

# WORKSHOP PLAN ... (AFTERNOON)


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I. Approaches to Estimating Error



**J. Spatially Variable Error Modelling**



K. Spatially Variable – Into to Fuzzy Error Modelling



L. GCD Budget Segregation



M. Interpreting Outputs of GCD



N. Self Paced Change Detection Exercise

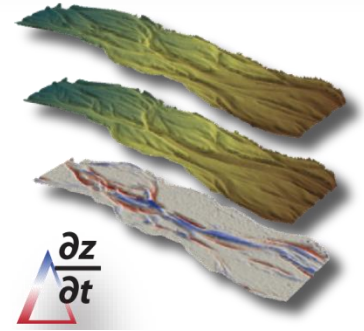


O. Recap & Synthesis



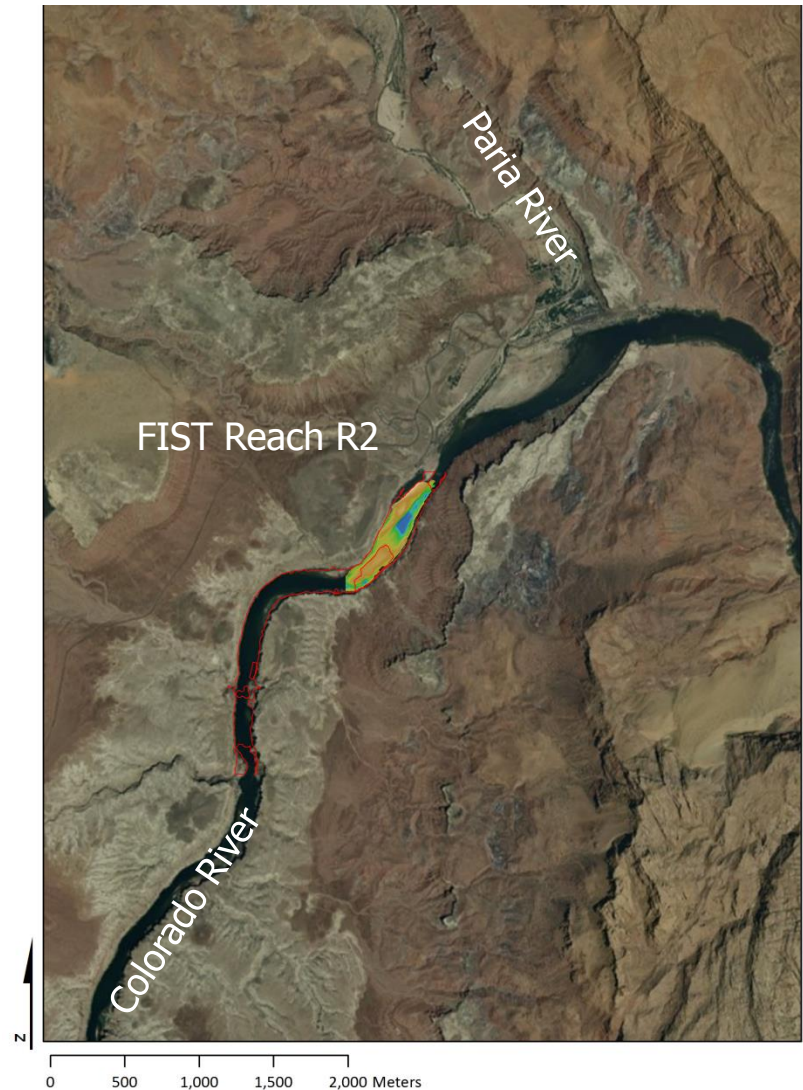
# GEOMORPHIC CHANGE DETECTION

## J. SPATIALLY VARIABLE & THE HYBRID-SURVEY DILEMMA



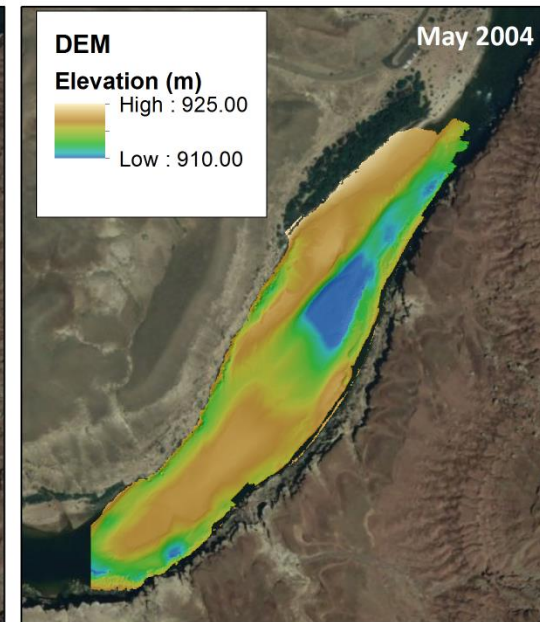
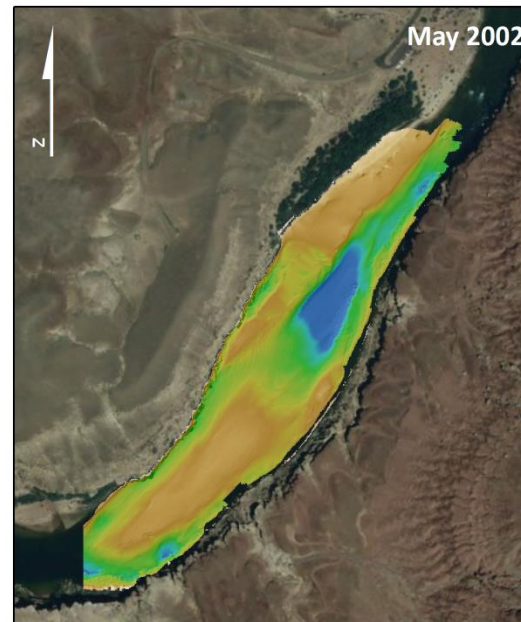
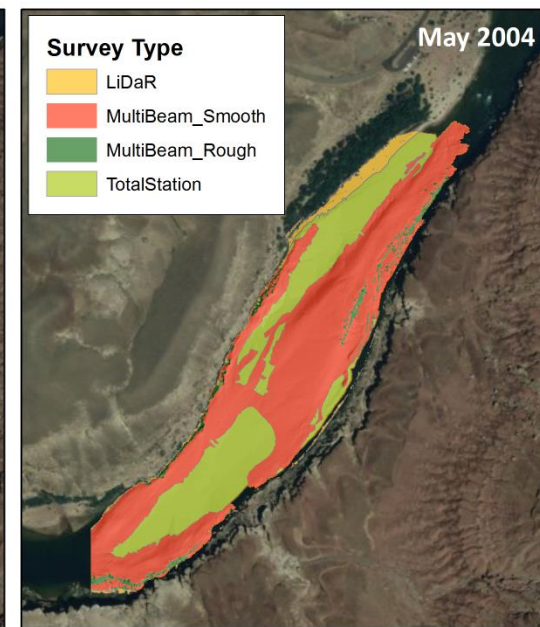
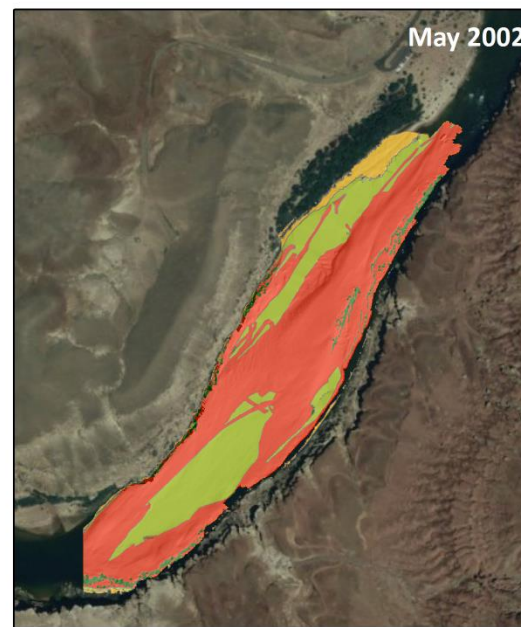
# WHAT'S THE DIFFERENCE?

