

Crude oil production:

Crude oil production is defined as the quantities of oil extracted from the ground after the removal of inert matter or impurities. It includes crude oil, natural gas liquids (NGLs) and additives.

The next table shows the list of countries by oil production :

	Country	Oil production 2019 (bbl/day) ^[1]	Oil production per capita 2017 (bbl/day/ million people) ^[5]
-	World production	80,622,000	10,798
01	United States ^[6]	15,043,000	35,922
02	Saudi Arabia (OPEC)	12,000,000	324,866
03	Russia	10,800,000	73,292
05	Iraq (OPEC)	4,451,516	119,664
06	Iran (OPEC)	3,990,956	49,714
07	China	3,980,650	2,836
08	Canada	3,662,694	100,931
09	United Arab Emirates (OPEC)	3,106,077	335,103
10	Kuwait (OPEC)	2,923,825	721,575
10	Brazil	2,515,459	12,113
11	Venezuela (OPEC)	2,276,967	69,914
12	Mexico	2,186,877	17,142
13	Nigeria (OPEC)	1,999,885	10,752
14	Angola (OPEC)	1,769,615	61,417
15	Norway	1,647,975	313,661
16	Kazakhstan	1,595,199	88,686
17	Qatar	1,522,902	500,000
18	Algeria (OPEC)	1,348,361	33,205
19	Oman	1,006,841	217,178
20	Libya (OPEC)	1,003,000	159,383
21	United Kingdom	939,760	14,284

22	Colombia	897,784	18,452
23	Indonesia	833,667	3,192
24	Azerbaijan	833,538	85,710
25	India	715,459	554
26	Egypt	686,000	6,860
27	Malaysia	661,240	21,202
28	Ecuador (OPEC)	548,421	33,470
29	Argentina	510,560	11,644
30	Romania	504,000	25,469
31	Congo, Republic of the (OPEC)	308,363	60,168
32	Vietnam	301,850	3,194
33	Australia	289,749	12,010
34	Thailand	257,525	3,667
35	Sudan and South Sudan	255,000	4,932
37	Equatorial Guinea (OPEC)	227,000	125,068
38	Gabon (OPEC)	210,820	106,528
39	Denmark	140,637	24,369
40	Chad	110,156	7,393
41	Brunei	109,117	257,959
42	Ghana	100,549	3,564
43	Cameroon	93,205	3,983
44	Pakistan	80,000	400
45	Italy	70,675	1,189
46	Timor-Leste	60,661	47,839
47	Trinidad and Tobago	60,090	44,054
48	Bolivia	58,077	5,334
49	Papua New Guinea	56,667	7,013
50	Uzbekistan	52,913	1,682
51.5	Bahrain	50,000	36,000
51.5	Cuba	50,000	4,357
53	Turkey	49,497	622
54	Tunisia	48,757	4,275

55	Germany	46,839	571
56	Peru	40,266	1,267
57	New Zealand	35,574	7,633
58	Ukraine	31,989	720
59.5	Ivory Coast	30,000	1,265
59.5	Syria	30,000	1,627
61	Belarus	25,000	2,637
62	Mongolia	23,426	7,739
63	Albania	22,915	7,901
64	Yemen	22,000	797
65	Poland	20,104	525
67	Congo, Democratic Republic of the	20,000	254
67	Philippines	20,000	193
67	Serbia	20,000	2,272
69	Netherlands	18,087	1,070
70	Suriname	17,000	30,465
71	France	16,418	253
72	Austria	15,161	1,742
73	Myanmar	15,000	284
74	Hungary	13,833	1,426
75	Croatia	13,582	3,223
76	Niger	13,000	631
77	Guatemala	8,977	544
78	Mauritania	5,000	1,162
79	Chile	4,423	247
80	Bangladesh	4,189	25
81	Japan	3,918	30
82	Greece	3,172	285
83	Spain	2,667	57
84	Czech Republic	2,333	220
86	Belize	2,000	5,464
86	Lithuania	2,000	689
86	South Africa	2,000	35
89	Barbados	1,000	3,521
89	Bulgaria	1,000	140

89	Kyrgyzstan	1,000	169
91	Georgia	400	102
92	Israel	390	47
93	Slovakia	200	37
94	Taiwan	196	8
95	Tajikistan	180	20
96	Morocco	160	4

