

Project Summary

Rocky Mountains Cooperative Ecosystem Studies Unit

Project Title: Investigation of Seasonal Variations and Heat Flow for Selected Hydrothermal Systems Using High Resolution Airborne Remote Sensing and Spatial Modeling

Discipline: Natural Resources
Type of Project: Technical Assistance
Funding Agency: National Park Service
Other Partners/Cooperators: Utah State University
Effective Dates: 9/1/2013 - 12/31/2014
Funding Amount: \$79,965

Investigators and Agency Representative:

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Abstract: Utah State University, Remote Sensing Services Laboratory will:

1. Acquire airborne high-resolution thermal imagery (night-time) over the Upper, Midway, Lower, geyser basins, Norris Geyser Basin, Mammoth Hot Springs, Hot Spring Basin and other areas of interest during Fall 2013 and Fall/Winter 2014.
2. Calibrate a 3-band multispectral rectified mosaics of new areas flown at 1-meter resolution, calibrated in terms of surface reflectance (in ERDAS Imagine Format *.img and/or Geotiff).
3. Calibrate thermal infrared mosaics of all areas flown at 1-meter pixel resolution, corrected for atmospheric effects and surface emissivity (in ERDAS Imagine Format *.img and/or Geotiff).
4. Generate classified LiDAR point cloud data of the new areas to be covered and 1-meter resolution DEM's of the same areas. Images should be readable in ARCGIS and/or other image processing software (ENVI, ERDAS, etc.).
5. Compare the Fall and Winter TIR images for seasonal variation.
6. Calculate heat flow for the different main monitoring areas flown over several years and different seasons.
7. Write a final report on methods for calibration of imagery, emissivity correction, atmospheric correction, orthorectification/georectification and comparison of seasonal changes and heat flow output.
8. Produce journal articles and conference papers describing the methodology and results in the energy balance study and the heat flow calculations.

Outcomes with Completion Dates: Final Report - October 31, 2014

Keywords: Utah State University, Yellowstone National Park, remote sensing, thermal springs