



U.S. Department of Energy
Office of Civilian Radioactive Waste Management



Surface-Feature Indications that Yucca Mountain has Not Experienced Extreme Ground Motions in the Past

Presented to:
Nuclear Waste Technical Review Board

Presented by:
John W. Whitney
U.S. Geological Survey
Denver, CO

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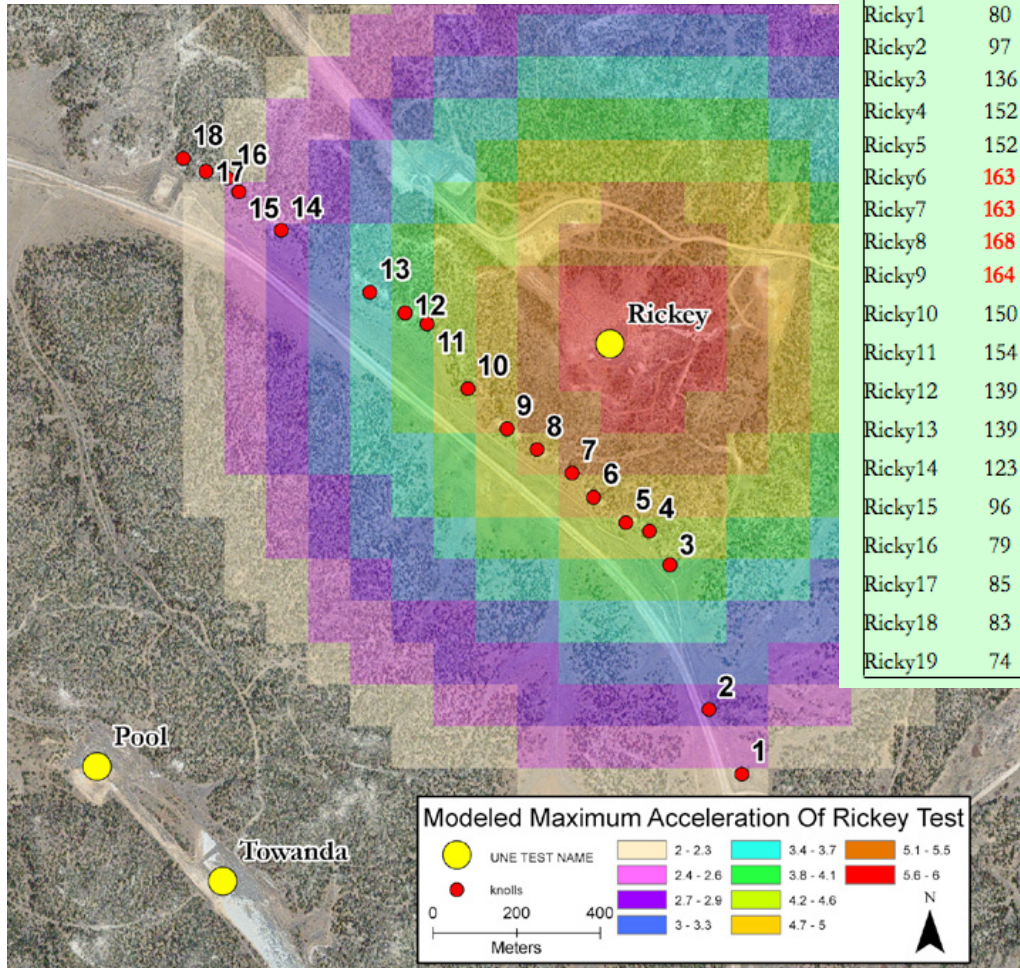


The geomorphic history of Yucca Mountain preserves evidence of climatic and tectonic events over several hundred thousand years



