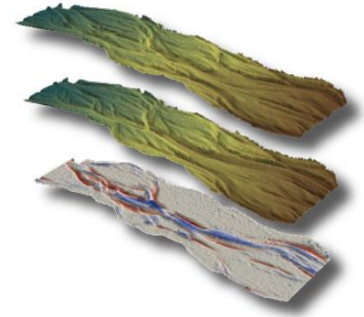
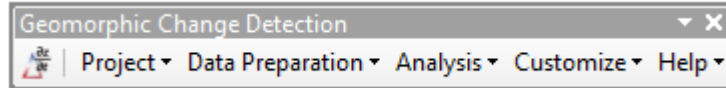


GEOMORPHIC CHANGE DETECTION

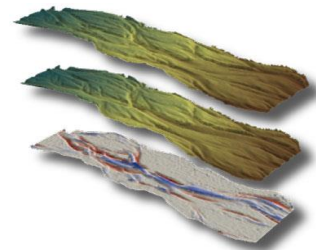
RECAP OF DAY 1 & PREVIEW OF DAY 2



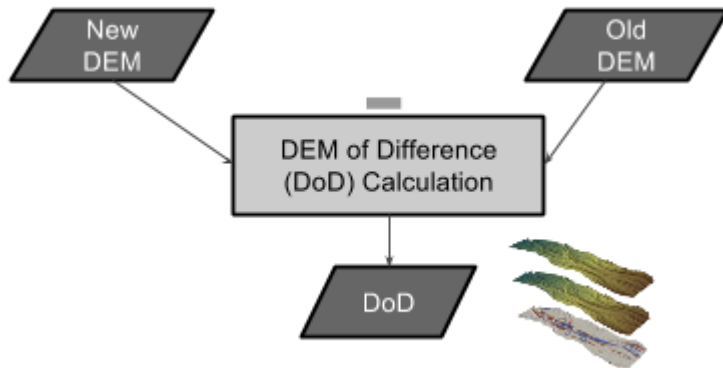
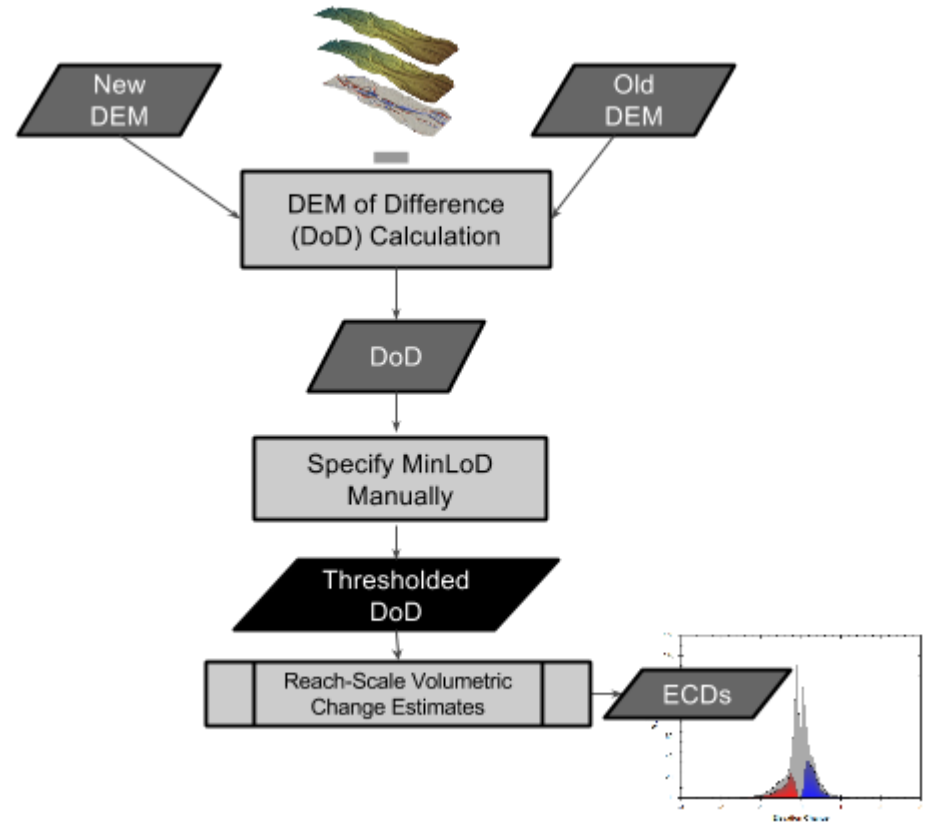
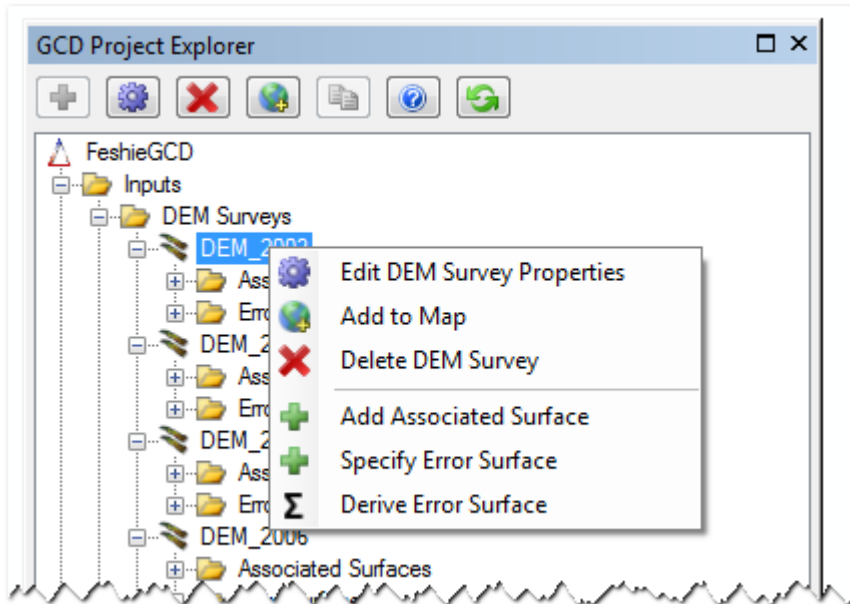
MAIN TAKE HOMES FROM DAY 1

