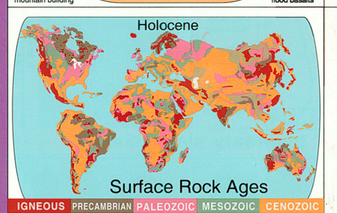
A CORRELATED HISTORY OF EARTH

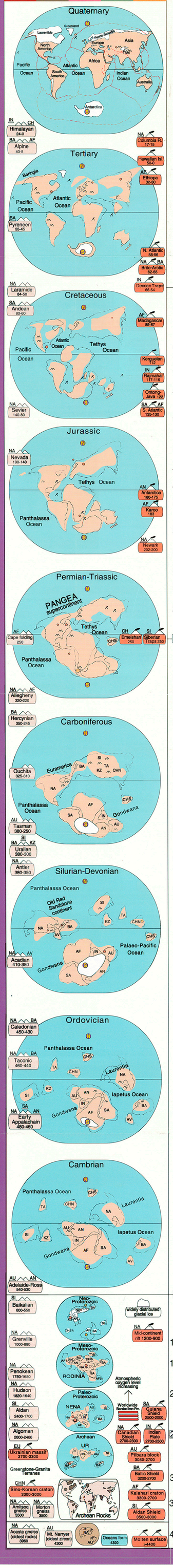
Hadean | Isuan | Swazian | Randian | Huronian | Kinnikeian | Riphean | Sturtian | Vendian | Paleozoic | Mesozoic | Cenozoic

Archean Eon | Proterozoic Eon | Phanerozoic Eon

Prokaryotae - Archaea | Protoctista - Plantae | Fungi | Animalia

Orogenies mountain building | **PLATE TECTONICS & GEOLOGY MAPS** | **Volcanics** flood basalts





MYA	MAG CHRON	ERA	PERIOD	mya	EPOCH	mya	STAGE	mya	North America	Classic Localities
0		CENOZOIC	QUATERNARY	Qty	Upper Paleolithic		Agriculture and the domestication of animals has sustained human civilization over the past 10,000 years			human: Grecо-Roman (Europe); human: Nile Valley (Egypt); human: Mesopotamia (Iraq, Iran, Syria); human: Catal Huyuk (Turkey); human: Jericho (Israel)
					Middle Paleolithic					
					Lower Paleolithic					
					earliest tools (Africa)	2.6	Holocene	Hol .01	Würmian .08	Wisconsinan; Sangamonian
