

9/56 YEAR CYCLE & CALIFORNIAN EARTHQUAKES

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David McMinn

A 9/56 year cycle was hypothesised to be applicable to the timing of major earthquake events. Remarkably, a 9/56 year seismic cycle was established for most of the countries around the circum Pacific belt ([McMinn, 2004](#)). The only exceptions were historic quakes in Japan, Taiwan and Kamchatka for whatever reason. All other regions/countries assessed showed positive correlates between 9/56 year patterns and the timing of major earthquakes. This paper considers the prospect of a 9/56 year cycle in Californian seismic history.

9/56 Year Seismic Cycle

The [US Geological Survey](#) (USGS) listed earthquakes occurring in California, Nevada and Baja California for the period 1769 to 2005. This included “*known earthquakes with a magnitude of at least 6.0 and selected smaller events*”. Of the 26 major quakes (mag => 7.0) in the 1800-2005 period (see Appendix 1), 13 occurred in the year ended December 21 of those years in the 9/56 year patterns presented in Table 1 (significant $p < .01$). These patterns overlap with the 36 ysc Series 1 & 2 found in US and Western European financial history (see Table 2.1, McMinn, 2006).

Table 1

9/56 YEAR CYCLES & MAJOR EARTHQUAKES IN CALIFORNIA, NEVADA & BAJA CALIFORNIA											
S 52	S 05				S 32	S 41	S 50	S 03	S 12	S 21	
	1812	1821	1830	1839	1848	1857	1866	1875	1884	1893	
	**					*					
1850	1859	1868	1877	1886	1895	1904	1913	1922	1931	1940	1949
		*						*		*	
1906	1915	1924	1933	1942	1951	1960	1969	1978	1987	1996	2005
*	**		*								*
1962	1971	1980	1989	1998	2007						
		*	*								

The 56 year sequences in the table are separated by an interval of 9 years. Years in **bold** contained big quakes (mag => 7.0) in the year ending Dec 21. * Asterisks denote the number of earthquakes in a given year.
Source of Raw Data: [US Geological Survey](#).

Remarkably, 9 major quakes in California – Nevada – Baja California happened in only four 56 year sequences (Sqs 34, 43, 52 & 05).

Table 2 **THE FOUR KEY 56 YEAR SEQUENCES
& MAJOR CALIFORNIAN EARTHQUAKES**

Sq 34		Sq 43		Sq 52		Sq 05
		1803	+ 9	1812	+ 9	1921
				**		
1850	+ 9	1859	+ 9	1868	+ 9	1877
				*		
1906	+ 9	1915	+ 9	1924	+ 9	1933
*		**				*
1962	+ 9	1971	+ 9	1980	+ 9	1989
				*		*

Years in **bold** contained big quakes (mag => 7.0) in the year ending Dec 21.

* Asterisks denote the number of quakes in a given year.

Within these four sequences, 7 quakes took place in the three months October to December, whereas a mere 0.5 could have been expected by chance. The two exceptions were the April 18, 1906 San Francisco quake and the 1932 event (Cedar Mountain, Nevada. mag 7.2.). The latter happened on December 21, 1932, up to a year earlier than the other earthquakes. Crucially, the four sequences experienced many record events.

- * Sq 34 – The biggest northern Californian quake (San Francisco. mag 8.25. April 18, 1906). The record quake for southern California was the 1857 event (mag 8.25), which occurred in Table 1.
- * Sq 34 – Record New Mexico quakes happened on July 16 and November 15 in 1906 (both at 5.8 mag).
- * Sq 34 – Equal first rank Arizona quake on January 25, 1906 (Flagstaff mag 6.2).
- * Sq 43 - Record quake for Nevada (Pleasant Valley. mag 7.7. Oct 3, 1915).
- * Sq 43 - Record quake for Baja California (Volcano Lake. mag 7.1. Nov 21, 1915).
- * Sq 52 - Record quake for western USA. (Great Cascadia. mag 9.0. Jan 26, 1700).
- * Sq 52 - Record historic volcanic eruption in the western states (Mt St Helens, May 18, 1980).

In the 8 months ended May 31, other record seismic events occurred in Sequence 52.

Sq 52	Event	Mag
1700	Great Cascadia quake. Jan 26.	9.0
1756	Record quake Wn Europe. Nov 1, 1755.	9.0
	Record north east US quake. Nov 18, 1755.	6.5
1812	Record cental US quake. New Madrid Feb 12.	7.9
1868	Record Hawaiian quake. Apr 03.	7.9
1924	Most damaging Japanese quake.	7.8
	Great Tokyo quake. Sep 01, 1923.	
1980	Mt St Helens eruption.	na
	Record US volcanic eruption May 18.	

