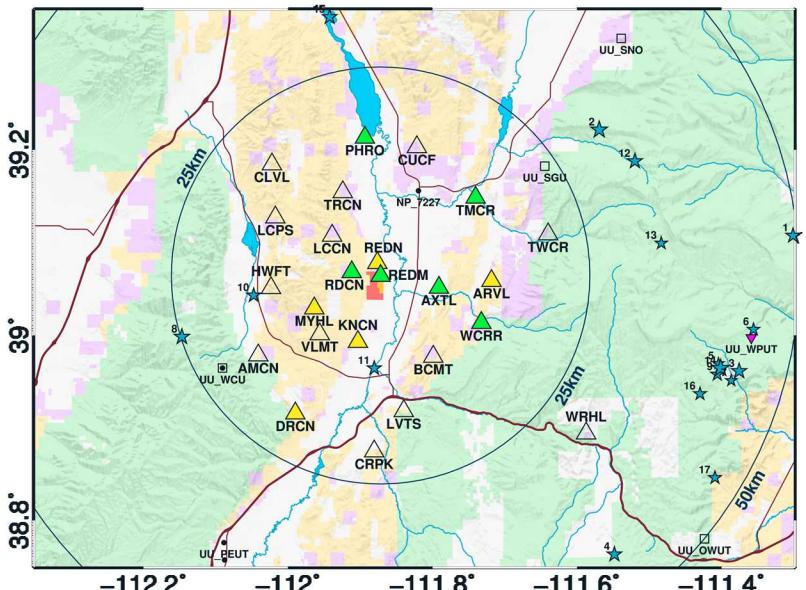


# Local Monitoring of Underground Mining Explosions



Station Status		
Currently Active	Data Collection Complete	Planned
CLVL, LCPS, PHRO, CUCF, TMCR, UU_SNO, UU_SGU, TWCR, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, UU_WPUT, UU_WPUT, UU_WCU, AMCN, MYHL, KNCN, VLMT, RDCN, REDN, REDM, AXTL, ARVL, WCRR, BCMT, LVT, CRPK, WRHL, UU_BEUT, UU_OWUT		
	HWFT, DRCN, LCCN, REDN, REDM, AXTL, ARVL, WCRR, BCMT, LVT, CRPK	
		CLVL, LCPS, PHRO, CUCF, TMCR, UU_SNO, UU_SGU, TWCR, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, UU_WPUT, UU_WPUT, UU_WCU, AMCN, MYHL, KNCN, VLMT, RDCN, REDN, REDM, AXTL, ARVL, WCRR, BCMT, LVT, CRPK, WRHL, UU_BEUT, UU_OWUT

Other symbols as in Figure 1.

Table of Earthquakes since Oct. 2017			
Depth(km)	Mag.	Date(UTC)	Time(UTC)
2.75	1.35	2017/10/05	07:04:47.800
16.89	1.78	2017/10/27	21:13:28.400
6.68	1.52	2017/11/12	04:16:25.630
10.33	1.40	2017/11/15	11:45:02.880
-0.92	0.75	2017/12/03	00:38:01.130
-2.02	0.95	2017/12/05	04:14:33.970
14.55	0.77	2017/12/10	11:20:24.710
0.70	1.53	2018/01/14	06:35:32.720
1.94	1.10	2018/01/15	11:39:22.580
3.35	1.26	2018/03/17	15:36:07.820
15.17	1.26	2018/03/29	07:55:16.030
1.94	1.44	2018/03/29	17:03:00.300
2.56	0.95	2018/04/07	08:42:53.330
3.04	1.86	2018/04/07	11:04:18.340
5.47	1.38	2018/04/12	06:44:40.020
2.98	1.02	2018/04/25	06:58:00.470
13.74	1.05	2018/05/03	09:31:41.260



## Broadband and nodal monitoring of mining explosions and earthquakes

- Near-local distances (<30km) to examine monitoring methods at near offsets
  - Waveform correlation
  - Noise & travel time tomography
  - Discrimination
- Redmond Salt Mine blasts 4-6 times per week in an underground tunnel complex
  - Typical size is 0.5 tonne TNT equiv.
  - Short duration, 0.1s total.
- Data collection is 1/3 complete, finishing Q2, 2019

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