

Course Offering for Spring, 747
Geography 747: Seminar in Physical Geography
Mapping and Measuring
Human Impacts on Geomorphic Systems

Instructor: Allan James AJames@sc.edu

This seminar will examine impacts of humans on rivers and how these changes can be mapped using modern geospatial methods in conjunction with field lab and field work. One focus will be on collecting large-scale imagery and making large-scale maps using Unmanned Aerial Systems (UAS) Structure from Motion (SfM) photogrammetry. Readings will focus on geomorphic systems, human disturbances, and new mapping technologies. Visual geomorphic interpretations of aerial imagery—practically a lost art—will be covered. 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.

Prerequisites. No prior experience with a UAS is required. Previous experience with geomorphology, large-scale mapping, or geographic information software is helpful but not required.

*We have two DJI drones (Phantom 3 and Phantom 4), but our ability to fly them may be constrained by USC rules and regulations. At the bare minimum, UAV data will be provided and opportunities will be given to work off campus in the collection of data.

Sand splay on left bank of Gills Creek near Forest Drive, Columbia, SC, deposited by Oct. 2015 flood. Map generated from a digital elevation model created by Structure from Motion photogrammetry using imagery obtained with a Phantom 3 quadcopter. Source: Magilligan et al. (in review).

