

SEA LEVEL

1700 -> 2300

BLACK: compilation of paleo sea level, tide gauge, and satellite/altimeter **data**
YELLOW: central estimates and likely ranges for **projections** of global mean sea level rise
[in 2100 relative to pre-industrial values +2.6, +4.5, +6.0, +8.5 Wm2]

dots: RCP8.5 [+8.5 Wm2 stays on earth, emissions continue to rise throughout 2100+]

line: RCP2.6 [+2.6 Wm2 stays on earth, emissions decline after 2020]

1700 -> 2300 [p01]
data source 01: **IPCC AR5** climatechange Report, 2013.
 Fig. 13.27 [page 1204]
 Fig. 13.3 [page 1147]

REPORT extract chapter 13 https://www.ipcc.ch/pdf/assessment-report/ar5/wg1/WG1AR5_Chapter13_FINAL.pdf
 REPORT FULL http://www.climatechange2013.org/images/report/WG1AR5_ALL_FINAL.pdf
 IMG_SCR <http://www.ipcc.ch/report/graphics/index.php?r=Assessment%20Reports&r=AR5%20-%20WG1&f=Chapter%2013>
 GSRAP [p01] vectorize

date: 2013
units: cm

RCP: Representative Concentration Pathways/greenhouse gas concentration trajectories
 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 Wm2]

RCP 8.5 [GHG emissions continue to rise throughout 2100+]
 RCP 6 [GHG emissions peak around 2060]
 RCP 4.5 [GHG emissions peak around 2040]
 RCP 2.6 [GHG emissions peak around 2020]
https://en.wikipedia.org/wiki/Representative_Concentration_Pathways

RCP GUIDE

SEI Stockholm Environment Institute, A guide to RCP's

RCP 8.5 [continue to rise throughout 2100+]
 . Three times today's CO2 emissions by 2100
 . Rapid increase in methane emissions
 . **Increased use of croplands** which is driven by an increase in population
 . A world **population of 12 billion** by 2100
 . Lower rate of technology development
 . Heavy reliance on fossil fuels
 . High energy intensity
 . No implementation of climate policies

RCP 6 [peak 2060]
 . Heavy reliance on fossil fuels
 . Intermediate energy intensity
 . Increasing use of croplands and declining grasslands
 . Stable methane emissions
 . CO2 emissions peak in 2060 at 75%t above today's levels, then decline to 25% above today

RCP 4.5 [peak 2040]
 . Lower energy intensity
 . **Strong reforestation programmes**
 . Decreasing use of croplands due to yield increases and **dietary changes**
 . Stringent climate policies
 . Stable methane emissions
 . CO2 emissions increase only slightly before decline commences around 2040

RCP 2.6 [peak 2020]
 . Declining use of oil
 . Low energy intensity
 . A world **population of 9 billion by year 2100**
 . Use of croplands increase due to bio-energy production
 . More intensive animal husbandry
 . Methane emissions reduced by 40 %
 . CO2 emissions stay at today's level until 2020, then decline and become negative in 2100
 . CO2 concentrations peak around 2020, followed by a modest decline to around 400 ppm by 2100

PAPER <https://www.sei-international.org/mediamanager/documents/A-guide-to-RCPs.pdf>
SITE <https://www.sei-international.org/>

Sea level rise is **caused** primarily by these factors related to global warming:
40% . the **expansion of sea water** as it warms.
30% . the added **water from** mountain glaciers
20% . and **melting ice** sheets
10% . and added land water [drinking water, agriculture...]
<https://sealevel.rise.gov/>
https://www.youtube.com/watch?v=vhL0Z_bqzQ&t=980s