									Riss-Würm .12	Illinoian
									Mindel-Riss .30	Yarmouthian
									Mindelian .45	Kansan
									Günz-Mindel .81	Aftonian
									Günzian 1.1	Nebraskan
									Donau-Günz 1.4	pre-Nebraskan
									Donau 1.8	
							Pleistocene	Ple 1.8	Gelasian 2.6	
					Neogene		Pliocene	Pli 5	Piacenzian 3.8	
									Zanclian 5	
							Miocene	Mio 23	Messinian 7	Hemphillian 9
									Tortonian 11	Clarendonian 12
									Serravallian 15	Barstovian 17
									Langhian 17	
									Burdigalian 21	Hemingfordian 20
									Aquitanian 23	Arikareean 29
							Oligocene	Oli 34	Chattian 29	
									Rupelian 34	Whitneyan 30; Orellan 31
									Priabonian 39	Chadronian 38
							Eocene	Eoc 55	Bartonian 42	Duchesnean 42
									Lutetian 50	Uintan 48; Bridgerian 51
									Ypresian 55	Wasatchian 56
									Thanetian 61	Clarkforkian 59; Tiffanian 60
							Paleocene	Pal 65	Danian 65	Torrejonian 63; Puercan 65
65	Czc	T	Pg	65						
70		MESOZOIC	CRETACEOUS	K2			Maastrichtian 71		Hell Creek; Lancian; Fox Hills	
80							Campanian 84		Pierre	
85							Santonian 86			
90							Coniacian 90		Niobrara	
95							Turonian 94		Carlile	
100							Cenomanian 99		Greenhorn/ Belle Fourche	
110							Albian 112		Dakota; Mowry; Newcastle; Skull Ck.	
120							Aptian 121		Fall River; Lakota	
130							Barremian 127			
140				K1			Hauterivian 132		Gannett	
150			JURASSIC				Valanginian 137			
160							Berriasian 144			
170							Tithonian 151		Morrison	
180							Kimmeridgian 154		Unkpapa	
190							Oxfordian 160		Sundance	
200							Callovian 164		Twin Creek	
210							Bathonian 169		Gypsum Springs	
220							Bajocian 176			
230							Aalenian 180		Navajo	
240							Toarcian 189			
250							Pliensbachian 195			
	Mzc			Tr 250			Sinemurian 202		Kayenta	
							Hettangian 205			
							Rhaetian 210		Wingate	
							Norian 221		Chinle	
							Carnian 227			
							Ladinian 234			
							Anisian 242		Moenkopi	
							Olenekian 245			
							Induan 250			
250							Tartarian 252		Ochoan; Guadalupian; Leonardian	
		PALEOZOIC	PERMIAN	P 295			Ufimian/ Kazanian 256			
							Kungurian 260			
							Artinskian 269			
							Sakmarian 282		Wolfcampian	
							Asselian 295			
300			CARBONIFEROUS	Pen 324			Gzhelian 302		Virgilian	
							Kasimovian 304		Missourian	
							Moscovian 311		Desmoinesian	
							Bashkirian 318		Atokan	
				Mis 354			Serpukhovian 327		Morrowan; Springeran	
							Visean 345		Chesterian	
							Tournaisian 354		Meramecian	
360							Famennian 367		Osagean	
							Frasnian 374		Kinderhookian	
380			DEVONIAN				Givetian 381		Chataquan	
							Eifelian 386		Senecan	
							Emsian 390		Erian	
							Pragian 396		Southwood; Deerpark	
400				D 409			Lochkovian 409		Helderberg	
410			SILURIAN				Pridoli 411		Cayugan	
420							Ludlow 423			
							Gorstian 423			
							Homerian 425		Lockportian	
							Sheinwoodian 427		Tonawandan	
430							Telychian 431		Ontarian	
				S 439			Aeronian 435		Alexandrian	
440							Rhuddian 439			
			ORDOVICIAN				Hirnantian 440		Gamach	
							Rawtheyan 441		Richmond	
							Cautleyan 442		Maysville	
							Pusgillian 443		Edenian	
450							Onnian 444		Sherman	
							Actonian 445		Kirkfield	
460							Marshbrookian 446		Rockland	
							Longvillian 450		Black River	
							Soudleyan 458		Chazy	
							Harnagian 462		Whiterock	
470							Costonian 464			
							Late 465			
							Middle 467			
							Early 469			
480							Late 476			
							Early 478			
490							Late 486			
							Early 493		Canadian	
500				O 500			Tremadoc 500			
			CAMBRIAN				Dolgellian 514		Trempealeauan	
510							Maentwrogian 517		Franconian	
							Menevian 519		Dresbachian	
