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Remote Sensing Montana Tech

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Montana Tech

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Remote Sensing

MontanaTech

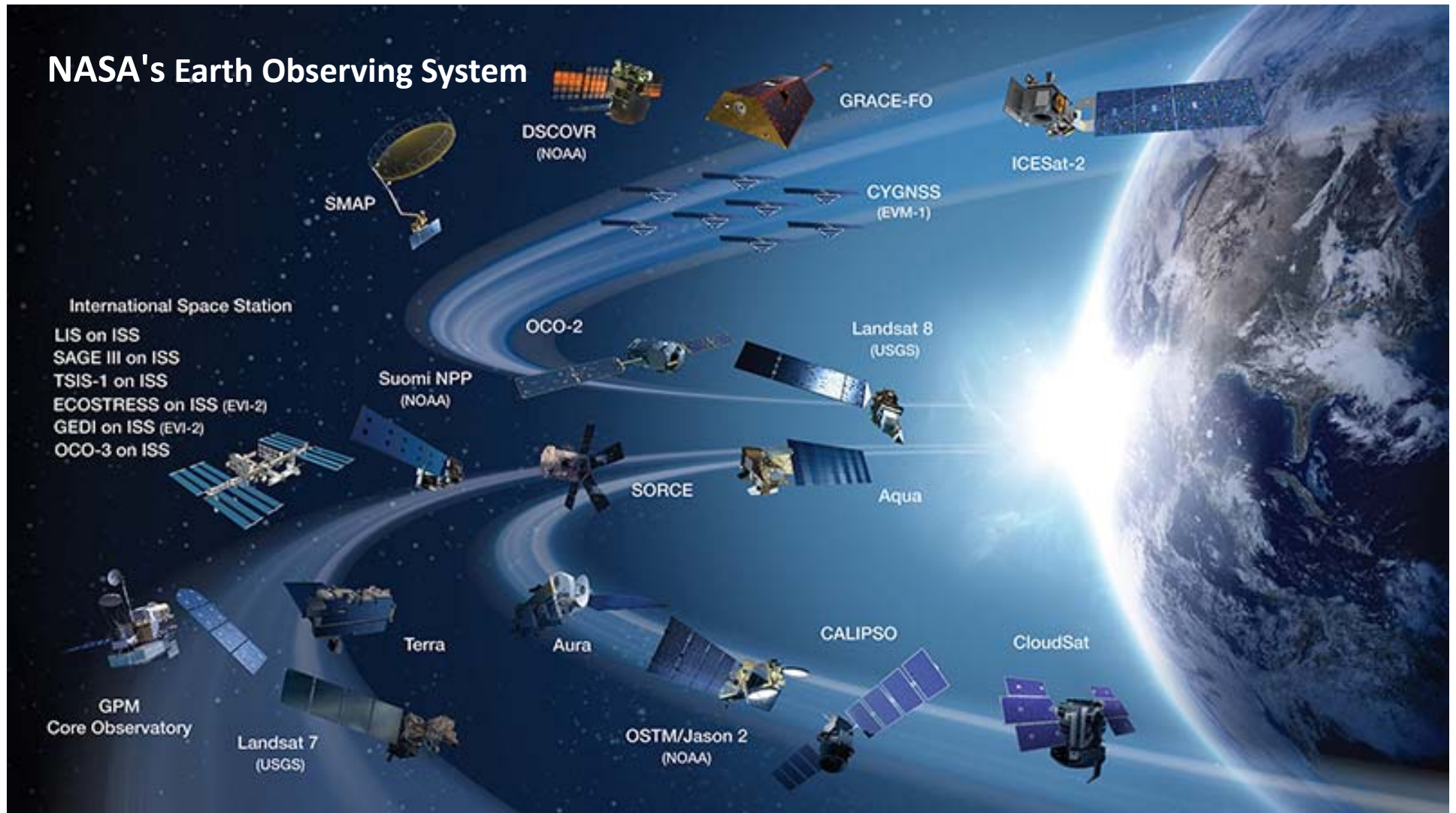
Xiaobing Zhou

xzhou@mtech.edu

DOE Lab Day

(10/8/2019)