- Paria Reach
  - FIST Reach R2
  - Six Surveys over four years (2000 to 2004); five epochs:
    - 2000 August
    - 2000 September
    - **2002 May**
    - **2004 May**
    - 2004 November
    - 2004 December
  - Used 121,843 of 311,371 points for 2002 & 86,142 of 251,739 points for 2004



# SUBSET OF DATA

- Hybrid Data Types
  - LiDaR ( $\sigma = 15$  cm)
  - Multibeam Smooth ( $\sigma = 3$  cm)
  - Multibeam Rough ( $\sigma = 12$  cm)
  - Total Station ( $\sigma = 6$  cm)
- What to do?



0 100 200 300 400 500 Meters



# EXERCISE J: MULTI-METHOD

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C:\0\_GCD\Excercises\J\_MultiMethod

1. Start New ArcMap Document
2. Create New GCD Project – Paria in K
3. Add two survey DEMs (2002 and 2004)
4. For survey method, select multi-method and load survey method shapefile
5. Derive Errors for each using multi-method
6. Perform probabilistic change detection



# WET-DRY AREAS....

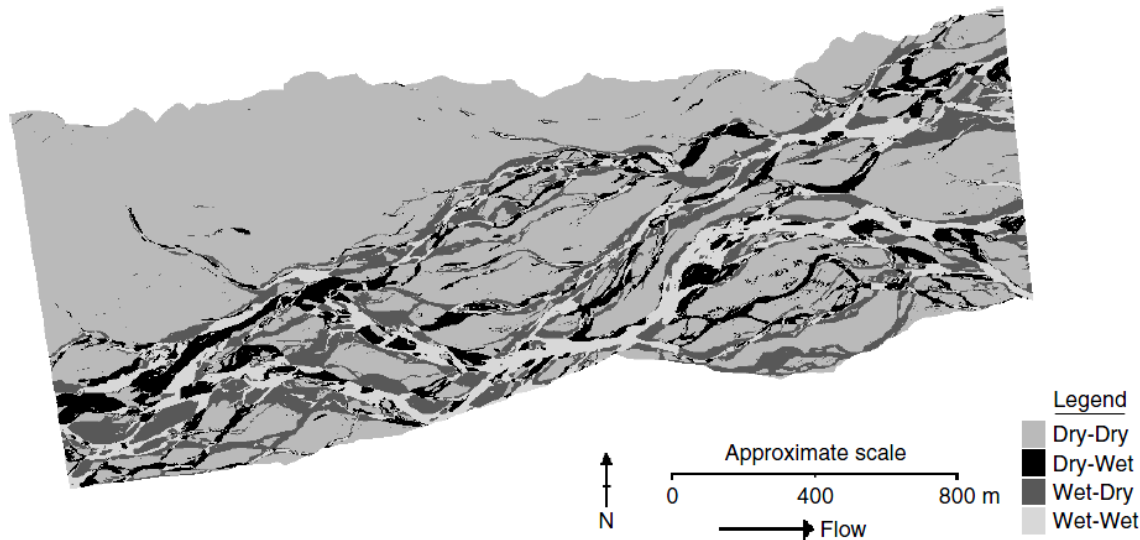


Figure 4. Classified patterns of change for the annual DEM of difference used to apply the level of detection information in Table V

- Wet areas have one error value, dry have another.
- With propagation, four possible combinations
- Derived from check points

Table III. Measures of surface precision estimated from a theoretical basis, from photocontrol point data (PCP-based), from independently acquired check data, and from overlap analysis

DEM	Theoretical precision (m)	PCP-based precision (m)	Check data precision (m)		Overlap analysis precision (m)
			Dry-bed	Wet-bed	
Photogrammetry: February 1999	±0.070	±0.052	±0.261	±0.318	±0.192
Photogrammetry: March 1999	±0.070	±0.051	±0.257	±0.256	±0.174
Photogrammetry: February 2000	±0.056	±0.049	±0.131	±0.219	±0.177
Laser altimetry: May 2000	n/a	n/a	±0.100	±0.250	±0.218