Course Offering for Spring, 747
Geography 747: Seminar in Physical Geography

Topic: Mapping and Measuring Human Impacts on Geomorphic Systems

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This course will examine impacts of human activities on river systems and how these changes can be mapped using modern geospatial methods in conjunction with field and laboratory work. A focus of the seminar will be on the collection of large-scale imagery and development of large-scale maps of fluvial channel systems. By combining aerial imagery acquisition by Unmanned Aerial Vehicles (UAVs) and point-cloud generation by Structure from Motion (SfM) software processing we have entered a new period in which accurate, low-budget, large-scale maps can be rapidly produced. This seminar will focus on reading and discussing modern scientific literature on the geomorphic systems, the nature of human disturbances to these systems, and new technologies that allow precise mapping of the systems. Visual geomorphic and geologic interpretations of aerial images—practically a lost art—will be covered. Readings will include recent literature on data acquisition procedures including establishment of ground control points (GCPs) and flight patterns designed to minimize map distortion. Field activities will include methods of sediment sampling, topographic surveying, and acquisition of aerial imagery*. Laboratory exercises will include sediment textural analysis in the BioGeomorphic sediment lab, and SfM image processing using Photoscan software by Agisoft.