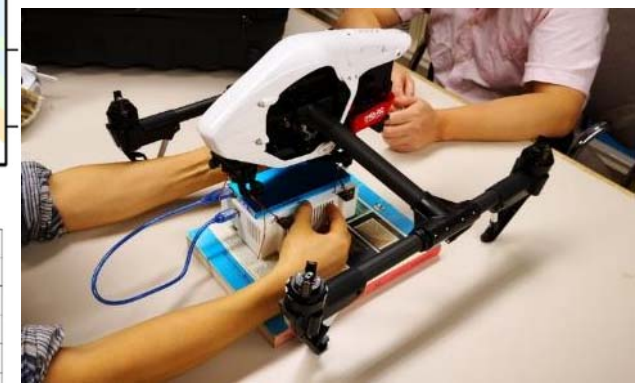
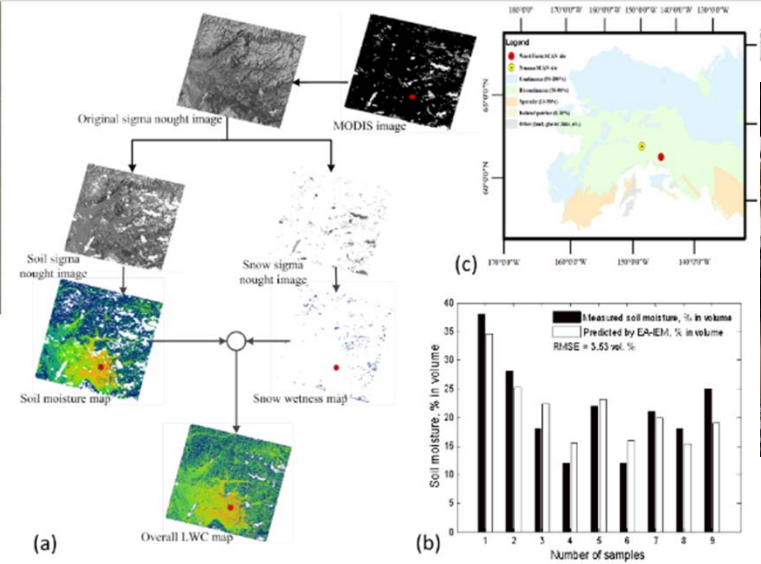
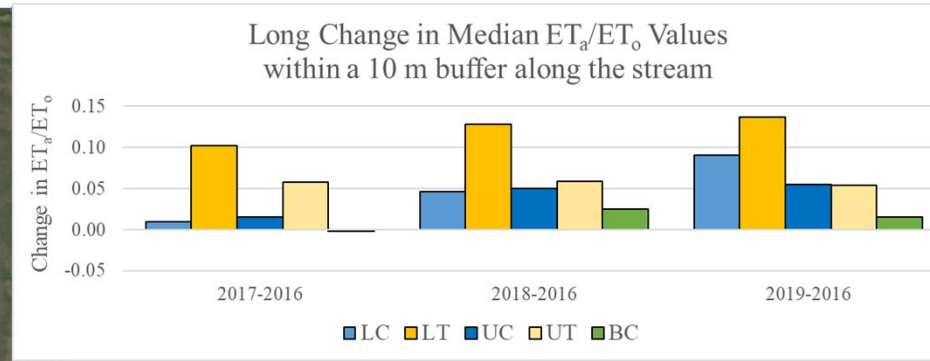
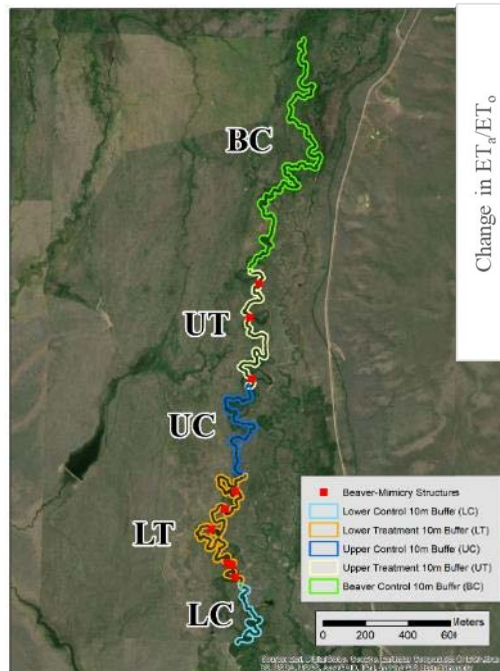
NASA's Earth Observing System