Underground Nuclear Explosions (UNEs) on Pahute Mesa

Max Velocity and Max Acceleration Predictions at each Knoll



Knoll	Max Vel	Max Accel	VACC	Knoll	Max Vel	Max Accel	VACC	Knoll	Max Vel	Max Accel	VACC
Ricky1	80	2	4	Pool1	157	3	4	Towanda1	99	2	4
Ricky2	97	3	5	Pool2	168	4	5	Towanda2	103	3	5
Ricky3	136	4	8	Pool3	173	4	5	Towanda3	98	2	4
Ricky4	152	4	9	Pool4	168	4	5	Towanda4	92	2	4
Ricky5	152	4	9	Pool5	181	4	5	Towanda5	99	2	4
Ricky6	163	5	10	Pool6	187	4	5	Towanda6	99	2	4
Ricky7	163	5	10	Pool7	187	4	5	Towanda7	95	2	4
Ricky8	168	5	10	Pool8	191	4	6	Towanda8	97	2	4
Ricky9	164	5	10	Pool9	195	4	6	Towanda9	94	2	4
Ricky10	150	4	9	Pool10	198	4	6	Towanda10	98	2	4
Ricky11	154	4	9	Pool11	180	2	5	Towanda11	82	2	4
Ricky12	139	4	8	Pool12	189	4	6	Towanda12	84	2	4
Ricky13	139	4	8	Pool13	189	4	6	Towanda13	84	2	4
Ricky14	123	3	7	Pool14	183	4	5	Towanda14	79	2	3
Ricky15	96	3	5	Pool15	181	4	5	Towanda15	70	2	3
Ricky16	79	2	3	Pool16	171	4	5	Towanda16	68	2	3
Ricky17	85	2	5	Pool17	168	3	5	Towanda17	65	2	3
Ricky18	83	2	4	Pool18	160	3	5	Towanda18	63	2	3
Ricky19	74	2	4	Pool19	161	3	5	Towanda19	63	2	3

Rickey (1968)
Pool (1976)
Towanda (1985)



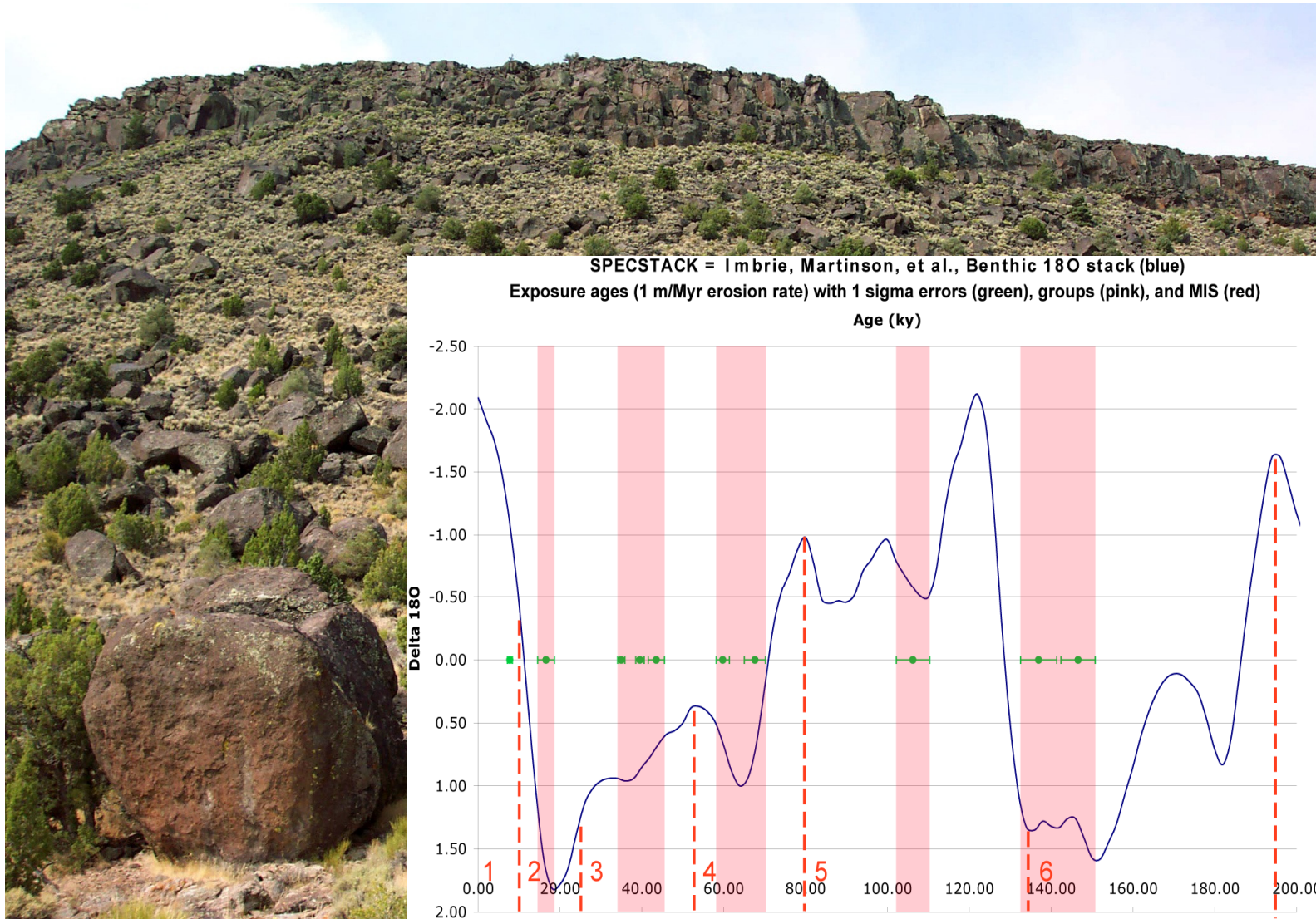
Large volumes of coarse rockfall generated by modeled 2 m/s PGV and 5-6 g PGA from two UNEs along Rickey Cliffs on Pahute Mesa
PGV = peak ground velocity, PGA = peak ground acceleration



