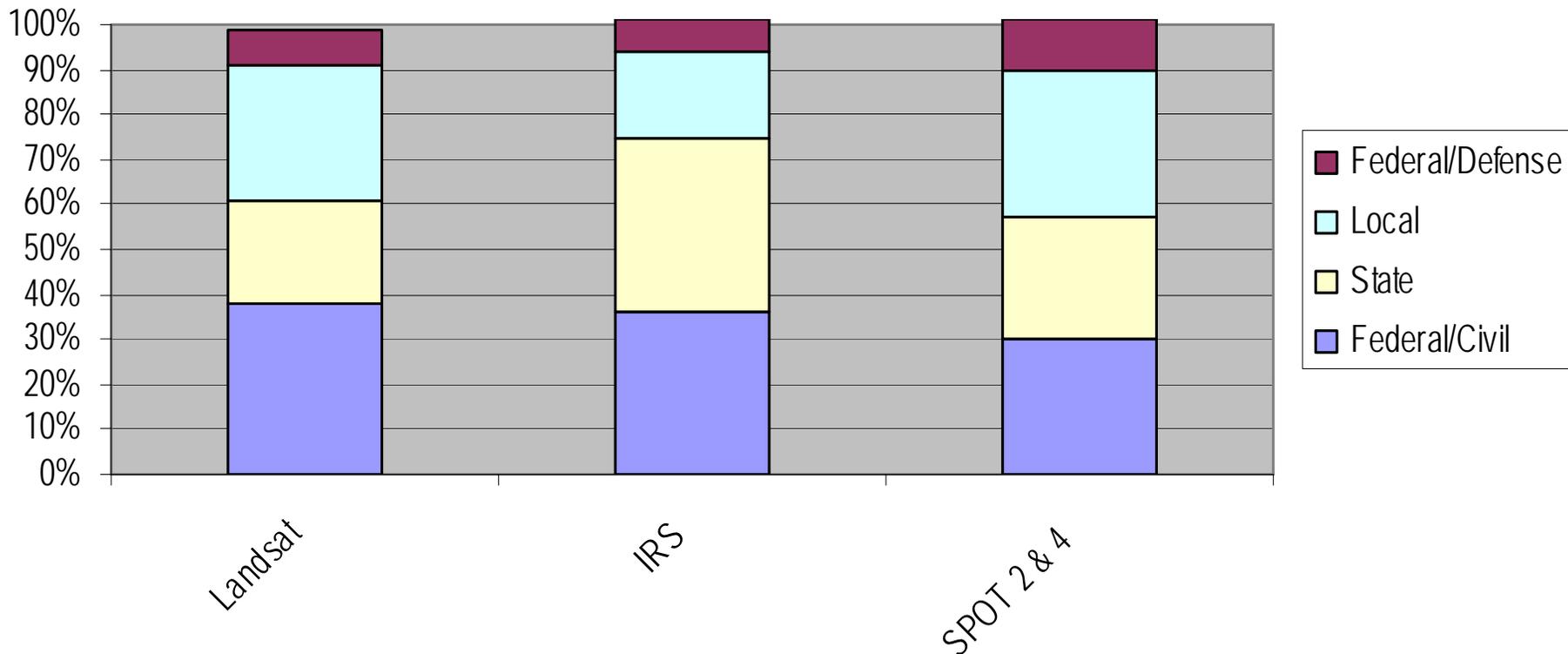
# Mid-Resolution Usage

## Asia 2006

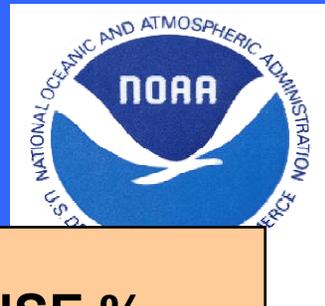
### Within the Government Sector



Asian 2006  
Government Unit Mid Resolution Data



# Other Satellite Data Uses Western Study 2005



<b>INTERNATIONAL GOVERNMENT SATELLITE DATA USAGE 2005-2015</b>	<b>RESPONSE %</b>
NASA (MODIS)	13%
NOAA (AVHRR)	12%
ASTER	11%
RadarSat	10%
NOAA (GOES)	5%
ERS	5%
OrbImage – OrbView	3%
DMC	2%
NASA (EO)	2%
JERS	1%

