



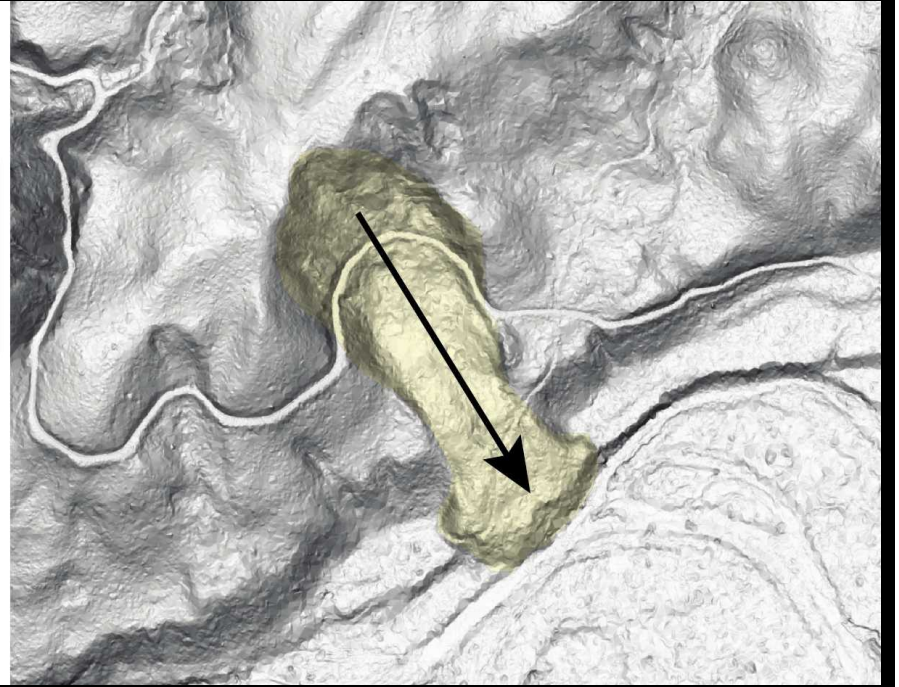
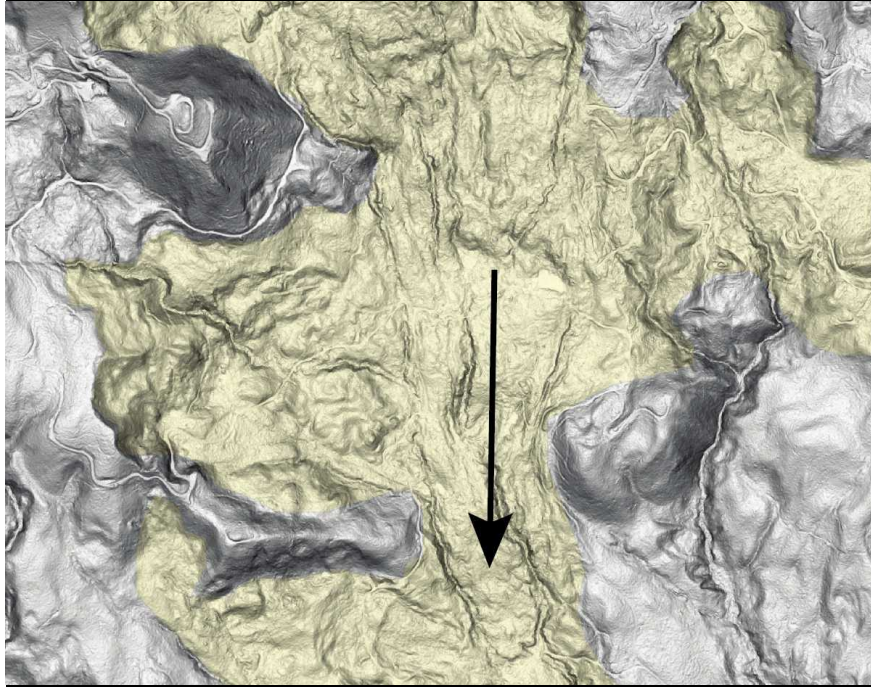
# **Instream Turbidity Monitoring Used to Assess Landslide Hazards in the Western Cascades**

