

Growth Constant Fingerprints of Economically Driven Climate Change

From its origin in 1780 to its major post WWII acceleration

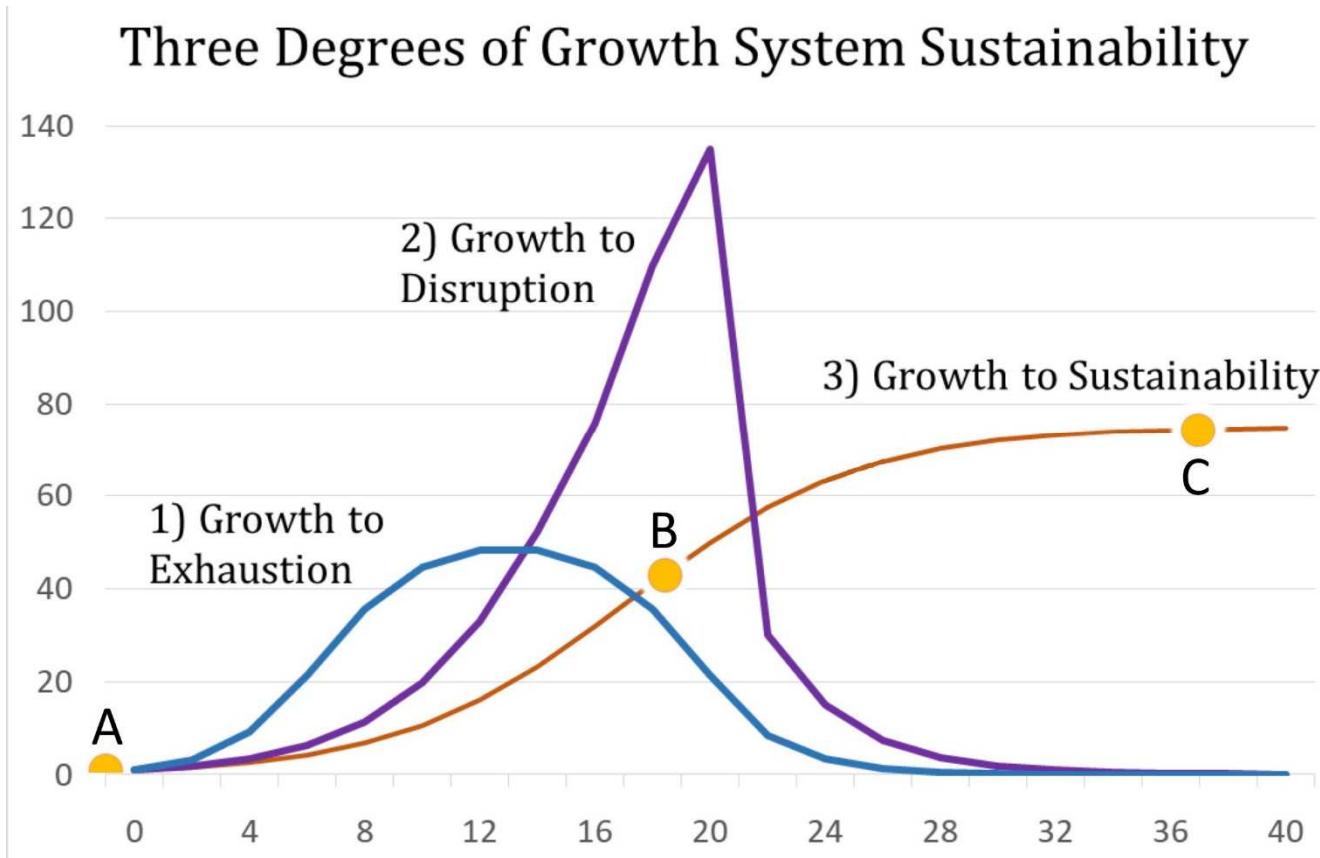
Paper and Supplemental Material Figures.

Key Words: natural systems physics, climate, human fingerprints, economic drivers, self-organization, growth constant states, coupling CO₂ & warming

HDS Growth Constants and Warming



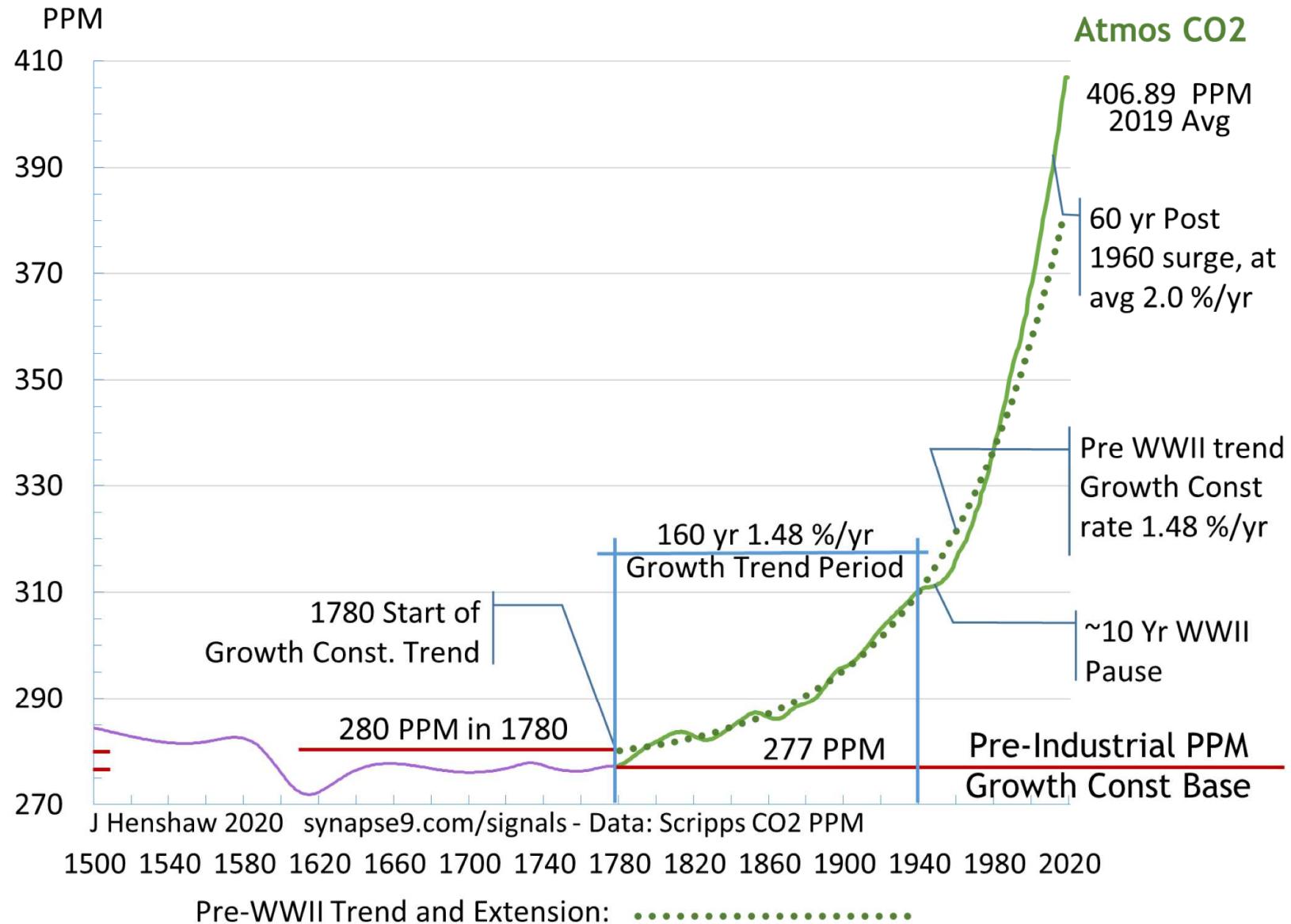
- Imagine the world economy as a kind of global storm, with many centers, organized as a whole to take advantage of any opportunity to grow.



The generic stages of “living-systems” development found in emerging growth systems that lead to exhaustion, disruption, or a sustainable climax.