Moderate Californian Earthquakes

The [US Geological Survey](#) listed some 42 Californian moderate earthquakes ($\Rightarrow 6.5$ and $\Leftarrow 6.9$ mag) for the 1800 to 2004 period. Of this figure, 17 occurred in an 18/56 year pattern (see Table 3), which was highly significant. One would expect around 5.3 such events to appear by chance in this grid.

Table 3 **18/56 YEAR CYCLE & MODERATE CALIFORNIAN QUAKES (6.5 - 6.9 mag)**

					1804	1822
		1806	1824	1842	1860	1878
		1862	1880	1898	1916	1934
				**		***
1882	1900	1918	1936	1954	1972	1990
		**		*****		
1938	1956	1974	1992	2010		
	*		****			
1994	2012					
	**					

The 56 year sequences are separated by an interval of 18 years.

Grid based on calendar years.

* Denotes major earthquakes $\Rightarrow 7.0$ mag.

* Denotes moderate earthquakes $\Rightarrow 6.5 \Leftarrow 6.9$ mag.

Source of Raw Data: [US Geological Survey](#).

Major earthquakes (mag $\Rightarrow 7.0$) in south western North America happened preferentially in the 9/56 year patterns shown in Table 1. Even so, a similar pattern contained very few moderate Californian earthquakes (see Appendix 3). These lesser events mainly took place in another sector of the cycle shown in Table 3. The dichotomy between major and moderate quakes in the 9/56 year cycle remains enigmatic and was unexpected.

Lunar Tidal Effects

Any events falling with significance in 9/56 year patterns will always correlate with the ecliptical position of the north (ascending) node (see Diagram 2.2, McMinn, 2006). The lunar nodes are imaginary points in the heavens where the plane of the Earth's orbit around the Sun (the ecliptic) is cut by the plane of the Moon's orbit around the Earth. The north node occurs where the Moon cuts the ecliptic from south to north. All 13 Californian earthquakes in Table 1 occurred with the lunar north node sited in two narrow segments in the ecliptic circle:

* 280 – 030 E^o - a 110^o segment

* 135 – 200 E^o - a 65^o segment.

All moderate events in Table 3 happened with the north node located between 250 and 320 E^o, a 70^o segment of the ecliptical circle.

No exceptions arose for either pattern, a factor very unlikely to occur by chance. The lunar nodes are strongly associated with Moon Sun tidal effects and by inference, these forces may explain why earthquakes fall asymmetrically in 9/56 and 18/56 year patterns.

Seasonality

As noted previously, major Californian quakes (\Rightarrow 6.9 mag) in Table 2 were most likely to happen in the three months October to December. Seasonality also shows up in other 56 year sequences in the same sector of the 9/56 year cycle. In Sequences 41 & 50 the quakes happened in January, while in Sequences 12 and 21 it was in May – June.

Sq 41		Sq 50		Sq 12		Sq 21
1857	+9	1866		1884	+ 9	1893
0109						
1913	+ 9	1922		1940	+ 9	1949
		0131		0519		
1969	+ 9	1978		1996	+ 9	2005
						0615

In the following five 56 year sequences, five Californian earthquakes happened in April 21 – June 28, as well as November 04 – December 16.

1862	1871	1880	1889	1898
1918	1927	1936	1945	1954
0421	1104			1216
1974	1983	1992	2001	2010
		0425		
		0628		

Such observed seasonality may be a real effect or just coincidence, the ultimate findings will have to be determined by further, more detailed assessments.

Hawaiian Earthquakes

Hawaiian earthquakes also tended to occur within a similar section of the 9/56 year cycle, as recorded for California. The [USGS](#) listed 15 major quakes on the island of Hawaii (see Appendix 2). Of this figure, 8 took place in the 11 months ended August 22 of those years in Table 2, whereas 1.5 could be expected by chance.

Five Hawaiian quakes occurred in the 3 months ending June 27 of those years in the 56 year sequences in Table 4, while coincidence would give about 0.3. The record quake for Hawaii (April 2, 1868) also fell within these 6 sequences, as did the most recent major quake in on October 15, 2006. A 9/56 year effect was also apparent in the timing of the beginnings of Hawaiian volcanic eruptions ([David McMinn](#)).

7 Months commencing September 1. In the 10 sequences below, 15 record state earthquakes happened in the 7 months commencing September 1 of those years in the 9/56 grid, where as 6.2 could have been expected by chance (significant $p < .001$).

4 quakes happened between March 05 and April 24.

7 quakes happened between November 15 and December 24.