**8<sup>th</sup> National Water-Quality Monitoring Conference  
April 30-May 4, 2012**

**Steven Sobieszczyk  
U.S. Geological Survey**



Steven Sobieszcyk



Sobieszcyk, 2010





Mark Uhrich



David Klug



## High-Turbidity Events

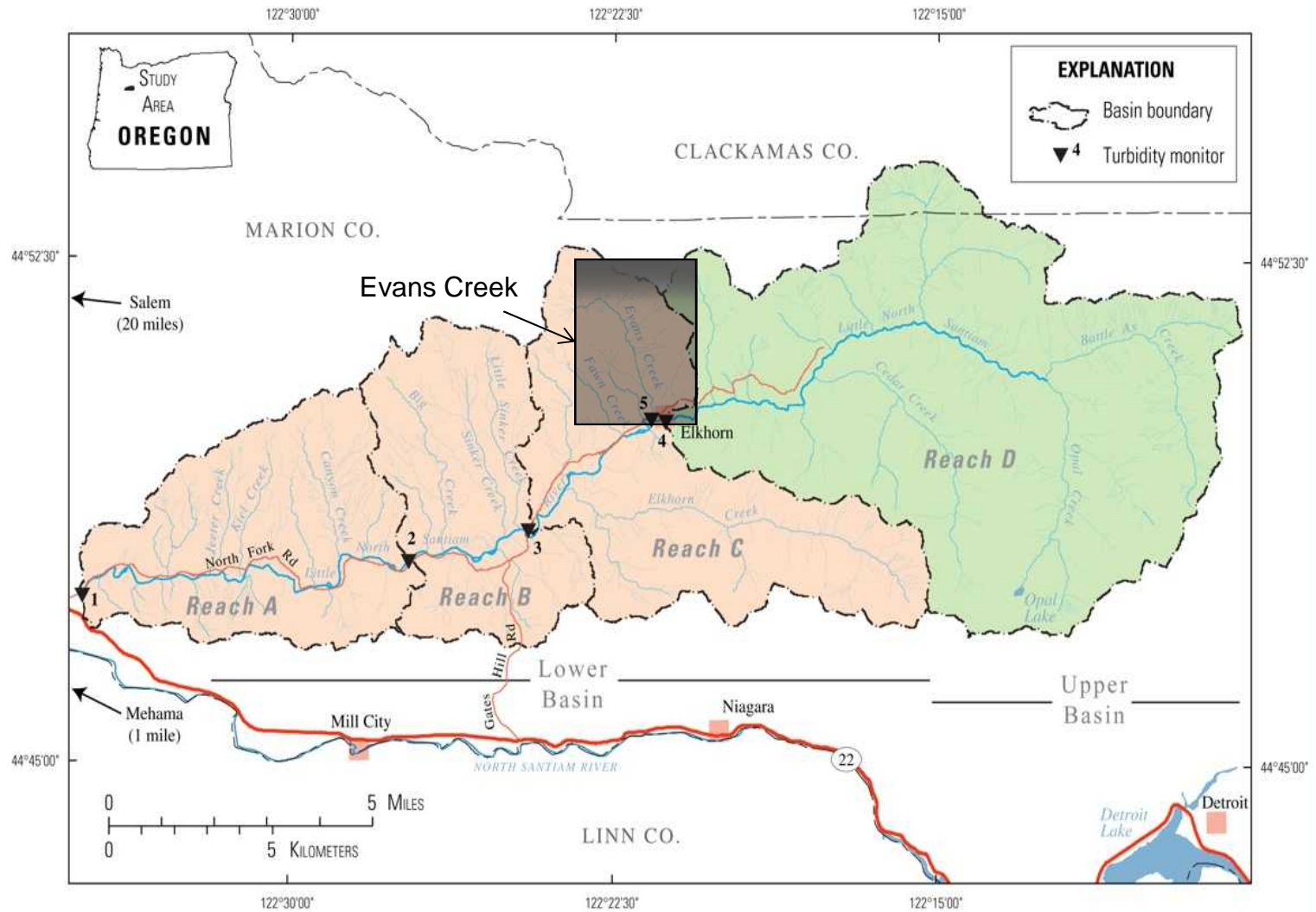


Mark Uhrich and Steven Sobieszczyk



# History of Problems





Base modified from U.S. Geological Survey (various scales)  
 Projection: Oregon Lambert, North American Datum 1983