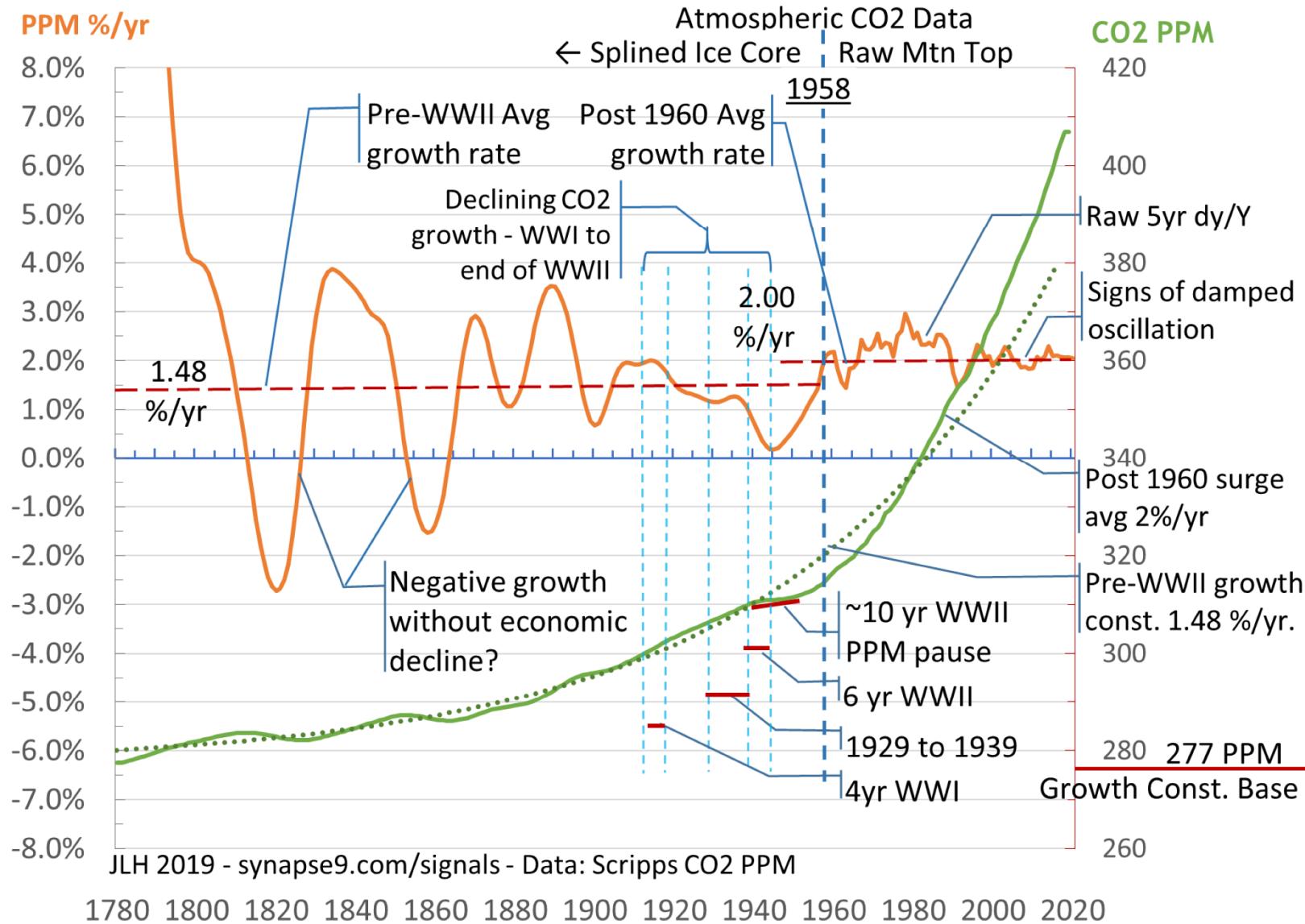
HDS Growth Constants and Climate

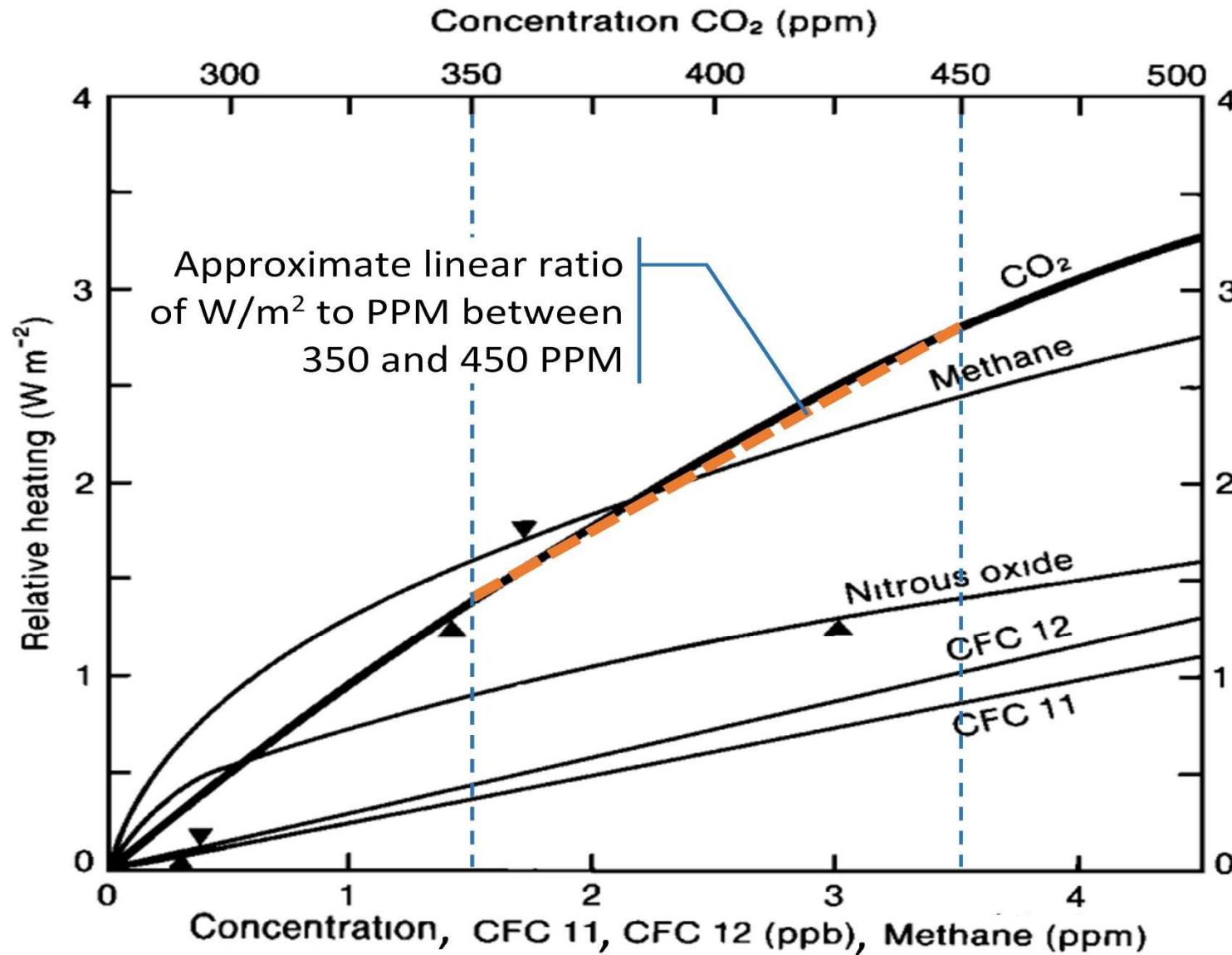
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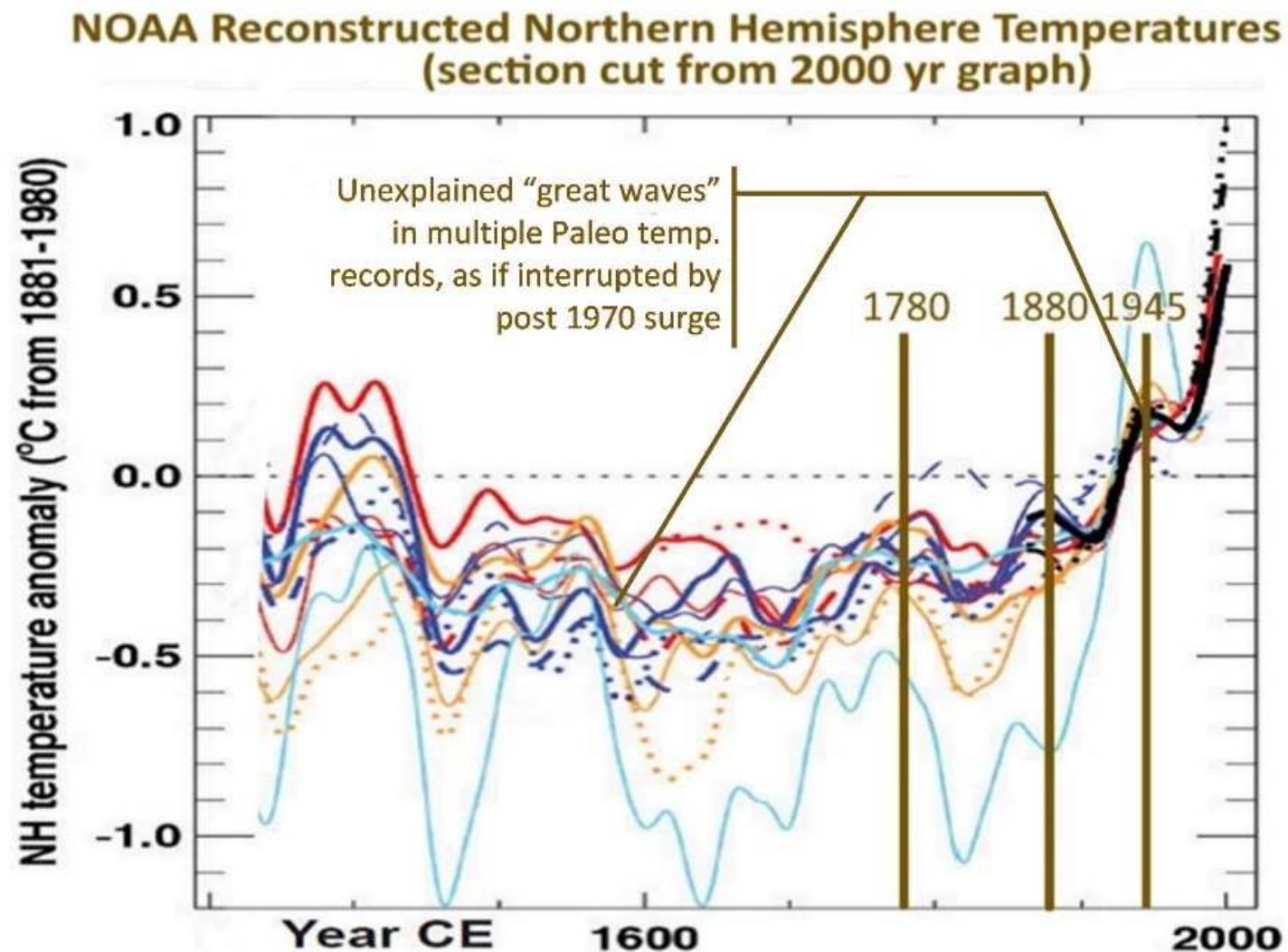


