

## Punjab Indian Weather Time Scales

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**History:** I have conducted many researches on the Indian weather and proposed hundreds and thousands of Indian weather Time Scale pertaining to the all Homogeneous Regions, Meteorological Subdivisions, states and districts of Indian which can help to forecast the weather changes in advance in 1980, Sri G. Surya Rao MLA had sent these Indian weather time scales to the chief minister of Andhra Pradesh for consideration and necessary action in 2004, some consultations were made with the planning department to implement the Indian weather time scale at the directorate of Economics & Statistics department in 2006, some correspondences were made with the environment, forest, science & Technology department for implementation of the Indian weather time scale the same scales were sent to the chief minister of Andhra Pradesh in 2003. And the same was again submitted to the chief minister of Andhra Pradesh in 2006. Many consultations were made with the commissioner for disaster Management in the years of 2008,2009 about the implementation of Indian weather time scale. In 2010, these scales were consulted with the A.P state council of science & Technology in 2008, Sri T. Subbirami Reddy, Honable Union Minister of state had recommended the Indian weather time scale to the Indian Meteorological department for implementation in the services to the country. Later consultations were made with the India meteorological department about the Indian weather time scale during the years of 2008-2008.

**Abstract:** I have conducted many extensive researches on the astronomical forces and its effects on the earth climate particularly on various regions of the India. The variations in the solar cycle affects and stimulate the earth climate. The moon affects and stimulate the ocean tides and atmosphere too. The movement of axis of the earth inclined at  $23\frac{1}{2}$  degrees from vertical to its path around the sun affects and stimulate the earth weather and leads to formation of monsoons and seasons etc. So the astronomical forces affect and stimulate the earth climate it may be more or less but it is true. These scales may be taken as a part of scientific study of astronomical forces & its effects on the earth climate.

[Gangadhara Rao Irlapati. **Punjab Indian Weather Time Scales.** *Academ Arena* 2018;10(3s): 105-112]. (ISSN 1553-992X). <http://www.sciencepub.net/academia>. 15. doi:[10.7537/marsaaj1003s1815](https://doi.org/10.7537/marsaaj1003s1815).

**Keywords:** Indian weather, astronomical forces.

### Introduction:

In the time and scale of the universe some things from astronomy to atom including living beings have been repeating once in every certain time or period. For example, the south and north magnetic poles have been shifting in every certain period. The sun spots have been repeating once in every eleven years. The lunar and solar eclipses have also been occurring once in every 18.6 years. The seasons such as winter, autumn etc. also have been repeating once in every year in the same month of the year. The periodical menses in the females repeating once in every month.

**Construction:** On the basis of the said universal facts, I have prepared a time scale with 21 blocks, each block containing certain prescribed cycle of years in which similar calendar years repeating one after another that leads similar weather conditions of those previous years to future years likely repeating every year approximately. The rainfall of the years, have been entering in the scale in percentages or as it is pertaining to month, season, annual wise of the each and every year. If we managing the scale in this manner continuously, we may assuming the weather

conditions of the anterior years on the basis of the posteriors years weather. On the basis of the principle, we can assume that a considerable, of course it may be little chance of predication for an ensuing years by study the data of earlier years.

**Studies Carried Out:** Many experiments were carried out on the Indian weather Time Scale and it was successfully proved out.

Firstly, see the Indian weather time scale. In this scale, the June, July, August and September months of the summer monsoon season were taken in a table in which the each month is also divided into three parts the Telangana, Rayalaseema and Coastal Andhra regions. The monthly wise rainfall data of the months of the regions from 1870 to till available years are taken in the form of percentages or as it is and entering in the scale pertaining to the region wise of the each and every year. If we managing the scale in this manner continuously, we may assuming the weather conditions of the anterior years on the basis of the posterior years weather.

Example for assuming the dry season or suppose to predict the rainfall situation in the summer season

of the ensuing year 2019: study the 7<sup>th</sup> cycle in which wet conditions in 10 years and dry conditions in 14 years were occurred in the month of June: wet conditions in 2 years and dry conditions in 22 years were occurred in the month of July: wet conditions in 4 years and dry conditions in 20 years were occurred in the month of August and wet conditions in 8 years and dry conditions in 16 years were occurred in the month of September. On the whole, wet conditions in 24 times and dry conditions in 72 times repeated in the summer monsoon season of the 7<sup>th</sup> cycle (As a result, there were dry conditions occurred in the 2002 year also). Therefore it is a considerable chance to predict that a dry season will be repeated in the ensuing year of 2019.

