GSA Data Repository Item 2016269
Melchiorre, E.B., Kamenov, G.D., Sheets-Harris, C., Andronikov, A., Leatham, W.B., Yahn, J., and Lauretta, D.S., 2016, Climate induced geochemical and morphological evolution of placer gold deposits at Rich Hill, Arizona, USA: GSA Bulletin, doi:10.1130/B31522.1.

DATA REPOSITORY FIGURES AND TABLES

Figure DR1. 30.4 troy ounces of gold nuggets from the Devils Nest placer of the Rich Hill area, mined in 2010-2014 by JW Mining. These nuggets come from a variety of placer deposits (e.g., red, white, and black), but are dominantly from the base of the red placers.

Figure DR2. Measurement of nugget morphology with digital calipers.

Figure DR3. Surface features of gold from the red placers include a). casts of quartz crystals from the lode source, b). relict skeletal octahedron crystal forms, seen here as chevrons, c). and d). deeply striated surfaces indicative of sliding in traction or boulder strikes.

Table DR1. Morphological characteristics of large placer gold nuggets examined in this study. W/L, width to length ratio; T/W, thickness to width ratio.

Table DR2. Geochemistry of large placer gold nuggets examined in this study, determined by portable x-ray fluorescence analysis.

Table DR3. Geochemistry of small placer gold grains examined in this study, determined by LA-ICP-MS (copper) and ion probe (silver and gold). (C), grain core measurement; (R), grain rim measurement.

LIBERTY
1966

inch/mm
45.53 mm
OFF
ON
ZERO

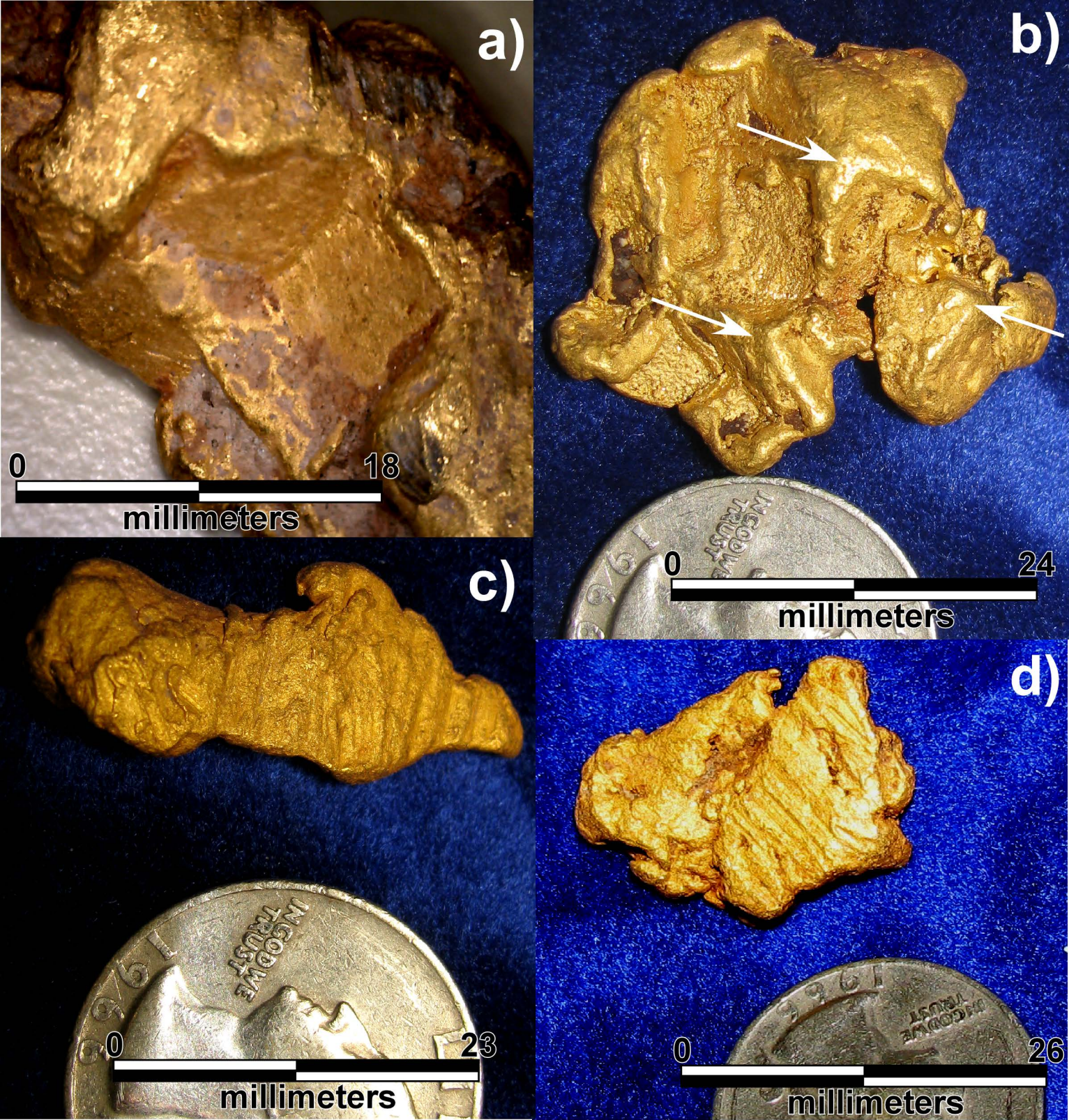
a)
0
18
millimeters
b)
0
24
millimeters
c)
0
23
millimeters
d)
0
26
millimeters