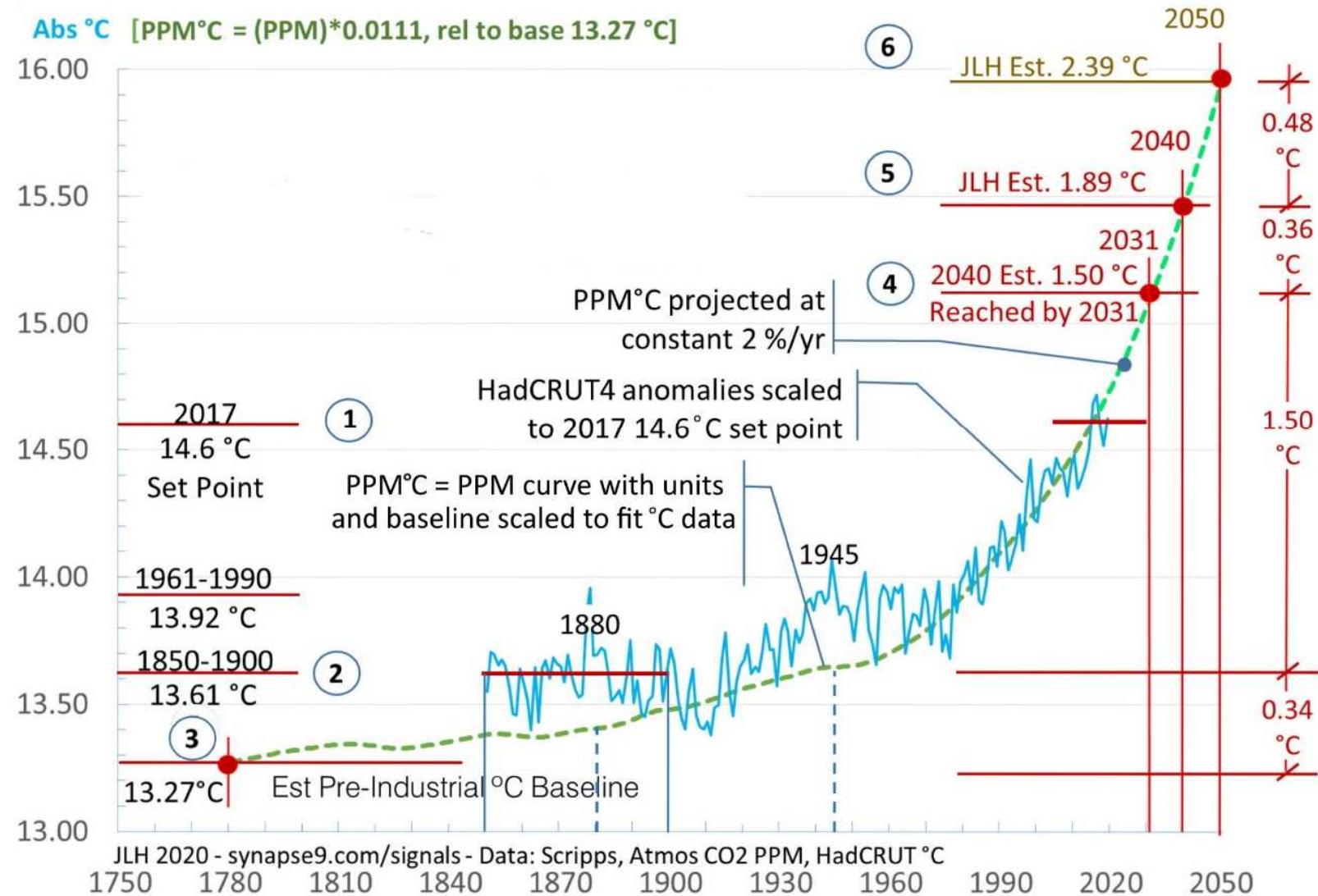
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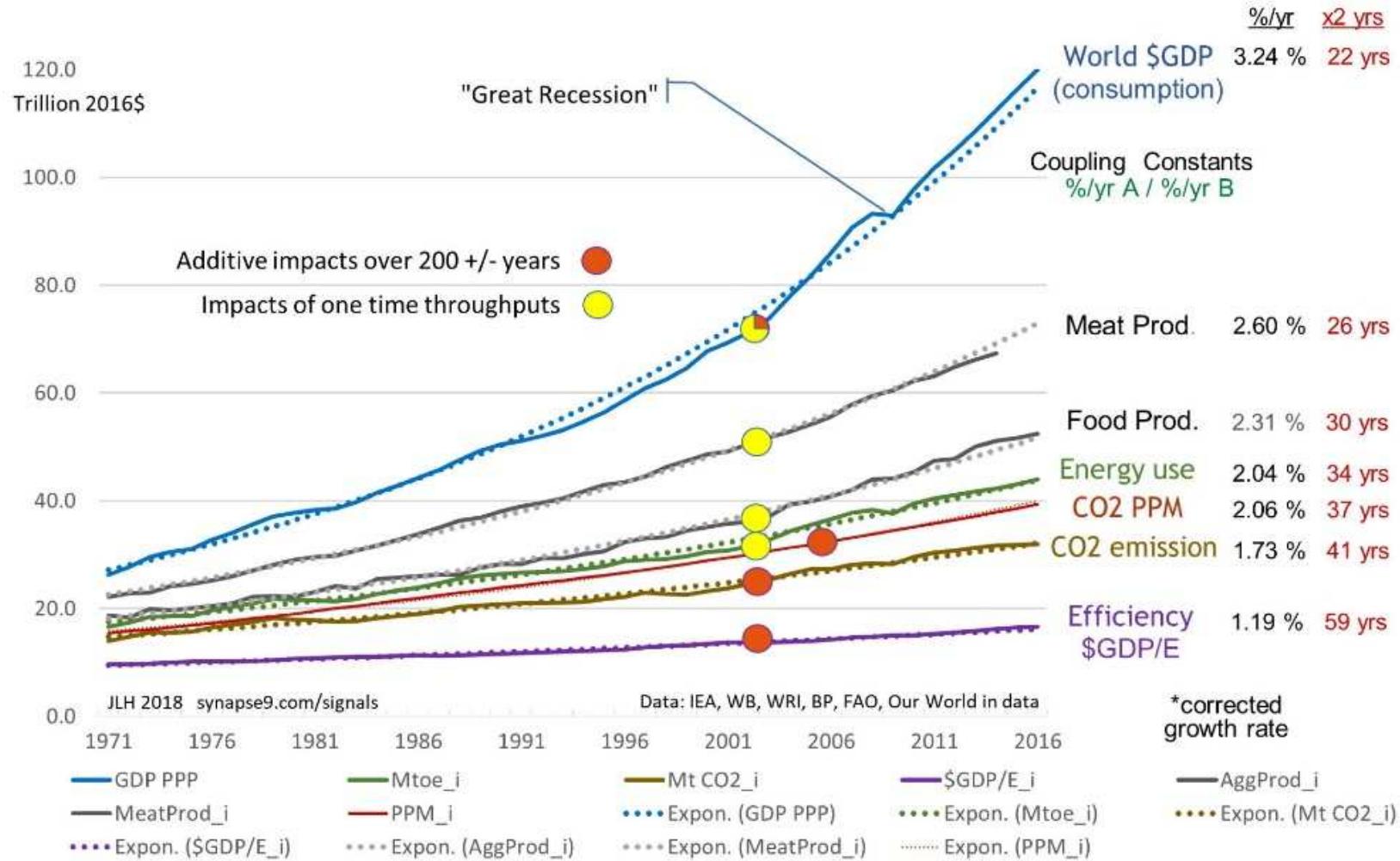