Example for assuming the wet season or suppose to predict the rainfall situation in the summer season of the ensuing year 2022: study the 10<sup>th</sup> cycle in which wet conditions in 13 years and dry conditions in 8 years were occurred in the month of June: wet conditions in 13 years and dry conditions in 8 years

were occurred in the month of July: wet conditions in 9 years and dry conditions in 12 years were occurred in the month of August and wet conditions in 19 years and dry conditions in 2 years were occurred in the month of September. On the whole, wet conditions in 54 times and dry conditions 30 times were repeated in the summer monsoon season of the 10<sup>th</sup> cycle. As a result, there were wet conditions occurred in the 2005 years also. Therefore, it is a considerable chance to predict that a wet season will be occurred in the ensuing year of 2022.

In the same manner, we can study the remaining All Indian weather time scales of all Homogeneous regions and subdivisions, states and districts of India.

**Conslusions:**

We can make many more modifications thus bringing many more developments in the Indian weather time scale and its all additional Indian weather time scale.

	June			July			August			SEPTEMBER			OVERALL SEASON						REMARKS	
	T	R	C	T	R	C	T	R	C	T	R	C	T	R	C					
1	2020																			
	1992	77.18	-9.5	-54.0	-39.2	+5	-15.8	+4.70	-11.2	-10.8	-35.2	-19.1	-26	-1	-12	-6				
	1964	-31.6	+21.3	-15.0	-36.6	+108	-13.4	799.5	-17.8	-11.8	+1503	+139	+95.4	+17	+16	+44				
	1936	+31.7	-9.16	-13.0	-14.1	-35.3	-7.00	-12.5	-65.7	-32.3	+7.82	+21.2	-39.2	-3	-29	-5				
	1908	-32.3	-62.9	+69.9	+5.8	-29.4	-50.9	-9.13	-57.2	-25.2	+10.8	+84.9	+48.4	+38	-9	-2				
	1880	+21.5	+15.2	-99	-24.0	-50.2	-46	-60.7	+2.63	-99.4	+56.2	+19.7	-51	-11	-18	-30				
2	2017																			
	1995	-1.01	-11.5	-36.2	-13.6	+6.5	-20.9	-46.7	-20	-23.0	-71.7	-17.3	-49.3	-33.5	-27.1	-16.3				
	1978	-78.2	-7.7	+26.2	-1.17	+57.5	+6.9	+47.0	-13.1	+31.7	+169.0	+100	+8.0	+50	+37	+55				
	1961	+34.0	+27.8	+70.9	-37.9	+32.9	-24.3	-8.35	-4.9	+13.3	+20.0	-49.6	-6.1	+12	+1	+30				
	1939	-38.0	-20.5	-38.2	-44.6	-34.6	-42.3	-27.5	+13.9	7396	-3.95	+81.7	-13.5	-28	-12	-23				
	1922	-12.3	-50.4	-90.2	-27.6	-516	-31	-36.8	-30.3	-42.0	+22.6	-1.2	-48.3	-18	-29	-15				
	1905	-17.6	+8.61	-29.3	-64.4	-62.2	-72.7	+16.8	+103	-10.5	734.8	-58.1	-6.5	-5	-4	-18				
	1883	+60	+23.3	-25.1	-8.24	-23.5	-55.1	+32.2	+36.4	-10.6	+85.1	-32.1	-56.6	+31	-4	-21				
3	2024																			
	1996	+13.5	+29.4	+13.7	-32.4	-21.4	-17.3	+21.1	+96.6	-9.8	-4.49	+51.2	+19.3	-3.6	+83.1	+46				
	1968	-330	-28.3	-38.7	-28.0	-39.4	-38.4	-82.5	-34.2	-99.4	+1.007	+55.6	-26.6	-20	-18	-39				
	1940	-19.8	+24.3	-2.0	+9.24	-159	-34.0	-89.9	-33.9	-18.4	-26.2	+35.0	-21.5	-5	-5	-3				
