

NEEA 2012 Summary and Program Recommendation
FGDC Coordination Group
March 13, 2012



+ National Enhanced Elevation Assessment

Completed in December 2012

Sponsor:

- National Digital Elevation Program (NDEP) – Twelve-member agencies, NSGIC

Partners:

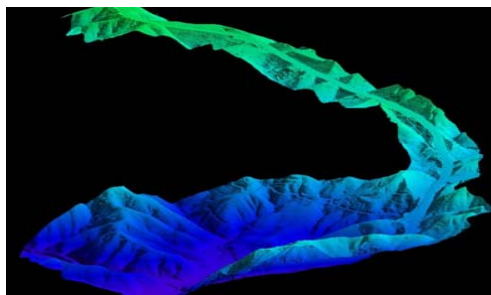
- U.S. Geological Survey (Managing Partner)
- National Geospatial-Intelligence Agency
- Federal Emergency Management Agency
- Natural Resources Conservation Service
- National Oceanic and Atmospheric Administration
- Study participants - 34 Federal agencies, 50 states and others

+ Example Functional Activities (Needs)

602 Functional Activities documented from 34 Federal agencies; 50 States; Territories; and from sampled non-profit, industry, local governments and tribes.



Precision Farming



Land Navigation and Safety



Geologic Resources and Hazards Mitigation



Natural Resource Conservation



Infrastructure Management



Flood Risk Mitigation

+ BU #9 – Geologic Resource Assessment and Hazards Mitigation

USGS Mission Critical Requirements: Identify areas, level of activity & risk associated with Earth hazards to reduce losses and increase public safety.

Update frequencies: 4-10 years

Expected combined benefits: \$31.25M/year

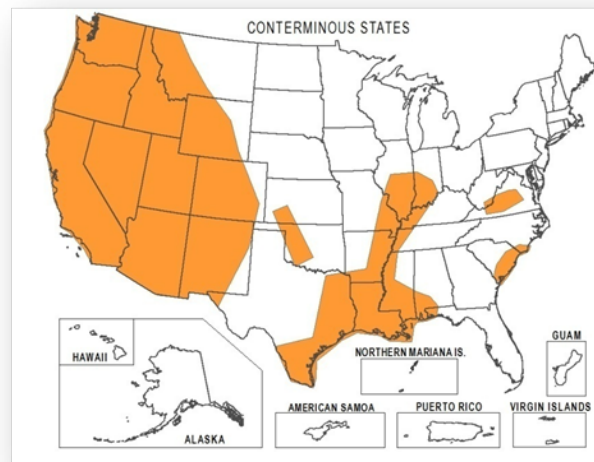
Data requirement: Predominantly QL 1

Example applications:

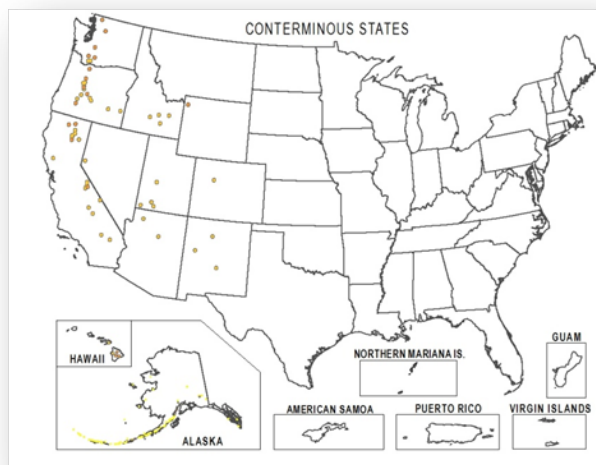
- Identify faults/landslides under thick vegetation
- Enhance infrastructure engineering design
- Estimate size, speed and effects of landslides
- Create loss mitigation strategies
- Provide maps and models to emergency planners

Quality Level

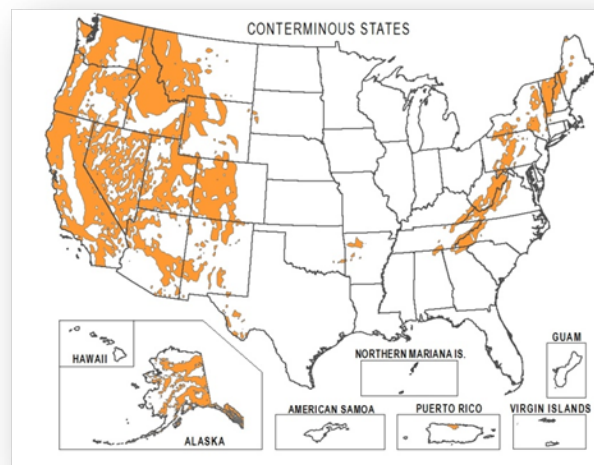
- Quality Level 1
- Quality Level 2
- Quality Level 3
- Quality Level 4
- Quality Level 5



