

Lessons from The Great Vermont Flood of 10-11 July 2023



SNRE Hearing: December 5, 2023
Ben DeJong – Vermont Geological Survey

Your Vermont Geological Survey



Ben DeJong, Ph.D.

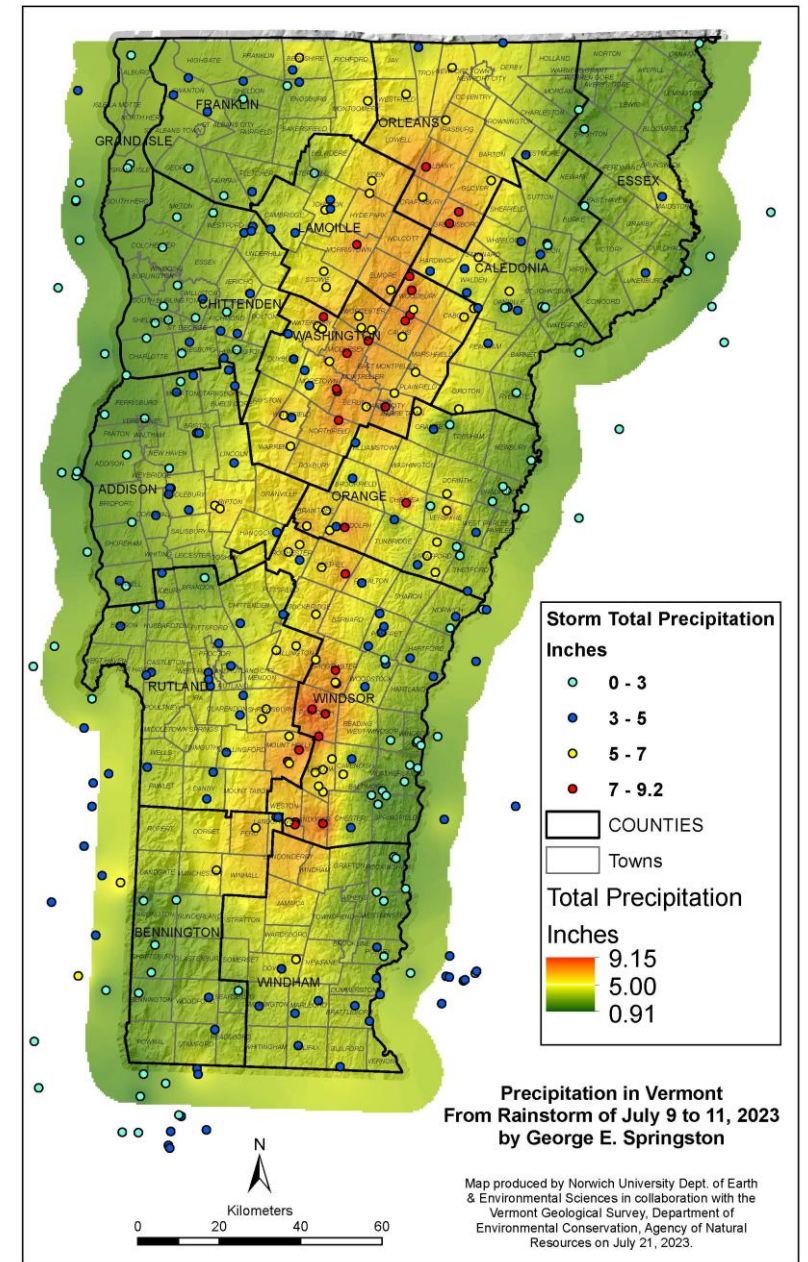
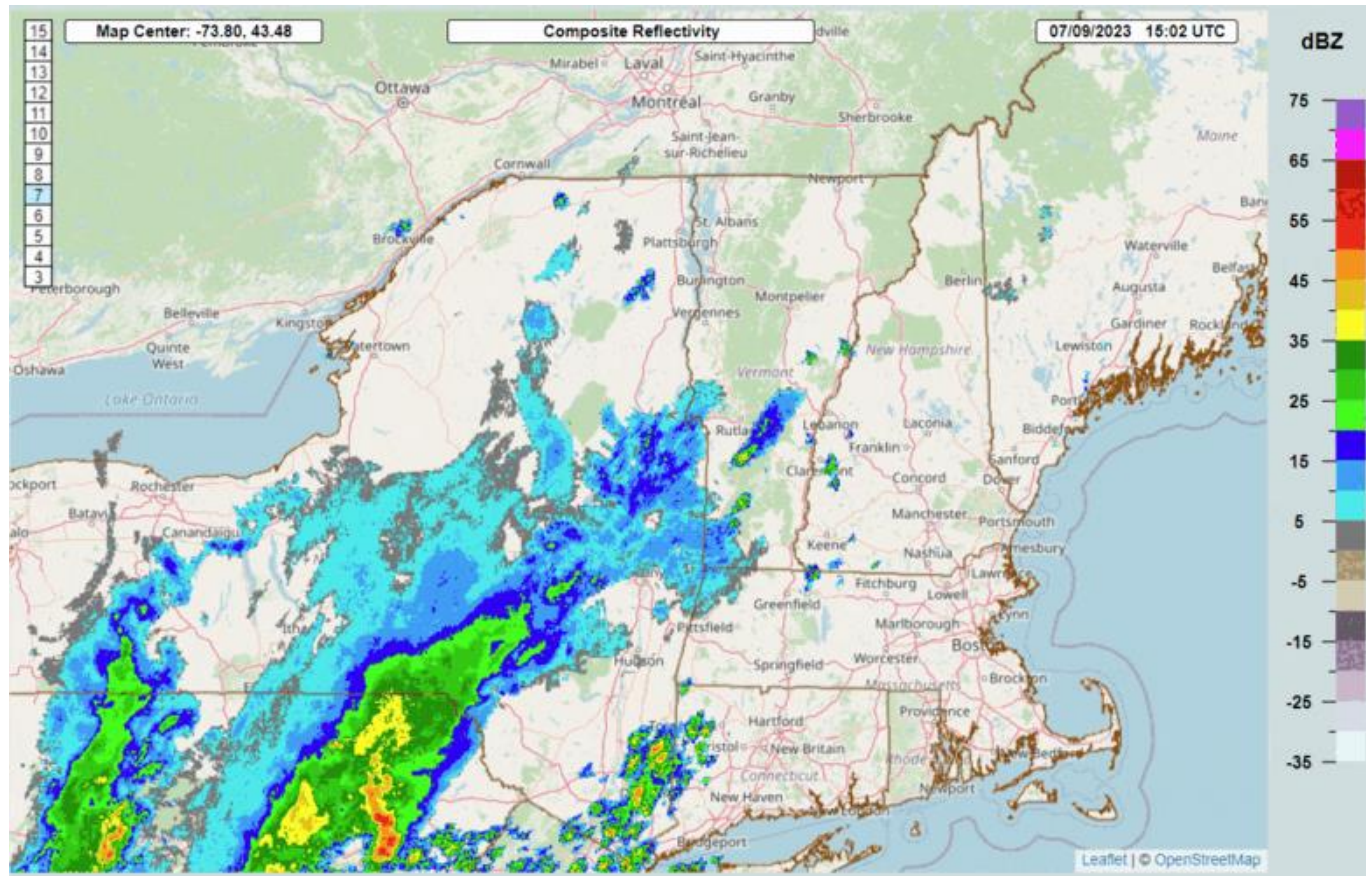


