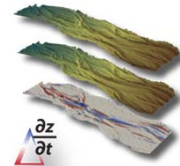


GEOMORPHIC CHANGE DETECTION

T. WORKSHOP SYNTHESIS



USACE Workshop
Kansas City
May 30- June 1, 2012



**US Army Corps
of Engineers®**



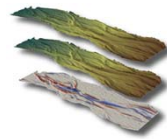
WE CAN NOW TURN THE HOSE OFF



MAIN TAKE HOMES FROM DAY 2

- Budget Segregation Extremely Flexible Way of Getting More Out of GCD
- Be Adaptable when Designing & Implementing Monitoring Campaigns... Hybrid A Reality
- 10% of Effort is Analysis – 90% is Data Preparation (e.g. Grid Concurrency; Building Surfaces; Removing Systematic Bias)
- Leave time for interpretation & combine multiple lines of evidence!

DoD = DEM of Difference =








WORKSHOP BIG PICTURE PLAN

- A. DAY 1 – All About Distinguishing Signal From Noise
- B. Day 2 – Interpreting the Signal & Cool Applications
- C. **Day 3- Hands-On with your own data**



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> |

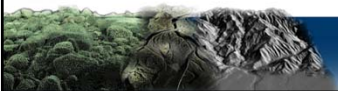


A Plan.. Not a Contract



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>15:30 to 15:45 Break</i> |
|  | I. Alt. Approaches (Spatial Coherence + Bayesian) | 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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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

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WORKSHOP PLAN – DAY 2... (Afternoon)

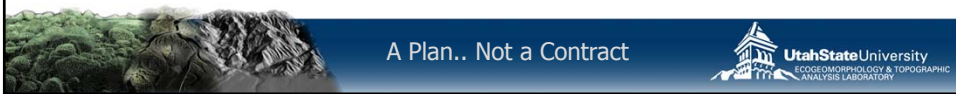
-  Q. GCD Budget Segregation 13:30 to 14:30
-  R. Budget Segregation Exercise 14:30 to 15:30
- Break 15:30 – 15:45*
-  S. Guided Examples with ACE's OWN Data 15:45 to 16:45
- 
-  T. Workshop Synthesis 16:45 to 17:00ish

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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 |



BY END OF WORKSHOP

You should understand:

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

GCD ≠ Glenn Canyon Dam
 GCD = Geomorphic Change Detection



≈ ?

DoD ≠



DoD = DEM of Difference =



WORKSHOP LEARNING OUTCOMES

- ✓ A comprehensive overview of the theory underpinning geomorphic change detection
 - Instill background necessary to design effective repeat topographic monitoring campaigns and distinguish geomorphic changes from noise (with particular focus on restoration applications)
- ✓ Methods for interpreting and segregating morphological sediment budgets quantitatively in terms of both geomorphic processes and changes in physical habitat
- ✓ 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