	1912	-61.1	-53.3	-74.3	+12.5	-20	-5.6	-11.8	+20.0	+15.3	-12.1	+41.4	20.3	-15	+1	+10				
	1884	-38.8	-53.7	-69.4	+40.7	-43.1	-33.7	-23.1	-25.0	-15.3	+65.6	-30.9	+8.1	+12	-48	-1				
4	1999	-24.2	-25.8	-13.9	-23.5	-30.1	-48.8	-2.28	+7.8	-40.9	+25.8	-24.0	-18.4	-9.1	-20	-15.9				
	1982	+5.15	+59.3	-34.4	+27.6	+0.5	-24.1	-28.6	-66.3	-40.9	+12.4	+17.0	-27.0	+1	-5	+13				
	1965	-51.1	+40.2	-36.6	-44.5	-23.3	-24.2	-27.0	+2.08	-9.7	+80.8	-7.04	22.0	+10	+3	+3				
	1943	+13.5	-54.8	-20.8	-31.4	-30.9	-35.8	-50.5	-9.5	+27.8	+99.1	+1.76	-14.9	-5	-20	-20				
	1926	-69.7	+32.3	+298.6	-10.8	-33.5	+1.8	-19.4	-31.4	-36.5	-18.6	-36.7	-5.3	-25	-2	-1				
	1909	-6.87	-45.4	-32.6	+0.71	-45.4	-22.4	-35.9	+2.06	-4.5	+1.24	+26	+4.3	-12	+44	+7				
	1887	+20.1	+165	+2.4	-23.5	+5.41	-32.6	283.3	+133	+506	+148.0	+16	+31.9	+49	+62	+40				
	1870		+11.5	-64.1		-89.5	-42.4		+50.6	-22.8		-58.1	+25.5	-29	+25	-7				
5	2000	+56.9	+75.4	+47.8	-22.9	-7.8	-34.8	+66.5	+145	764.9	-57.0	-25.1	-57.9	+11	+39	+23				
	1972	70.93	+39.5	-77.6	-42.6	-67.6	-49.6	-58.4	-85.1	+29.9	-37.2	+39.9	+446.6	-1	-24	-34				
	1944	-17.7	+99.9	-0.2	-1.96	+5.6	-17.4	-310	+33.6	-35.4	+74.8	-1.92	-10.9	-39	+15	-2				
	1916	+42.2	-36.5	-2.4	+9.79	+12	+36	-24.3	+17.9	-11.5	+92.0	+54.0	-38.4	+19	+45	+18				
	1888	-18.3	-55.3	-56.2	-4.76	-53.2	-32.5	-43.6	-42.2	-57.4	-49.3	+72	-57.6	-26	-14	-39				
6	2018																			
	2001	714.4	-61.8	-13.4	-6.5	-44.4	-52.0	-53.8	-22.4	-94.3	-28.4	+10.9	+15.1	-25.1	+2.1	-1.2				
	1979	-18.7	-26.9	-23.0	-530	-40.4	-60.9	-50.4	-578	-64.2	+99.3	+37.8	+12.1	-8	-20	-21				
	1962	-48.5	+54.0	-36.1	-24.9	-47.1	+2.5	-27.6	+6.1	-10.5	+103	+4.4	+58.9	+14	-11	+30				
	1945	+17.1	-58.3	-67.7	+14.2	+112	-6.7	-2.23	+17.7	-26.6	+18.9	-15.6	+6.3	+8	+15	-1				
	1923	-80.1	-11.2	-75.5	+3.97	-53.4	-57.5	-54.2	-80.7	-99.4	+73.8	+33.5	-99.3	-17	-29	-13				
	1906	+95.6	+57.6	+180.6	-10.7	+18.0	-34.9	-3.33	+13.8	+10.9	+34.8	+47.4	-45.6	+10	+29	+18				
	1889	-16.6	-25.8	+50.1	+2.55	+43.6	-27.4	+24.0	+28.8	-33.2	+76.8	+17.8	+45.2	+18	-34	+23				
7	2019																			
	2002	-23.0	+16.5	+478	-70.2	-50.1	-69.6	+5.43	-44.2	+64.9	-58.4	-23.4	57.9	-37.1	-31.5	-35.1				
	1985	+19.3	-21.8	-4.6	-15.4	-85.6	-6.8	-44.5	-18.3	-24.8	-39.2	-62.0	-44.1	-23	-20	-4				
	1963	-24.0	-7.7	-36.3	-43.0	+4.5	-22.2	-25.0	+60.6	-7.2	-27.1	-35.4	-4.3	+11	+2	-3				
	1946	+270	-31.6	-22.0	+5.69	-39.7	-9.8	-18.3	-16.6	-30.5	-47.4	+6.4	-16.1	-8	-20	-15				
	1929	-31.6	-20.2	+46.2	-56.6	-44.5	-65.4	-39.9	-69.5	-22.5	+79.3	+58.1	-4.1	-18	-12	-3				
	1907	722	-19.7	+48.8	-42.6	-19.7	-35.1	?	-74.6	-53.6	-18.4	-1.2	-64.4	-8	-28	-19				
	1890	+1.86	+84.1	+2.3	-7.57	-11.6	-39.7	-25.0	+9.21	-50.7	+78.5	+38.5	-30.7	+10	+22	-15				
	1873	-13.5	-47.7	-48.2	-64.5	-53.2	-39.4	-31.5	-24.7	-16.7	+39.8	+25.6	-39.9	-27	-19	-20				