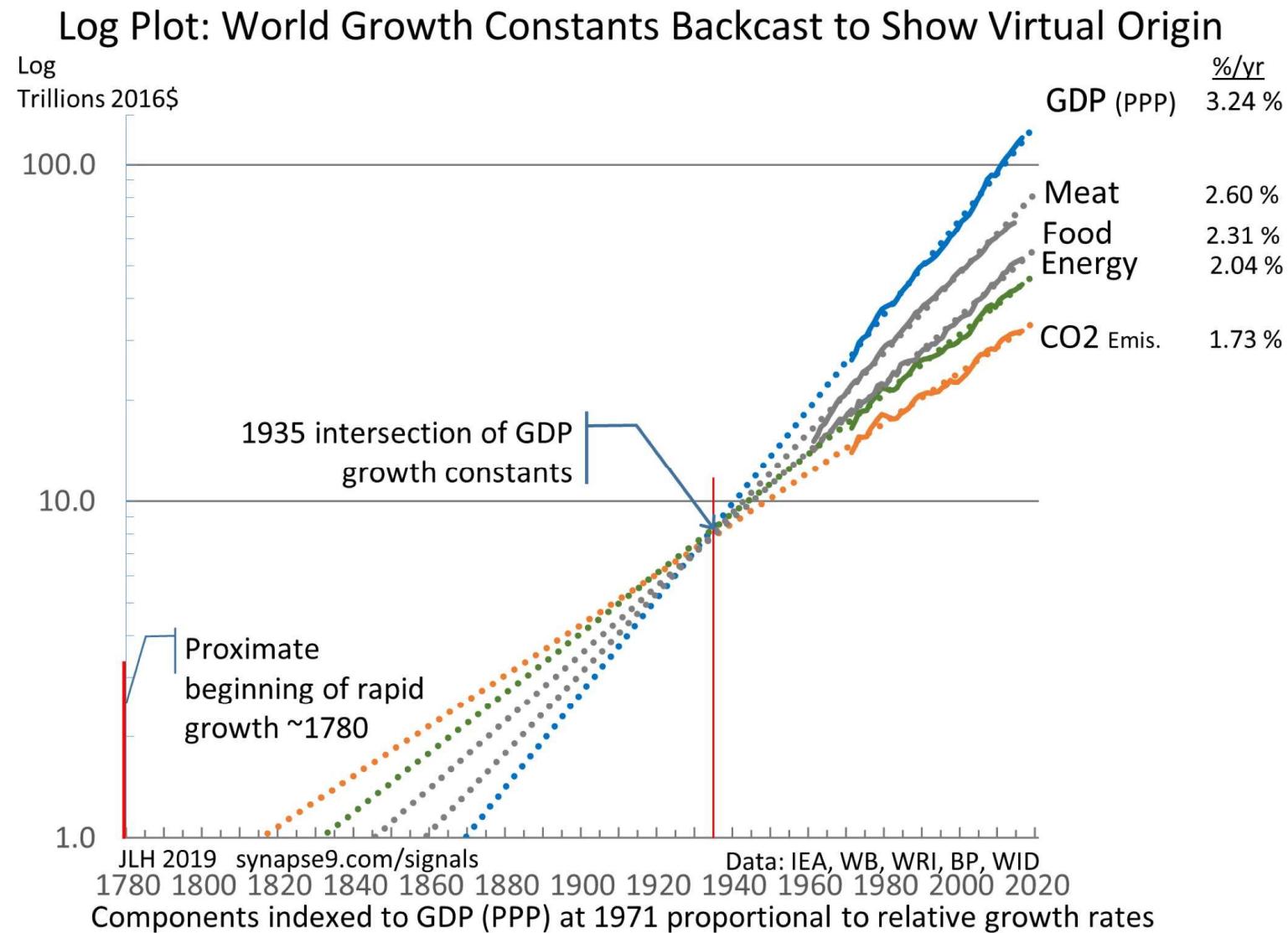


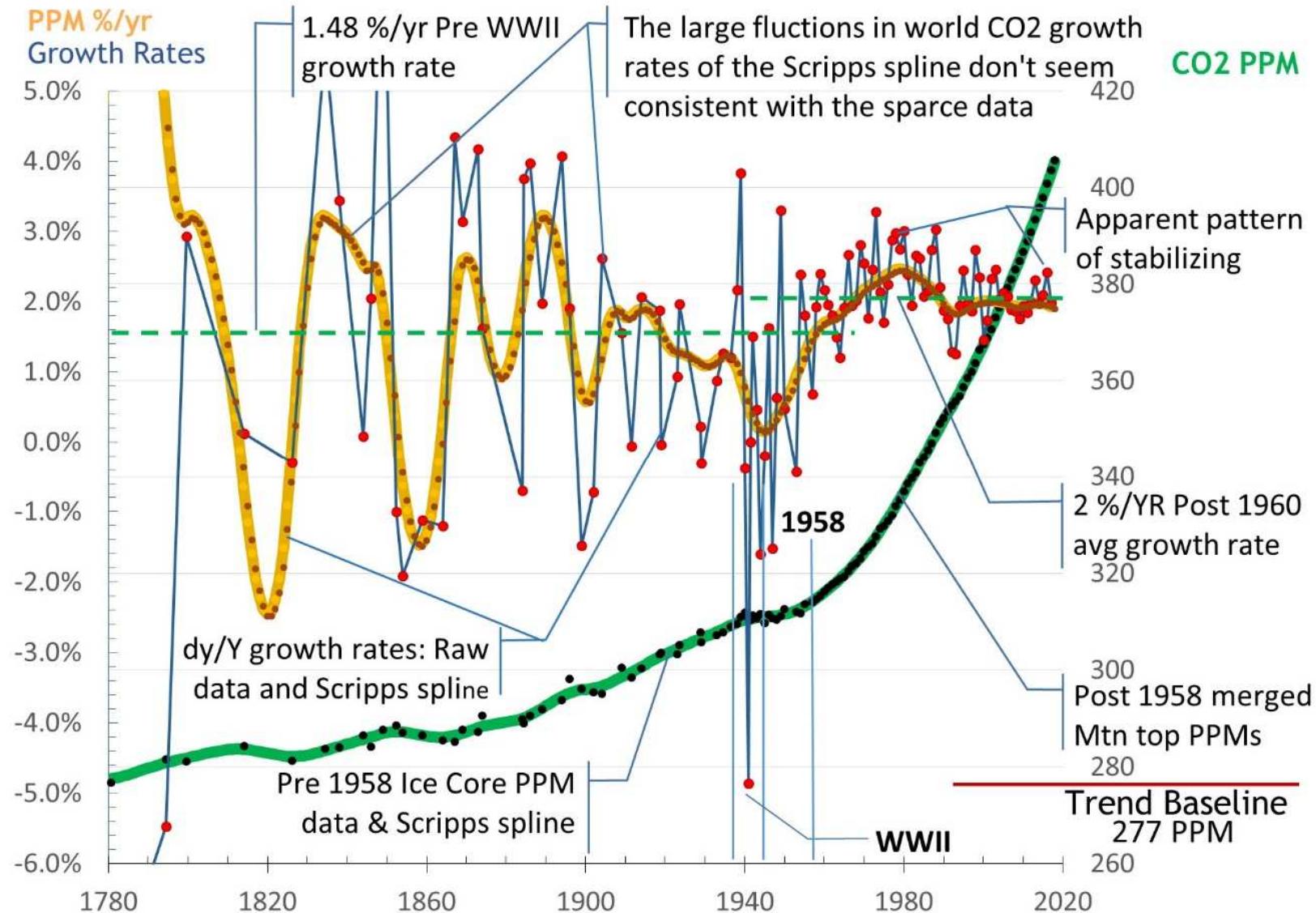


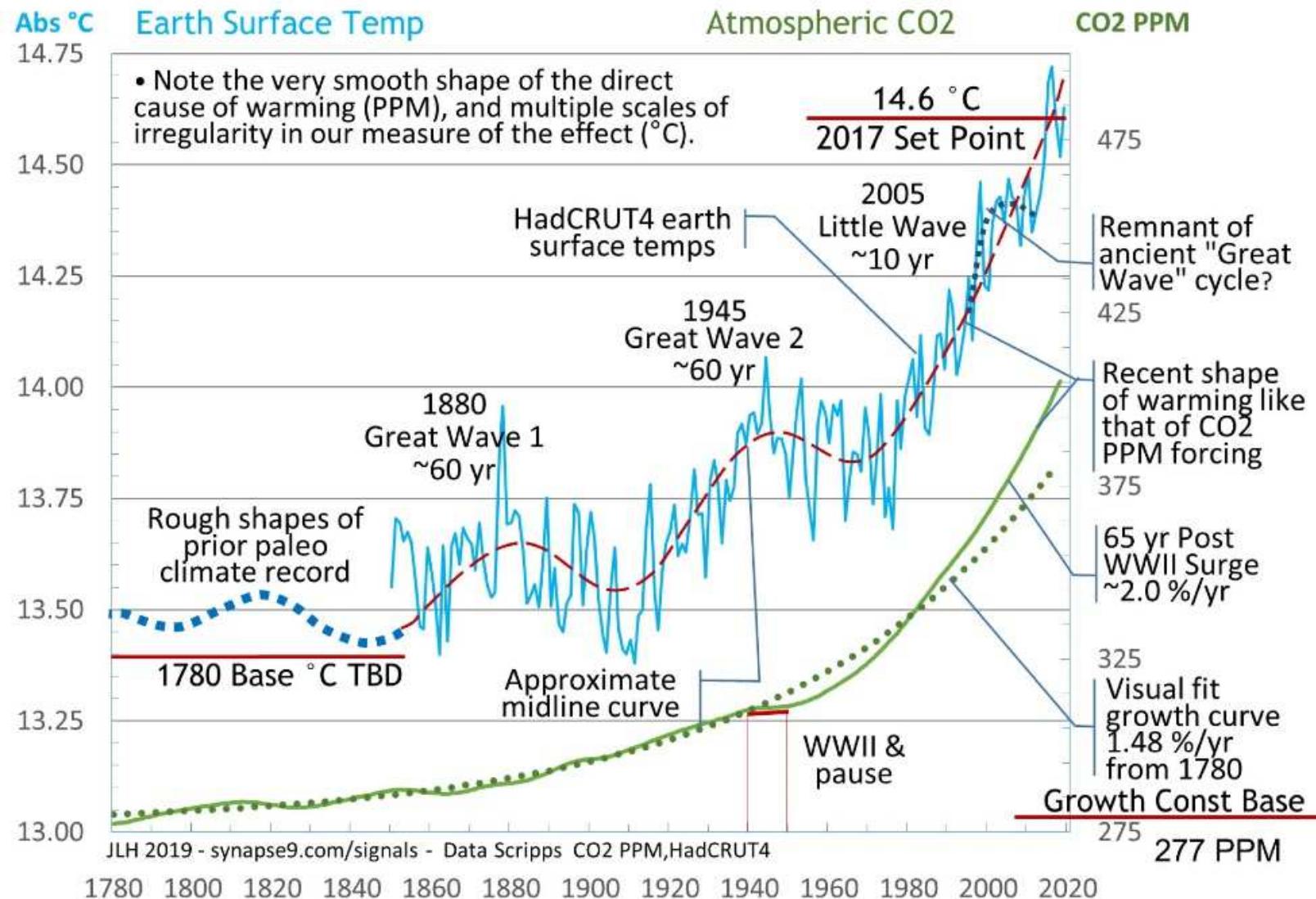
Growth Constants of the World Economy Indexed by Growth Rate