- **Hydrological Remote Sensing**
- **Remote Sensing for mineral exploration**
- **Remote Sensing for cryosphere**
- **Remote Sensing for mineral exploration/remediation**
- **Mapping**

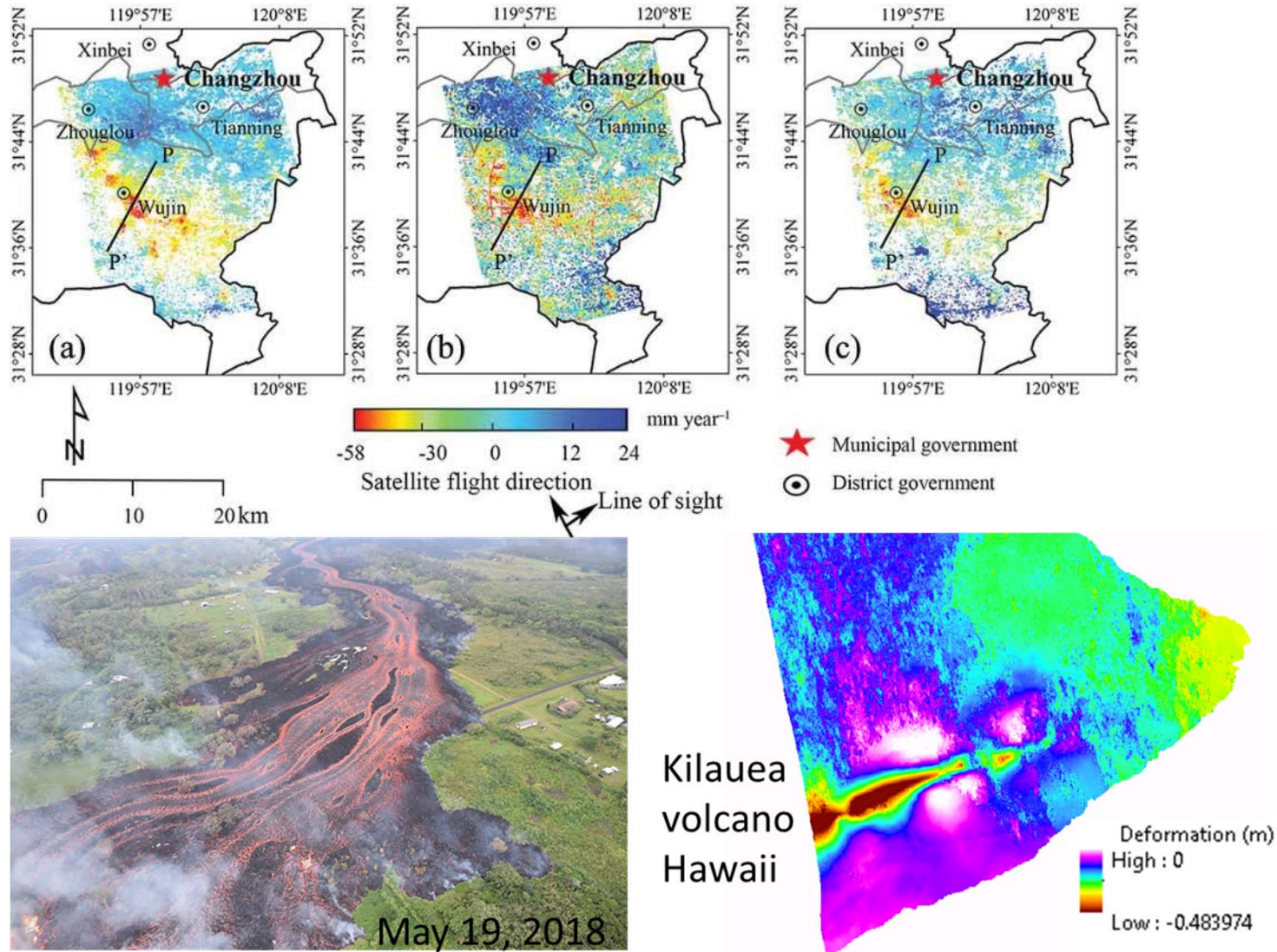
Hydrological Remote Sensing

- Evapotranspiration (Andrew Bobst, Raja Nagesetty, Glen Shaw)
- Vegetation vigor (Andrew Bobst)
- Radar soil moisture (Xiaobing Zhou)