	2013	June			July			August			SEPTEMBER			OVERALL SEASON			REMARKS
		T	R	C	T	R	C	T	R	C	T	R	C	T	R	C	
18	1991	+42.1	+17.7	+64.5	-11.9	-16.1	-30.2	-39.0	-17.8	-93.7	+1.31	-11.6	+32.7	-9.6	+14.7	+22.6	
	1974	-26.6	-5.5	-14.3	-46.9	-12.2	-99.9	-22.6	-20.7	-37.2	+17.6	+10.3	+33.6	-24	+19		
	1957	-16.9	+19.5	+45.3	-49.0	-12.9	-30.4	-1.91	-26.6	+21.3	+12.4	-22.4	-12.1		+8	+24	
	1935	-6.87	+43.4	-45.1	+11.5	+4.16	-30.6	-31.1	+138.8	+346.3	+51.0	-11.3	-21.8	+2	+35	-24	
	1918	-93.3	-45.9	-16.8	-46.1	-56.3	-62.1	-57.0	-38.2	-40.5	+1.00	+18.1	-13.2	-40	-29	-20	
	1901	-21.0	-6.25	-40.7	-11.5	-69.7	-43.8	-16.3	+10.4	-42.2	-44.0	+30.1	-28.9	-19	-29	-24	
	1879	-8.51	+18.8	+3.2	-27.8	+48.1	-116.5	+31.4	-10.4	-99.4	+56.7	+19.7	-51	-9	-6	-16	
19	2014																
	1997	-59.7	+7.9	-65.1	-40.2	-54.2	-37.2	-33.8	-40.7	-48.2	+10.6	+134	+109	-33.2	+14.1	+15	
	1975	-15.4	-4.9	+53.8	+7.44	+48.3	-16.3	-10.9	-14.9	-28.5	+149	+31.6	+7.2	+21	+11	+20	
	1958	-60.6	-19.5	-42.3	-10.1	-16.7	+22.7	-32.0	+105	-15.9	+13.0	-10.4	-12.7		+8	+10	
	1941	+18.0	-47.0	+82.5	-67.5	+578	-70.2	-33.4	-48.3	7269	+37.2	+53.6	+1.2	-32	+8	-5	
	1919	+26.6	+6.66	-20.1	-41.1	+57.3	-19.7	-55.7	-80.0	-49.2	+457	+10.7	-26	-32	+2	-15	
	1902	-36.6	-27.6	-47.8	-48.6	-13.6	-35.5	-12.1	-55.7	-99.4	+26.3	-13.2	+15.1	-19	-17	+4	
	1885	-20.7	+19.4	-4.2	-14.1	+11.8	-31.5	-47.6	-41.8	-67.3	+38.5	-25.4	+5.5	-18	-18	-10	
20	2015																
	1998	71.32	-529	-34.5	-21.5	-58.6	29.8	+15.4	+20.2	+5.1	+49.0	+70.6	+56	-50.9	+37	+25.3	
	1981	+36.3	-0.6	-26.9	+1.12	-5.9	+10.0	+7.12	-7.6	-28.9	+105.1	+61.2	+24.6	+26	+10	+25.3	
	1959	-4.76	+76.3	+18.3	-11.5	+9.27	+20.5	-34.2	-165	-30.9	-99.9	+136	-28.8	+40	+10	+12	
	1942	74.76	+42.7	-12.1	-7.78	-66.7	-47.9	+22.4	-13.1	-18.4	-44.5	-24.8	+34.2	-4	-20	-20	
	1925	6.28	-47.2	+1.0	+2.38	-9.2	-10	-4.93	+19.1	+2.4	-0.54	-18.4	+386	-2	-14	+4	
	1903	-25.7	-680	+22.6	+54.0	-46.8	+10.2	+34.8	+30.3	+8.0	+5304	+72	+7.0	+45	+39	+37	
	1886	+60.9	+3.88	+25.1	+26.6	+69.4	-4.2	+40.6	+40.1	+55.3	-39.9	+9.04	-99.3	+24	+21	+38	
21	2016																
	1988	-14.2	-57.0	-57.4	+10.7	+77.7	+33.6	-25.9	+12.7	+19.4	+136	+33.4	+37.4	+65	+50	+41	
	1966	-54.9	+67.3	-32.8	715.4	+14.3	+32.3	-7.57	+0.5	+6.1	+61.3	+14.8	-27.2	+3	+20	+9	
	1932	+13.2	-629	-13.1	73.97	-24.1	-13.7	+20.1	+22.0	-36.2	+52.6	-20.32	-32.4	+1	-10	-18	
	1904	+15	-33.4	-42.5	-4.6	+22.1	-51.4	-69	-83.0	-38.0	+36.9	-39.6	-41.5	-24	-55	-30	
	1876	-42.2	-20.8	-33.3	-34.7	73.6	-52.1	-31.8	-42.4	-99.9	-40.6	-71.1	-50.4	-38	-53	-19	





