

Supplement of Hydrol. Earth Syst. Sci., 23, 1375–1392, 2019
<https://doi.org/10.5194/hess-23-1375-2019-supplement>
© Author(s) 2019. This work is distributed under
the Creative Commons Attribution 4.0 License.



Supplement of

Combining continuous spatial and temporal scales for SGD investigations using UAV-based thermal infrared measurements

Ulf Mallast and Christian Siebert

Correspondence to: Ulf Mallast (ulf.mallast@ufz.de)

The copyright of individual parts of the supplement might differ from the CC BY 4.0 License.

Figure S 1: Accuracy plot showing the horizontal and vertical deviation of each frame in relation to the first frame (master). The deviation was inferred using the distance between the mass centres of two reflectors between the processed frame and the master.

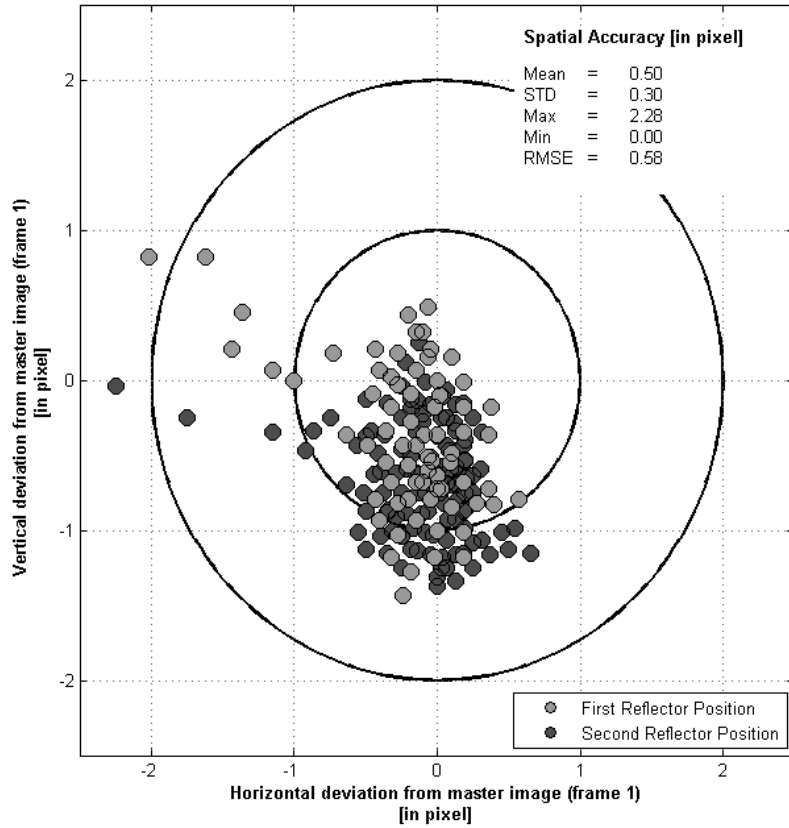


Table S 1: Full detail of water chemistry (analytical results) of all sampled focused SGDs and onshore springs, along with the results from the inverse geochemical modelling and the volumetric calculation