Remote Sensing for Natural Hazard Monitoring/Assessment

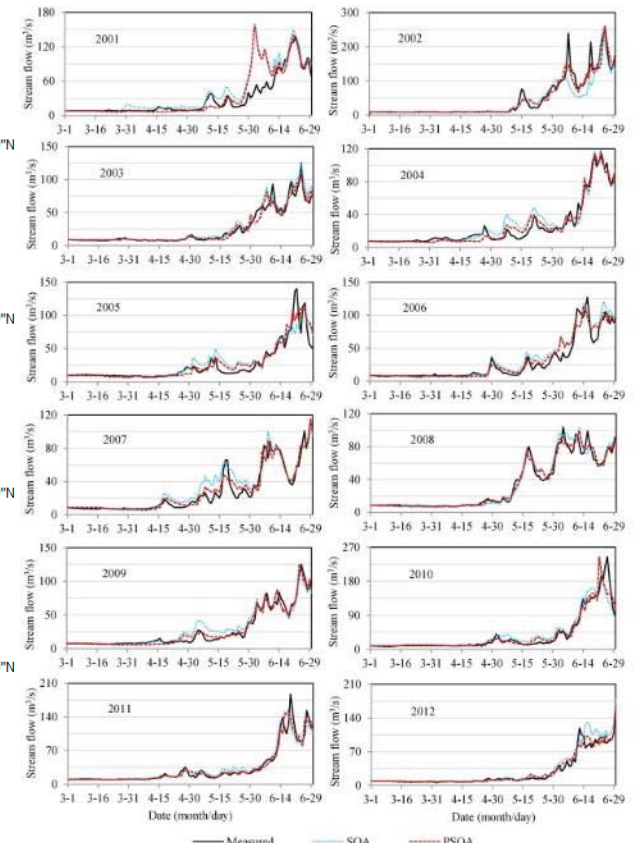
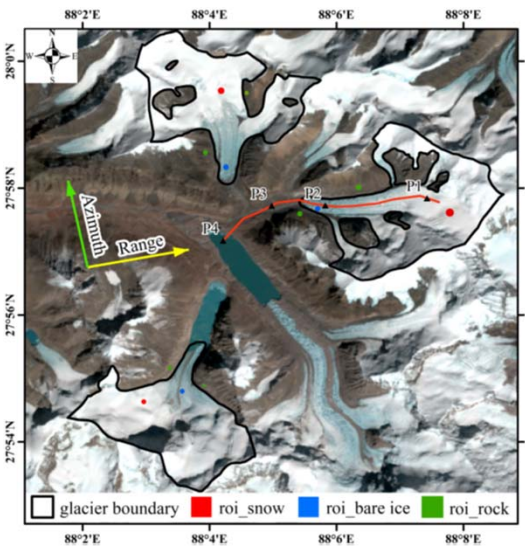