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	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
2007												
2009												
1987	-29.30401	18.04773	69.23077	-10.7438	476.9231	36.05769	-79.34345	54.71251	90.90609	14.785714	-88.46154	-72.97297
1970	107.6973	-27.12492	89.43937	91.73554	19.87179	234.1346	56.39535	215.0326	-7.134875	82.02765	-100	100
1963	23.62637	93.69748	100	12.39669	90.38462	0.489703	67.80047	-11.91464	-15.91352	-100	-92.30769	-65.27027
1931	-45.78755	14.28571	-70.66493	-73.55572	10.89744	82.45192	0.117125	17.22584	-29.13001	84.101382	-100	98.64885
1914	-31.86813	30.2573	83.70274	323.1405	41.88887	43.50952	46.19027	54.71251	98.24047	109.21659	94.23077	-91.89189
1897	16.48352	33.61345	85.91917	153.7719	-56.41026	-21.07692	-27.12558	-4.386485	67.95767	92.165899	-100	55.40541
1875	100	16.38855	98.98898	100	42.94872	-54.08625	24.38575	87.9668	266.0802	-73.041475	-100	-62.83784
2007												
2010												
1995	65.93907	21.84874	-45.2412	46.28059	96.15185	42.11538	184.8837	-85.95139	16.81329	100	84.61135	-100
1971	-34.72527	39.4938	92.65319	-27.27373	171.7949	89.42308	26.63848	124.4813	207.6246	92.628798	11.33848	100
1954	11.709471	-44.69085	-53.67156	269.697	-44.02985	-47.31183	594.0476	-169.0476	91.90207	7.980799	835.1111	0
1937	-29.48718	136.9740	84.27425	256.3719	-12.82051	39.90385	7.652431	83.22966	-42.22849	62.672811	-96.38452	80.40541
1915	31.50183	187.1479	-26.27751	31.40496	-60.89744	52.40385	-27.25198	-56.58864	29.83477	5.9807838	-100	-81.75646
1898	65.93907	167.8892	100	-92.52066	-14.71359	41.10577	29.58774	68.76111	36.95015	-100	-100	143.2432
1881	-89.37729	28.41176	-20.8605	14.64959	24.35897	154.8077	72.14968	13.57909	-75.56207	-92.235023	-100	-100
2008												
2000	41.76923	77.31092	-49.54368	90.90909	182.0513	287.7404	43.26171	96.13515	-54.0967	-100	-78.84815	-100
1972	57.50916	5.042017	87.87484	-31.40496	-100	-12.06731	-6.634749	-12.71103	71.96549	94.009717	132.6471	-11.48640
1944	31.50183	129.8319	-35.85308	281.8187	-43.58974	-75	-4.549455	5.299852	76.58847	-79.282679	84.61538	-13.57351
1916	93.77289	-13.02571	56.24055	-56.24825	58.23113	-23.07697	23.19718	16.85679	31.96481	26.110599	-100	100
1888	19.48352	-42.85714	80.73829	87.81818	76.15385	7.652768	3.698934	25.54831	-41.35347	-76.262672	147.3077	-95.94595
2009	-84.81319	215.9664	41.85137	-26.44838	-12.68211	109.6754	-71.14365	-20.62883	-71.652	89.400927	-46.15185	-71.62162
1990	90.10989	121.4288	47.84876	-49.58878	-52.5641	-58.41366	35.67653	7.448888	74.58456	-98.677512	11.53848	181.7568