							St. Davids 520		Albertan	
520							Solvan 520			
							Botomian 523		Waucoban	
							Atdabanian 525			
							Tommotian 530			
530							Manykaian 540			
540				€ 540						
560		PROTEROZOIC	NEOPROTEROZOIC		Sinian		Vendian	Ediacara Epoch 560	Pounian 545	St. Johns
600				V 610				Varanger Epoch(glacial)	Wonokan 560	Conception
800				625			Great Worldwide Unconformity 625		Mortensees 581	
1000				Stu Sturtian 800					Smallfjord 610	
1500			MESOPROTEROZOIC				Karatau 1050		Bayfield	
							Yurmatin 1350		Altamona Fm. (TX, USA)	
							Burzian 1600		Beck Springs (CA, USA)	
				Rif 1600				Keweenawan	Crystal Spgs. Fm. (CA, USA)	
2000			PALEOPROTEROZOIC				Mogolian 2200	Gunflint	Rove; Iron; Kakabeka	
				Ani 2200					Balcher Group (Canada)	
									Gunflint Iron Fm. (MN, USA)	
									Negaunee Fm. (MI, USA)	
									Wheatsland Fm. (Africa)	
2500				Hur 2500			Huronian Era		Vaalian 2500	Cobalt; Quirke Lake; Hough Lake; Elliot Lake
			NEOARCHEAN				Ventersdorp 2550		Elt	
							Central Rand 2750			Bulawayan Fm. (Africa)
							Dominion 3000		Laurentian	
3000				Ran 3000						
			MESOARCHEAN				Pongola 3100			
							Moodies 3300			
3500							Figtree 3500		Keewatinian	
				Swz 3700			Swazian Era			
							Onverwacht 3700			
			PALEOARCHEAN				Isuan Era 3800		Limpopo 3800	
4000							Hadean Era			
				4560				Hde		

Kimberlite Eruptions (Diamond Deposits) | Continental Glaciation

IMPACT CRATERS AND EVENTS

Name	Locality	mya	Diameter(km)	Exposed(yes/no)	[shattercones,breccia,impact melt,shock metamorphism,meteorite]
1	Kuryta-Ugarch,Turkmenistan	60?/1999	.005km	yes	[HS chondrite]
2	Stefamaui,Russia	5/177/1990	.009?km	(8.4 meters)	yes [IIIAB iron]
3	Sikote-Alin,Russia,Siberia	2/12/1947	.100m	yes	[IIAB iron]
4	Tunguska,Russia,Siberia	6/30/1908	no		
5	Wabar,Saudi Arabia	<.200	.1km	yes	[Wabar glass, shock,IIAB iron]
6	Haviland,USA,Kansas	<.001mya	.02km	yes	[PAL pallasite (Brenham)]
7	Odessa,Russia,Siberia	<.001mya	.90km	yes	
8	Campo Del Cielo,Argentina	<.004mya	.05km	yes	[IAB iron]
9	Kaalijarvi,Estonia	>.004mya	.11km	no	[shatterconoe,breccia, IAB iron]
10	Antonio (Sumatra),Rokiuk	.500mya	1km	yes	
11	Henbury,Australia, N. Territory	~.004?mya	180m	yes	[melt, IIAB iron]
12	Macha,Russia,Siberia	<.007?mya	.3km	yes	[iron+metallic spherules]
13	Sneiling,Australia	<.01mya	.02km	no	[melt]
14	Monsalo,Poland	<.01mya	1km	yes	[IIICD iron]
15	Nagano, Japan	<.05mya	1km	yes	
16	Boshole,Australia,NT	.05± ?.0015mya	0.17km	yes	[IIAB iron]
17	Odessa,USA,Texas	<.05mya	0.17km	yes	[IAB iron]
18	Barringer,USA,Arizona	.049 ± .003mya	(49,000years)	1.19km	yes [shatterconoe,melt,breccia,shock, IAB iron (Canyon Diablo)]
	Loner,India,Meherashtra	.052 ?.006mya	1.83km	yes	[breccia, melt]
	Amguid,Algeria	<.1mya	.40km	yes	[shock]
19	Dellen Lake,Swedon	89 ± 2.7mya	19km	yes	[shock]
20	Steen River, Canada,Alb.	95 ± ?mya	25km	no	
21	Kentland,USA,IN	<97mya	13km	yes	[shatter,breccia,shock]
22	Deep Bay,Canada,Sask.	99 ± 4mya	13km	yes	[breccia,shock]
23	West Hawk Lake,Canada,Man.	100 ± 50mya	3.15km	yes	
24	Serra Madera,USA,TX	<100 mya	13km	yes	[shatterconoe,breccia]
	Mount Toondina,South Australia	<110mya	4km	yes	
25	Zapadnaya,Ukraine	115 ±10mya	4km	no	
26	Zeleny Gai,Ukraine	120 ± 20mya	2.5km	no	[shock]
27	Carswell Lake,Canada	115 ± 10mya	39km	yes	[shatterconoe]
28	BP Structure,Libya	<120mya	2.8km	yes	[shock]
29	Gweni,Libya	<120mya	12km	yes	[shatterconoe,breccia,shock]
	Mien Lake,Sweden	121 ± 5mya	9km	yes	[melt,shock]
30	Azuara,Spain	<130mya	30km	yes	[shock]
	Goyder,Australia,NT	<136mya	3km	yes	[melt,shock]
31	Rotmistrovka,Ukraine	140 ± 20mya	2.7km	no	[breccia,melt,shock]