Jon Kim, Ph.D.

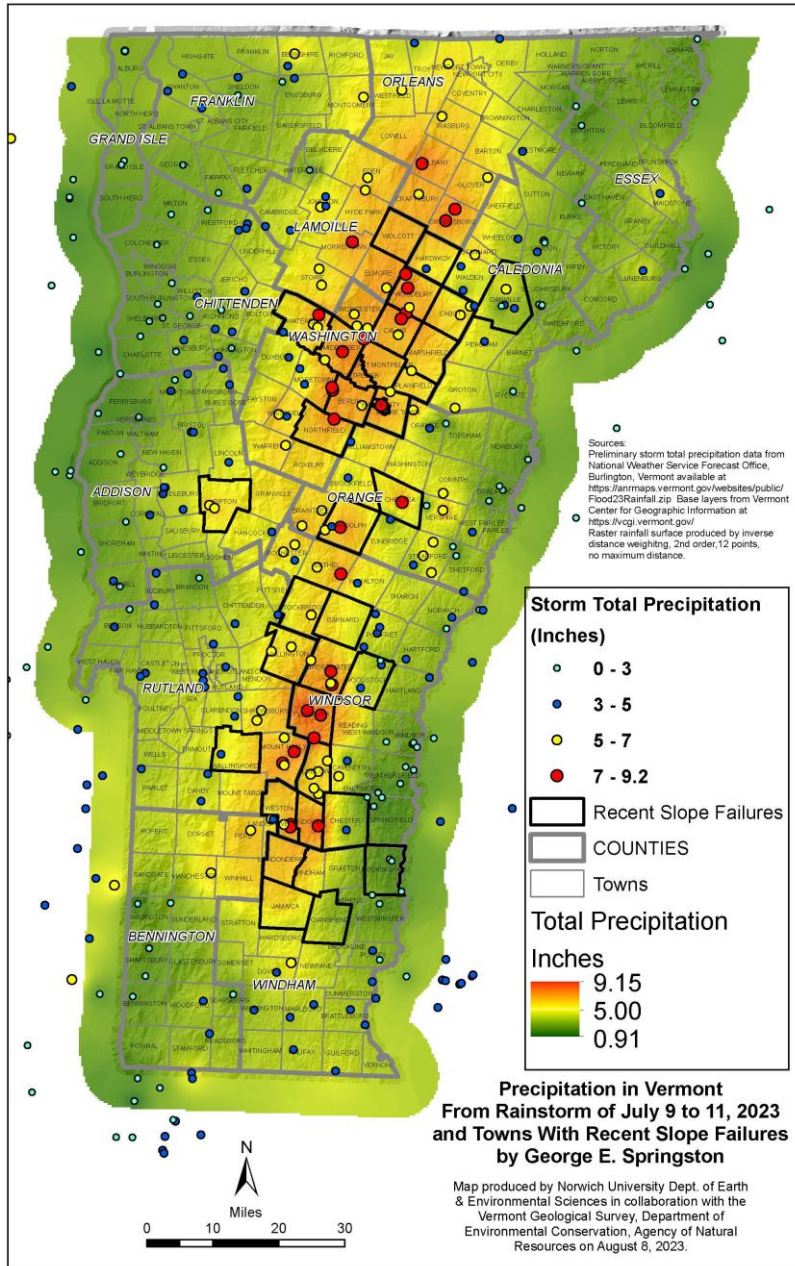


Peter Strand, Ph.D.

The Green Mountain "Juicer"



Historic Landslide Hazards



From: Dejong, Benjamin <Benjamin.DeJong@vermont.gov>

Sent: Wednesday, July 12, 2023 7:53 AM

To: Beling, John <John.Beling@vermont.gov>

Subject: Landslides

Hi John,

Rather than email all Directors and plug up DEC and inter-agency email, I thought I'd just direct this simple request to you:

The past couple days, focus has been on the rivers and flooded areas. Starting today, this will begin pivoting to the hills and adjacent areas experiencing erosion and landslide hazards. I'll be assembling something of a "landslide team" with our academic partners to respond to concerns.

As you hear about and/or receive emails regarding landslides, could you please forward them to me so I can inventory all the issues?