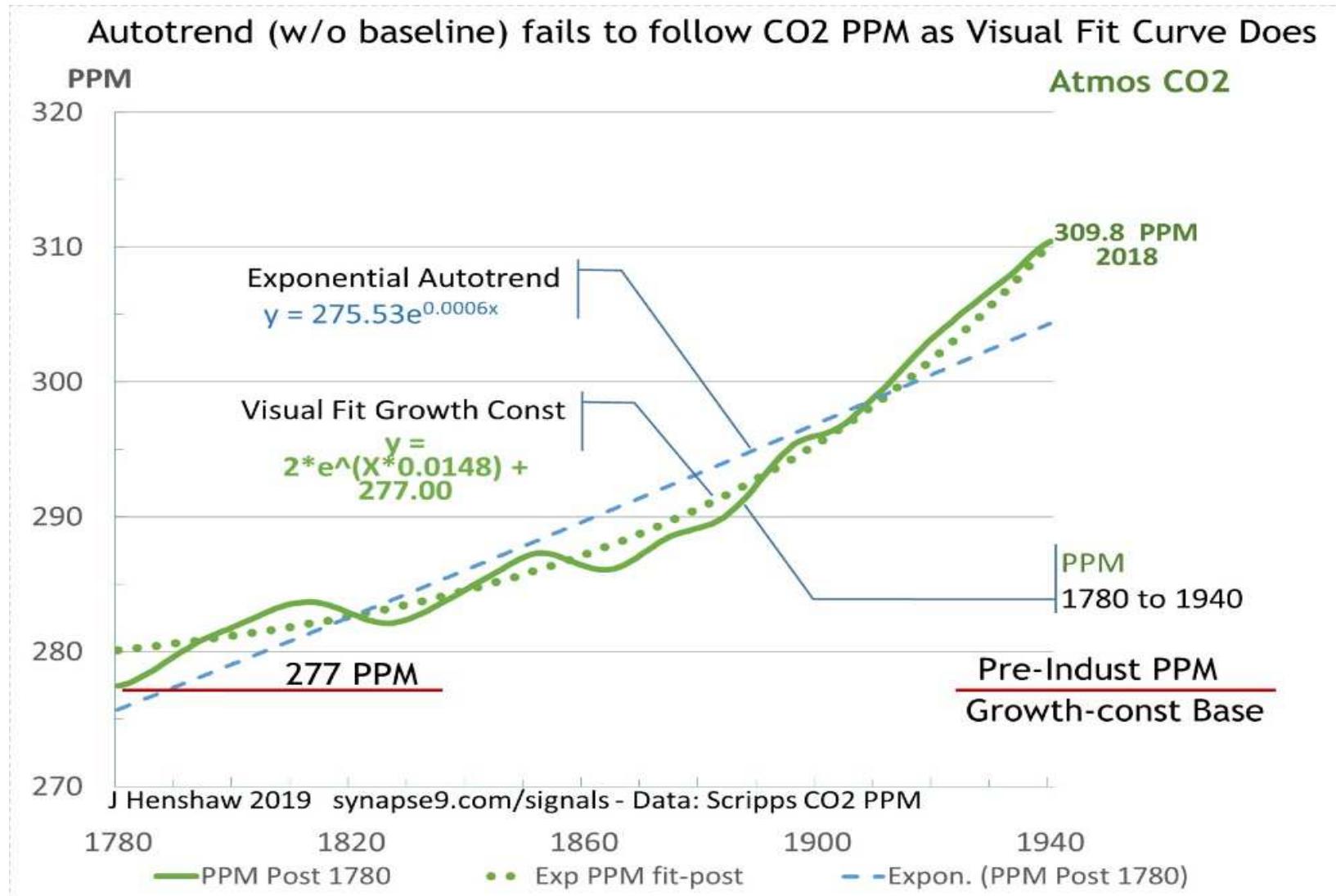
Components indexed to GDP(PPP) at 1971 proportional to relative growth rates