TABLE DR1. MORPHOLOGICAL CHARACTERISTICS OF LARGE GOLD NUGGETS

Sample Number	Type	Mass (g)	Length (mm)	Width (mm)	Thickness (mm)	W/L	T/W	Surface Smoothness
JY2	Red Placer	150.3	56.51	41.94	11.52	0.74	0.27	Subangular
JY3	Red Placer	125.1	49.36	32.11	13.04	0.65	0.41	Subangular
JY4	Red Placer	38.2	36.67	20.03	9.03	0.55	0.45	Angular
JY5	Red Placer	18.9	25.62	17.75	5.16	0.69	0.29	Angular
JY8	Red Placer	126.1	50.41	31.77	9.94	0.63	0.31	Angular
JY9	Red Placer	155.7	65.33	30.22	13.74	0.46	0.45	Subangular
JY11	Red Placer	40.7	32.71	14.61	8.38	0.45	0.57	Angular
JY12	Red Placer	124.7	60.81	57.97	8.12	0.95	0.14	Subangular
JY13	Red Placer	54.4	44.33	23.37	11.22	0.53	0.48	Angular
EM1	Red Placer	5.2	24.08	13.38	1.98	0.56	0.15	Angular
EM2	Red Placer	4.0	21.19	12.41	1.59	0.59	0.13	Angular
EM3	Red Placer	3.8	16.63	10.05	2.12	0.60	0.21	Angular
EM4	Red Placer	2.8	15.74	9.69	1.87	0.62	0.19	Angular
EM5	Red Placer	3.8	12.55	10.38	2.23	0.83	0.21	Subangular
EM6	Red Placer	3.9	16.75	13.97	1.83	0.83	0.13	Angular
EM7	Red Placer	4.2	16.13	8.45	2.11	0.52	0.25	Angular
EM8	Red Placer	5.4	23.10	18.32	1.82	0.79	0.10	Subangular
JY19	White Placer	57.0	46.24	17.30	13.57	0.37	0.78	Rounded
JY14	White Placer	42.2	34.37	9.88	9.32	0.29	0.94	Rounded
JY15	White Placer	69.5	36.09	23.40	11.46	0.65	0.49	Rounded
JY16	White Placer	72.2	46.20	19.11	12.25	0.41	0.64	Subrounded
JY17	White Placer	76.9	35.72	15.19	12.63	0.43	0.83	Rounded
JY7	White Placer	87.7	33.00	23.12	14.94	0.70	0.65	Subrounded
RA W1	White Placer	3.4	14.92	7.36	5.01	0.49	0.68	Rounded
RA W2	White Placer	2.9	12.87	6.95	5.13	0.54	0.74	Rounded
RA W3	White Placer	4.2	3.34	2.06	1.79	0.62	0.87	Rounded
RA W4	White Placer	3.9	14.31	8.17	4.64	0.57	0.57	Rounded
RA W5	White Placer	5.5	22.11	14.52	8.74	0.66	0.60	Rounded
RA W6	White Placer	4.6	3.37	1.67	1.42	0.50	0.85	Rounded
JY6	Black Placer	72.6	64.22	19.88	9.64	0.31	0.48	Angular
EM 10	Black Placer	4.0	17.84	6.41	2.86	0.36	0.45	Subangular
RA B1	Black Placer	2.1	8.01	3.09	1.39	0.39	0.45	Angular
RA B2	Black Placer	1.9	6.93	2.85	1.02	0.41	0.36	Angular
RA B3	Black Placer	1.5	5.63	2.10	1.13	0.37	0.54	Angular
RA B4	Black Placer	1.1	4.51	1.66	0.79	0.37	0.48	Angular
JY1	Potato Patch	248.3	47.85	33.29	19.61	0.70	0.59	Subangular
JY18	Potato Patch	39.1	33.28	29.73	6.41	0.89	0.22	Angular
PP1	Potato Patch	25.3	25.11	16.23	12.19	0.65	0.75	Subangular
PP2	Potato Patch	16.5	25.12	16.55	8.48	0.66	0.51	Subangular

