

GEOMORPHIC CHANGE DETECTION

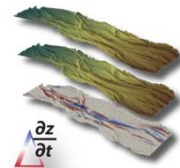
L. RECAP OF DAY 1 & PREVIEW OF DAY 2



USACE Workshop

Kansas City







May 30- June 1, 2012



**US Army Corps
of Engineers®**



WORKSHOP PLAN – DAY 1... (MORNING)








- | | | |
|---|---|-----------------------------|
| A. | Introductions | 9:00 to 9:30 |
|  | B. Review of Topographic Surveys & Data | 9:30 to 10:00 |
|  | C. Review of Building DEMs | 10:00 to 10:45 |
| | | <i>10:45 to 11:00 Break</i> |
|  | D. Working with Cross Section Data | 11:00 to 11:30 |
|  | | |
|  | E. Essential Best Practices to Support change Detection | 11:30 to 12:00 |
|  | | <i>12:00 to 13:30 Lunch</i> |



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WORKSHOP PLAN – DAY 1... (AFTERNOON)

	F. Traditional Approaches to Change Detection	13:30 to 14:30
	G. Intro to GCD Software	14:30 to 15:00
	H. Thresholding Alternatives	15:00 to 15:30
	I. Alt. Approaches (Spatial Coherence + Bayesian)	15:30 to 15:45 Break 15:45 to 16:15
	J. Spatially Variable Error	16:15 to 16:30
	K. Multi-Method Surveys	16:30 to 16:45
	L. Recap & Preview of Day 2	16:45 to 17:00ish

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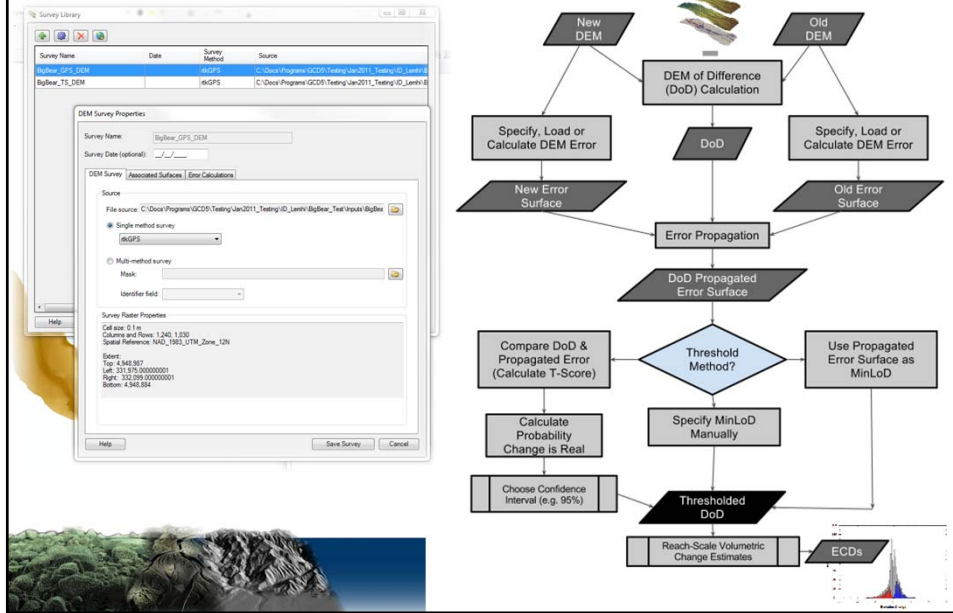
MAIN TAKE HOMES FROM DAY 1

- Change detection is only possible when signal is greater than noise
- Now we have multiple methods for estimating noise
 - Start Simple & Conservative
 - Invest more in error estimation if you think there is a real signal that is being threshold out
- The methods do not guarantee that you will be able to distinguish your signal from noise

DoD = DEM of Difference =



USING THE GCD SOFTWARE...



BY END OF WORKSHOP

You should understand:

1. GCD techniques and how they are applied to monitoring rivers
2. How to account for unreliability uncertainties in DEMs
3. How to interpret DoDs

GCD \neq Glen Canyon Dam
 GCD = Geomorphic Change Detection

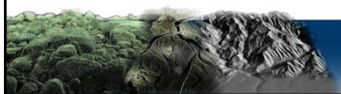


\approx ?




DoD \neq



DoD = DEM of Difference =








WORKSHOP LEARNING OUTCOMES

-  A comprehensive overview of the theory underpinning geomorphic change detection
-  Partial
 - Instill background necessary to design effective repeat topographic monitoring campaigns and distinguish geomorphic changes from noise
 - Methods for interpreting and segregating morphological sediment budgets quantitatively in terms of both geomorphic processes and changes in physical habitat
-  Partial
 - Hands-on instruction on use of the [GCD software](#) through group-led and self-paced exercises
 - An opportunity to interact with experts on geomorphic monitoring and the software developers of GCD to help you make better use of your own data







WORKSHOP PLAN – DAY 2... (Morning)

-  Q & A: Misconceptions from Day 1 9:00 to 9:15
-  M. Fuzzy Inference Systems 9:15 to 10:00
-  N. Building Your Own FIS 10:00 to 11:00
-  O. Closure of Sediment Budgets & Transient Storage Analysis 11:00 to 11:30
-  P. Interpreting Outputs of GCD – Tips & Tricks 11:30 to 12:00
- Lunch On Own 12:00 to 13:30





WORKSHOP PLAN – DAY 2... (Afternoon)

- | | | |
|---|--|-------------------|
|  | Q. GCD Budget Segregation | 13:30 to 14:30 |
|  | R. Budget Segregation Exercise | 14:30 to 15:30 |
| <i>Break 15:30 – 15:45</i> | | |
|  | S. Guided Examples with ACE's OWN Data | 15:45 to 16:45 |
|  | T. Workshop Synthesis | 16:45 to 17:00ish |

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WORKSHOP PLAN – DAY 3...

- | | | |
|---|--|---------------|
|  | U. GCD Feature Wishlist | 9:00 to 9:30 |
|  | V. Working with Your Own Datasets in GCD | 9:30 to 12:30 |

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