# Other Satellite Data Uses

## Asian Study 2006

### ASIAN SATELLITE DATA USAGE

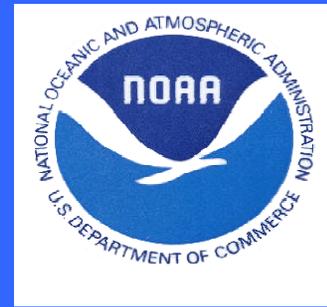
### RESPONSE %

#### Other:

- Other	1%
- EO-1 (NASA), (US)	1%
- MODIS (NASA), (US)	4%
- NOAA/AVHRR (US)	3%
- NOAA/GOES (US)	1%
- RadarSat (MDA), (Canada)	3%
- TERRA (ASTER), (US)	3%
	<b>Subtotal: 16%</b>

#### Asian Satellite Systems:

- ALOS (Japan)	1%
- Beijing-1 (China)	1%
- KOMPSAT-1 (Korea)	1%
- RocSat 2 (Taiwan)	1%
- Ziyuan (China)	1%
	<b>Subtotal: 5%</b>



# Aerial Data Usage Results



# Aerial Usage

## West 2005 & Asia 2006



- **Western and Asian highest responding sector for Aerial Data Usage was the Commercial Sector.**
- **Asian study response rate very low due to government management of the Aerial Sector.**



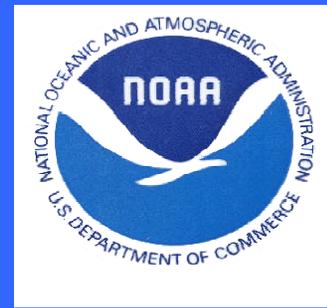
# Aerial Film



- **Most frequently owned mfr. Zeiss RMK Top 15 and Leica RC30.**
- **The respondents would not provide revenue indicating that the government manages the industry.**
- **The organization sizes were large at 100-500 employees.**
- **Most focused on the use of stereo imagery, accuracy and greater ground resolution**



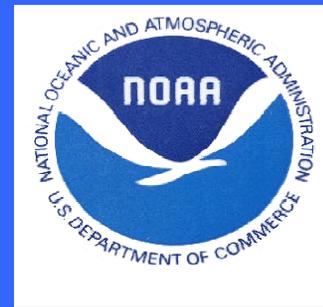
# Aerial Digital



- **Most utilized cameras DIMAC and Applanix DSS.**
- **Indicated no growth and no employment changes over next decade.**
- **Focus over the next decade is International Trade and National Defense/Homeland Security.**



