UAV(Drone) Remote Sensing of Cameron Peak Wildfire Watershed Impacts

1. *Faculty mentor name, department, college, and contact information.*

   Christopher Robertson, CSU Drone Center, Walter Scott College of Engineering, Engineering Research Center A318, 970-491-8985, christopher.robertson@colostate.edu

   - **Daniel McGrath**, Assistant Professor, Dept. of Geosciences, Warner College of Natural Resources, 970-491-5301, daniel.mcgrath@colostate.edu
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2. *Are there any other identified mentors (e.g. field-based Extension agent) associated with this project?*
   - **Mark Platten**, Director and Extension Agent Natural Resources, Teller County, 719-686-7961, mark.platten@colostate.edu
   - **Sophia Linn**, CSU Geospatial Centroid, 211G Morgan Library, 970-491-2774, Sophia.linn@colostate.edu
   - **David Frey,** Emergency Services Technician, 1303 N. Shields St Fort Collins, 970-498-5309, freydj@co.larimer.co.us

3. *In what region(s) will the student be working (county/region)?*

   Larimer County, Colorado. The student will be working throughout the Cache La Poudre River watershed in regions affected by the Cameron Peak wildfire. When not conducting fieldwork, the student will work out of the CSU Drone Center on Main Campus.

4. *Please describe the proposed internship goals, scope, and objectives.*

   The goal of this internship is to gain valuable experience supporting research into the impacts of the Cameron Peak wildfire on the Cache La Poudre River drainage. The Cameron Peak wildfire is the largest in CO history at ~209,000 acres and the long-term impact to the watershed will be significant and will likely include debris flows, altered streamflow patterns, and debris-laden flash floods. The primary objective will be to use UAVs (drones) to collect aerial imagery of fire affected areas and subsequently build orthomosaic images and digital elevation models (DEMs) to quantify the impact of the fire. The intern/research team will work with the CSU Geospatial Centroid to make these finished map products available to the public for further access and analysis of the wildfire's impact. The Larimer County Emergency Services branch is also interested in this project to help them understand impacts on swift water runoffs and fire behavior, specifically in watersheds.

5. *How was this applied research project identified?*

   This research project complements seed funding from the OVPR for a **"**Comprehensive assessment of hydrologic and geomorphic dynamics of the Cameron Peak wildfire in the Cache la Poudre watershed (PI Stephanie Kampf)." The intern will support this team of researchers addressing critical questions about the wildfire impact.

6. *With which stakeholder group(s) will the intern work?*

   The student will work directly with the CSU Drone Center and WCNR through Chris Robertson and Daniel McGrath.

7. *What student learning outcomes do you anticipate and are there opportunities for professional development?*

   The student will learn to operate UAVs via participation in the April 2021 CSU Drone Flight School and become a FAA certified sUAS pilot. Further the student will learn flight and data collection techniques. The student will learn to use specialized software to create 2D and 3D georeferenced maps and models. Collectively, this skill set is highly sought after by employers in many fields, as UAV use is critical in many fields/applications.

8. *Do you have a specific mentor style that you would like to share with potential interns?*

   All mentors have extensive previous experience mentoring and advising students and will work to create a supportive, engaging, and productive work environment.

9. *Are travel funds available? Opportunities to provide student assistance with housing?*

   No funds are available for housing. Reimbursement of travel mileage to field sites may be available.