Seismic



Volcanos



Landslides

+ BU #8 – Agriculture and Precision Farming

J.R. Simplot Company Mission Critical Requirements –
QL 3 LiDAR is required for all agricultural land for site-specific application of seed, fertilizer, lime, pesticides and water to optimize farm yields. Also used to reduce farm and pasture runoff that pollutes streams.

- Update Frequencies 6-10 years.
 - Expected benefits \$50M/year in the Red River Valley (parts of ND and MN) for farm drainage-related losses to corn and wheat alone.
 - Potential benefits \$2B/year. If 10% of drainage-related productivity losses were averted with improved elevation data on a national basis.

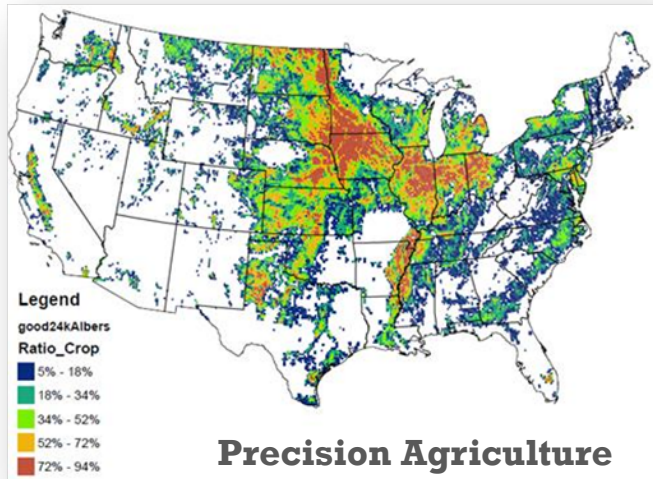


Image from University of Missouri Extension

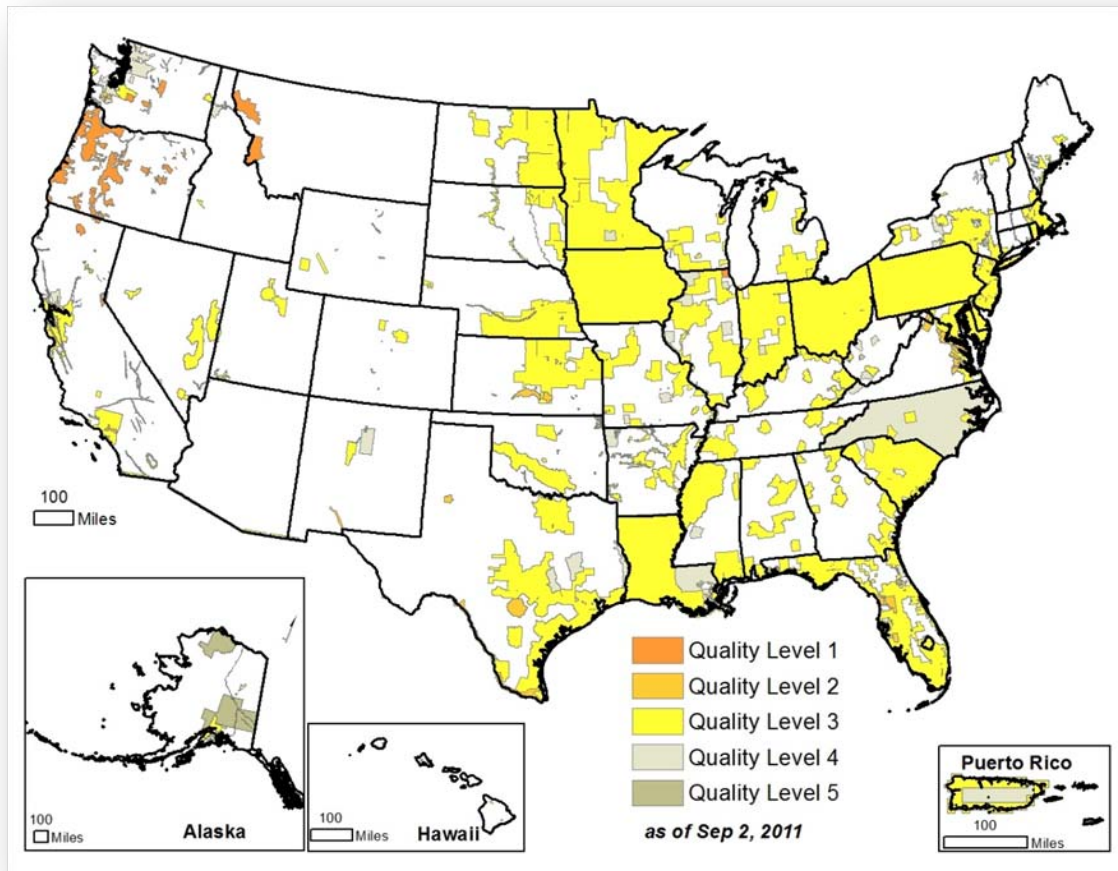
+ Benefits for Top Business Uses

Rank		Annual Benefits	
		Conservative	Potential
1	Flood Risk Management	\$295M	\$502M
2	Infrastructure and Construction Management	\$206M	\$942M
