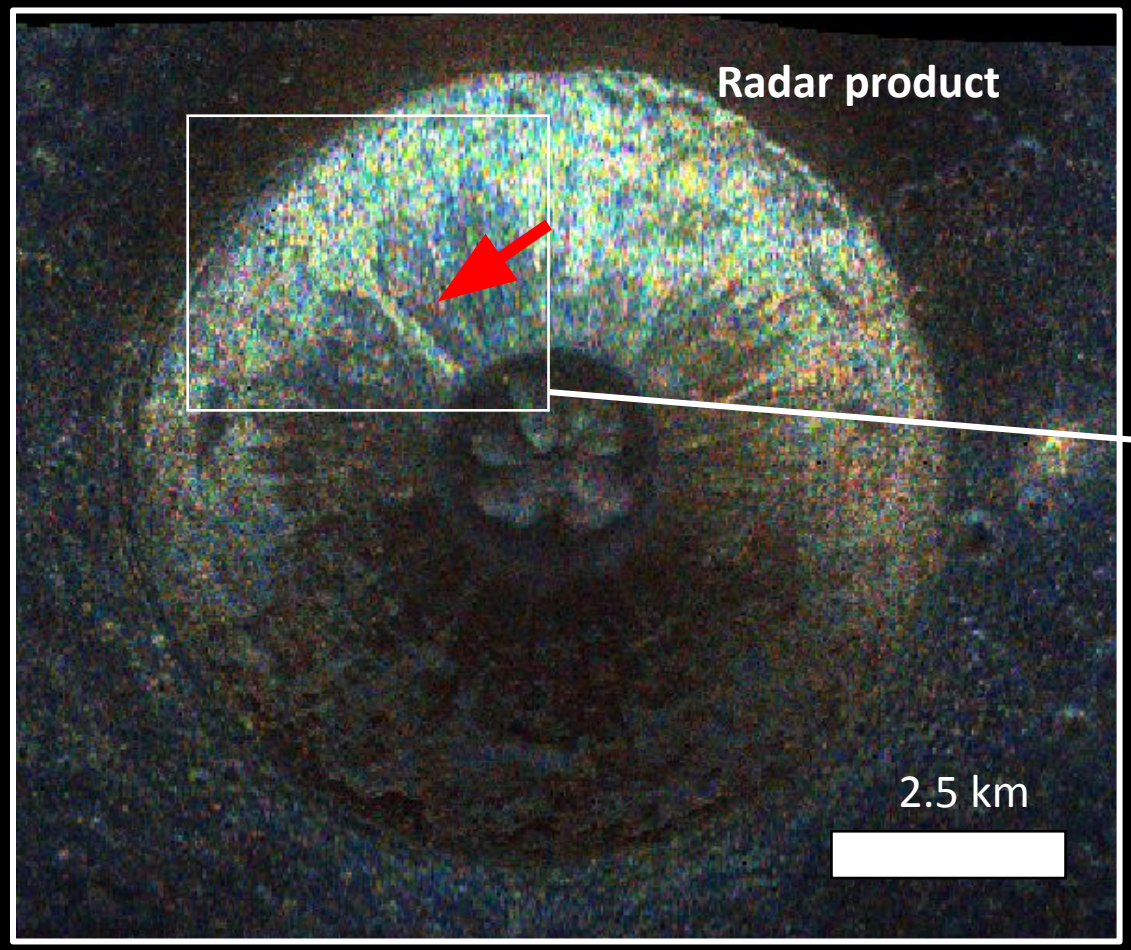
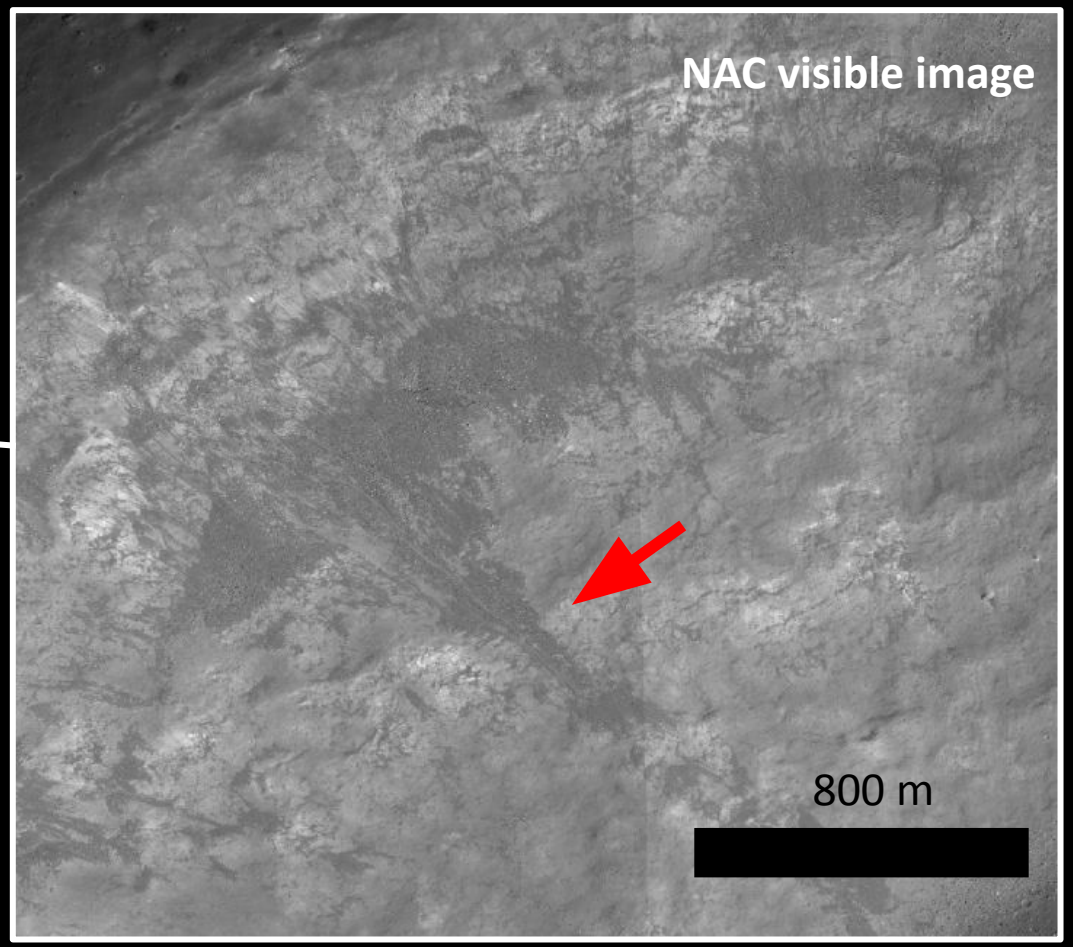
We have observed mass wasting events shaping the Moon surface since the first images from the Apollo era.