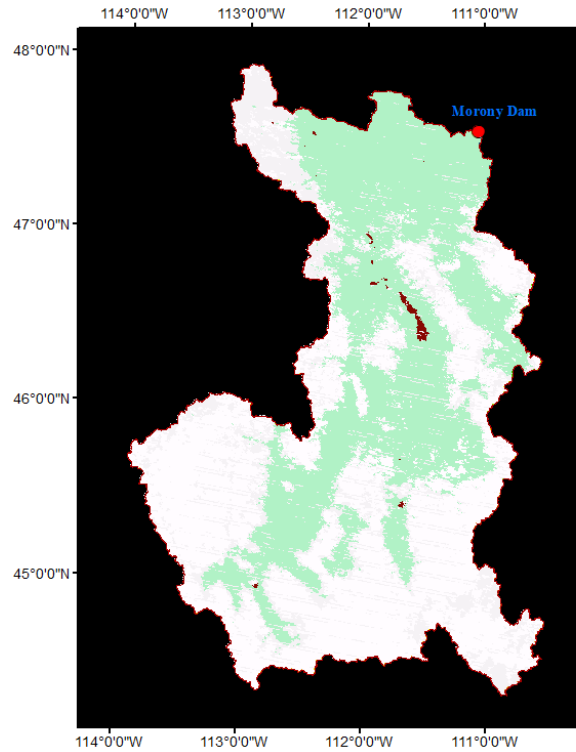
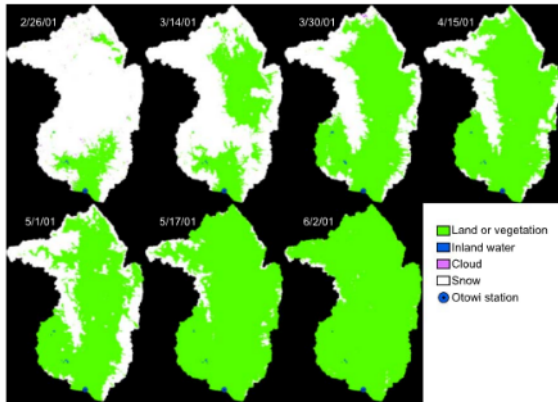
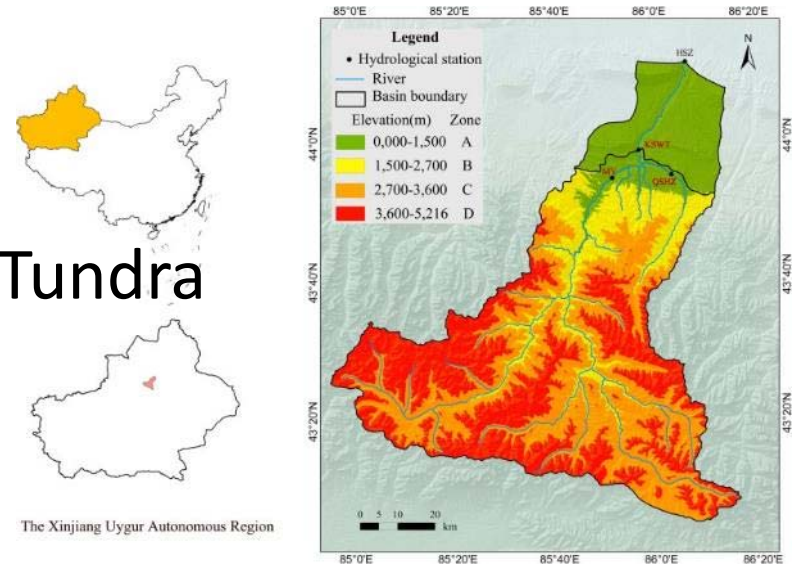
- Land slides
- Volcano eruption (InSAR)