32	Gosses Bluff,Australia,NT	142.5 ± ?.5mya	22km	yes	[shatterconoe]
33	Mjolnir,Norway(offshore)	142 ± 3mya	40km	no	[shock]
	Morokweng,S. Africa	145 ± 1mya	70km	no	
	Liverpool,Australia,NT	150 ± 70mya	1.6km	yes	[shock]
34	Vepriaj,Lithuania	160 ± 10mya	8km	no	[shattertconoe,breccia]
35	Mansion,USA,IA	73.8 ± .3	30km	no	[breccia,melt]
36	Lappajarvi,Finland	77.3 ± 5mya	23km	yes	[melt]
37	Wurrumpiya,USA,AL	80 ± 1.5mya	6.5km	no	[melt,shock]
38	Tabun-Khara-Obo,Mongolia	~3mya	1.3km	yes	
39	Talemzane,Algeria	<3mya	1.75km	yes	[shattercone,shock]
40	Acuelbout,Mauritania	3 ± .3mya	0.4km	yes	[melt,FeNi in glass]
41	Elgygytgyn Lake,Russia	3.5 ± .5mya	18km	yes	[shock]
42	Roter Kamm,Namibia	3.7 ± .3mya	2.5km	yes	[breccia,shock]
43	Karla,Russia	5 ± 1mya	12km	yes	[breccia]
44	Bigach,Kazakhstan	5 ± 3mya	7km	yes	
45	Shunak,Kazakhstan	12 ± 5mya	3km	yes	[breccia,shock]
46	Steinheim,Germany	15 ± 1mya	3.8km	yes	[shattercone]
47	Nordlinger-Ries,Germany	15 ± .1mya	24km	yes	[shattercone,breccia,melt,shock]
48	Haughton Dome,Canada, NWT	23 ± 1mya	24km	yes	[shattertconoe,shock]
49	Logancha,Russia	25 ± 20mya	20km	yes	[shattertconoe]
50	Popigai	100	90	Popigai,Russia 35 ± 1mya 100km yes [breccia,melt,shock]	
51	Chesapeake	90	28	Chesapeake,USA 35.5 ± .5mya 90km no [breccia,shock]	
52	Kara-Kul	52		Kara-Kul,Tajikistan ~2.6mya 52km yes	
53	Ellerslie,S. Pacific Ocean	~2.5mya	>2km	yes	[shock]
54	Misatin Lake,Canada	36 ± 4mya	28km	yes	[melt]
55	Wanapitei Lk.,Canada	37 ± 2mya	8km	yes	
56	Eagle Butte,Canada	<65mya	19km	no	
57	Quarry,Algeria	<70mya	6km	yes	
58	Kara,Russia	70 ± 3mya	65km	no	[breccia,melt,shock]
59	Vargeao Dome,Brazil	<70mya	12km	yes	
60	Maple Creek, Canada	<75mya	6km		
61	Mt. Darwin,Australia,Tasmania	~.75mya	1km	yes	[Darwin Glass]
62	Australasian Tektite crater	~.77mya	>50km	no	[melt]
63	Zhamanshin,Kazakhstan	.9 ?.1mya	14km	yes	[melt]
64	Wewers, Western Australia	<1mya	.08km	yes	[IIAB iron]
65	Monturaqui,Chile	<1mya	.46km	yes	[impactite,IAB iron]
66	Bosumtwi Lake,Ghana	1.03 ?.02mya	10.5km	yes	[melt,shock]
67	Charlevoix,Canada,Qbc	357 ?15mya	54km	yes	[shattercone,shock]
68	Ryan Creek,USA,TN	360 ?20mya	3.5km	yes	[shatterconoe,breccia]
69	Piccaninny,Western Australia	<360mya	7km	yes	
70	Woodleigh,Australia	364 ± 8mya	120km	no	
71	Siljan,Sweden	368 ± 1.1mya	55km	yes	[shattertconoe,shock]
72	Alamo,USA,NV	~370mya	no		[breccia,shock]
73	Panther Mtn.,USA,NY	~375mya	10km		
74	Illylnets,Ukraine	378 ± 5mya	4.5km	no	[breccia,melt,shock]
75	Kaluga,Ukraine	380 ± 5mya	15km	no	[breccia,melt]
76	Brent,Canada	396 ± 20mya	3.8km	yes	[shattercone,breccia,melt]
77	Elbow,Canada	396 ± 25mya	8km	no	
78	Versailles,USA,KY	<400mya	1.6km	yes	[breccia]
79	Lac La Moliere,Canada,Qbc	400 ± 50mya	8km	yes	[melt]
80	Nicholson Lk.,Canada,NWT	<400mya	12.5km	yes	[shattercone,breccia,shock]
81	Glasford,USA,IL	<430mya	4km	no	[shattercone,breccia]
82	Couture,Canada,Qbc	450 ± 25mya	8km	yes	[melt]
83	Rochechouart,France	214 ± 8mya	23km	yes	[breccia,melt,shock]
84	Manicouagan,Canada	214 ±1mya	100km	yes	[shattercone,melt]
85	Saint Martin Lk.,Canada	220 ± 32mya	40km	yes	[melt]
86	Karlikkoselka,Finland	<230mya	1.5km	yes	
87	Pilot Lake,Canada, NWT	445 ±2mya	6km	yes	[shock]
88	Calvin,USA,MI	450 ±10mya	8.5km	no	
89	Kgardla,Estonia	~455mya	7km	no	[breccia,shock]
90	Tvaren,Sweden	<455mya	2km	no	
91	Lockne,Sweden	455 ±10mya	8km	no	
92	Kursk,Russia	250 ± 80mya	6km	no	[breccia,melt]
93	Gow Lake,Canada,Sask.	<290mya	5km	yes	[shattercone,breccia]
94	Araguainha Dome,Brazil	249 ±19mya	40km	yes	[shattercone,breccia,melt]
95	Bedout, Australia				Possibly Falklands(S.Am.) microtektites, shocked minerals, buckyballs, rapid extinction, etc. found in sediments at this time.