3	Natural Resources Conservation	\$159M	\$335M
4	Agriculture and Precision Farming	\$122M	\$2,011M
5	Water Supply and Quality	\$85M	\$156M
6	Wildfire Management, Planning and Response	\$76M	\$159M
7	Geologic Resource Assessment and Hazard Mitigation	\$52M	\$1,067M
8	Forest Resources Management	\$44M	\$62M
9	River and Stream Resource Management	\$38M	\$87M
10	Aviation Navigation and Safety	\$35M	\$56M
:			
20	Land Navigation and Safety	\$0.2M	\$7,125M
Total for all Business Uses (1 – 27)		\$1.2B	\$13B

+ National Digital Elevation Program (NDEP)

Status of Elevation Data

Map depicts public sources of LiDAR in all states plus IfSAR data in Alaska



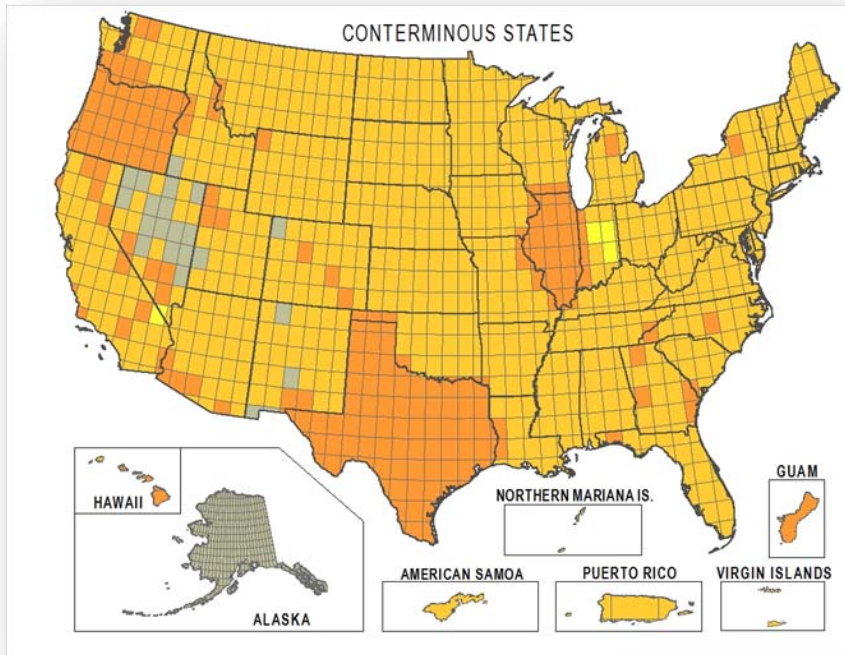
1996 - 2011

- 28% coverage - 49 states
- 15% coverage – Alaska
- 30+ year replacement cycle
- Program is efficient – less than 10% overlap of coverage
- Cooperative data projects work
- Data quality variable

Why is this a problem?