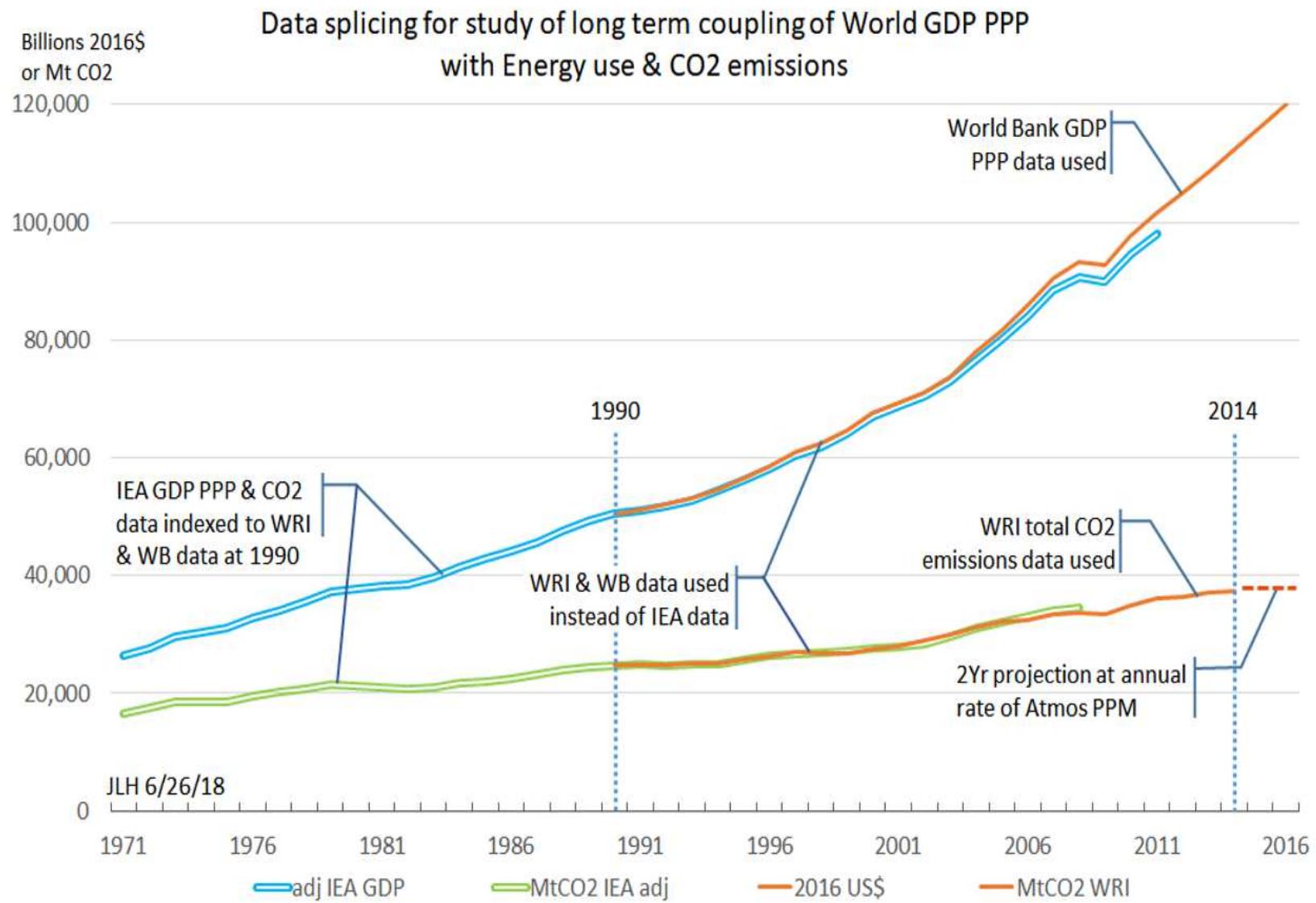


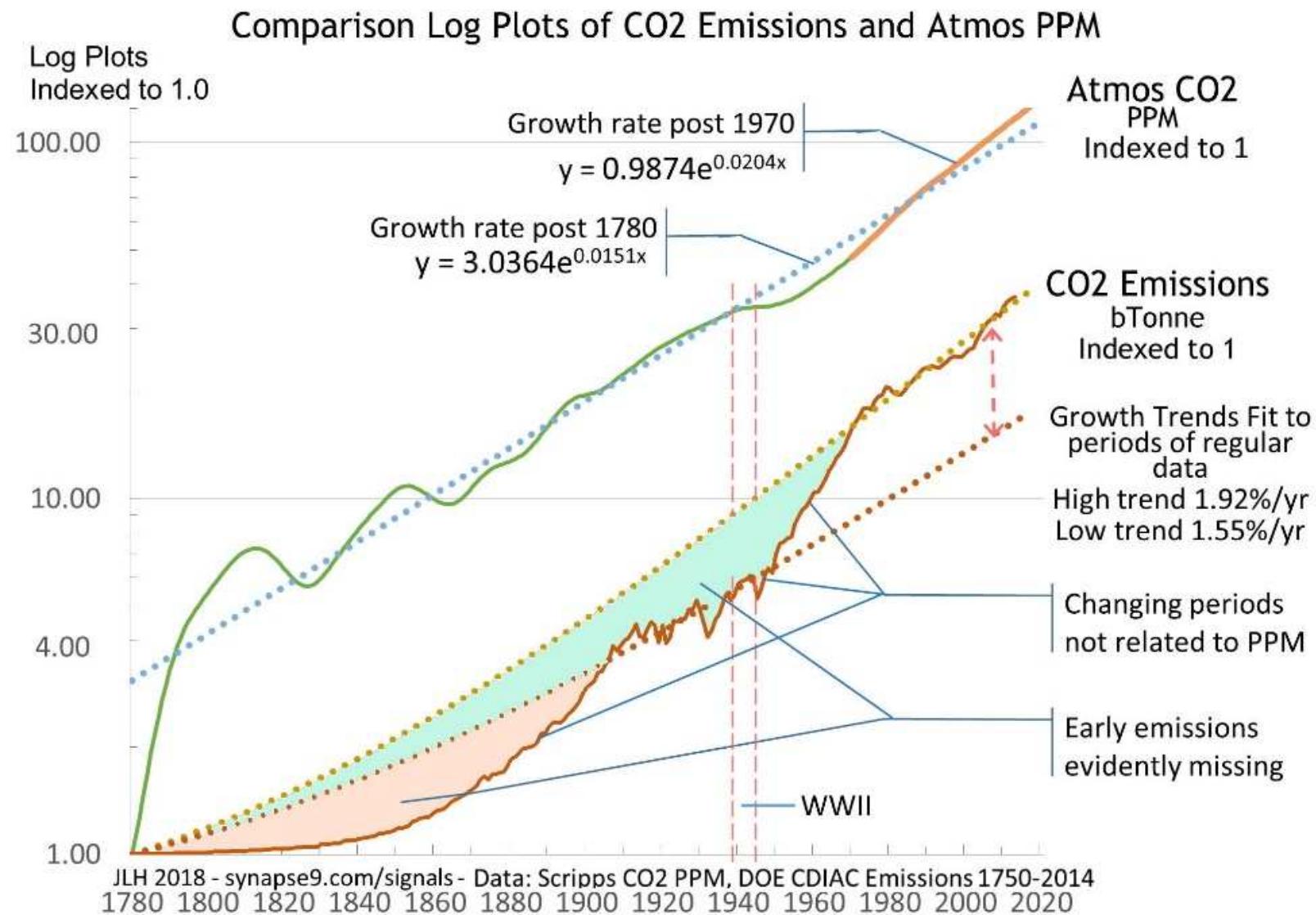






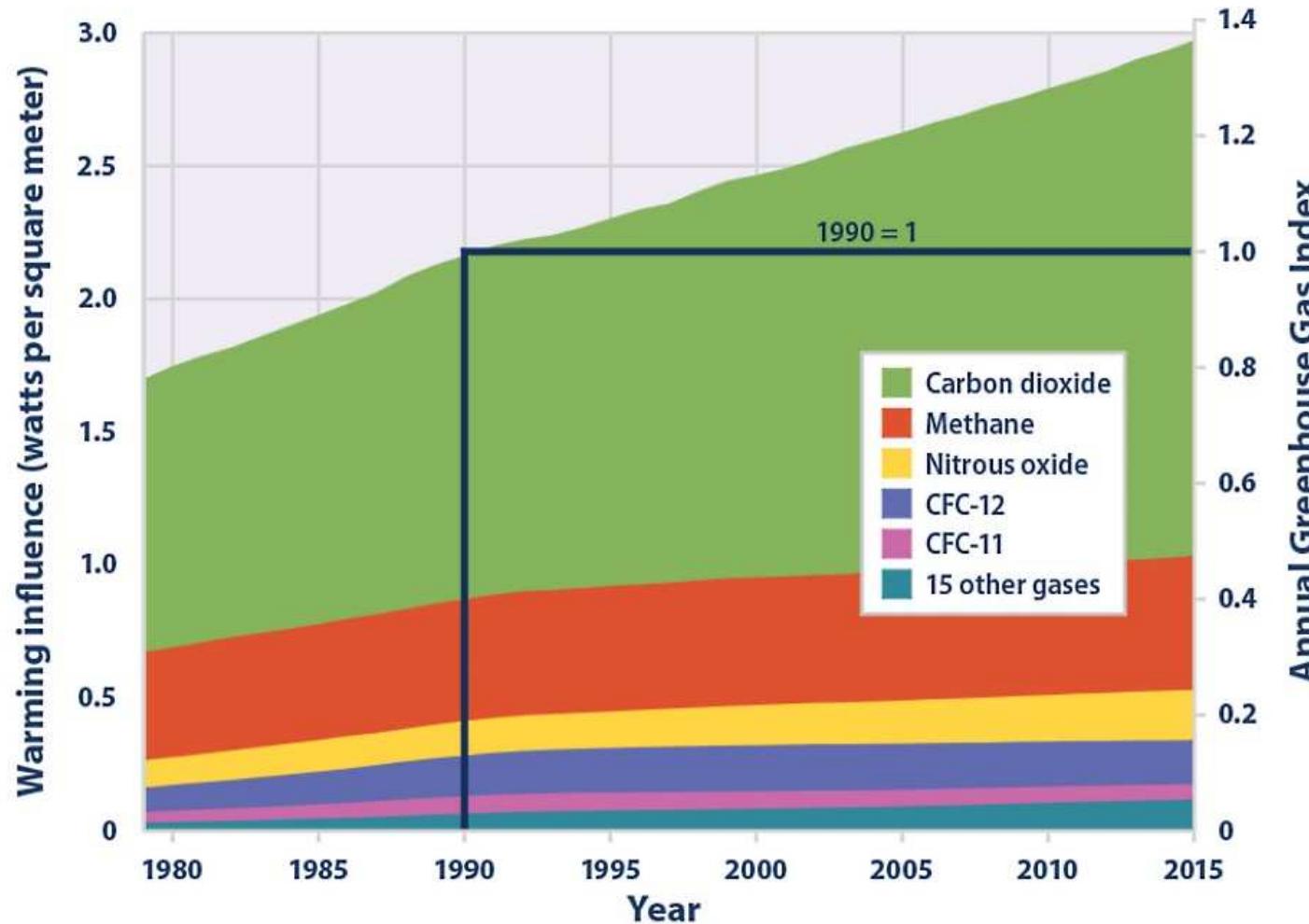


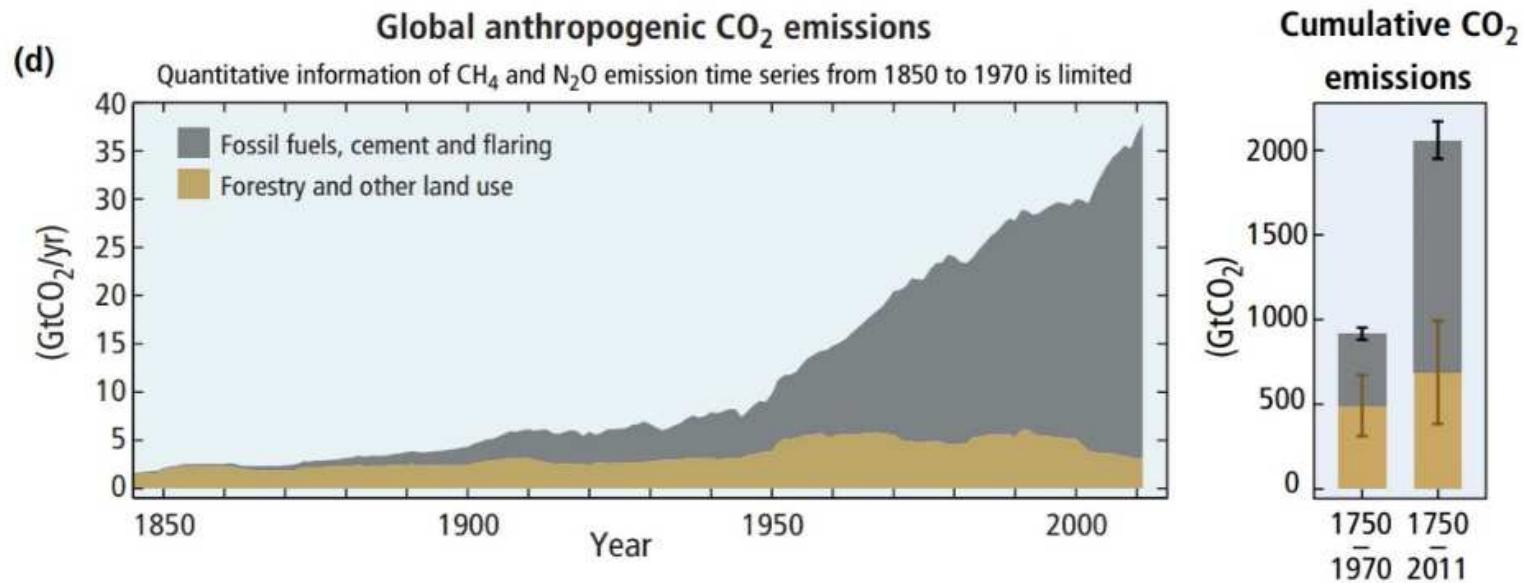


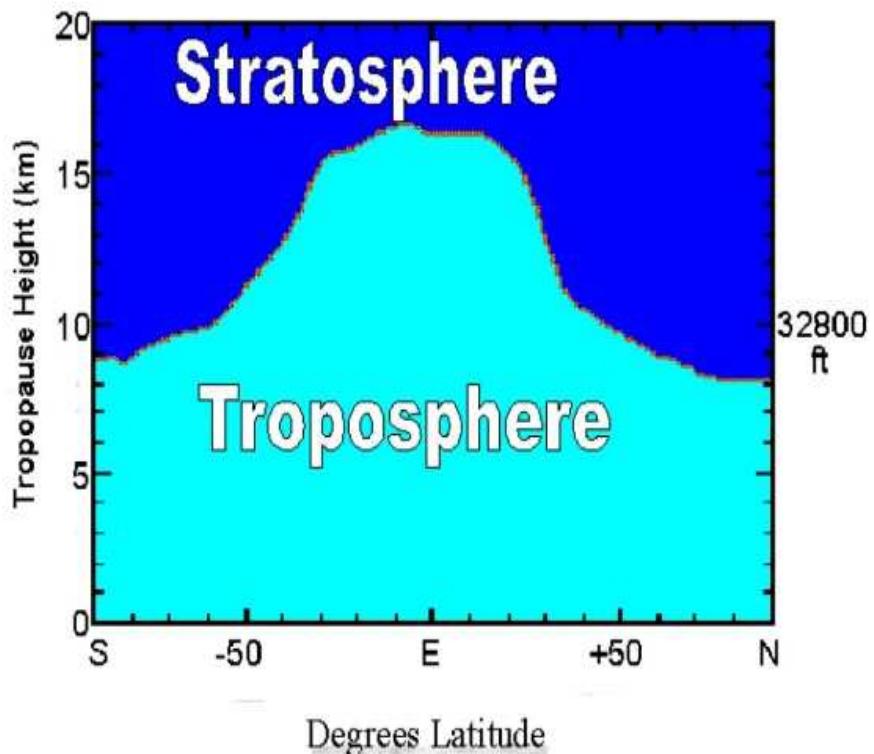
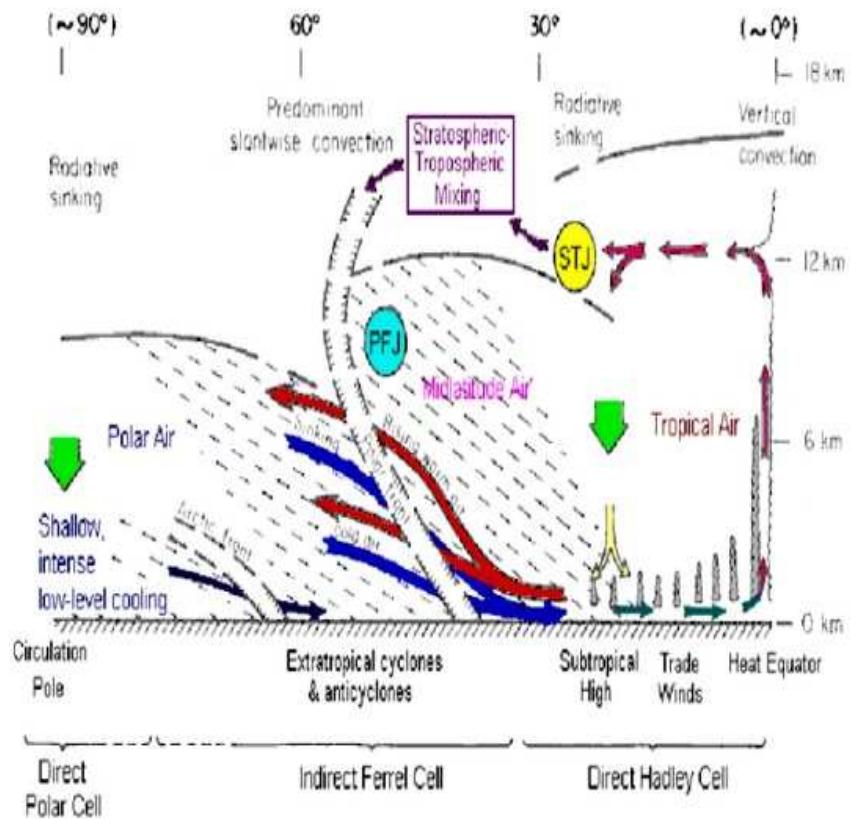


