

ON CLIMATE CHANGE AFFECTING THE DYNAMICS OF OVERLAND FLOW FROM INFILTRATING MICROCATCHMENTS

What happens at the hillslope scale?

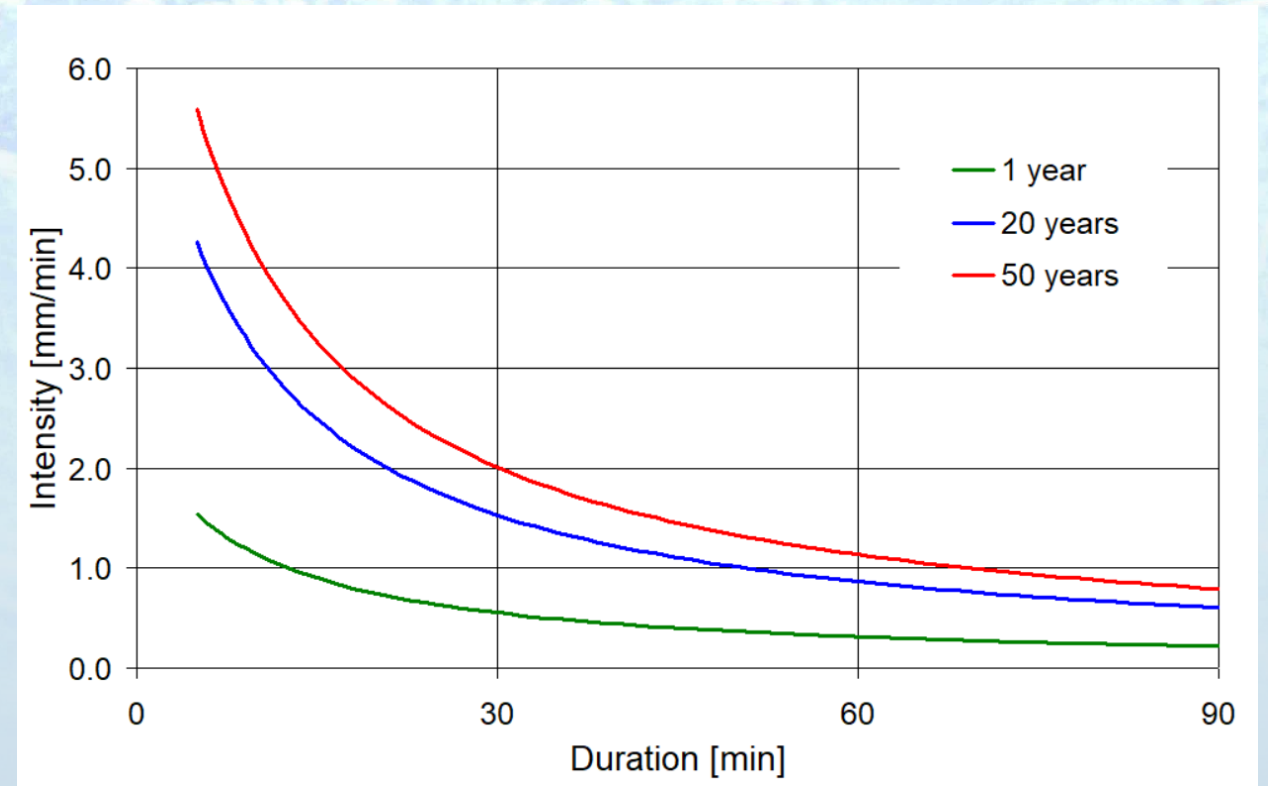
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METHOD

- Mathematical model
- Assumptions underlying the study:
 - 0.0 to 2.0 K warming
 - Clausius-Clapeyron scaling (7% / K)
 - IDF relationship