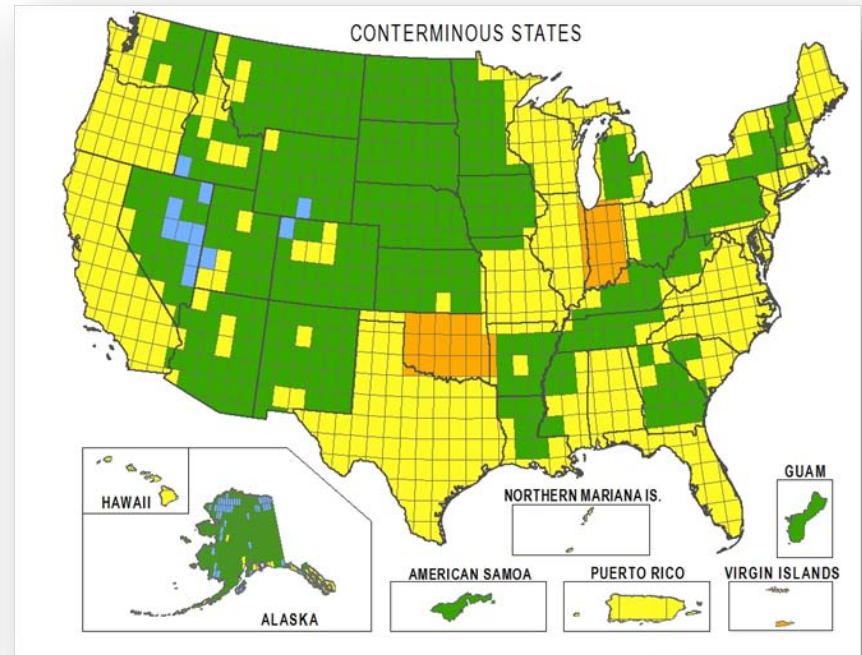
- Remaining 72% coverage is 30 or more years old.
- Alaska – very poor quality
- Meets 10% of need
- Current and emerging needs require much higher quality data.

+ Scenario 4: Highest Net Benefits for Combined Federal, State and Nongovernmental Requirements