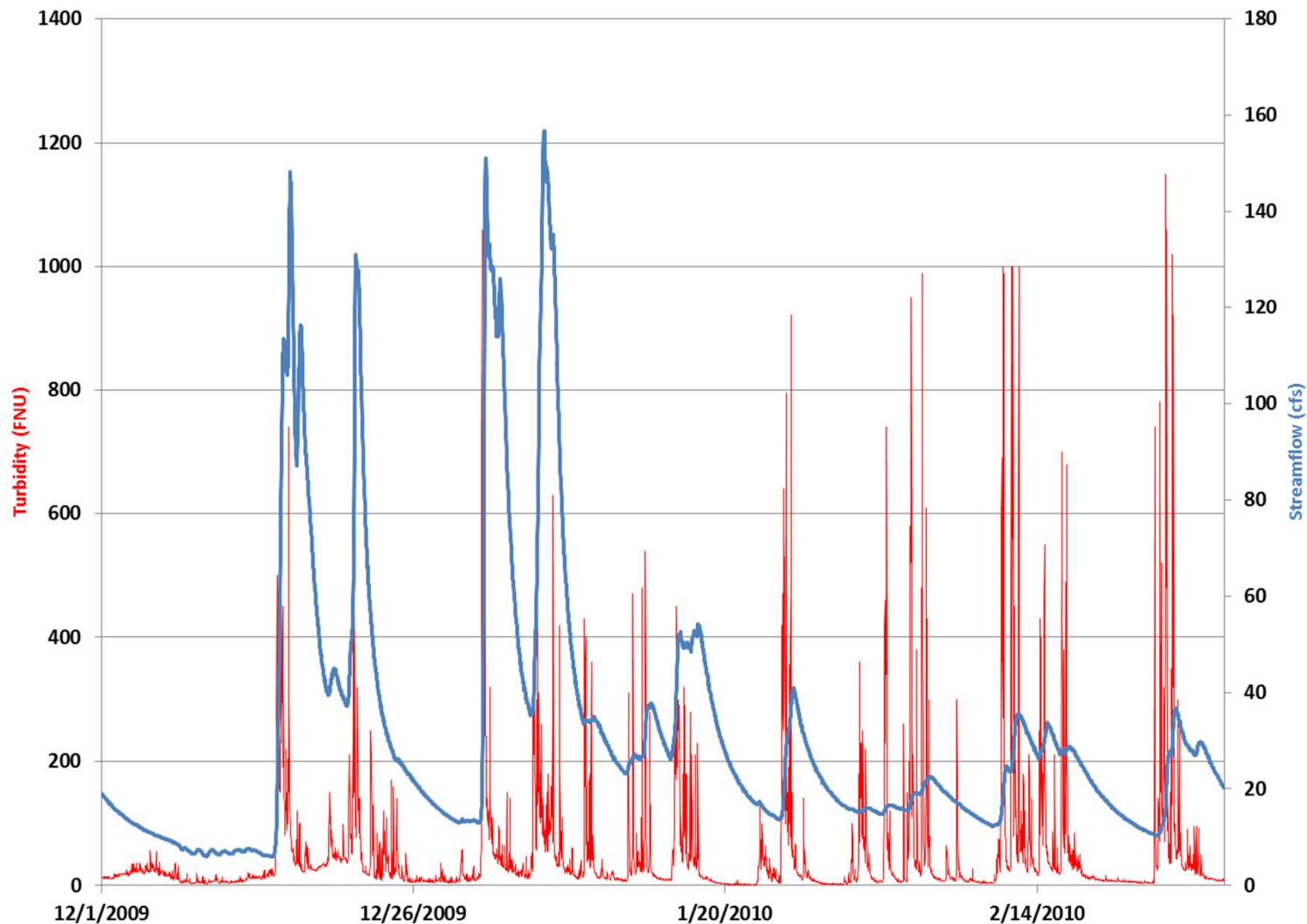


# Little North Santiam River Basin



Sobieszczyk, 2010

Evans Creek Station (14182000)



Evans Creek (December 2009–February 2010)



- >1, 150 FNU
- 3,300 Mg (suspended)