# Aerial Sensor



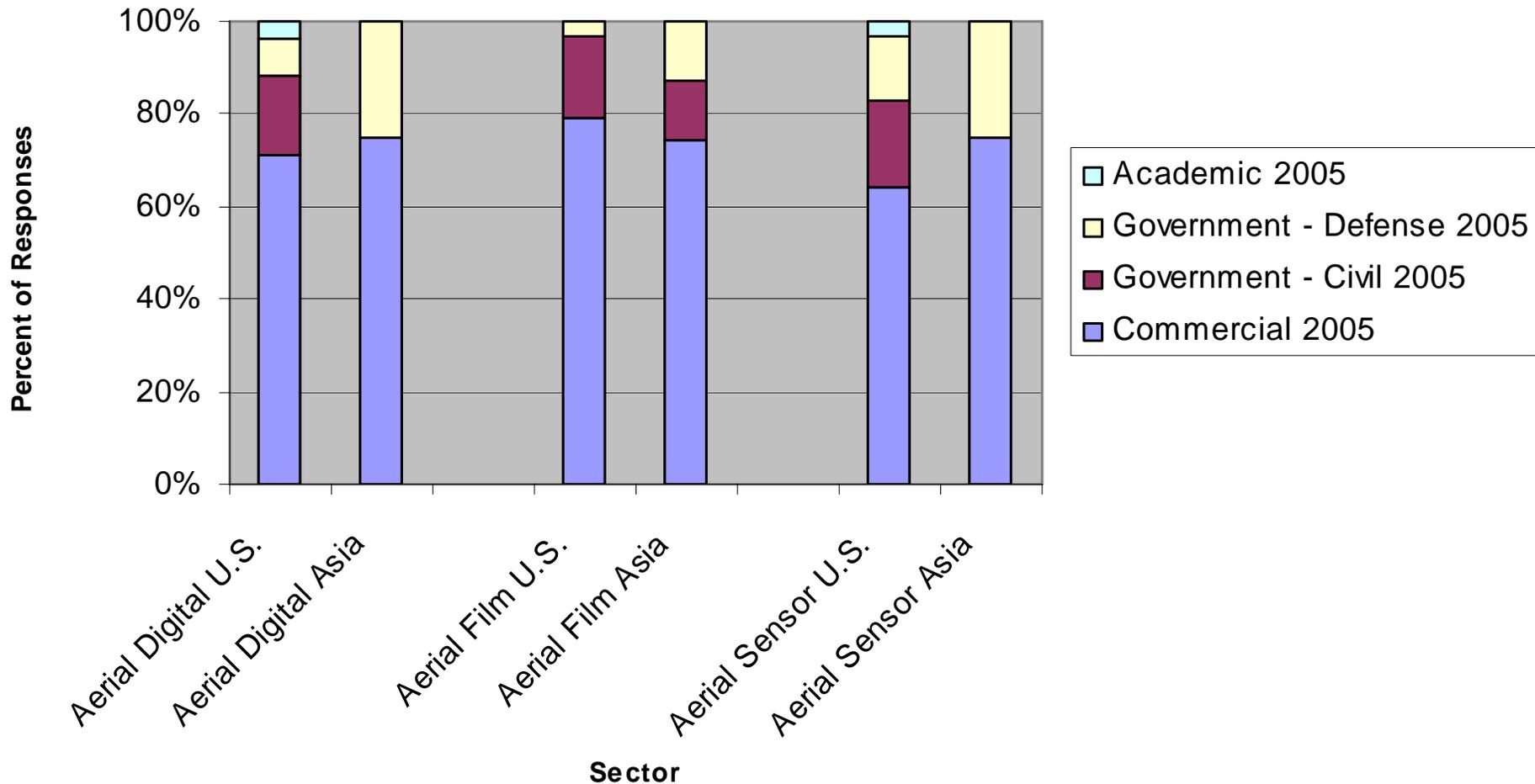
- **Most selected LIDAR mfr.- Optech.**
- **Most selected Multi Spectral Sensor mfr.- ITRES SASI.**
- **No growth indicated in the sale of Aerial Imagery and Sensors over the next decade.**
- **Employment levels remain steady.**
- **Most focused on Outsourcing/Privateization for future business.**