Quality Levels

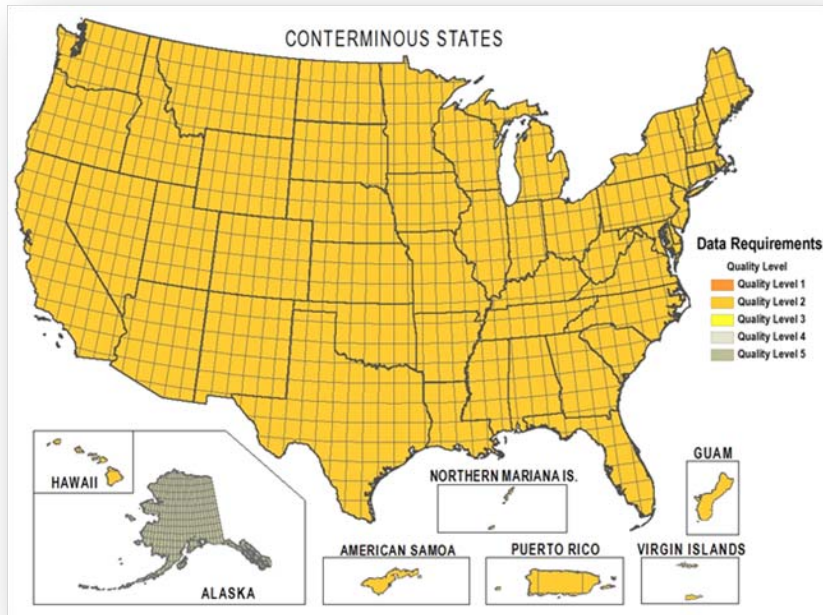
Data Requirements



Update Frequencies



+ Scenario 3, 3A: Uniform QL2



Scenario 3: 8 year acquisition

Avg. Annual Costs: \$146M

Avg. Annual Benefits: \$690M

Avg. Annual Net Benefits: \$544M

B/C Ratio: 4.7:1

Total Possible Benefits Satisfied: 58%

Scenario 3A: 15 year acquisition

Avg. Annual Costs: \$78M

Avg. Annual Benefits: \$349M

Avg. Annual Net Benefits: \$271M

B/C Ratio: 4.5

Total Possible Benefits Satisfied: 30%

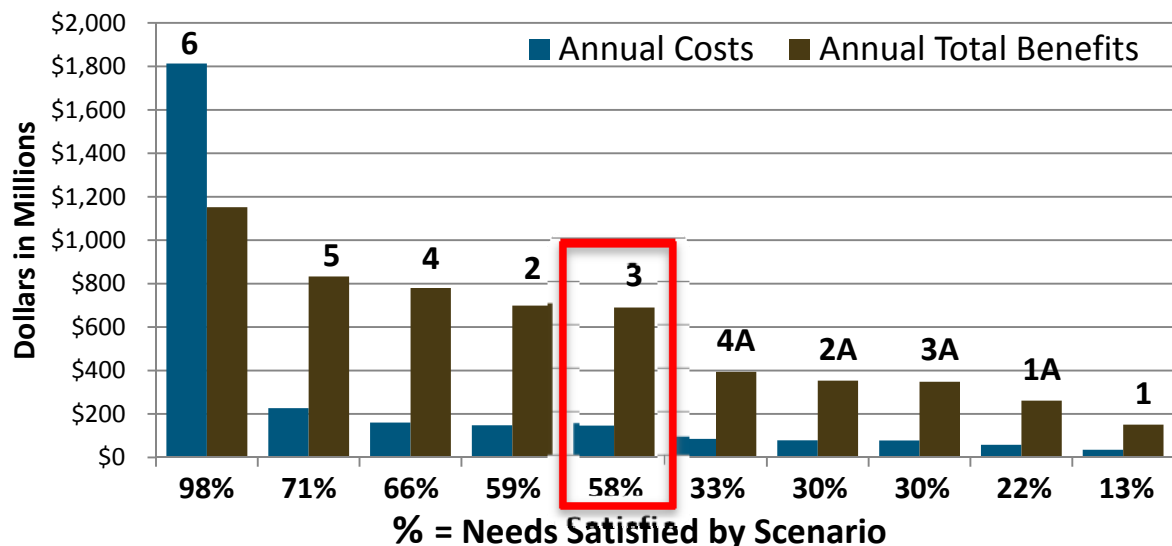
+ Summary of Findings and Conclusions

- Status quo program relatively efficient but meets less than 10% of measured needs.
- All program scenarios provide favorable benefit cost ratios.
- All program scenarios combine multiple requirements and collect data in large regular blocks to achieve improved cost efficiency.
- IT infrastructure needed to manage data for all scenarios.
- No technical barriers to moving ahead
- Major dollar benefits are realized from high quality data.

+ Recommended Elevation Data Program

Quality Level 2 (QL2) LiDAR* - 8 year acquisition

- Average Annual Costs: \$146M
- Average Annual Benefits: \$690M (B/C Ratio - 4.7:1)
- Total Possible Benefits Satisfied: 58%