- Mass wasting are the downslope movement of material driven by gravity (Li et al., 2023)
- In this study, we focused on the characterization of mass wasting on the lunar mare.
- The lunar mare are large, dark young basaltic plains (lava flows and pyroclastic deposits) on the Moon (Hiesinger & Jaumann, 2014)

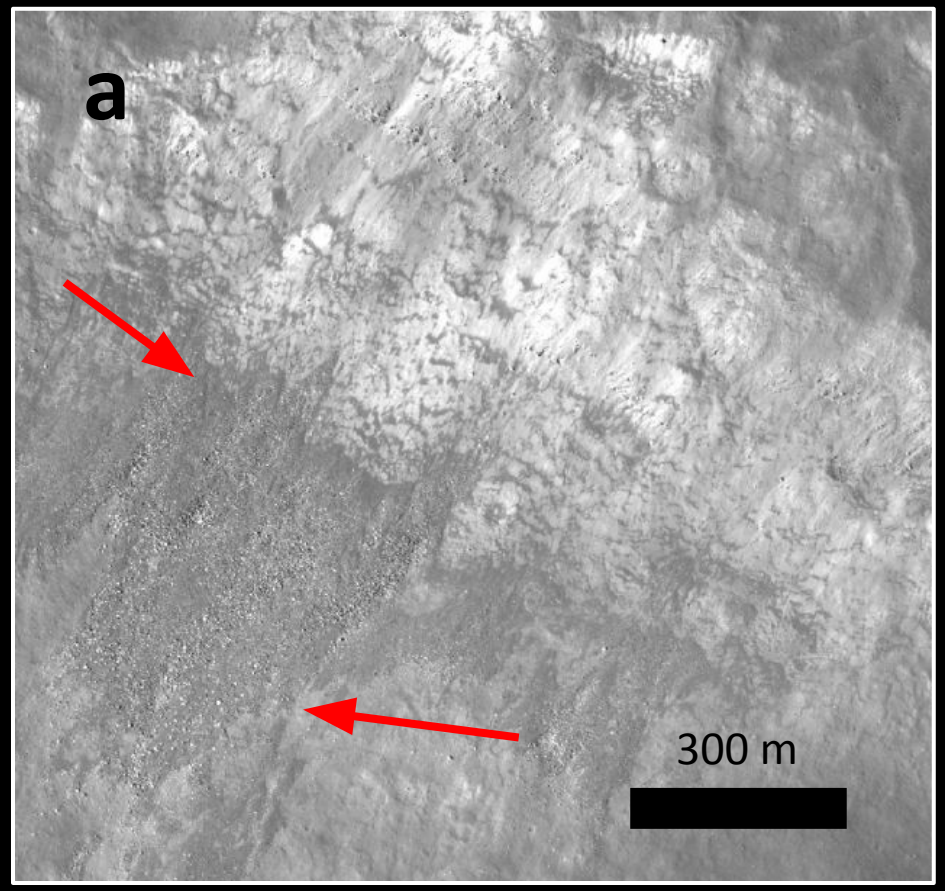
Nearside of the Moon

We used radar products (m-chi decomposition) to study the scattering properties of areas with mass wasting

