OUTLINE

In this practical class you will derive multiple elevation models of a small river reach using data from Bridge Creek, Oregon – a research site currently being analysed to study the impacts of beaver on river morphology and flood dynamics. The goal of the exercise is to implement the basic workflow described in the lecture … interpolating raw survey observations into a TIN and resampling this into a raster surface model. Specifically, you are asked to implement and document this processing chain in three ways:

1. creating a TIN and raster DEM by resampling (at 0.5 m) without any manual editing
2. as (1) above, but use the TIN editing tools to manually correct obvious visual errors using the aerial imagery for support
3. as (1) above, but incorporate breaklines in the generation of the TIN. Compare this automated product to 1 and 2

For each of the above processing steps, your finalized raster models should obey the basic principles of orthogonality and concurrency to ensure they are intercomparable.

# Data and Background:

Data for this project come from Bridge Creek, Oregon. You are provided with:

1. a raster aerial image of the site
2. a shapefile of raw total station survey observations
3. a digitized shapefile the demarcates the survey extent
4. a shapefile containing manually surveyed breaklines

All data are projected into the NAD83 UTM Zone 10N coordinate system.

# Reporting:

The report for this project comprises three pages based on the proforma given below. Essentially, you are asked to provide map outputs of the TIN and associated DEM for each of the processing steps given above (1-3), accompanied by a short commentary identifying the generic methods and an interpretation of the models produced.

The maps produced should be presented to a high standard, using appropriate survey legends, map scales and orientation arrows (or with a projection grids) and an explanatory caption for each figure.

# RESULTS 1: RAW PROCESSING CHAIN (NO BREAKLINES OR MANUAL EDITING)

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| **Figure 1:** | **Figure 2:** |

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| **Method and Interpretation (100-150 words):** |

# RESULTS 2: MANUALLY EDITED DATA PRODUCTS

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| **Figure 1:** | **Figure 2:** |

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| **Method and Interpretation (100-150 words):** |

# RESULTS 3: AUTOMATED TERRAIN MODELS USING BREAKLINES TO SUPPORT INTERPOLATION

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| **Figure 1:** | **Figure 2:** |

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| **Method and Interpretation (100-150 words):** |