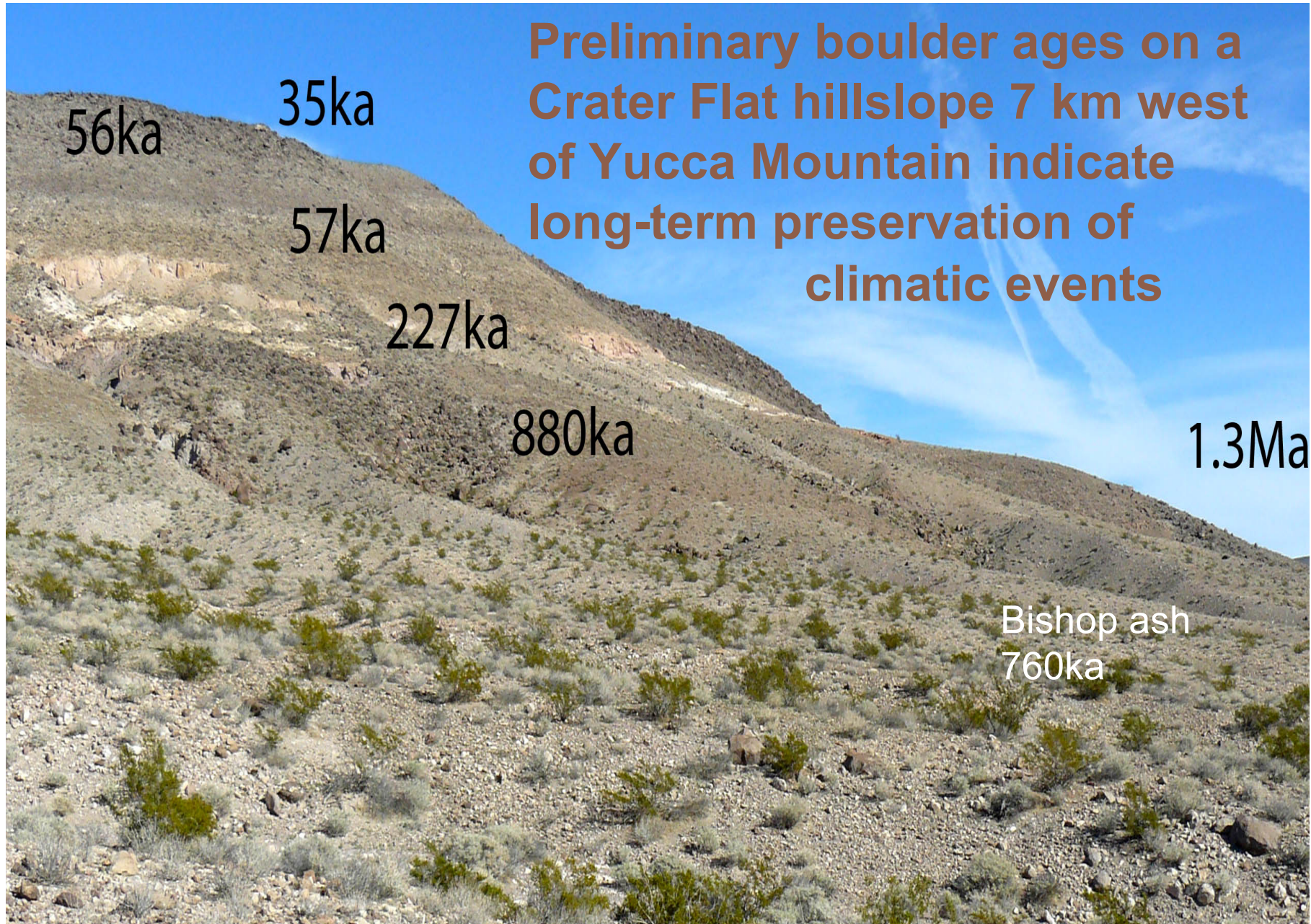
Boulder ages increase down Castle Rock hillslope