Kilauea volcano
Hawaii

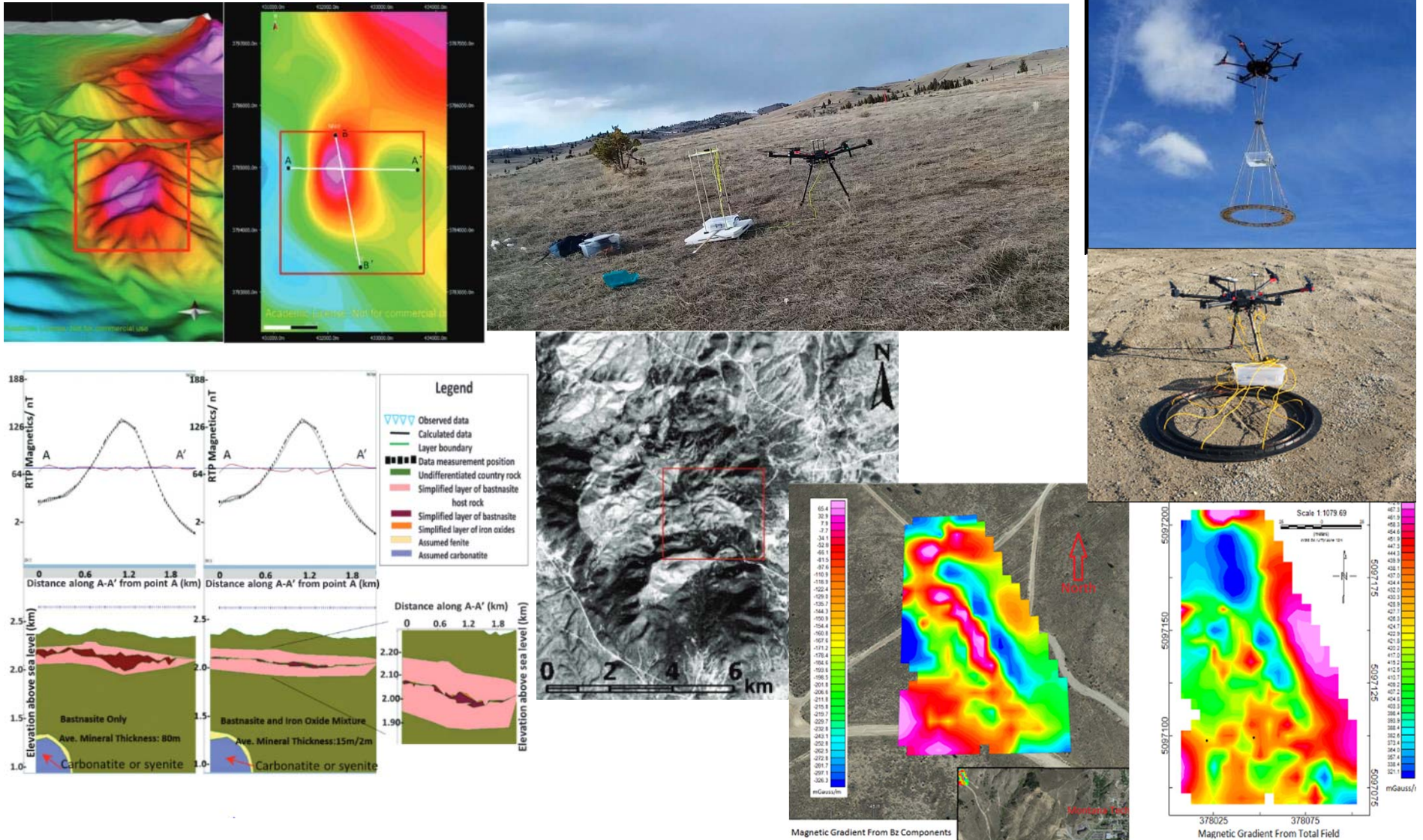
Remote Sensing for cryosphere

- Snow /Glacier ice
- Snowfield Dynamics - Alpine Tundra
- Cold weather & hydropower



Remote Sensing for mineral exploration/remediation

- Aeromagnetic + Electromagnetic Induction
- Multi- and hyperspectral (Pyperion & AVIRIS)



Custom UAS Lidar/Photogrammetry Mapping System

Jeremy Crowley, Montana Bureau of Mines and Geology, Raja Nagisetty and Bryce Hill, MTech

- Velodyne Lidar, SBG IMU, Intel NUC Microcomputer
- Linux Based Robotic Operating System
- Working on terrain guided flight, real-time mapping, obstacle avoidance, colorized point clouds





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