96	Chicxulub	180	65	Chicxulub,Mexico,Yucatan 65mya 180km no [breccia,melt,shock]	
97	Silverpit,North Sea	<65mya	20km	no	
98	Bee Bluff,USA,TX	<40mya	2.4km	no	
99	Toms Canyon,USA,NJ (offshore)	35 ± 1mya	10km	no	[breccia]
100	Chicxulub,Mexico,Yucatan	65mya	180	65mya	
101	Mission Creek,USA,SD	<65mya	16km	yes	[shatter,breccia]
102	Kara,Russia	70 ± 3mya	65km	no	[breccia,melt,shock]
103	Vargeao Dome,Brazil	<70mya	12km	yes	
104	Maple Creek, Canada	<75mya	6km		
105	Mt. Darwin,Australia,Tasmania	~.75mya	1km	yes	[Darwin Glass]
106	Australasian Tektite crater	~.77mya	>50km	no	[melt]
107	Zhamanshin,Kazakhstan	.9 ?.1mya	14km	yes	[melt]
108	Wewers, Western Australia	<1mya	.08km	yes	[IIAB iron]
109	Monturaqui,Chile	<1mya	.46km	yes	[impactite,IAB iron]
110	Bosumtwi Lake,Ghana	1.03 ?.02mya	10.5km	yes	[melt,shock]
111	Kalkkop,South Africa	<1.8mya	.64km	yes	[shock]
112	Tenouner,Mauritania	2.5 ± .5mya	2km	yes	[shock]
113	Elikchi,S. Pacific Ocean	~2.5mya	>2km	yes	[shock]
114	Kara-Kul,Tajikistan	~2.6mya	52km	yes	
115	Tabun-Khara-Obo,Mongolia	~3mya	1.3km	yes	
116	Talemzane,Algeria	<3mya	1.75km	yes	[shattercone,shock]
117	Acuelbout,Mauritania	3 ± .3mya	0.4km	yes	[melt,FeNi in glass]
118	Elgygytgyn Lake,Russia	3.5 ± .5mya	18km	yes	[shock]
119	Roter Kamm,Namibia	3.7 ± .3mya	2.5km	yes	[breccia,shock]
120	Karla,Russia	5 ± 1mya	12km	yes	[breccia]
121	Bigach,Kazakhstan	5 ± 3mya	7km	yes	
122	Shunak,Kazakhstan	12 ± 5mya	3km	yes	[breccia,shock]
123	Steinheim,Germany	15 ± 1mya	3.8km	yes	[shattercone]
124	Nordlinger-Ries,Germany	15 ± .1mya	24km	yes	[shattercone,breccia,melt,shock]
125	Haughton Dome,Canada, NWT	23 ± 1mya	24km	yes	[shattertconoe,shock]
126	Logancha,Russia	25 ± 20mya	20km	yes	[shattertconoe]
127	Rochechouart,France	214 ± 8mya	23km	yes	[breccia,melt,shock]
128	Manicouagan,Canada	214 ±1mya	100km	yes	[shattercone,melt]
129	Saint Martin Lk.,Canada	220 ± 32mya	40km	yes	[melt]
130	Karlikkoselka,Finland	<230mya	1.5km	yes	
131	Kursk,Russia	250 ± 80mya	6km	no	[breccia,melt]
132	Gow Lake,Canada,Sask.	<290mya	5km	yes	[shattercone,breccia]
133	Araguainha Dome,Brazil	249 ±19mya	40km	yes	[shattercone,breccia,melt]
134	Bedout, Australia				Possibly Falklands(S.Am.) microtektites, shocked minerals, buckyballs, rapid extinction, etc. found in sediments at this time.