ID	Analytical Results										
	T [°C]	pH [-]	TDS [g/l]	Density [g/cm ³]	Na [mmol/l]	K [mmol/l]	Ca [mmol/l]	Mg [mmol/l]	Cl [mmol/l]	SO4 [mmol/l]	HCO3 [mmol/l]
<i>Interstitial Brine</i>											
	35.6	5.38	345	1.23	1717	192	356	1651	6701	3.37	1.64
<i>Onshore Springs</i>											
09/854	27.9	7.20	7.3	1.00	40.9	5.34	9.54	28.6	129	1.62	3.80
09/855	28.5	7.12	26.0	1.00	129	14.8	48.1	116	429	19.8	4.00
09/856	28.1	7.16	15.6	1.00	89.3	9.01	23.6	68.4	261	8.74	3.96
09/857	27.6	7.11	21.2	1.00	140	11.5	28.0	87.5	363	9.30	3.80
09/858	27.6	7.48	6.4	1.00	35.6	4.31	9.6	26.3	110	1.66	4.23
<i>Focused SGD</i>											
11/120	29.6	7.25	15.8	1.00	68.9	9.61	26.8	82.9	270	7.13	5.03
10/30	28.0	6.75	9.5	1.00	464	56.7	137	502	1693	25.5	2.77
12/382	31.5	7.27	8.7	1.00	45.2	6.19	12.0	37.9	154	2.28	4.57
11/126	30.0	7.37	4.9	1.00	26.2	3.77	6.92	21.1	81.4	1.22	4.43
11/101	24.0	7.16	12.8	1.00	70.4	9.51	17.6	59.3	216	3.50	7.79
11/102	26.6	7.24	13.9	1.00	77.9	9.90	19.3	65.8	239	3.76	6.86
11/121	21.0	7.08	24.8	1.00	125	14.5	44.7	130	415	10.7	4.28

Continued on next page

Modelling Results											
ID	Intersti. Brine [kg]	Fresh Water [mol H2O]	Halite [mol/kgw]	Aragonite [mol/kgw]	Gypsum [mol/kgw]	MgX2 [mol/kgw]	CaX2 [mol/kgw]	NaX [mol/kgw]	KX [mol/kgw]	CO2(g) [mol/kgw]	Sum Residuals [mol/kgw]
<i>Onshore Springs</i>											
09/854	0.012	54.9	0.0123	0.0017	0.0017	0	0	-0.0020	0.0020	0.0023	0.21
09/855	0.049	52.8	0	0.0017	0.0201	0	0	0	0	0.0022	0.91
09/856	0.028	53.9	0	0.0019	0.0087	-0.0066	0	0.0132	0	0.0020	0.61
09/857	0.039	53.3	0	0.0017	0	-0.0244	0.0058	0.0371	0	0.0021	0.24
09/858	0.011	54.9	0.0071	0.0020	0.0016	-0.0006	0	0	0.0013	0.0022	0.88
<i>Focused SGD</i>											
11/120	0.030	53.8	0	0.0025	0.0071	0.0042	0	-0.0083	0	0.0025	0.39
10/30	0.201	44.3	0	0	0.0011	0.0271	0	0	0	0	2.65
12/382	0.015	54.7	0.0056	0.0021	0.0024	0	-0.0008	0	0.0017	0.0027	-0.84
11/126	0.008	55.1	0.0051	0.0021	0.0012	0	-0.0007	0	0.0015	0.0023	0.35
11/101	0.022	54.3	0.0036	0.0034	0.0034	0	-0.0015	0	0.0031	0.0043	0.35
11/102	0.025	54.1	0.0032	0.0037	0.0037	0	-0.0014	0	0.0028	0.0037	0.42
11/121	0.048	52.8	0.0018	0	0	-0.0160	0.0160	0	0	0.0027	0.54

Continued on next page

Volumetric Calculation				
ID	Halite [cm ³ /m ³ H ₂ O]	Aragonite [cm ³ /m ³ H ₂ O]	Gypsum [cm ³ /m ³ H ₂ O]	Sum [cm ³ /m ³ H ₂ O]
<i>Onshore Springs</i>				
09/854	359.5	59.5	125.7	544.7
09/855	0	59.4	1493.0	1552.4
09/856	0	65.3	649.4	714.7
09/857	0	59.0	0.0	59.0
09/858	208.3	69.5	119.8	397.6
<i>Focused SGD</i>				
11/120	0	85.5	527.1	612.6
10/30	0	0	79.8	79.8
12/382	163.4	73.3	177.3	414.0
11/126	150.0	71.6	88.0	309.6
11/101	319.3	122.3	254.8	696.5
11/102	365.6	110.3	273.8	749.7
11/121	0	62.4	0	62.4