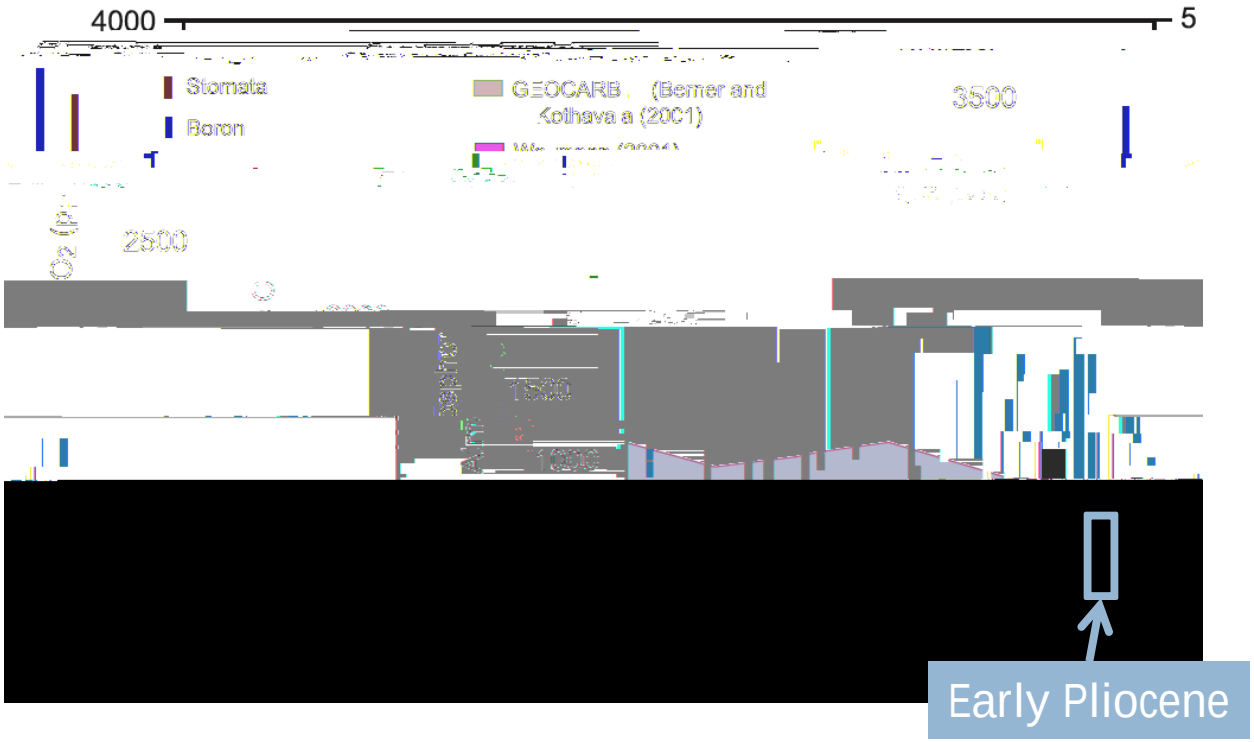
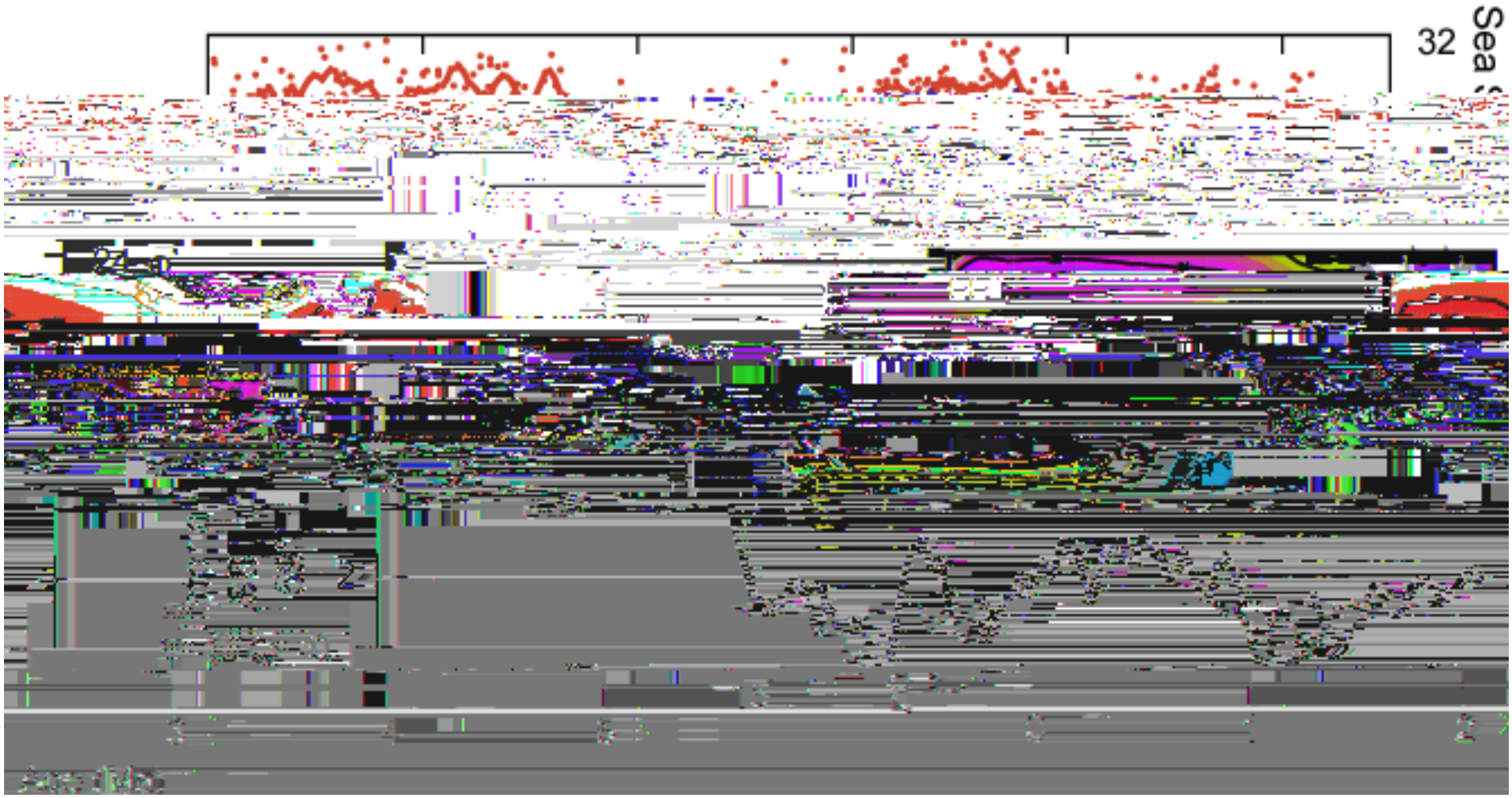
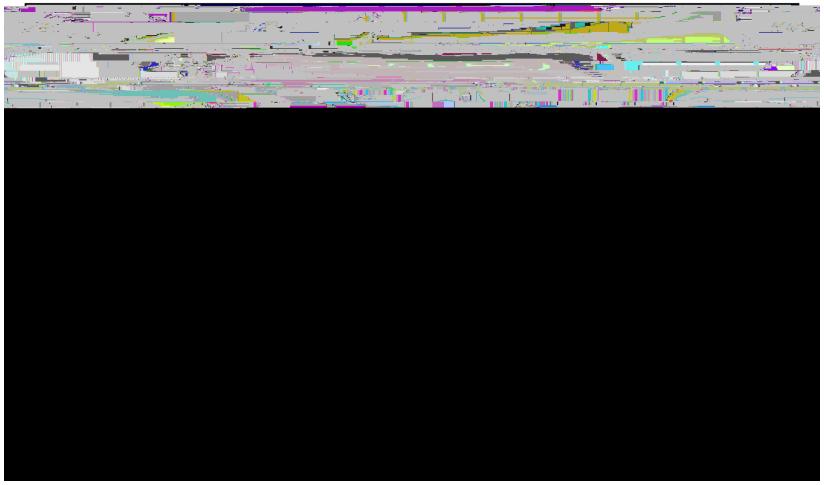