	1756	1765	1774	1783 1130	1792	1801	1810	1819	1828
1803	1812	1821	1830	1839	1848	1857	1866 18670424	1875	1884
1859	1868	1877 1115	1886 0901	1895	1904	1913 19140305	1922	1931 1217	1940 1220 1224
1915 19160221	1924	1933 19340312	1942	1951	1960	1969 1120	1978	1987	1996
1971	1980	1989 19900113	1998 0925	2007 20080418					

Conclusions

Earthquakes in California – Nevada – Baja California fall preferentially in patterns of the 9/56 year cycle, at least for the major quakes (mag \Rightarrow 7.0). The most astonishing feature was the four sequences (Sqs 34, 43, 52 & 05), in which occurred numerous record quakes. The moderate Californian earthquakes were most likely to take place within the 18/56 year cycle as presented in Table 3. There are indications that seasonality is also important in the 9/56 year seismic cycle, but this need to be more fully explored before any conclusions may be drawn. The 9/56 year seismic cycle probably arises from Moon Sun tidal effects, a finding firmly supported by the strong association between lunar nutation and 9/56 year patterns.

To date only correlates have been established between the timing of major quakes and the 9/56 year patterns. How Moon Sun tidal effects actually function remain the great unknown. If the cyclic maths can ever be deciphered, accurate predictions of major and moderate earthquakes could possibly be made, a vital discovery that could save the lives of many thousands of people.

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Reference

McMinn, David. *Market Timing By The Moon and The Sun.* Privately published. 2006.

Appendix 1 MAJOR CALIFORNIAN EARTHQUAKES: 1800 - 2005

Year	Mth	Dy	Mag	Location
1812	12	08	7.0	Wrightwood
1812	12	21	7.0	Santa Barbara Channel
1838	06	00	7.0	San Francisco Peninsula
1868	10	21	7.0	Hayward Fault
1892	02	24	7.0	Laguna Salada, BC
1899	04	16	7.0	West of Eureka
1934	12	31	7.0	Colorado River
1915	11	21	7.1	Volcano Lake, BC
1940	05	19	7.1	Imperial Valley
1954	12	16	7.1	Fairview Peak, Nevada
1989	10	18	7.1	Loma Prieta
1991	08	17	7.1	West of Crescent City
1923	01	22	7.2	Cape Mendocino
1932	12	21	7.2	Cedar Mountain, Nevada
1980	11	08	7.2	West of Eureka
1992	04	25	7.2	Cape Mendocino
1999	10	16	7.2	Hector Mine
2005	06	15	7.2	Offshore Northern California
1915	10	03	7.3	Pleasant Valley, Nevada
1922	01	31	7.3	West of Eureka
1927	11	04	7.3	South West of Lompoc
1992	06	28	7.3	Landers
1872	03	26	7.6	Owens Valley
1952	07	26	7.7	Kern County
1857	01	09	8.25	Great Tejon earthquake
1906	04	18	8.25	Great San Francisco earthquake

Events in **bold** fall in the 12 months ending December 21 of those years in the 9/56 year patterns in Table 1.

Source: [US Geological Survey Californian Earthquake History: 1769 to Present.](http://pasadena.wr.usgs.gov/info/cahist_eqs.html) http://pasadena.wr.usgs.gov/info/cahist_eqs.html

Appendix 2 MAJOR HAWAIIAN QUAKES: 1865-1990

Year	Magnitude	Region
Mar 28, 1868	6.5-7.0*	Mauna Loa south flank
Apr 2, 1868	7.5-8.1*	Mauna Loa south flank
Oct 5, 1929	6.5	Hualalai
Sept 25, 1941	6.0	Kaoiki
May 29, 1950	6.2	Mauna Loa southwest rift
Apr 22, 1951	6.3	Kilauea

Aug 21, 1951	6.9	Kona
May 23, 1952	6.0	Kona
Mar 30, 1954	6.5	Kilauea south flank
June 27, 1962	6.1	Kaoiki
Apr 26, 1973	6.2	Honomu
Nov 29, 1975	7.2	Kilauea south flank
Nov 16, 1983	6.6	Kaoiki
June 25, 1989	6.1	Kilauea south flank
Oct 15, 2006	6.6	Offshore west side of the island

Years in **bold** contained major Hawaiian earthquakes in the 11 months ending August 22 of those years in Table B. Source of Raw Data: [USGS](#)

Appendix 3

Moderate Californian earthquakes were least likely to occur in the 9/56 year pattern presented in Table A. Only four such events took place in 20 56 year sequences, where as 15 could have been expected by chance (significant $p < .001$).

Table A 9/56 YC & MODERATE CALIFORNIAN QUAKES

						1803	1812	1821	1830
1805	1814	1823	1832	1841	1850	1859	1868	1877	1886
1861	1870	1879	1888	1897	1906	1915	1924	1933	1942
1917	1926	1935	1944	1953	1962	1971	1980	1989	1998
1973	1982	1991	2000	2009					
									1808
		1801	1810	1819	1828	1837	1846	1855	1864
1839	1848	1857	1866	1875	1884	1893	1902	1911	1920
1895	1904	1913	1922	1931	1940	1949	1958	1967	1976
1951	1960	1969	1978	1987	1996	2005			
2007									

The 56 year sequences are separated by an interval of 9 years.
Calendar years in blue contained a moderate Californian earthquake.
Source of Raw Data: [US Geological Survey](#).