Cosmogenic boulder ages indicate cliff weathering primarily during glacial episodes

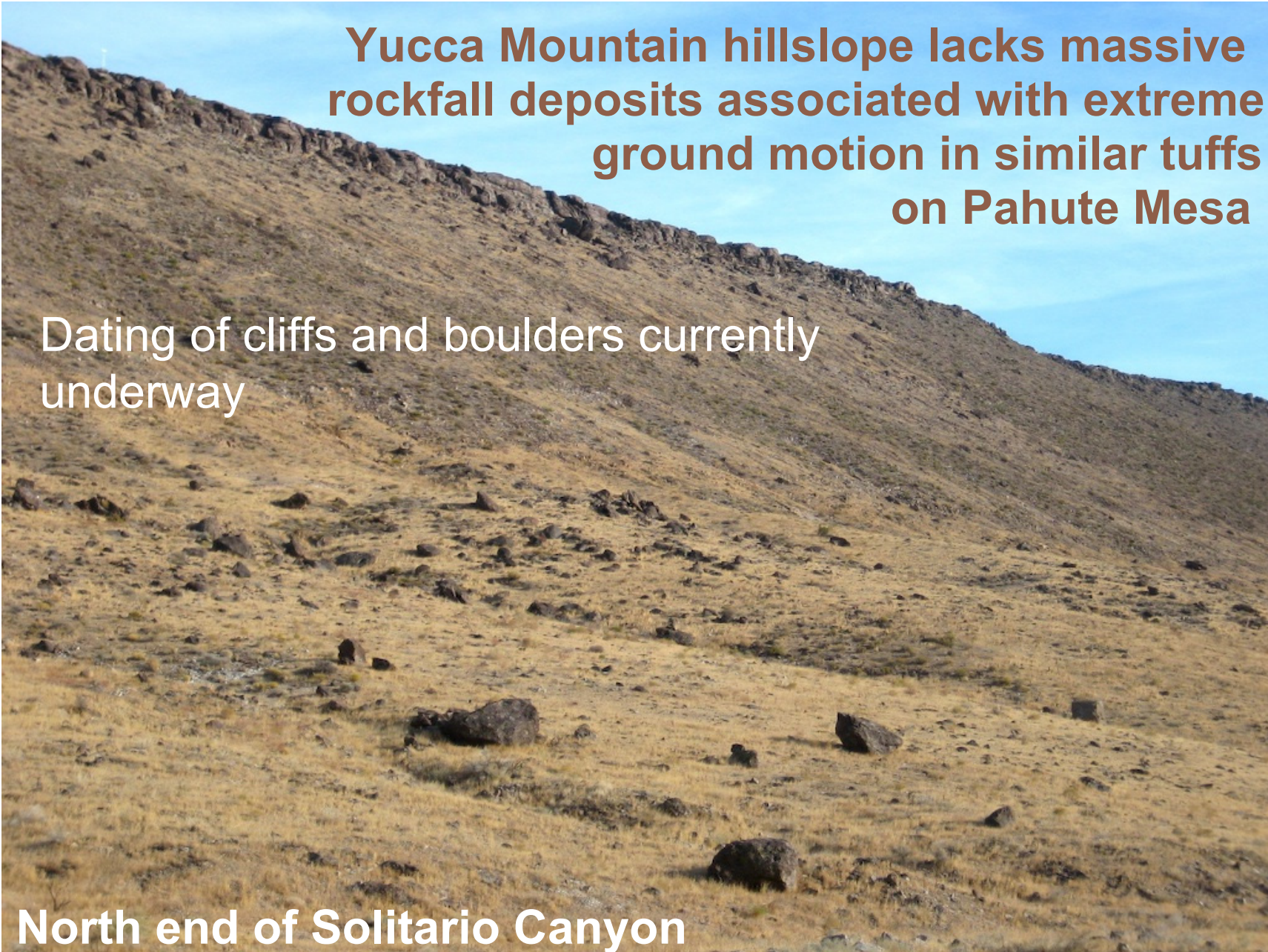


Preliminary boulder ages on a Crater Flat hillslope 7 km west of Yucca Mountain indicate long-term preservation of climatic events



Cosmogenic dating of cliffs and precarious rocks on Yucca Mountain can define how long fragile features have been preserved without shaking by different levels of ground motion





**Yucca Mountain hillslope lacks massive
rockfall deposits associated with extreme
ground motion in similar tuffs
on Pahute Mesa**

Dating of cliffs and boulders currently
underway

North end of Solitario Canyon



Acknowledgements

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