- Change detection requires accurate and robust control networks to facilitate repeat surveys
- For many rivers & streams, a hybrid survey approach is only way to paint a complete topographic picture
- Consistency is critical when building DEMs to support change detection
- Basic change detection is a simple subtraction problem with noise filtered out
- ... But what about the noise?

DoD = DEM of Difference =



USING THE GCD SOFTWARE...



WORKSHOP LEARNING OUTCOMES



Partial

- 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



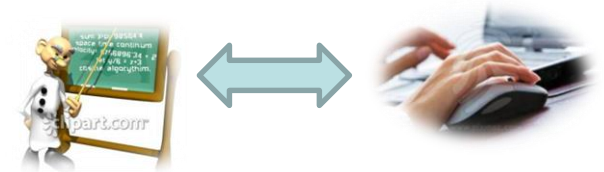
Partial

- 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 BIG PICTURE PLAN

- A. DAY 1 – Surveying & DEM construction principles to support Change Detection**
- B. Day 2 – Change Detection Principles & Error Modelling
- C. Day 2 – Interpreting the Signal & Applications



WHAT TOMORROW MAY BRING...

- Headaches and information overload in a cloud of uncertainty



Day 2 – Error Modelling & Uncertainty Accounting to Support Change Detection

- 9:00 – 9:15 – Q & A – Questions and Review from Day 1
- 9:15 – 9:45 – I. GCD Thresholding Alternatives
 - Exercise: GCD Thresholding + Sensitivity Analysis
- 9:45 – 10:15 – J. Approaches to Estimating Errors
 - Exercises w/ Grand Canyon:
 - Spatially Uniform
 - Spatially Variable - Multi-Method
 - Spatially Variable - User Defined

10:15 - 10:30 - Break

- 10:30 - 11:00 - K. Statistical Methods for Error Modelling from High Resolution Data
 - Exercise: Running ToPCAT for Statistical Models
- 11:00 - 12:00 - L. Ground-Based LiDaR & SFM Survey of Flume
 - Demo: Survey Flume with TLS & SFM

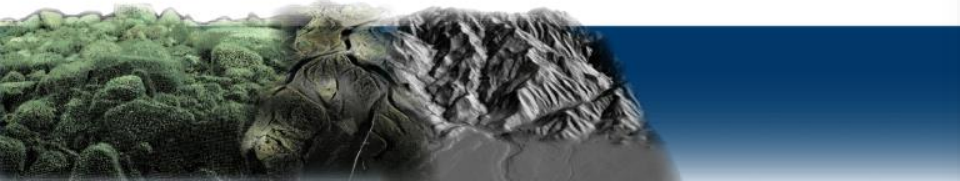
12:00 – 1:00 – Lunch

- 1:00 - 1:45 - M. Using ToPCAT & GCD for Roughness Estimation & Surface Construction
 - Exercise: Using GCD to decimate and derive roughness (Flume Example)
- 1:45 - 2:30 - N. Introduction to Fuzzy Error Modelling
 - Exercise: Running your first FIS (using Feshie)
- 2:30 - 3:30 - O. FIS Error Modelling in CHaMP & BitBucket Repository
 - Exercise: Build CHaMP FIS for Bridge Creek (3 different methods)

3:30 - 3:45 - Break

- 3:45 – 4:30 - P. Building your own FIS Error Models
 - Exercise: Building your own FIS for TLS flume data
- 4:30 - 4:45 - Q. Self-Paced - Prepping Surveys & Building Error Models for Change Detection
 - Exercise - Apply FIS from P to flume example data
- 4:45 - 5:00 - R. Recap of Day / Preview of Day 3
 - Exercise - Full Change Detection Example - Bridge Creek

Participants on own for Dinner



DINNER AT BULL'S HEAD

- Head west, turn right at light, go down hill through next light (north) and it's across from stadium on west.