135	Chicxulub	180	65	Chicxulub,Mexico,Yucatan 65mya 180km no [breccia,melt,shock]	
136	Silverpit,North Sea	<65mya	20km	no	
137	Bee Bluff,USA,TX	<40mya	2.4km	no	
138	Toms Canyon,USA,NJ (offshore)	35 ± 1mya	10km	no	[breccia]
139	Popigai,Russia	35 ± 1mya	100km	yes	[breccia,melt,shock]
140	Chesapeake,USA	35.5 ± .5mya	90km	no	[breccia,shock]
141	Misatin Lake,Canada	36 ± 4mya	28km	yes	[melt]
142	Wanapitei Lk.,Canada	37 ± 2mya	8km	yes	
143	Eagle Butte,Canada	<65mya	19km	no	
144	Quarry,Algeria	<70mya	6km	yes	
145	Kara,Russia	70 ± 3mya	65km	no	[breccia,melt,shock]
146	Vargeao Dome,Brazil	<70mya	12km	yes	
147	Maple Creek, Canada	<75mya	6km		
148	Mt. Darwin,Australia,Tasmania	~.75mya	1km	yes	[Darwin Glass]
149	Australasian Tektite crater	~.77mya	>50km	no	[melt]
150	Zhamanshin,Kazakhstan	.9 ?.1mya	14km	yes	[melt]
151	Wewers, Western Australia	<1mya	.08km	yes	[IIAB iron]
152	Monturaqui,Chile	<1mya	.46km	yes	[impactite,IAB iron]
153	Bosumtwi Lake,Ghana	1.03 ?.02mya	10.5km	yes	[melt,shock]
154	Kalkkop,South Africa	<1.8mya	.64km	yes	[shock]
155	Tenouner,Mauritania	2.5 ± .5mya	2km	yes	[shock]
156	Elikchi,S. Pacific Ocean	~2.5mya	>2km	yes	[shock]
157	Kara-Kul,Tajikistan	~2.6mya	52km	yes	
158	Tabun-Khara-Obo,Mongolia	~3mya	1.3km	yes	
159	Talemzane,Algeria	<3mya	1.75km	yes	[shattercone,shock]
160	Acuelbout,Mauritania	3 ± .3mya	0.4km	yes	[melt,FeNi in glass]
161	Elgygytgyn Lake,Russia	3.5 ± .5mya	18km	yes	[shock]
162	Roter Kamm,Namibia	3.7 ± .3mya	2.5km	yes	[breccia,shock]
163	Karla,Russia	5 ± 1mya	12km	yes	[breccia]
164	Bigach,Kazakhstan	5 ± 3mya	7km	yes	
165	Shunak,Kazakhstan	12 ± 5mya	3km	yes	[breccia,shock]
166	Steinheim,Germany	15 ± 1mya	3.8km	yes	[shattercone]
167	Nordlinger-Ries,Germany	15 ± .1mya	24km	yes	[shattercone,breccia,melt,shock]
168	Haughton Dome,Canada, NWT	23 ± 1mya	24km	yes	[shattertconoe,shock]
169	Logancha,Russia	25 ± 20mya	20km	yes	[shattertconoe]
170	Rochechouart,France	214 ± 8mya	23km	yes	[breccia,melt,shock]
171	Manicouagan,Canada	214 ±1mya	100km	yes	[shattercone,melt]
172	Saint Martin Lk.,Canada	220 ± 32mya	40km	yes	[melt]
173	Karlikkoselka,Finland	<230mya	1.5km	yes	
174	Kursk,Russia	250 ± 80mya	6km	no	[breccia,melt]
175	Gow Lake,Canada,Sask.	<290mya	5km	yes	[shattercone,breccia]
176	Araguainha Dome,Brazil	249 ±19mya	40km	yes	[shattercone,breccia,melt]
177	Bedout, Australia				Possibly Falklands(S.Am.) microtektites, shocked minerals, buckyballs, rapid extinction, etc. found in sediments at this time.