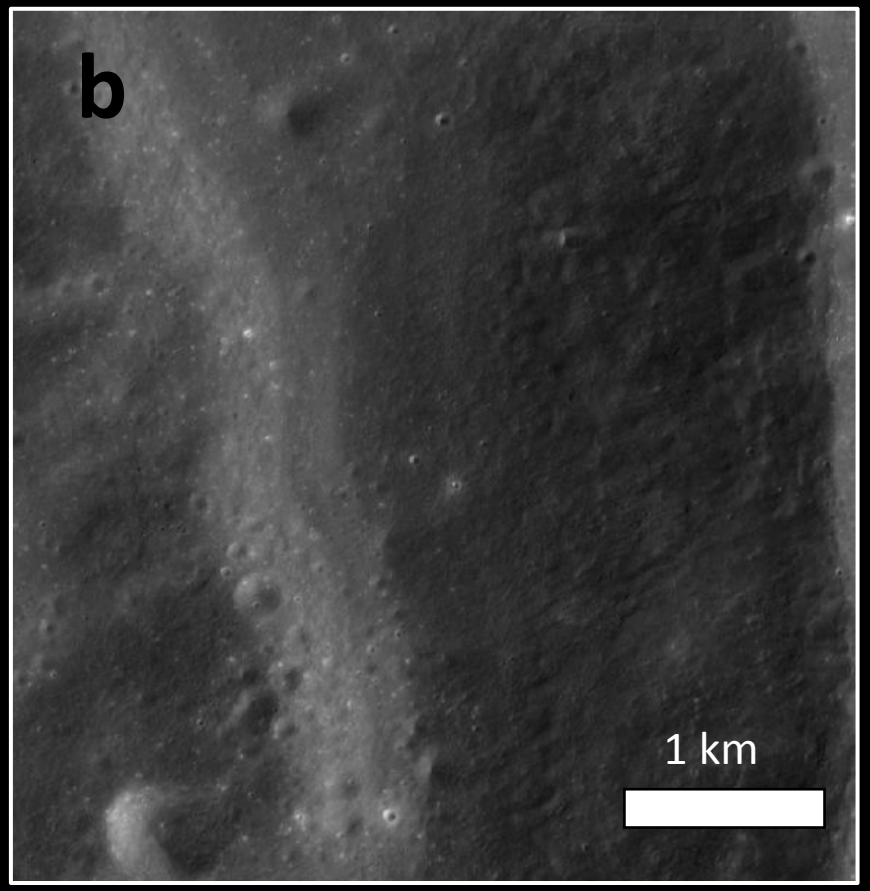




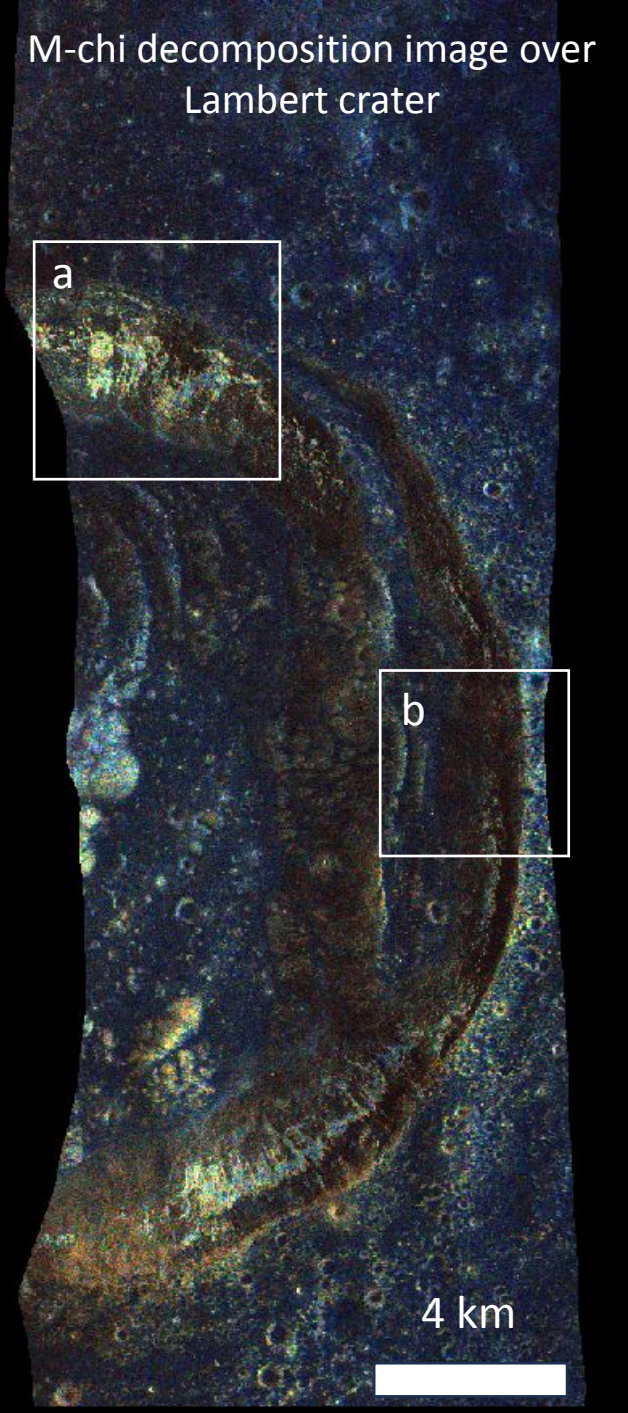
We can identify mass wasting based on their higher values of depolarization