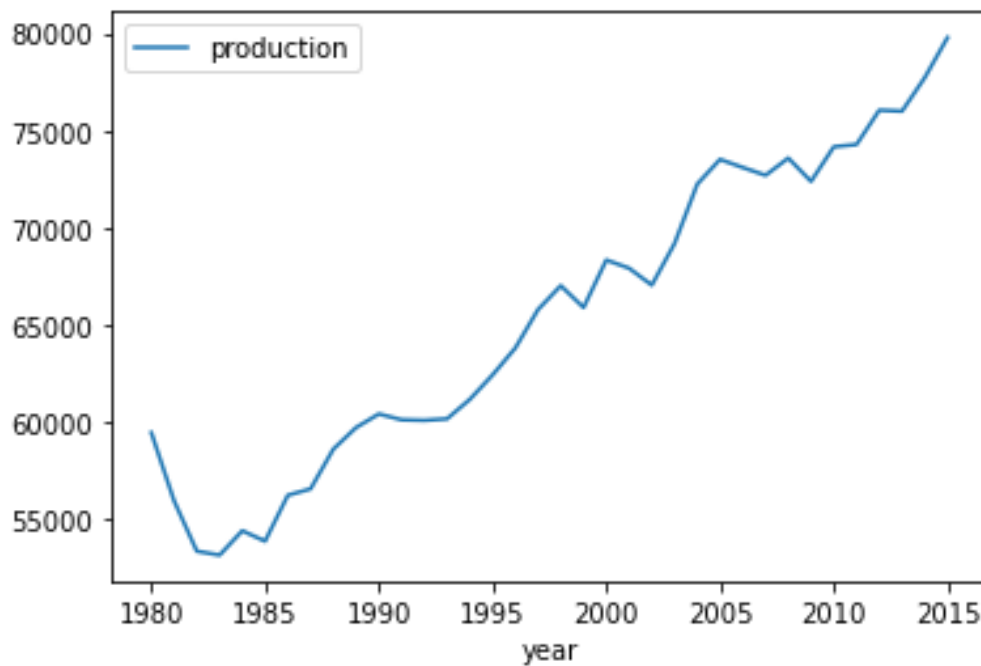
Oil Production has increased since 1980 as this table shows:

year	production	change
1980	59,463.80	NA
1981	55,958.40	-5.90 %
1982	53,367.30	-4.63 %
1983	53,166.60	-0.38 %
1984	54,417.60	2.35 %
1985	53,882.60	-0.98 %
1986	56,242.17	4.38 %
1987	56,572.17	0.59 %
1988	58,615.45	3.61 %
1989	59,725.36	1.89 %
1990	60,424.25	1.17 %
1991	60,126.34	-0.49 %
1992	60,097.77	-0.05 %
1993	60,173.79	0.13 %
1994	61,175.25	1.66 %
1995	62,430.25	2.05 %
1996	63,816.35	2.22 %
1997	65,797.55	3.10 %
1998	67,022.85	1.86 %
1999	65,898.06	-1.68 %
2000	68,343.04	3.71 %
2001	67,921.63	-0.62 %
2002	67,050.84	-1.28 %
2003	69,189.99	3.19 %
2004	72,249.60	4.42 %
2005	73,516.23	1.75 %

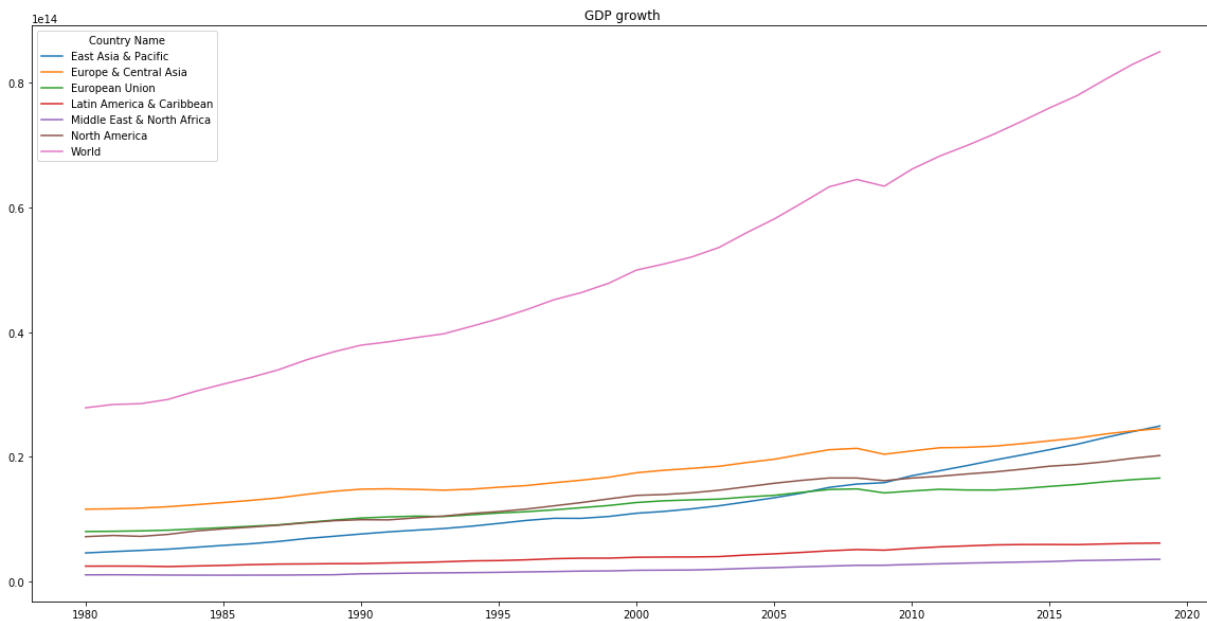
2006	73,099.73	-0.57 %
2007	72,698.83	-0.55 %
2008	73,583.73	1.22 %
2009	72,385.33	-1.63 %
2010	74,166.13	2.46 %
2011	74,281.63	0.16 %
2012	76,047.63	2.38 %
2013	75,996.83	-0.07 %
2014	77,724.30	2.27 %
2015	79,784.30	2.65 %

