University of Idaho Computational Hydrology Group: Seismic Survey Report

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Objective

The primary focus of our work is constraining heat flux and understanding heat partitioning in geothermal areas. The seismic refraction surveys add an additional component to our work and give subsurface clues to what we were seeing in ground temperature surveys. The first use was image breakthrough of a relay ramp in the Alvord Basin, OR. The breakthrough appeared to be evident in previous ground temperature studies of the area. Upon completion of this phase, we also used the seismic equipment to find the basement contact to better characterize fluid flow in Burgdorf Hot Springs and to image the subsurface in Yellowstone National Park. The work in YNP was at the time our primary research project and was focused on constraining heat flux.

Survey Locations and Description

Burgdorf Hot Springs, Idaho

Burgdorf Hot Springs is a recreational bathing resort 20 miles north of McCall, Idaho in the Payette National Forest. 6 fixed seismic lines were used to collect data within a 72m x 72m grid and placed in the area of investigation at 0m,4m,8m,12m,16m, and 20m. 24 geophones were spaced at 1.5m and shots were placed at 0m,9m,18m,27m and 36m geophone locations across each transect.



Alvord Basin, Oregon

The Alvord Basin in located in South-Eastern Oregon and is one of the Northern most basin and range provinces. 5 fixed seismic lines were used to collect data within a 72m x 72m grid and placed in the area of investigation at 0m,18m,36m,54m, and 72m. 48 geophones were spaced 1.5m apart and shots were placed at the 0m,18m, 36m, 54m and 72m geophone locations across each transect.



Morning Mist Hot Springs Group, Yellowstone National Park, Wyoming

Morning Mist Hot Springs Group is located in the Lower Geyser Basin of Yellowstone National Park in Northwestern Wyoming. 5 fixed seismic lines were used to collect data within a 72m x 72m grid and placed in the area of investigation at 0m,18m,36m,54m, and 72m. 48 geophones were spaced 1.5m apart and shots were placed at the 0m,18m, 36m, 54m and 72m geophone locations across each transect.



Associated Metadata

Burgdorf Hot Springs										
Transect	End 1 Easting	End 1 Northing	End 2 Easting	End 2 Northing	0m Shot File	9m Shot File	18m Shot File	27m Shot File	36m Shot	
									File	
0	585248	5014323	585282	5014312	61.sgy	60.sgy	59.sgy	58.sgy	57.sgy	
4	585247	5014319	585281	5014308	52.sgy	53.sgy	54.sgy	55.sgy	56.sgy	
8	585246	5014315	585280	5014304	51.sgy	50.sgy	49.sgy	48.sgy	47.sgy	
12	585245	5014311	585279	5014301	42.sgy	43.sgy	44.sgy	45.sgy	46.sgy	
16	585244	5014308	585278	5014297	39.sgy	38.sgy	37.sgy	36.sgy	35.sgy	
20	585243	5014304	585277	5014293	30.sgy	31.sgy	32.sgy	33.sgy	34.sgy	
All UTM are zone 11T										

Alvord Basin, Oregon												
Transect	End 1 Latitude	End 1 Longitude	End 2 Latitude	End 2 Longitude	0m Shot File	12m Shot File	36m Shot File	54m Shot File	72m Shot File			
0	367967	4688111	367981	4688178	10.sgy	11.sgy	12.sgy	13.sgy	14.sgy			
6	367972	4688108	367988	4688177	19.sgy	18.sgy	17.sgy	16.sgy	15.sgy			
12	367979	4688108	367994	4688175	20.sgy	21.sgy	22.sgy	23.sgy	24.sgy			
18	367986	4688106	367998	4688175	29.sgy	28.sgy	27.sgy	26.sgy	25.sgy			
24	367993	4688105	368004	4688173	30.sgy	31.sgy	32.sgy	33.sgy	34.sgy			
All UTM are zone 11T												

Yellowstone National Park										
Transect	End 1	End 1	End 2 Easting	End 2	0m	12m	36m	54m	72m	
	Easting	Northing		Northing	Shot	Shot	Shot	Shot	Shot	
					File	File	File	File	File	
0	515265	4935538	515329	4935507	2.sgy	3.sgy	4.sgy	5.sgy	6.sgy	
12	515261	4935528	515325	4935497	11.sgy	10.sgy	9.sgy	8.sgy	7.sgy	
36	515253	4935514	515318	4935481	12.sgy	13.sgy	14.sgy	15.sgy	16.sgy	
54	515242	4935495	513309	4935460	22.sgy	21.sgy	19.sgy	18.sgy	17.sgy	
72	515295	4935442	515231	4935475	23.sgy	24.sgy	25.sgy	26.sgy	27.sgy	
All UTM are zone 12T										

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