

OBSERVATION OF SNOW
PROCESSES THROUGH
TIME-LAPSE
PHOTOGRAPHY

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PROJECT SUMMARY

- Increase understanding of the effects of the mountain pine beetle
- Snow as a component of the hydrological processes in the No Name watershed
- Methods for quantifying snow processes

PROJECT SUMMARY

- Cameras systematically placed in three sites throughout the No Name watershed
- Cameras capture fluctuations in snow depths
- Time-lapse photography
- Photographic analysis
- Complimentary ongoing research

PREVIOUS RESEARCH

- Methods adopted from Garvelman et.al. (2013) & Farinotti et.al. (2010)
 - Differences in camera use
 - Photographic analysis
 - Snow stake improvement

CONTINUOUS DATA COLLECTION

- Monitor fluctuations of snowfall, snow melt, and redistribution on site
- Cameras at three locations, record data in 2- hour increments
- Elucidate surface water and groundwater connections

PHOTOGRAPHIC ANALYSIS

- Image-J allows for efficient photographic snow survey analysis
- Pixel analysis
- Compared with other data
- Method for long-term data acquisition

QUANTIFYING SNOW PROCESSES

- Current methods expensive in both time and money
- High resolution photography
- Understanding the watershed interactions post-mountain pine beetle

WHY IS THIS IMPORTANT?

- Snow is primary contributor to hydrological systems
- Snow quantification onerous due to topography
- Modeling to understand snow yields to environment and role in water budget

WHY IS THIS IMPORTANT?

- Photographic analysis less expensive, less time consuming
- Previous research has not assessed the use of game cameras
- Image-J improves on previous programs

WHY THIS IS IMPORTANT

- Snow stake accuracy
- Assessing new methods for potential use in future endeavors
- Effects of mountain pine beetle on No Name watershed

DESIGN/METHODS

- Cameras placed at three sites in the No Name watershed
- Cameras powered by local battery
- Data downloaded to local SD card
- Snow stake measurements

DESIGN/METHODS

- Data collection at each site
- Photographic data assessment
- Special precautions

PRELIMINARY DATA



PRELIMINARY DATA



CONCLUSION

- Snow processes contribute to hydrological and energy budgets
- Current methodology dangerous and expensive
- Photographic analysis accurate and inexpensive

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