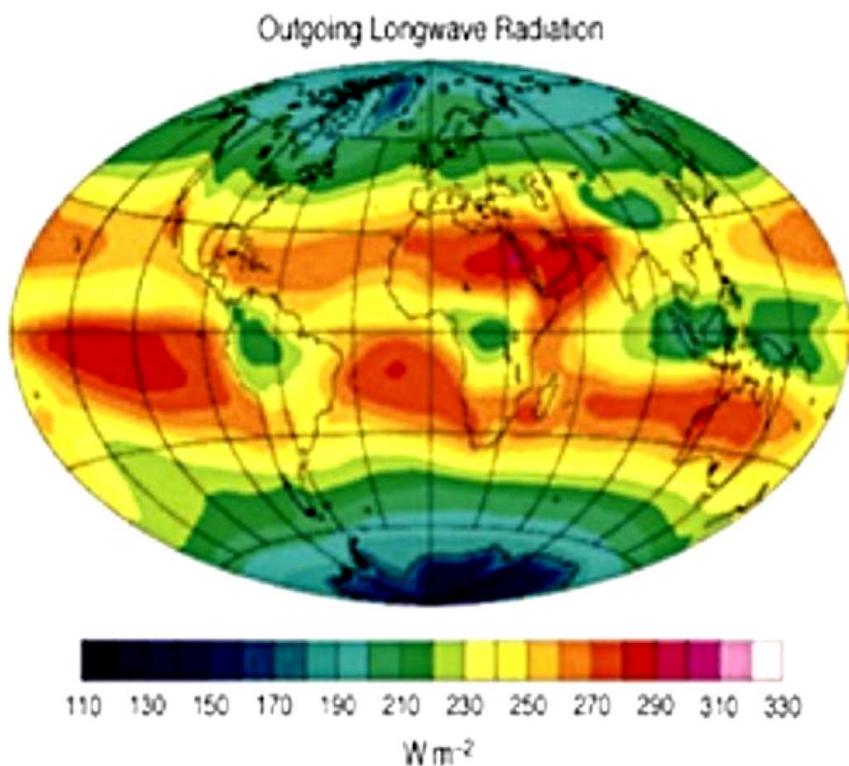
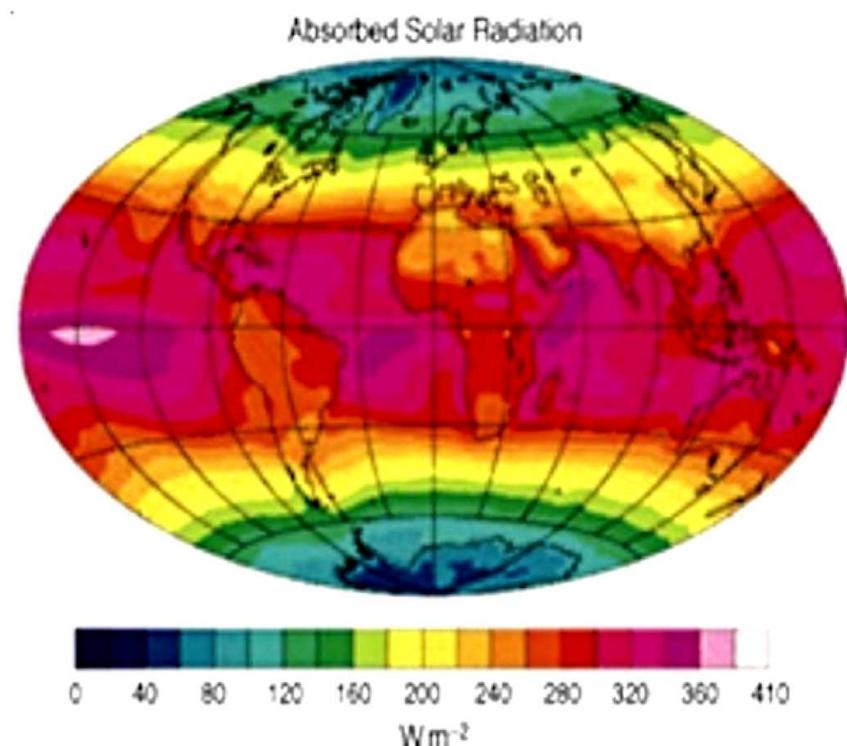
(EPA 2017)

Figure 1. Radiative Forcing Caused by Major Long-Lived Greenhouse Gases, 1979-2015