We used the previous data and pulled how the production changed through the time since 1980:

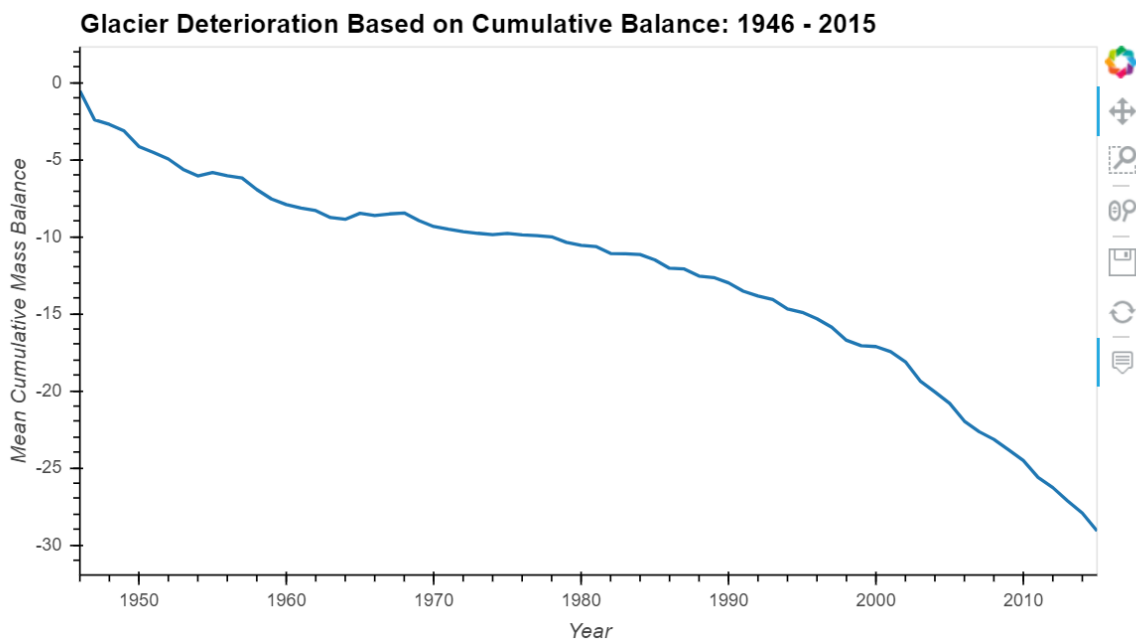
`crude_oil.plot()`



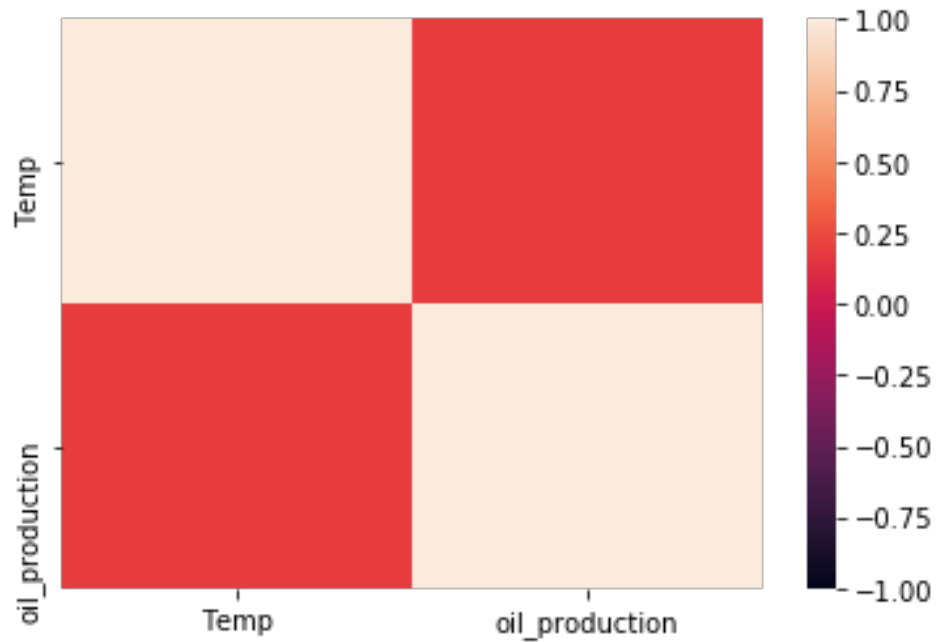
* How did the production of the crude oil affected the worlds GDP since 1980?



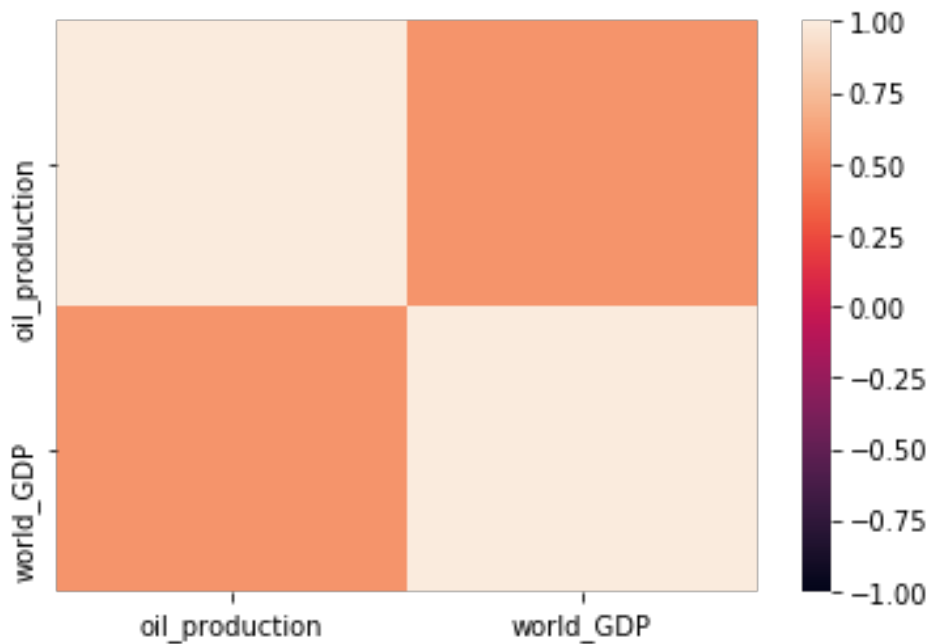
The next graph outlines glacier deterioration from 1946 - 2015. The measurements reflect a mean cumulative mass balance, which is a net gain or loss of snow and ice. The negative trend shows that the net balance has been deteriorating fairly consistently since 1946, and seemingly increased in deterioration since approximately 2000. Reference Data: <https://www.epa.gov/climate-indicators/climate-change-indicators-glaciers> <https://www.epa.gov/climate-indicators/climate-change-indicators-arctic-sea-ice> https://nsidc.org/data/glacier_inventory/query.html <https://www.epa.gov/climate-indicators/climate-change-indicators-antarctic-sea-ice>