SOILS, GEOMETRY

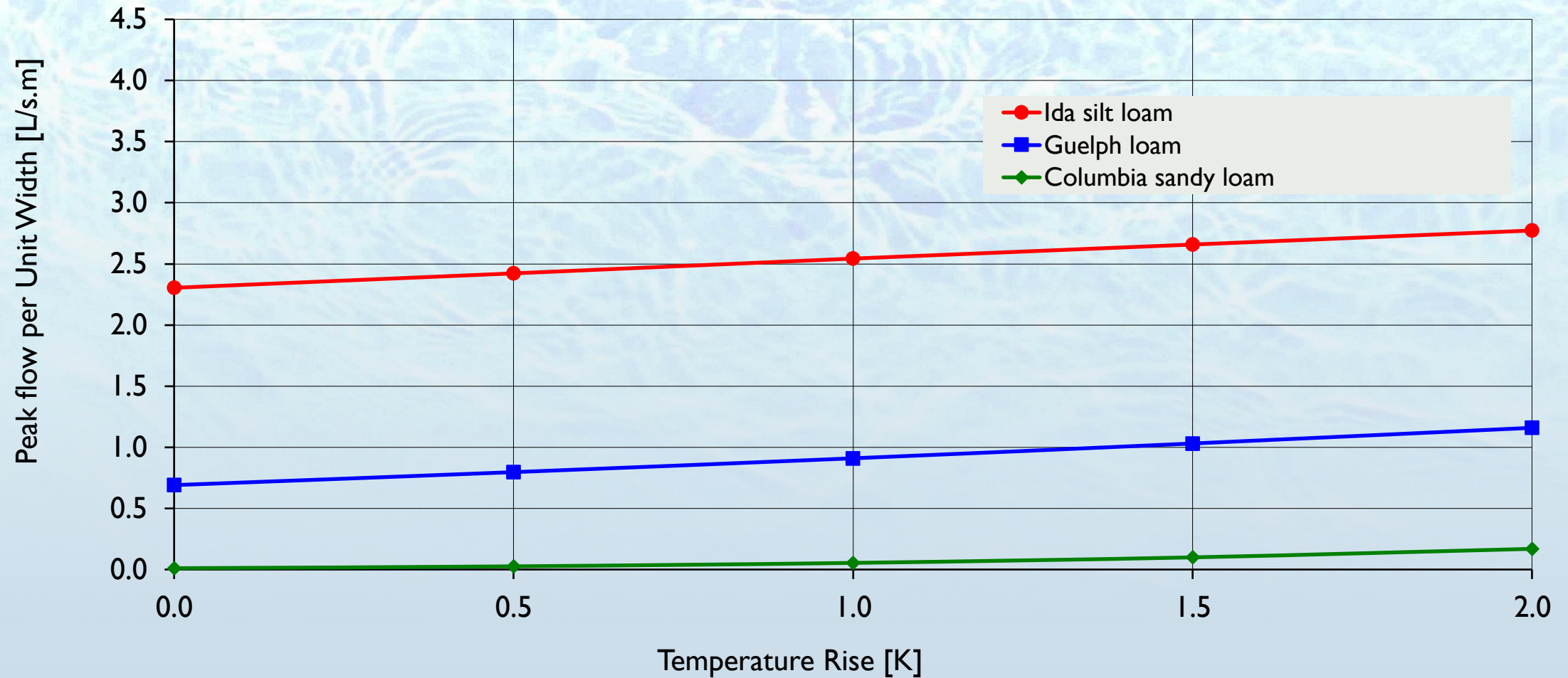
- Ida silt loam: $K_s = 2.92 \times 10^{-7} \text{ m/s}$
- Guelph loam: $K_s = 3.67 \times 10^{-6} \text{ m/s}$
- Columbia sandy loam: $K_s = 1.39 \times 10^{-5} \text{ m/s}$

Hillslope length: 50 m

Slope: 10 %

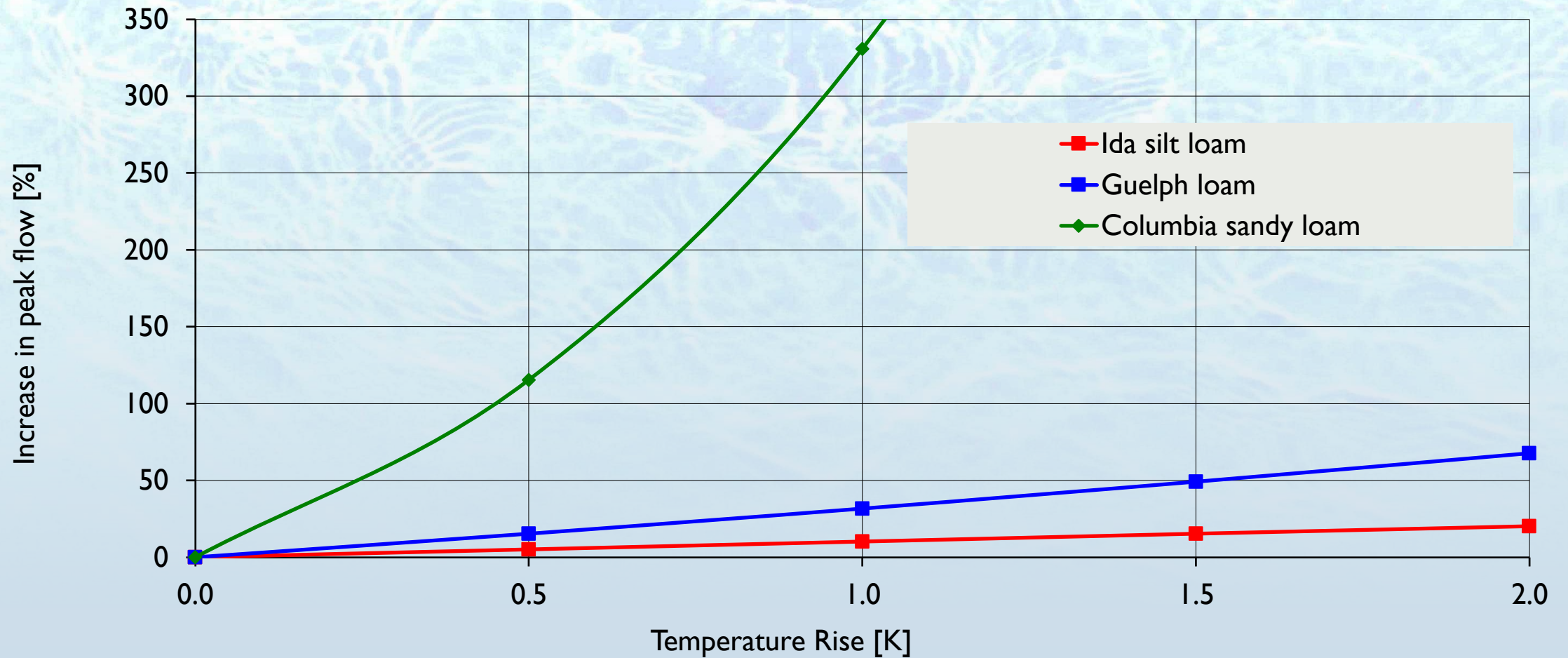
RESULTS

Return period: 20 years



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SUMMARY AND CONCLUSIONS

- behavior depends on several thresholds:
 - ponding: development of overland flow
 - laminar / turbulent: resistance law
 - contributing area: percentage of hillslope 'active'
- increase in peak flow may strongly exceed that of rain