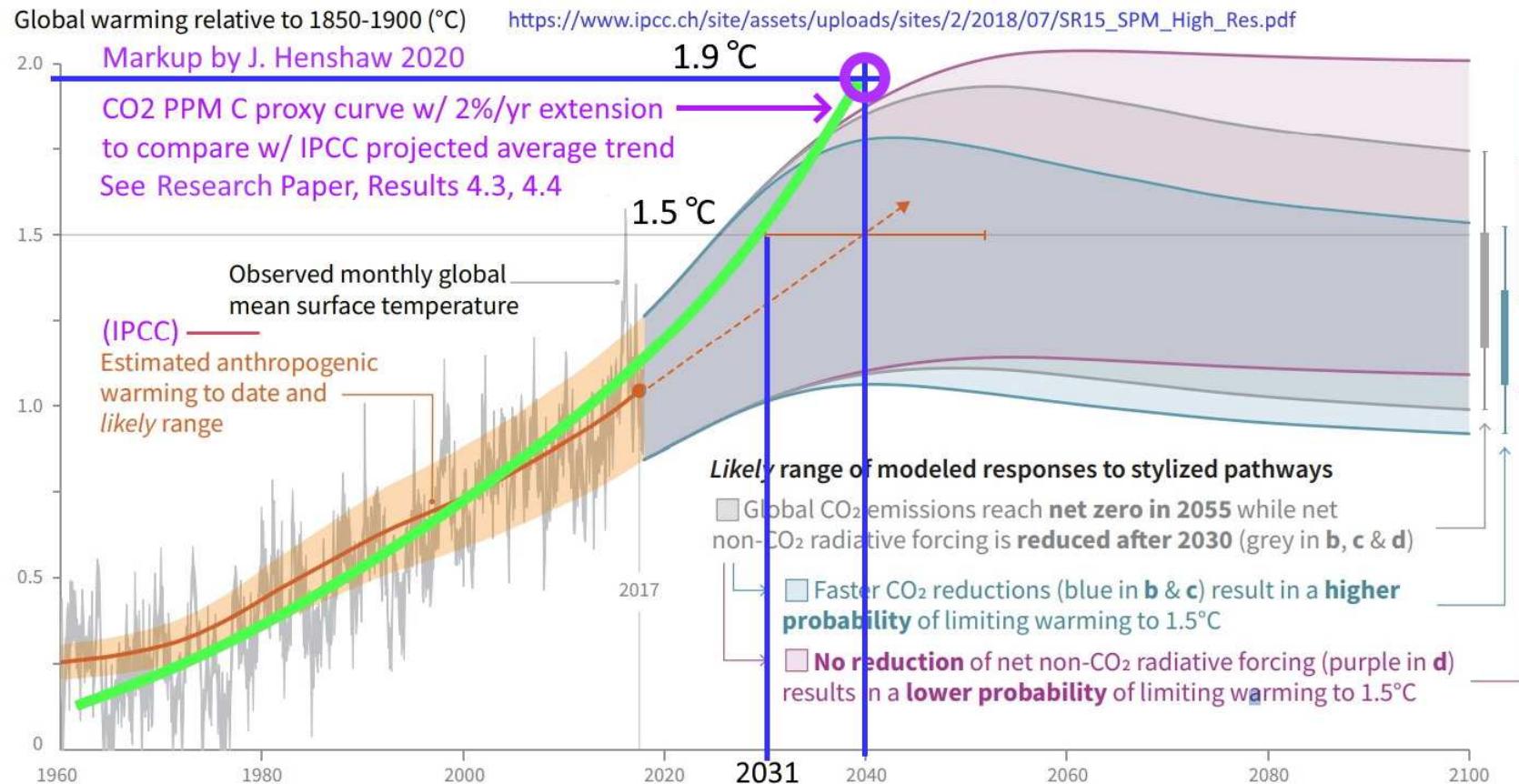


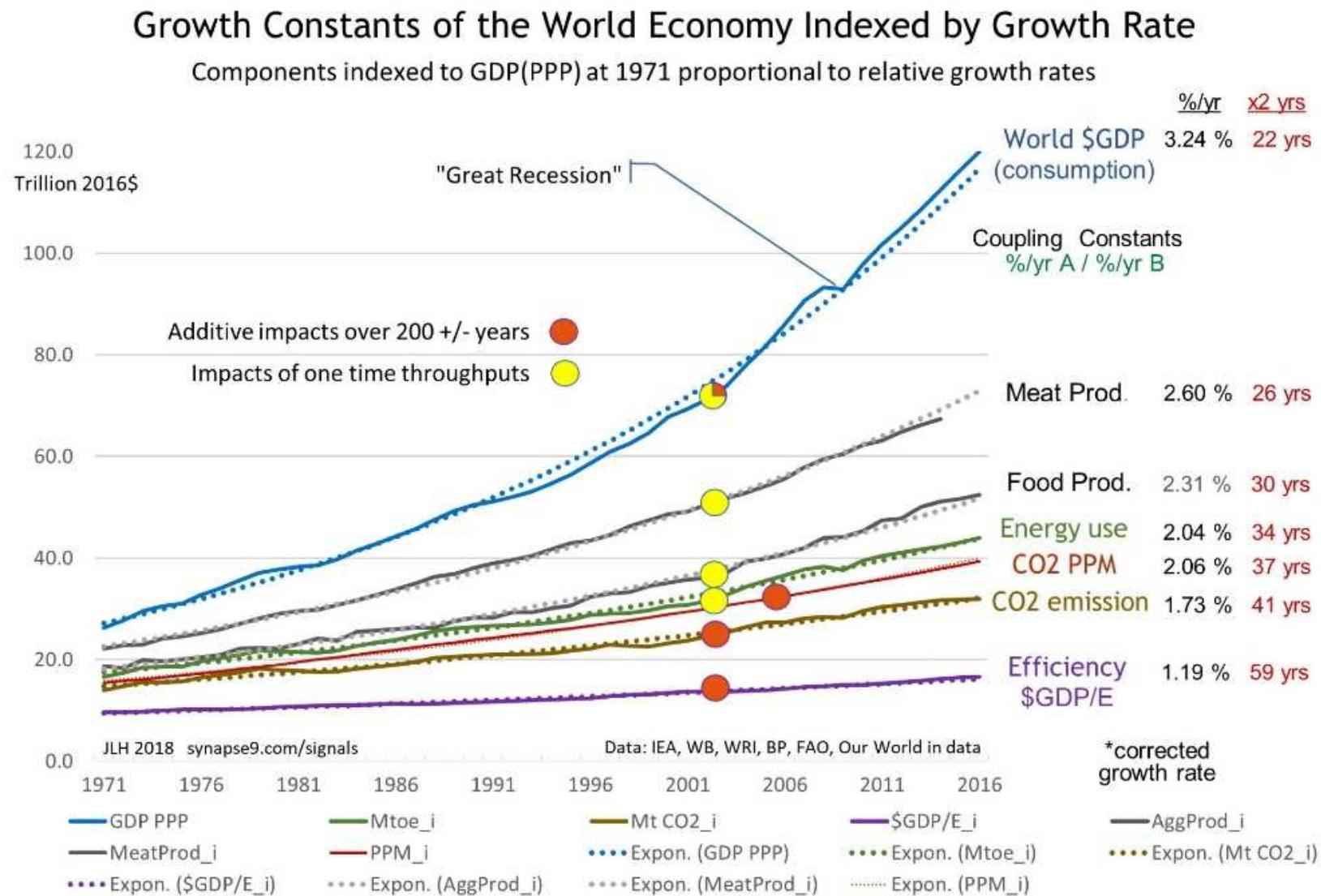


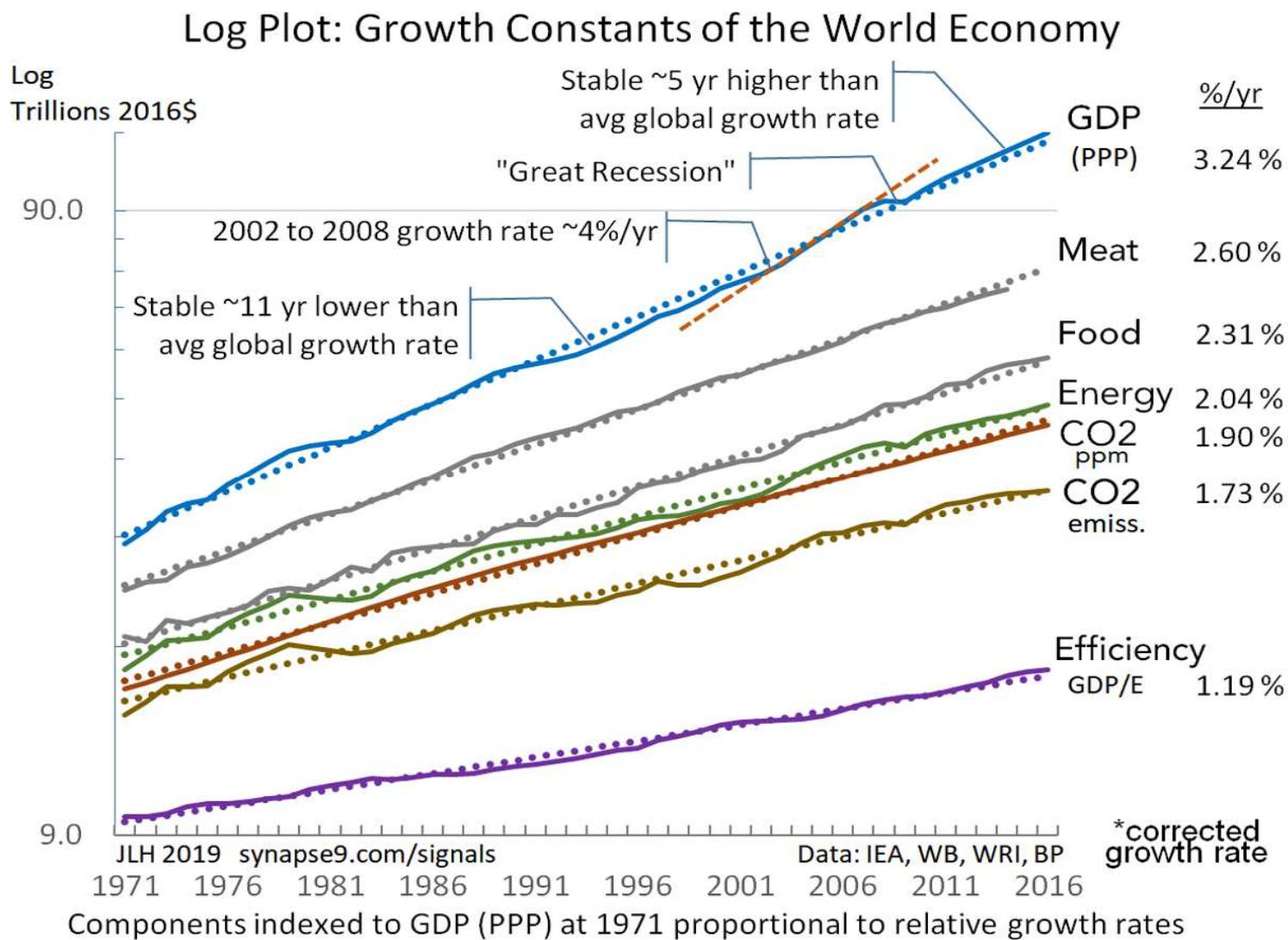




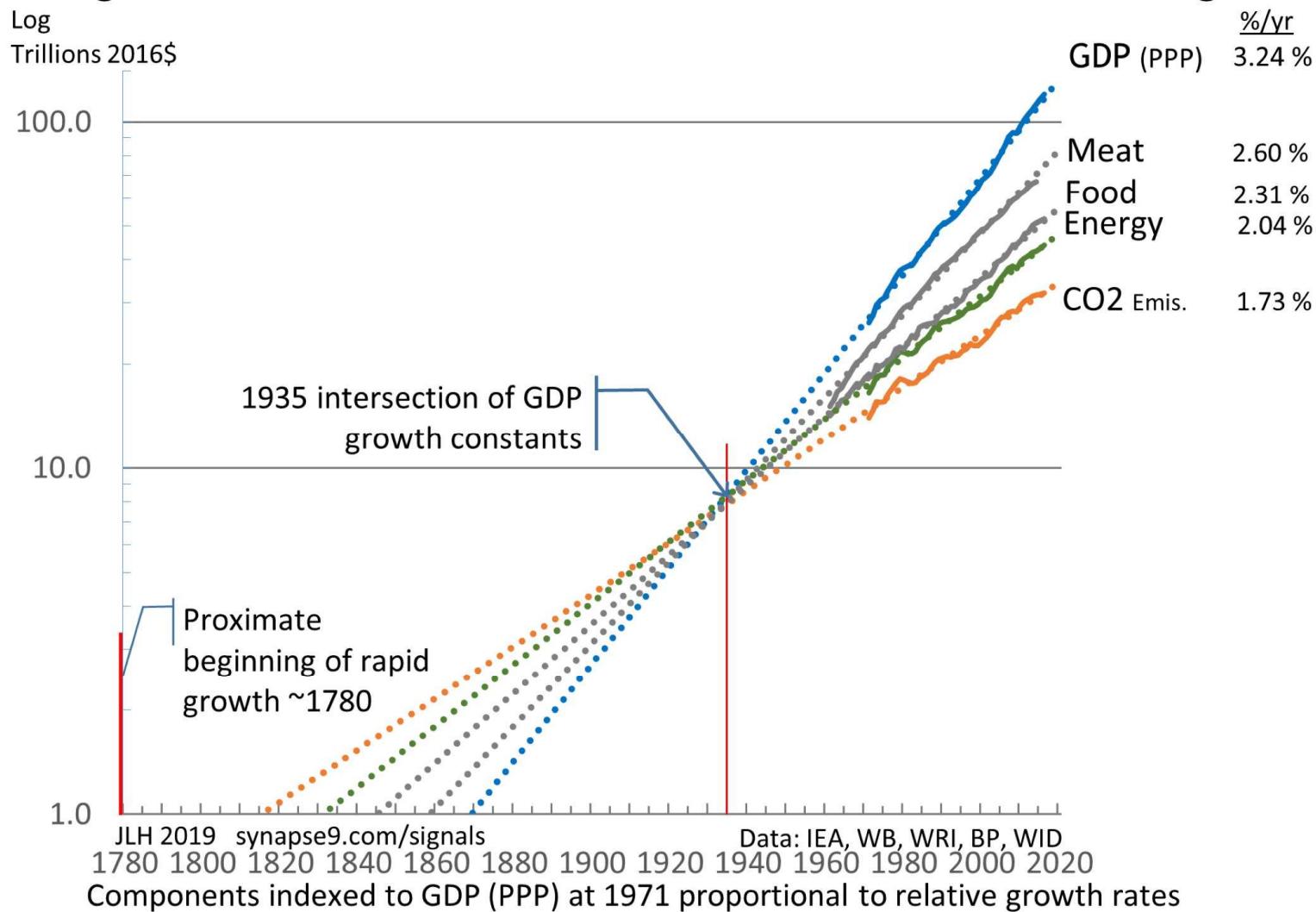
a) Observed global temperature change and modeled responses to stylized anthropogenic emission and forcing pathways







Log Plot: World Growth Constants Backcast to Show Virtual Origin



Log plot: Environ Var's Indexed to GDP and Backcast to Virtual Origin

Log Plot

Trillions 2016\$ - components indexed to GDP at 1971,
in proportion to relative growth rates