1973	-37.96705	17.18487	89.17867	60.08764	223.7179	129.0885	45.03457	119.7392	-72.34076	87.940399	5.769735	156.0811
1951	12.82051	-85.21479	-31.25074	15.70248	68.58974	87.98077	8.088881	-28.2926	92.86411	-90.78341	507.6973	91.89189
1934	-32.23443	-45.37815	55.41069	-28.33884	-71.79487	10.57695	-19.69173	28.57143	88.24079	-100	-100	75
1917	62.89974	97.29959	72.89919	897.7828	242.7492	123.38124	43.00043	90.26715	237.2629	61.366667	-100	90.00000
1895	152.381	6.727689	84.87614	24.78139	-67.30769	190.8654	67.91755	20.988	100	96.113364	68.07697	92.97297
1878	3.663004	85.21479	95.25062	106.2645	282.6973	67.97669	0.729958	89.78177	80.84064	100	100	-41.89189
2011												
1994	0	21.84874	-96.41677	-8.264451	-16.66967	51.20797	66.86047	58.26917	-29.22776	-94.930876	-100	-16.89189
1977	41.75824	-42.85714	96.17601	242.9752	137.1795	176.4473	4.281184	-4.388485	5.669939	-73.043475	-100	21.62162
1955	12.82051	-81.93277	69.6219	37.19008	5.769231	-3.884615	84.21776	8.081648	34.50635	185.92074	-100	-75
1938	183.8828	23.10908	96.47979	-6.61157	-74.35897	218.0289	-45.87738	-31.08106	-95.69892	-16.40553	-100	96.62162
1921	-35.89744	-85.21479	-99.60887	-96.69421	92.94872	57.45192	-42.86469	-30.20519	-42.32649	45.62212	-100	36.48649
1899	100	56.72269	98.95698	47.93388	50	46.63463	-54.86258	-67.14064	-94.08991	-89.861753	-100	100
1882	102.9164	30.2521	-99.21773	-12.39669	63.28462	-55.04808	18.02326	-24.48111	-64.96279	-99	-100	-98.64885
2004	94.87175	63.02521	100	-46.28099	210.2564	12.25962	-72.41015	-0.355443	-95.29668	57.603687	-76.92308	80.40541
1976	23.44722	96.21849	-70.66493	1.852891	-43.58974	62.25962	-5.468829	102.8438	0.684262	-76.497696	-100	100
1948	-41.02564	121.4288	-7.993064	-63.63636	85.89744	18.99018	23.57294	21.88854	-51.8174	-100	80.26075	43.91892
1920	3.296703	-15.12605	-70.92358	-93.38843	32.08231	-0.480769	-10.62368	-35.24392	-75.07331	-100	-100	-31.21622
1892	-55.67766	-98.73269	-84.43348	-95.04132	42.94872	-68.71154	30.074	25.28156	96.58925	-100	-100	202.7027
2008	26.71952	-76.89076	100	104.1322	332.0613	569.4717	-51.90275	26.22999	12.31672	-68.663394	80.26075	-62.16216
1980	32.96703	54.67185	-61.27771	-42.14876	-89.10256	33.89471	135.0951	-43.33136	-30.59629	36.40553	42.20769	278.3784
1957	27.83883	9.663886	-61.27771	-90.90909	66.02564	55.04808	23.62579	37.28512	-100	98.612512	98.07697	-75.22973
1924	32.80271	106.7227	-86.24055	-93.38843	-8.333333	-56.875	-2.43129	-29.46058	44.96579	-97.695853	84.61538	343.2432
1894	251.6484	24.16979	-64.01565	-66.19835	-35.75641	267.6923	26.37421	-4.509038	-32.16031	-100	15.28462	372.2973