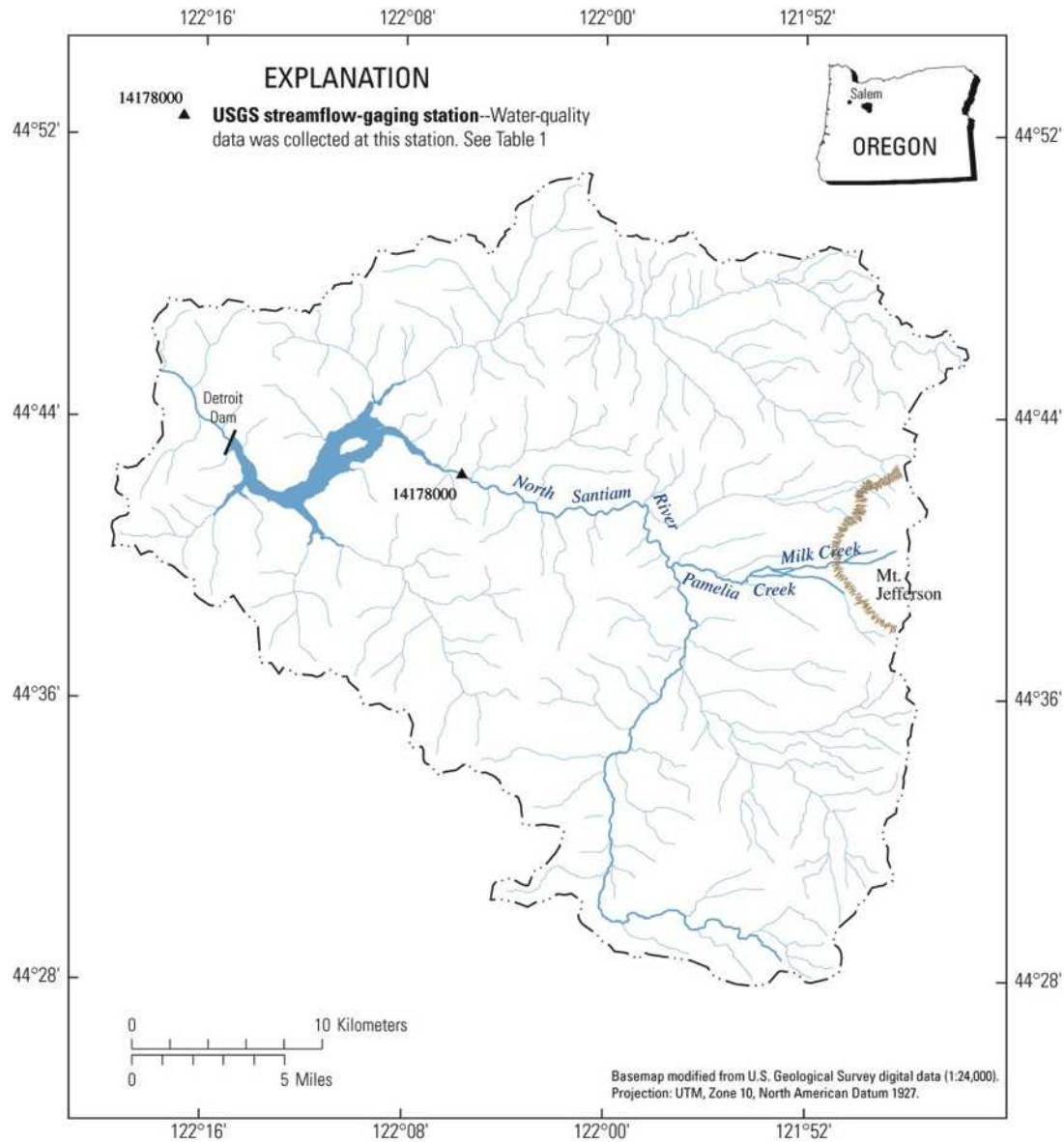
Steven Sobieszcyk



Robert Ross



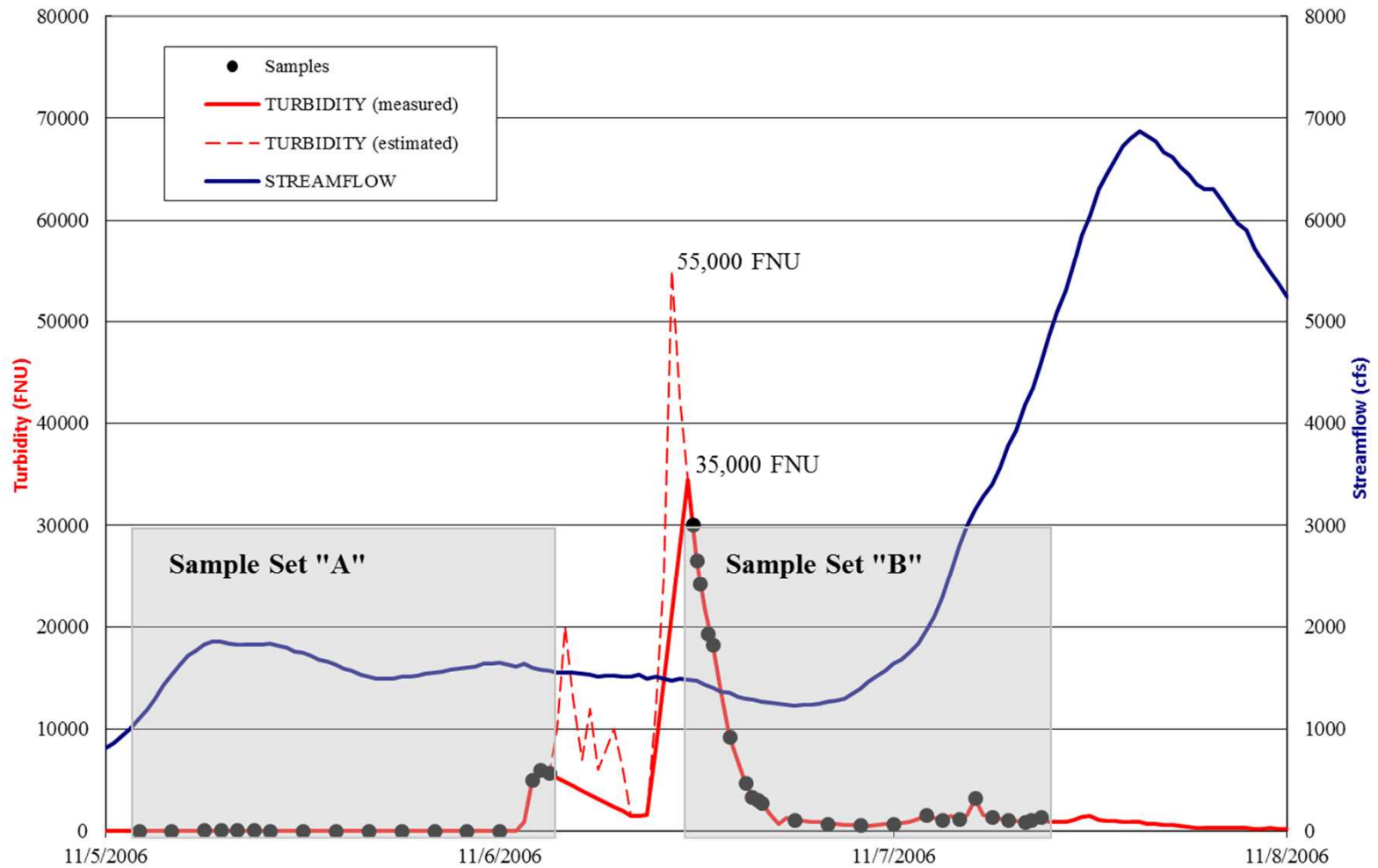
## Mount Jefferson Debris Flow



North Santiam River (November 6, 2006)



North Santiam Station (14178000)



North Santiam River (November 6, 2006)



Robert Ross



Mark Uhrich

- 35,000–55,000 FNU
- 15,500–21,000 Mg (suspended)
- 100,000–240,000 m<sup>3</sup> (deposited)
- 0.5 km<sup>2</sup> deposit extent



Mark Uhrich



Heather Bragg



## Summary

- **Landslide sediment contribution:**
  - Once, or
  - Repeatedly
- **1,000s–10,000s FNU**
- **10,000s Mg in single event (hours)**
- **Can be unrelated to streamflow**



Jay Spillum



- [www.twitter.com/USGS\\_OR](http://www.twitter.com/USGS_OR)
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# USGS North Santiam River Monitoring



# Evans Creek Landslide Profile