TABLE DR2. XRF GEOCHEMISTRY OF LARGE GOLD NUGGETS

Sample Number	Type	Au (wt%)	Au Error (wt%)	Ag (mg/kg)	Ag Error (mg/kg)	Cu (mg/kg)	Cu Error (mg/kg)	Mn (mg/kg)	Mn Error (mg/kg)	Fe (mg/kg)	Fe Error (mg/kg)
JY2	Red Placer	95.3	0.36	47248	4012	376	35.09	< LOD	436.94	1702	250.2
JY3	Red Placer	95.1	0.39	47752	2262	386	62.06	< LOD	377.9	2046	263.26
JY4	Red Placer	96.7	0.36	32510	1461	373	81.33	< LOD	328.49	6943	378.66
JY5	Red Placer	97.6	0.30	21631	872	359	72.56	< LOD	555.27	5826	345.63
JY8	Red Placer	95.7	0.11	37081	2117	380	44.16	< LOD	514.85	18474	628.94
JY9	Red Placer	94.4	0.25	42575	1226	384	29.5	< LOD	464.3	16708	547.77
JY11	Red Placer	96.0	0.26	31813	1042	401	78.06	< LOD	444.84	6357	348.78
JY12	Red Placer	93.2	0.38	67723	2244	418	92.68	< LOD	353.27	2067	253.23
JY13	Red Placer	97.3	0.27	22264	852	342	34.6	< LOD	354.36	9791	431.18
EM1	Red Placer	97.1	0.33	25874	545	330	26.4	< LOD	511.52	8752	432.35
EM2	Red Placer	94.8	0.12	42177	5297	371	58.25	< LOD	333.71	27858	946.43
EM3	Red Placer	95.7	0.34	41214	1936	397	63.17	< LOD	480.88	6778	379.83
EM4	Red Placer	96.6	0.29	33548	1304	351	45.23	< LOD	332.05	2546	265.19
EM5	Red Placer	95.6	0.25	41385	1359	330	58.78	< LOD	382.87	4706	328.05
EM6	Red Placer	95.8	0.14	32591	2249	333	28.12	< LOD	306.16	41537	1261.82
EM7	Red Placer	91.1	0.30	77754	5980	408	50.39	< LOD	441.42	17866	637.32
EM8	Red Placer	96.9	0.27	23963	503	332	39.22	< LOD	374.6	15413	580.59
JY19	White Placer	99.5	0.32	4298	144	330	32.6	< LOD	321.5	2933	650.01
JY14	White Placer	99.7	0.31	2607	98	280	21.66	< LOD	317.18	4135	302.31
JY15	White Placer	99.4	0.37	6202	185	309	30.42	< LOD	510.02	1951	242.33
JY16	White Placer	99.5	0.33	3830	130	346	39.33	< LOD	415.33	9760	429.54
JY17	White Placer	99.5	0.35	3686	118	322	26.03	< LOD	316.03	2088	627.33
JY7	White Placer	99.5	0.29	4367	129	344	29.14	< LOD	397.03	8629	403.55
RA W1	White Placer	99.6	0.16	2348	66	319	32.26	< LOD	492.97	3420	105.43
RA W2	White Placer	99.6	0.44	1715	44	313	25.62	< LOD	184.64	4296	113.25
RA W3	White Placer	99.8	0.15	1122	61	265	46.92	< LOD	194.6	4628	122.33
RA W4	White Placer	99.8	0.15	1219	65	305	44.96	< LOD	281.61	4246	114.63
RA W5	White Placer	99.4	0.20	3246	102	328	28.45	< LOD	412.37	4668	93.7
RA W6	White Placer	99.0	0.31	4955	176	289	32.74	< LOD	189.58	5615	113.75
JY6	Black Placer	99.8	0.14	1306	78	437	63.72	3553	213.46	32083	1028.53
EM 10	Black Placer	99.7	0.28	1963	57	424	65.34	3101	350.14	65188	1555.87
RA B1	Black Placer	99.7	0.19	2209	69	510	62.43	2955	263.62	46538	1243.08
RA B2	Black Placer	99.8	0.11	919	62	482	71.77	4850	309.56	53697	1173.95
RA B3	Black Placer	99.7	0.33	2103	79	463	62.86	3638	214.09	48677	1003.36
RA B4	Black Placer	99.9	0.20	1064	50	479	61.09	6322	244.5	58740	1332.7
JY1	Potato Patch	99.1	0.37	8577	271	654	68.2	385	150.33	13116	295.76
JY18	Potato Patch	99.1	0.39	5149	186	540	71.22	510	173.9	25829	718.25
PP1	Potato Patch	99.7	0.31	2890	102	713	95.37	420	159.61	14338	561.82
PP2	Potato Patch	99.3	0.29	6947	192	615	54.8	492	146.89	17835	588.55

