

CP.4.2.8, Sauer3

The file `scrippsy.txt`, available from the textbook website, is a list of 50 numbers which represent the concentration of atmospheric carbon dioxide, in parts per million by volume (ppv), recorded at Mauna Loa, Hawaii, each May 15 of the years 1961 to 2010. The data is part of a data collection effort initiated by Charles Keeling of the Scripps Oceanographic Institute (Keeling et al. [2001]). Subtract the background level of 279 ppv as in Computer Problem 4, and fit the data to an exponential model. Plot the data along with the best fit exponential function and report RMSE.

year	ppm	year	ppm	year	ppm	year	ppm	year	ppm
1961	320.58	1971	328.92	1981	342.91	1991	359.34	2001	374.02
1962	321.01	1972	330.07	1982	344.14	1992	359.66	2002	375.55
1963	322.25	1973	332.48	1983	345.75	1993	360.28	2003	378.35
1964	322.24	1974	333.09	1984	347.43	1994	361.68	2004	380.61
1965	322.16	1975	333.97	1985	348.93	1995	363.79	2005	382.24
1966	324.01	1976	334.87	1986	350.21	1996	365.41	2006	384.94
1967	325.00	1977	336.75	1987	351.84	1997	366.80	2007	386.43
1968	325.57	1978	338.01	1988	354.22	1998	369.30	2008	388.49
1969	327.34	1979	339.47	1989	355.67	1999	371.00	2009	390.18
1970	328.07	1980	341.46	1990	357.16	2000	371.82	2010	393.22

Concentration of atmospheric carbon dioxide, in parts per million by volume (ppv), from 1961 to 2010.

See the website <http://scrippsco2.ucsd.edu> for much more data and analysis of the Scripps carbon dioxide study.

Do not worry about the questions of Sauer. This problem is (more or less) solved in the following notebook. You have 1 handwritten question to answer. See below.

Handwritten Question: By using `print`, give the equation of the best-fit exponential function. Be careful that there are two offsets. We offset the y-axis by 279 ppv, and we offset the year axis by 1961. Check that for year 1970, the best-fit value (given by your function) is 328.77 ppv.

Jupyter Notebook: https://colab.research.google.com/drive/15l78g98Fkzl65f_C2uqjC8WCBzK31qT-

Concentration of atmospheric carbon dioxide,
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