

If the Dark Ages solar peak c.525CE caused a c.5m sea-level rise 50-100y later ("ocean memory"), the stronger 1958 solar "Grand maximum" presages a >5m rise by 2058: literature review by an impartial geologist

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The 255 authors of IPCC's "Climate Change 2013: The Physical Science Basis" include no sedimentary geologists, specialists in ever-changing sea level (SL). According to IPCC the 0.3m SL rise(1) since tide-gauge records began (c.1700CE, Little Ice Age[LIA] acme) is unprecedented in >2ky, implicating mankind's CO₂ emissions. On the contrary, a c.5m SL rise and fall between c.400CE and 1700 are indicated independently by three lines of evidence: British archaeology(2,3); worldwide raised-shoreline benchmarks(4); and Red Sea foraminifera O18 fluctuations(5). The c.5m fall is attributable to 590-1640CE cooling (ice growth) shown by a global proxy temperature graph(6; cf.7). This 1ky-long cooling and ensuing 1850-2017 warming, both sawtooth-style, in turn mimic a 1ky solar decline then rise(8), moreso after aligning the 590CE peak temperature(6) with the c.525CE solar "Grand maximum" (GM) or near-GM(8). This 65y lag reflects hitherto-neglected ocean-conveyor-belt circulation, i.e. downwelling Atlantic surface water, variably solar-warmed (depending on solar-governed cloudiness[9]), upwells decades later beside Antarctica, returning northward to affect continental air temperatures. The conveyor slowed in the LIA (c.150y offset between 1280-1700CE cluster of solar Grand minima[8] and 1430-1850 cool phase[6]). Lately the lag, obvious from visual cross-matching of 1850-2012 instrumental-temperature peaks and troughs(10) versus the 1700-2016 sunspot chart (Google images), is c.85y (1890 solar trough matches 1975 temperature trough). Similarly, SL(1) clearly lags temperature(10) by 15y (1964 and 1976 temperature troughs match 1979 and 1991 SL troughs). Thus the total SL-solar lag is 100y (85+15). Appreciating the 85y and 100y lags enables vital predictions: sunspots increased (sawtooth-style) from c.1890 until the 1958 GM (the only definite GM in >2ky[8]), therefore ongoing warming will peak c.2043 (1958+85), and SL c.2058. How high will SL rise? The 1958 solar GM exceeded (95% confidence;8) the c.525CE GM(?) that caused a c.5m rise, but SL has risen just 0.3m since c.1700(1), so a further 4.7m+ is predictable by 2058. A viable cause is that whenever the sun exceeds the GM threshold(8), "superwarmed" downwelling Atlantic water eventually upwells at Antarctica, causing runaway retreat (ice-cliff collapse) of ice-sheet glaciers after melting the buttressing ice shelf. Thus the ocean "remembers" the 1958 solar GM; the Antarctic "time-bomb" is set. The forecast 5m+ SL rise should largely span 2038-2058, as the GM threshold was crossed c.20y before the GM apex(8). This implies catastrophic acceleration, in c.20y time, to an average rate >25cm/y (100x current trivial 2.5mm/y). The lookalike Dark Ages SL rise was perhaps c.50% slower (threshold possibly as much as c.45y before apex[8]). Lack of contemporary descriptions suggests that this SL rise of c.5m in c.45y (average 0.3mm/day) caused less concern than recurrent Justinian plague and frequent wars. The Dark-Ages event, preceding industrial CO₂ emissions by >1ky, absolves mankind of causing climate and SL change, as does the >1.5ky solar/temperature correlation (mismatches reflect "sliding lag", proxy imperfections and volcanic aerosol/ash eruptions). Notes: 1/Jevrejeva et al.2008 GeophysResLett35Fig1; 2/Higgs2016a 35th IGC abstract; 3/Higgs2016b GSA Annual Meeting abstract; 4/Fairbridge1961 PhysicsAndChemistryOfTheEarth4Fig.15; 5/Siddall et al.2003 Nature423Fig1; 6/Mann et al.2009 Science326FigS5gAllProxy; 7/Ahmed et al.2013 NatureGeoscience6Fig4b; 8/Usoskin et al.2014 Astronomy&Astrophysics562 L10Fig2; 9/Svensmark2007 Astronomy&Geophysics48; 10/IPCC ClimateChange2014SynthesisReportFig1.1a.