TABLE DR3. LA-ICP-MS CHEMISTRY OF SMALL PLACER GOLD GRAINS

Sample	Cu (mg/kg)	Ag (mg/kg)	Au (wt%)
Red (C)	386.2	89000	91.10
Red (C)	450.8	119000	88.10
Red (C)	430.6	107000	89.30
Red (C)	397.3	98300	90.17
Red (C)	448	111000	88.90
Red (C)	425.7	108000	89.20
Red (C)	490.3	122000	87.80
Red (C)	384.8	91100	90.89
Red (R)	360.3	2800	99.72
Red (R)	336.9	1750	99.83
Red (R)	330.1	5200	99.48
Red (R)	303.4	310	99.97
Red (R)	348	5540	99.45
Red (R)	360.7	9210	99.08
AVE Rim	340	4135	99.6
AVE Core	427	105675	89.4

Sample	Cu (mg/kg)	Ag (mg/kg)	Au (wt%)
White (C)	353.4	84700	91.53
White (C)	377.2	101000	89.90
White (C)	320.80	75900	92.41
White (C)	350.3	98300	90.17
White (C)	328.1	79300	92.07
White (C)	337.3	88500	91.15
White (R)	300.7	4300	99.57
White (R)	283.1	2500	99.75
White (R)	325.1	4200	99.58
White (R)	296.9	2100	99.79
White (R)	297.9	3100	99.69
White (R)	301.6	5200	99.48
AVE Rim	301	3567	100
AVE Core	345	87950	91

Sample	Cu (mg/kg)	Ag (mg/kg)	Au (wt%)
Potato (C)	652	3410	99.66
Potato (C)	693	4500	99.55
Potato (C)	702.8	9980	99.00
Potato (C)	531.3	12500	98.75
Potato (R)	456.8	170	99.91
Potato (R)	469.0	457	99.93
Potato (R)	427.4	288	99.92
AVE Rim	451	305	100
AVE Core	645	7598	99.2

Sample	Cu (mg/kg)	Ag (mg/kg)	Au (wt%)
Black (C)	481.9	91900	90.81
Black (C)	532	98600	90.14
Black (C)	542.9	89700	91.03
Black (C)	480.5	80200	91.98
Black (C)	467.2	91200	90.88
Black (C)	435.2	82400	91.76
Black (R)	463.2	7800	99.22
Black (R)	564.5	7200	99.28
Black (R)	537.4	400	99.96
Black (R)	474.3	6650	99.34
Black (R)	447.3	5820	99.42
Black (R)	553.6	3400	99.66
Black (R)	487.2	8900	99.11
AVE Rim	504	5739	99.4
AVE Core	490	89000	91.1