Thanks,
Ben



VERMONT
AGENCY OF NATURAL RESOURCES
Vermont Geological Survey

Landslide Status by the Numbers

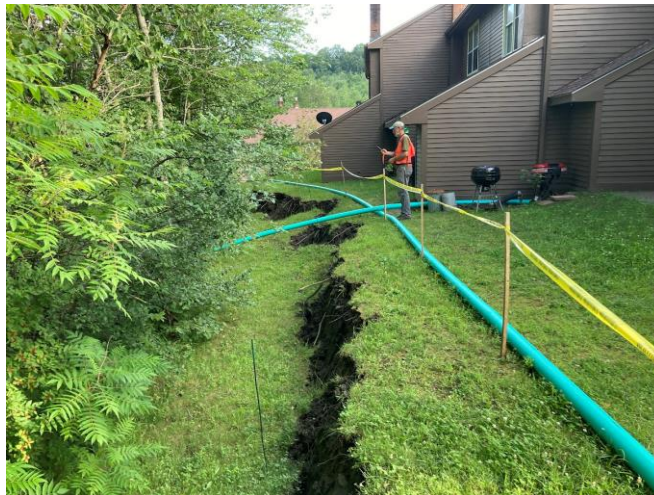
Status	Sites
1	39
2	31
3	0
4	11*
Total	81

**2 roads; 1 fire dept.; 8 residential structures*

1. No Immediate Risk/Action Required



2. Unstable; Needs Mitigation or Ongoing Monitoring



3. Unstable; Needs Evaluation by State Fire & Safety



4. Evacuation Recommended; Review by State Fire & Safety

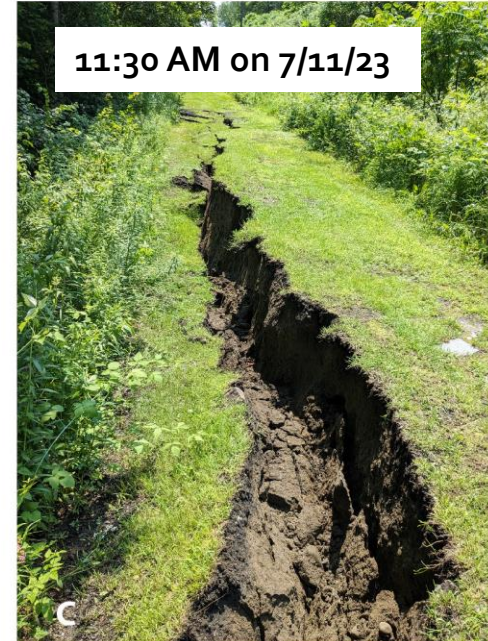


Significantly Increased Coordination

- Close, frequent contact with SEOC
- Immense support from Norwich University partners
- Deputized two prior VGS staff members
- State partners
 - Geotechnical evaluation by VTrans staff
 - Structural engineering perspective from Urban Search and Rescue
 - Department of Public Safety Fire (VEM, Fire Safety)
- Geotechnical Support from PennDOT under EMAC



Enabled Fast & Effective Response



2022 NOAA Climate Summary for VT

Key Message 1: Temps have risen 3 degrees F since the beginning of the 20th century

Key Message 2: Annual average precipitation has increased nearly 6" since 1960s

KEY MESSAGE 3

Extreme weather events, particularly floods and severe storms, are having a stronger impact on Vermont. At the same time, multiyear meteorological and hydrological droughts continue to pose challenges for water-dependent sectors. Extreme rainfall events are projected to become more frequent and intense in the future.



Summary

This was historic, and exposed just how susceptible our state is to failing slopes

- Fast & effective response requires
 - Capacity
 - Coordination: geologists and geotechnical/structural engineers, DPS
 - Well-defined roles and responsibilities
- Challenges ahead:
 - How to handle hazardous parcels not eligible for FEMA support?
 - Identification and management of landslide-prone areas of Vermont

