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Data Measured on Water Collected from Fall River Springs, California

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DATA MEASURED ON WATER COLLECTED FROM FALL RIVER SPRINGS, CALIFORNIA

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In October 1997 field collection of water emerging from large volume springs located at the headwater of Fall River in northeastern California resulted in the measurement of stable isotope, radiocarbon, tritium, and dissolved noble gases. This work was follow-on to previous studies on similar spring systems in Hat Creek Valley and surrounding Mt. Shasta in northern California (Rose and Davisson, 1996; Rose et al., 1996; Davisson and Rose, 1997). The data for Fall River springs was never formally published and is therefore tabulated in Table 1 in order to be recorded in public record.

These studies, along with many parallel and subsequent ones using isotopes and elemental concentrations, are all related to the general research area of tracing sources and quantifying transport times of natural and man-made materials in the environment. This type of research has direct relevance in characterizing environmental contamination, understanding resource development and protection, designing early detection in WMD related terrorism, and application in forensics analysis.

References

- Rose, T.P. and Davisson, M.L., 1996, Radiocarbon in hydrologic systems containing dissolved magmatic carbon dioxide. *Science*, 273, 1367-1370.
- Rose, T.P., Davisson, M.L., Criss, R.E., 1996, Isotope hydrology of voluminous cold springs in fractured rock from an active volcanic region, northeastern California. *Journal of Hydrology*, 179, 207-236.
- Davisson, M.L., T.P. Rose, 1997, Comparative Isotope Hydrology Study of Groundwater Sources and Transport in the Three Cascade Volcanoes of Northern California. UCRL-ID-128423, 46 pp.



Sample	Sample Date	Latitude	Longitude	T°C	pH	Electrical Conductivity	Dissolved Inorganic Carbon	$\delta^{18}\text{O}$	δD	$\delta^{13}\text{C}$	^{14}C	^4He	^3He	^{20}Ne	^{40}Ar	^3H
						uS	mg/L	per mil	per mil	per mil	pmc	(atom/g)	(atom/g)	(atom/g)	(atom/g)	(pCi/L)
FRS-1	10/27/1997	41°07'04.5"	121°33'25.9"	10.0	7.00	139.8	83	-13.21		-17.2	91.7	1.25332E+12	2.34854E+06	4.67720E+12	1.07175E+16	8.17
FRS-2	10/27/1997	41°07'04.5"	121°33'25.9"	10.0	7.03	147.2		-13.06	-93.5							
FRS-3	10/27/1997	41°06'59"	121°33'10"	12.0	7.76	146.4	82	-13.76		-11.7	74.7	1.37237E+12	3.73864E+06	4.66586E+12	9.78042E+15	8.88
FRS-4	10/27/1997	41°06'52.7"	121°32'53.1"	12.0	7.32	154.5	80	-13.70		-12.0	78.2					
FRS-5	10/27/1997	41°06'44.7"	121°32'49.3"	12.5	7.59	155.1	85	-13.70		-10.9	74.5	1.30806E+12	3.20435E+06	4.80913E+12	9.57733E+15	10.13
FRS-6	10/27/1997	41°06'48.5"	121°30'37.1"	13.0	7.34	157.0	87	-13.74		-12.0	77.8	1.29689E+12	3.09025E+06	4.55000E+12	9.50251E+15	12.97
FRS-7	10/27/1997	41°06'48.5"	121°30'37.1"	12.0	7.15	142.0		-13.63	-99.5							
FRS-8	10/27/1997	41°06'58.2"	121°30'20.9"	14.0	7.02	161.0		-13.46								
FRS-9	10/27/1997	41°06'24.9"	121°30'12.3"	13.0	7.49	147.2	81	-13.65	-99.0	-11.4	81.0					
FRS-10	10/28/1997	41°07'33.8"	121°24'06.0"	12.5	7.80	182.0		-13.27								
FRS-11	10/28/1997	41°07'59.5"	121°24'20.7"	13.5	7.92	186.8	106	-13.40		-11.9	83.0	1.17247E+12	1.85407E+06	4.61817E+12	9.53458E+15	13.58
FRS-12	10/28/1997	41°08'01.7"	121°24'28.8"	13.5	7.96	181.9	104	-13.40		-11.7	79.2					
FRS-13	10/28/1997	41°06'46.8"	121°26'50.6"	13.5	7.90	172.5	97	-13.54	-97.0	-11.0	78.1	1.17878E+12	1.90201E+06	4.58400E+12	9.32080E+15	12.67
FRS-14	10/28/1997	41°06'50.3"	121°27'27.6"	13.0	7.89	170.6	95	-13.50	-98.0	-11.0	77.6	1.15900E+12	1.83411E+06	4.57520E+12	9.48470E+15	10.85
FRS-15	10/28/1997	41°07'02.1"	121°29'31.0"	12.5	7.85	156.7	86	-13.70		-11.1	76.6	1.14363E+12	1.67475E+06	4.42094E+12	9.76974E+15	8.87
FRS-16	10/28/1997	41°07'00.2"	121°29'29.2"	12.5	7.85	156.0	94	-13.67		-11.3	73.4					