



TEMPERATURE

-65.000.000 -> 2300

BLACK: Variations of temperature derived from ice cores [isotope ratios], deep-sea sediment and continental records; complementary to coral and lake level **data**
YELLOW: central estimates and likely ranges for **projections** of global temperature
[in 2100 relative to pre-industrial values +2.6, +4.5, +6.0, +8.5 W/m²]

dots: RCP8.5
[+8.5 W/m² stays on earth, emissions continue to rise throughout 2100+]

line: RCP2.6
[+2.6 W/m² stays on earth, emissions decline after 2020]
thin: RCP6, RCP4

date: 2013 /2017
0: relative to 1951-1980 average temperatures [C= g04]
[variations in the negative scale, to other graphs see appendix]

RCP: RepresentativeConcentrationPathways/greenhousegasconcentrationtrajectories
 They describe a possible range of **radiative forcing** values.
[Positive radiative forcing: Earth receives more incoming energy from sunlight than it radiates to space.]
[in 2100 relative to pre-industrial values +2.6, +4.5, +6.0, +8.5 W/m²]

-65.000.000 -> 450.000 -> -20.000 [g01]
[45.000.000 -> 1950]
data source_01: Hansen J, The Royal Society, Climate sensitivity, sea level and atmospheric CO₂, **2013**, Fig. 4 graph_1_14dC_1/x=0_L_X
<http://ata.royalsocietypublishing.org/content/royopen/3/1/200120120294.full.pdf>
[G004] [g01] created from org kb

-20.000 -> -9.000 -> 1880 [g02]
[30.000 -> 2100] [0= relative to 1951-1980 average]
data source_02: Marcott et al. Science, A Reconstruction of Regional and Global Temperature for the Past 11,300 Years, **2013**, Fig. 4 / Fig. 1/ Fig. 3 graph_2_0.2dC_1/1951-1990 = 0_L_B
<http://science.sciencemag.org/content/338/6124/1198>
[G004] [g01] reworked

1880 -> 2016 [g03]
[1880 -> 2016] [0= relative to 1951-1980 average]
data source_03: NASA's Goddard Institute for Space Studies (GISS), Global Temperature, **2017** graph_0dC_1/1951-1980 = 0_L_A
<https://climate.nasa.gov/vital-signs/global-temperature/>
[G004] [g01] created from giss

2016 -> 2300 [g04]
[1760 -> 2300] [0= relative to 1951-2005 average]
data source_04: IPCC AR5 Fifth assesment report, the physical science basis, **2013**, Fig. 12.5./page 1054 graph_1+4dC_1/1986-2005 = 0_L_C
http://www.ipcc.ch/pdf/assessment-report/ar5/wg1/WG1AR5_Chapter12_FINAL.pdf
[G004] [g04] reworked

-4.500.000.000
 Age of the Earth
OXYGENATION
[3.500.000.000] end of free oxygen in the atmosphere - O₂
ICE AGE HURONIAN
[2.450.000.000 -> 2.100.000.000]

ICE AGE CRYOGENIAN
[720.000.000 -> 635.000.000]
-500.000.000
ICE AGE ANDEAN-SAHARAN
[450.000.000 -> 420.000.000]
ICE AGE KAROO
[360.000.000 -> 260.000.000]
PANGAEA
[335.000.000 -> 175.000.000] last supercontinent (see large inset)

DINOSAURS
[230.000.000 -> 66.000.000]
CENOZOIC
[65.000.000 -> today] age of the mammals
-65.000.000
WHALES
[40.000.000]
-5.000.000
ICE AGE QUATERNARY
[2.500.000 -> today] last ice age
HOMO ERECTUS
[1.800.000]
-500.000
[g01-1] <- 64.500.000 y ->
[g01-2] <- 480.000 y ->

GLACIAL ELSTERIAN
[475.000 -> 424.000]
INTERGLACIAL HOLSTEIN
[424.000 -> 374.000]
-400.000
-300.000
HOMO SAPIENS SAPIENS
[300.000]

-200.000
GLACIAL SAALIAN
[200.000 -> 130.000]
INTERGLACIAL EEMIAN
[130.000 -> 115.000]
-100.000

GLACIAL WEICHSELIAN
[10.000 -> 11.500] last ice age
-20.000
[g02-1] <- 11.000 y ->
-15.000
INTERGLACIAL HOLOCENE
[11.500 -> NOW] human civilisation
-10.000
[g02-2] <- 10.880 y ->

-5.000
WRITING
[3.1000] eg. namer palette, egypt
0
STANDARD OIL
[1870]
1880
[g02] <- 136 y ->
2016
[g04] <- 284 y ->
2050
2100
2200
2300
[g04] end