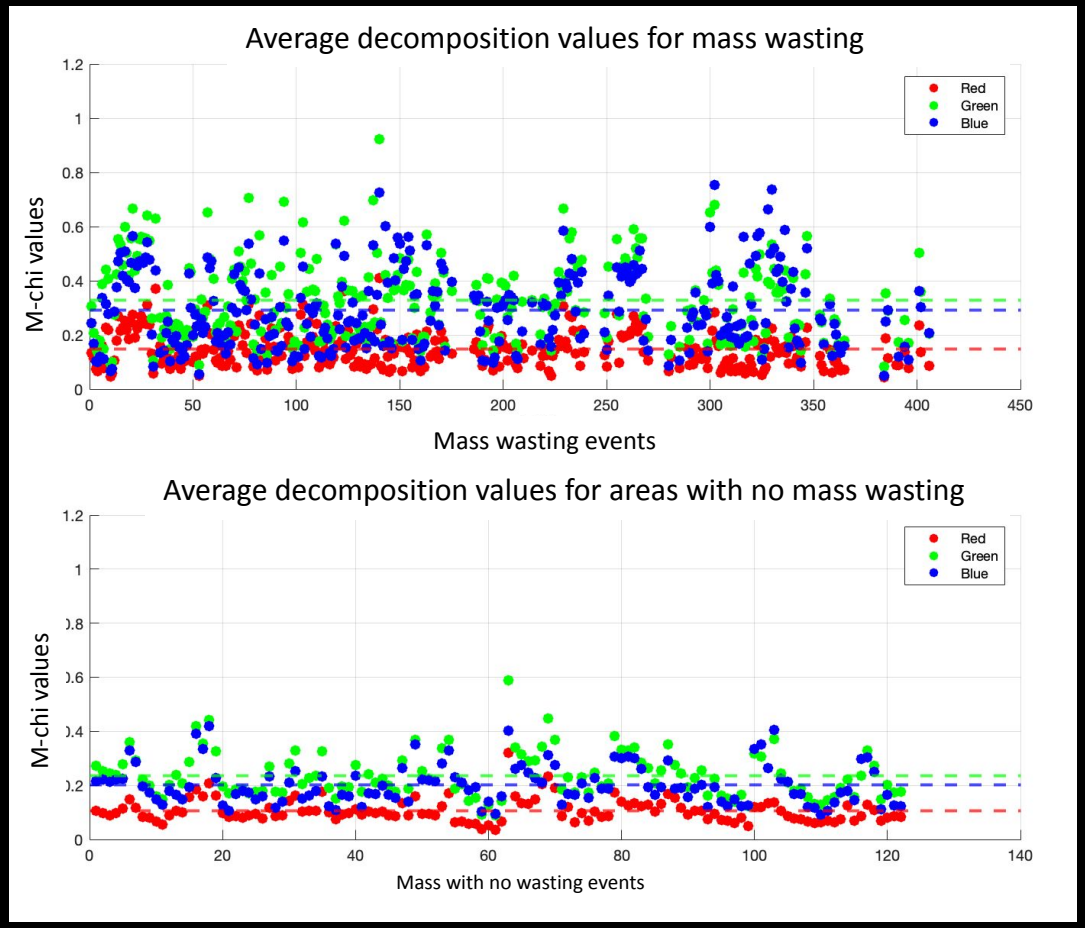
Areas with Mass wasting

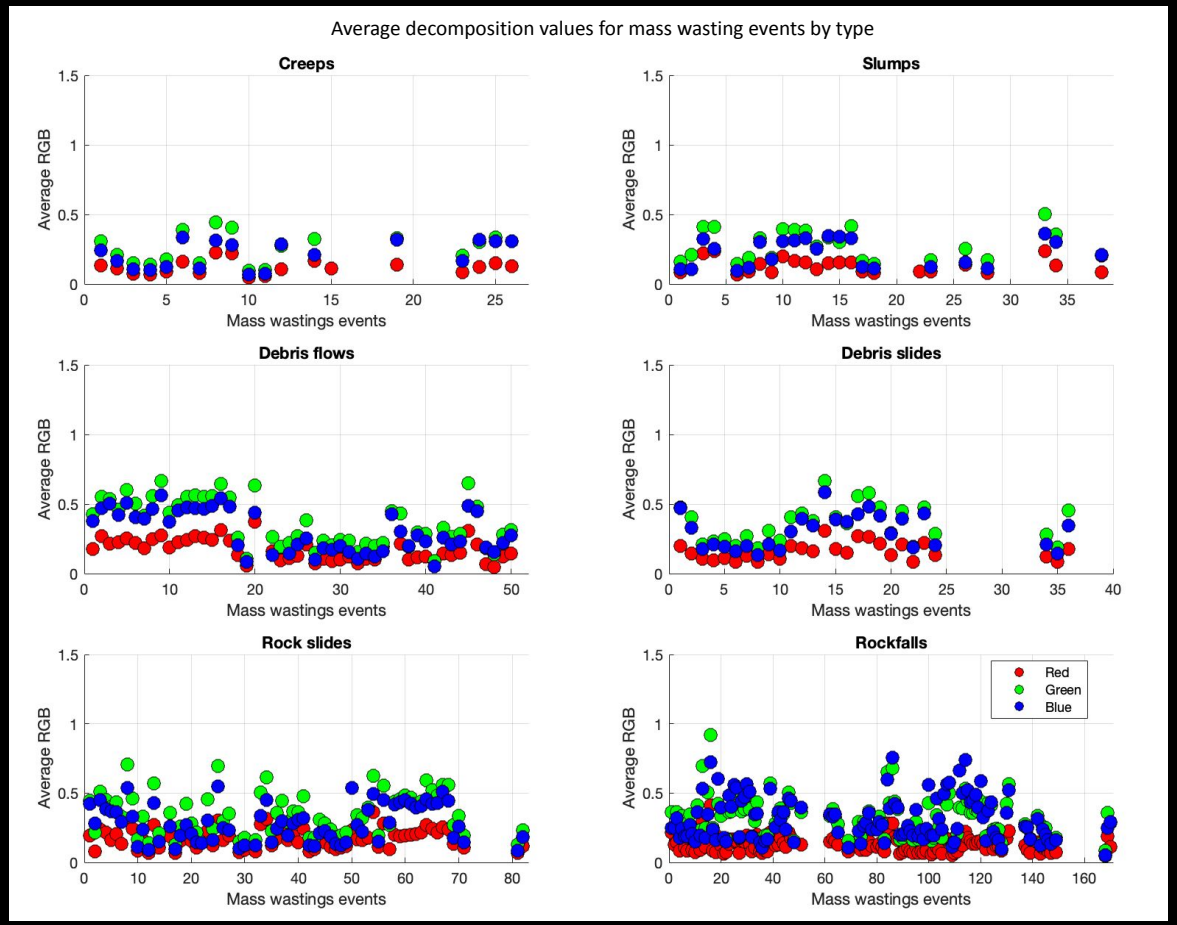


Area Without Mass Wasting



Using “Zonal Statistics as a table” tool in ArcMap, we extracted decomposition values for all the areas that we previously mapped with mass wasting events.





We have developed a preliminary classification of mass wasting events based on their radar scattering properties.

Class identified in this study	Mass wasting type	Average Red double bounce	Average Green depolarized scatters	Average Blue single bounce
Class A	Creeps	0.119	0.257	0.212
	Slumps	0.130	0.282	0.225
Class B	Debris flows	0.170	0.365	0.304
	Debris slides	0.166	0.375	0.316
	Rockslides	0.171	0.350	0.276
Class C	Rockfalls	0.129	0.308	0.313

- We this study we are hoping that it can give us a better understand mass wasting morphologies on the Moon.
- Use this methodology to find mass wasting events in the future on places where illuminations conditions make it difficult (high albedo areas or permanently shadow regions)