MEASURING AND MODELING HYDROLOGIC RESPONSES TO TIMBER HARVEST IN A CONTINENTAL/MARITIME MOUNTAINOUS ENVIRONMENT

By
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MCEW Water Yield

- 6 yrs pre-treatment, 4 yrs post-roads, 4 yrs post-harvest

RESULTS

- Annual water Yield
  - Post roads
    - 70 mm/yr ↑ (11%)
  - 50% Clearcut
    - 255mm/yr ↑ (28%)
  - 50/50 Partial cut
    - 135mm/yr ↑ (20%)
  - Largest mo/ ↑ (snow deposition and melt period)
    - Expressed during spring months
  - ET (residual)
    - Clearcut, ↓ 35%
    - Partial cut, ↓ 14%
Snowmelt Processes

- 38 temp/data loggers
  - 3 m height
  - 20 m vertical Dist.
- 14 snow courses
  - 20 m length
  - 2 m sampling
- 7 climate stations
  - Air temp
  - Windspeed
  - Wind direction
  - Relative Humidity
  - Soil moisture
  - Soil Temp
  - Snow Depth
Temperature Inversions

- Temperature transect
  - Elevation, topography, land-use
  - Cold-air drainage/temperature inversions
- Snowmelt variability
- Noc cond, soil water pot ($\Psi_s$)
Snow Courses

- 14 snow courses
  - Snow depth and density
    - Judd compliment
  - Snowmelt variability
    - Topography
    - Management
Climate Stations

• 7 Climate stations
  – Stratified
    – Elev & treatments
  – Data collection
    – 2003 - present
• Quantify variability of snowmelt

Feb 15, 2004

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Synthesis - Modeling

- Modeling and validation
  - WEPP
    - Validate snowmelt algorithms
    - Recommendations to WEPP developers
Peripheral Project

Riparian Bryophyte Productivity

(Volke & Hubbart)

• Effects of timber harvest on riparian bryophytes
  • Biomass
  • Morphology
• Management effects on stream ecosystem biota
  • Bioindicator
Funding

- USFS Research Joint Venture Agreement #03-JV-11222065-068, USFS Grant 04DG11010000037, and USDA-CSREES 2003-01264 funded this research.

Current Manuscripts in: print, review, or revision


- Various presentations & outreach activities.

Thank You