178	Chicxulub	180	65	Chicxulub,Mexico,Yucatan 65mya 180km no [breccia,melt,shock]	
179	Silverpit,North Sea	<65mya	20km	no	
180	Bee Bluff,USA,TX	<40mya	2.4km	no	
181	Toms Canyon,USA,NJ (offshore)	35 ± 1mya	10km	no	[breccia]
182	Popigai,Russia	35 ± 1mya	100km	yes	[breccia,melt,shock]
183	Chesapeake,USA	35.5 ± .5mya	90km	no	[breccia,shock]
184	Misatin Lake,Canada	36 ± 4mya	28km	yes	[melt]
185	Wanapitei Lk.,Canada	37 ± 2mya	8km	yes	
186	Eagle Butte,Canada	<65mya	19km	no	
187	Quarry,Algeria	<70mya	6km	yes	
188	Kara,Russia	70 ± 3mya	65km	no	[breccia,melt,shock]
189	Vargeao Dome,Brazil	<70mya	12km	yes	
190	Maple Creek, Canada	<75mya	6km		
191	Mt. Darwin,Australia,Tasmania	~.75mya	1km	yes	[Darwin Glass]
192	Australasian Tektite crater	~.77mya	>50km	no	[melt]
193	Zhamanshin,Kazakhstan	.9 ?.1mya	14km	yes	[melt]
194	Wewers, Western Australia	<1mya	.08km	yes	[IIAB iron]
195	Monturaqui,Chile	<1mya	.46km	yes	[impactite,IAB iron]
196	Bosumtwi Lake,Ghana	1.03 ?.02mya	10.5km	yes	[melt,shock]
197	Kalkkop,South Africa	<1.8mya	.64km	yes	[shock]
198	Tenouner,Mauritania	2.5 ± .5mya	2km	yes	[shock]
199	Elikchi,S. Pacific Ocean	~2.5mya	>2km	yes	[shock]
200	Kara-Kul,Tajikistan	~2.6mya	52km	yes	
201	Tabun-Khara-Obo,Mongolia	~3mya	1.3km	yes	
202	Talemzane,Algeria	<3mya	1.75km	yes	[shattercone,shock]
203	Acuelbout,Mauritania	3 ± .3mya	0.4km	yes	[melt,FeNi in glass]
204	Elgygytgyn Lake,Russia	3.5 ± .5mya	18km	yes	[shock]
205	Roter Kamm,Namibia	3.7 ± .3mya	2.5km	yes	[breccia,shock]
206	Karla,Russia	5 ± 1mya	12km	yes	[breccia]
207	Bigach,Kazakhstan	5 ± 3mya	7km	yes	
208	Shunak,Kazakhstan	12 ± 5mya	3km	yes	[breccia,shock]
209	Steinheim,Germany	15 ± 1mya	3.8km	yes	[shattercone]
210	Nordlinger-Ries,Germany	15 ± .1mya	24km	yes	[shattercone,breccia,melt,shock]
211	Haughton Dome,Canada, NWT	23 ± 1mya	24km	yes	[shattertconoe,shock]
212	Logancha,Russia	25 ± 20mya	20km	yes	[shattertconoe]
213	Rochechouart,France	214 ± 8mya	23km	yes	[breccia,melt,shock]
214	Manicouagan,Canada	214 ±1mya	100km	yes	[shattercone,melt]
215	Saint Martin Lk.,Canada	220 ± 32mya	40km	yes	[melt]
216	Karlikkoselka,Finland	<230mya	1.5km	yes	
217	Kursk,Russia	250 ± 80mya	6km	no	[breccia,melt]
218	Gow Lake,Canada,Sask.	<290mya	5km	yes	[shattercone,breccia]
219	Araguainha Dome,Brazil	249 ±19mya	40km	yes	[shattercone,breccia,melt]
220	Bedout, Australia				Possibly Falklands(S.Am.) microtektites, shocked minerals, buckyballs, rapid extinction, etc. found in sediments at this time.
221	Chicxulub	180	65	Chicxulub,Mexico,Yucatan 65mya 180km no [breccia,melt,shock]	
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224	Toms Canyon,USA,NJ (offshore)	35 ± 1mya	10km	no	[breccia]
225	Popigai,Russia	35 ± 1mya	100km	yes	[breccia,melt,shock]
226	Chesapeake,USA	35.5 ± .5mya	90km	no	[breccia,shock]
227	Misatin Lake,Canada	36 ± 4mya	28km	yes	[melt]
228	Wanapitei Lk.,Canada	37 ± 2mya	8km	yes	
229	Eagle Butte,