# Aerial Data Usage



US 2005 and Asia 2006



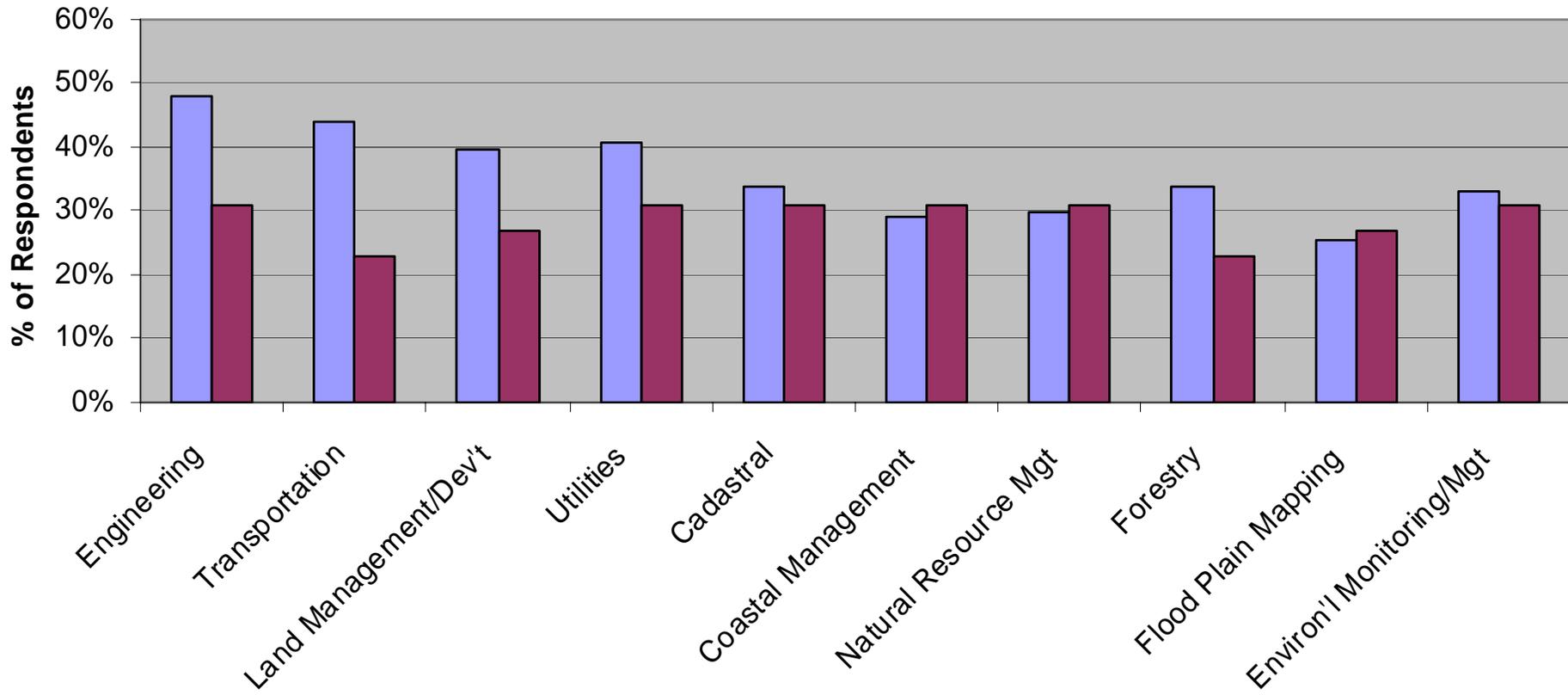


# Aerial Data Applications



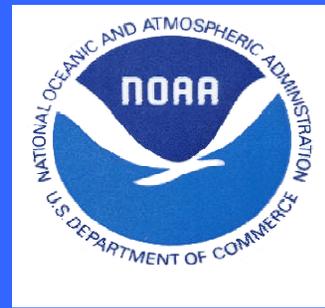
### Applications (Aerial Sectors)

■ 2005 US, Canada and Europe  
■ Asia 2006





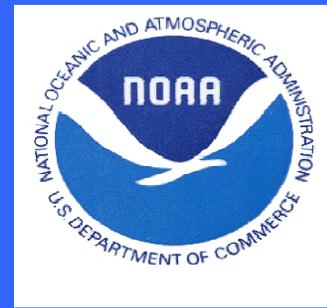
# CLOSING



- **Globally all Imagery Providers predicting growth in terms of data sales and launches.**
- **None of the Data Providers can survive without Government Purchases.**
- **Europe and Asia driven by data becoming less expensive and environmental applications.**
- **U.S./Canada driven by National Defense/Homeland Security.**



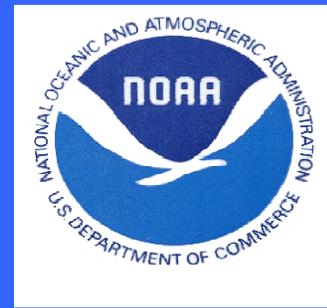
# CLOSING



- **Asia extremely young work force.**
- **Asia focused on satellite development and launches – profitability not an issue – budgets equal the Western for data purchases.**
- **Remote Controlled Aircraft and Artificial Intelligence is also a main focus of the Asian Remote Sensing Community.**



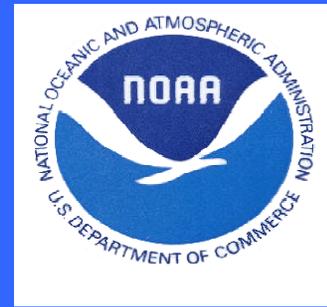
# Summary



- Final report available (PDF)
  - [www.globalinsights.com](http://www.globalinsights.com)
  - [www.licensing.noaa.gov](http://www.licensing.noaa.gov)
  - **2006-2016 Asian Remote Sensing Study to be released any minute!!**



*Thank You!*



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