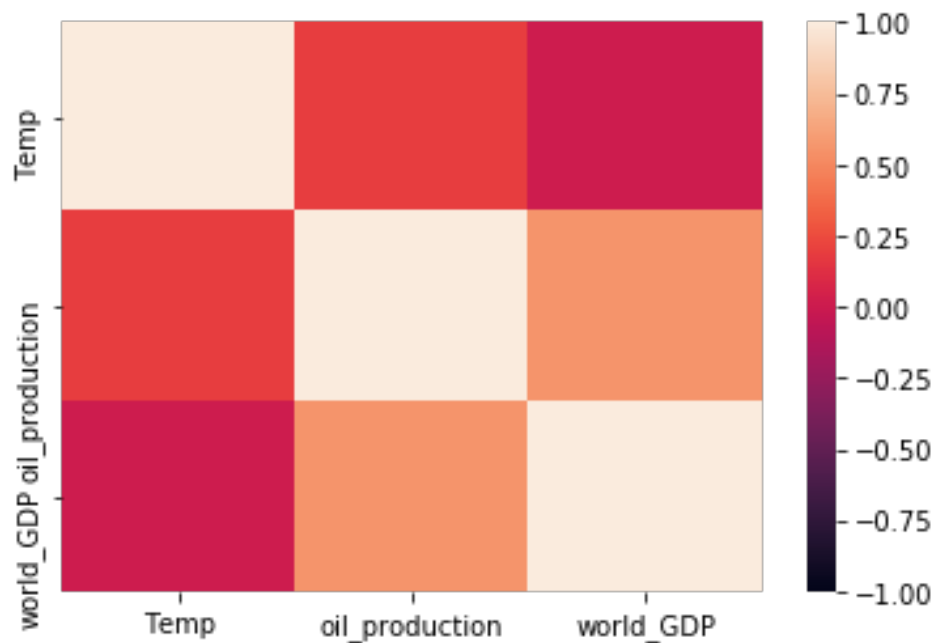
* What is the correlation between world temperature and percentage of crude oil production?



* What is the correlation between **Percentage change in oil production** and **World GDP**?



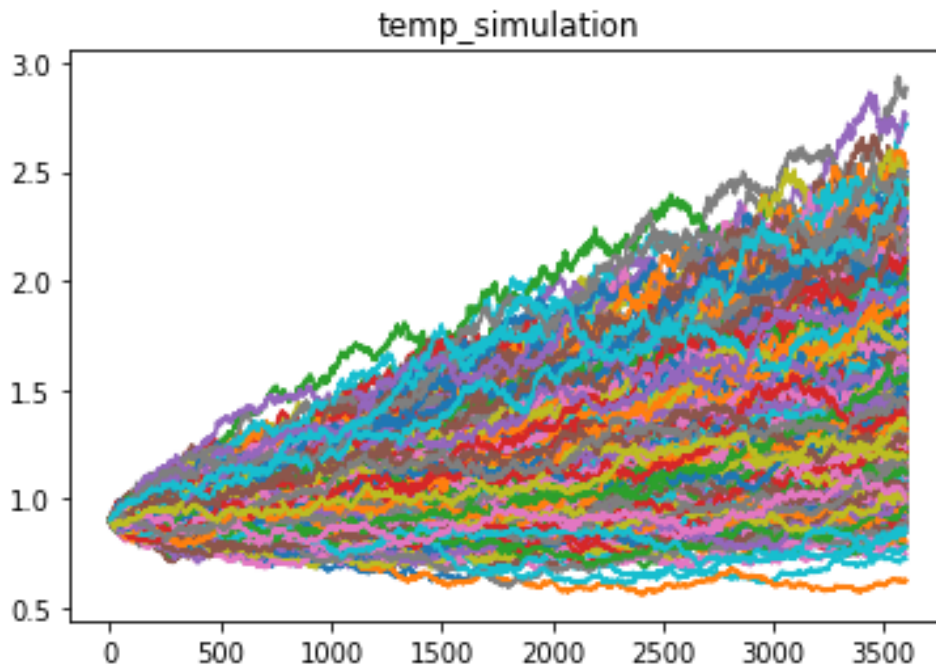
*What is the **Correlation between 3 data sets Temperature,oil Percentage change and World GDP change?**



Monte Carlo Simulation:

Monte Carlo methods, or Monte Carlo experiments, are a broad class of **computational algorithms** that rely on repeated **random sampling** to obtain numerical results.

- S=Last Recorded Temperature
- T=Number of Iterations
- mu=Temperature Mean
- vol=Temperature Standard Deviation



Conclusion:

oil and gas production is contributing far more to warming the planet , Global warming is an aspect of climate change, referring to the long-term rise of the planet's temperatures. It is caused by increased concentrations of greenhouse gases in the atmosphere, mainly from human activities such as burning fossil fuels.

The gross domestic product (GDP) growth rate measures how fast the economy is growing, Higher production leads to a lower unemployment rate, further fueling demand.

Increased wages lead to higher demand as consumers spend more freely. This leads to higher GDP.