* Note: All scenarios include QL5 (IfSAR) for Alaska

+ Recommended Elevation Data Program

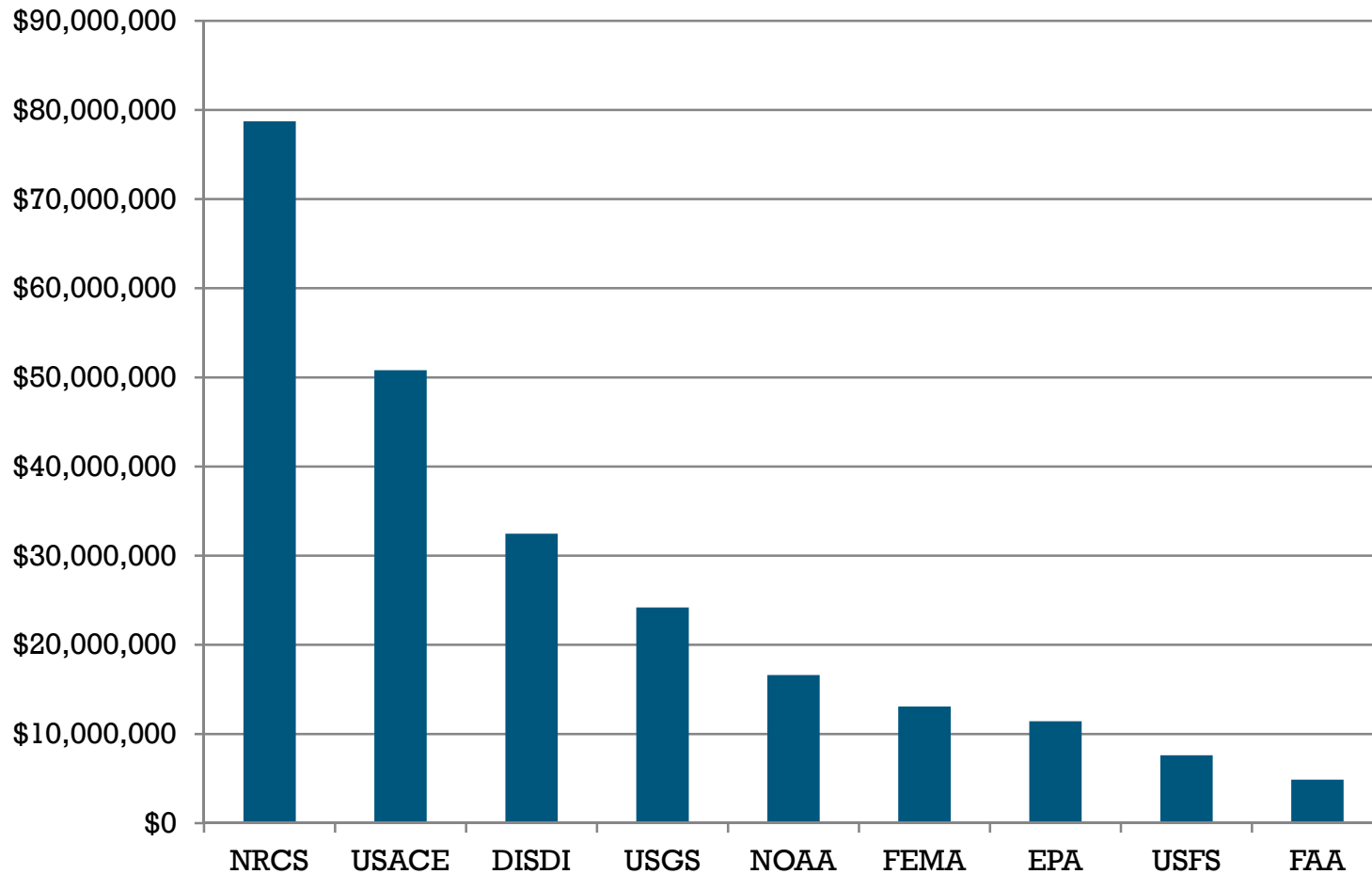
QL2 LiDAR* - 8 year acquisition (3)

Advantages:

- Achieves the majority of benefits
- High benefit-cost ratio and net benefits
- Benefits realized in 8 years instead of 30+ years for status quo
- Meets all lower QL requirements and partially satisfies QL1
- Cost efficiencies achieved through large area acquisition strategy

+ Annual Benefits of Recommended Program

Benefits to top 9 agencies



+ Proposed Funding Strategy

Cooperatively Funded Program Executed by USGS

- Coalition of Federal agencies commit funding to a national program (in rank order of benefits): NRCS, USACE, DISDI, USGS, NOAA, USFS, FEMA, EPA, FAA, NGA at \$10 M each plus USGS base program of approximately \$10 M
- States and other partner agencies will be invited to participate \$36 M (balance of program cost)
- Collection priorities will be based on coalition partner agency needs
- Acquisition cycle scales with funding

+ Alaska Roundtable Meeting

Accelerate Funding for Critical Elevation Data Needs

- NEEA program recommendation includes QL5 (IfSAR) for Alaska, however critical and well-documented needs for data are urgent
- USGS partnering with State of Alaska to convene a Round Table meeting of Federal agencies in May to discuss funding strategies
- Follow-on to Round Table meeting held in Anchorage in May, 2011 with participation including BLM, USFS, NPS, USGS, FAA, FEMA, DHS, and DOD
- Supports Alaska's Statewide Digital Mapping Initiative, USGS Alaska Mapping Initiative and a wide range of government mission needs
- Recently, NORTHCOM, the Navy, and the Coast Guard have also expressed interest in better Alaska data and maps due to expanded commercial air and sea transport requirements via arctic routes

+ Outreach Plans for Enhanced Elevation Program to include Alaska Initiative

- **FGDC Coordination**
 - Planning for special ExCom meeting in March
 - Presentations at Coordination Group (today) and Steering Committee meeting in April
 - NGAC presentation in April and request NGAC recommendations to strategy

- Kevin Gallagher, USGS Associate Director for Core Science Systems, requesting to meet with executives in appropriate program areas of the proposed partner agencies

- Alaska Round Table in May

- Community outreach plans: MAPPS, NSGIC, others...

- Materials under development for these meetings
 - 1-page NEEA “at a glance” information sheet
 - 1-page partner strategy information sheet
 - Summary of your agency needs and benefits
 - Website with these materials to include Dewberry report