Early
Messinian
Tortonian
Serravallian
Langhian
Burdigalian


4000
5
Stomata
Boron
GEOCARB . (Berner and
Kothava a (2001)
3500
2500
Early Pliocene

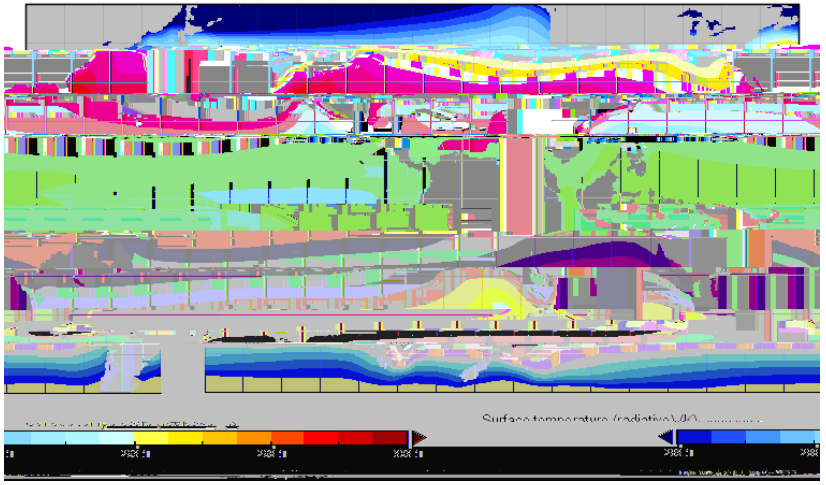
Wara"s Permanent El Niño

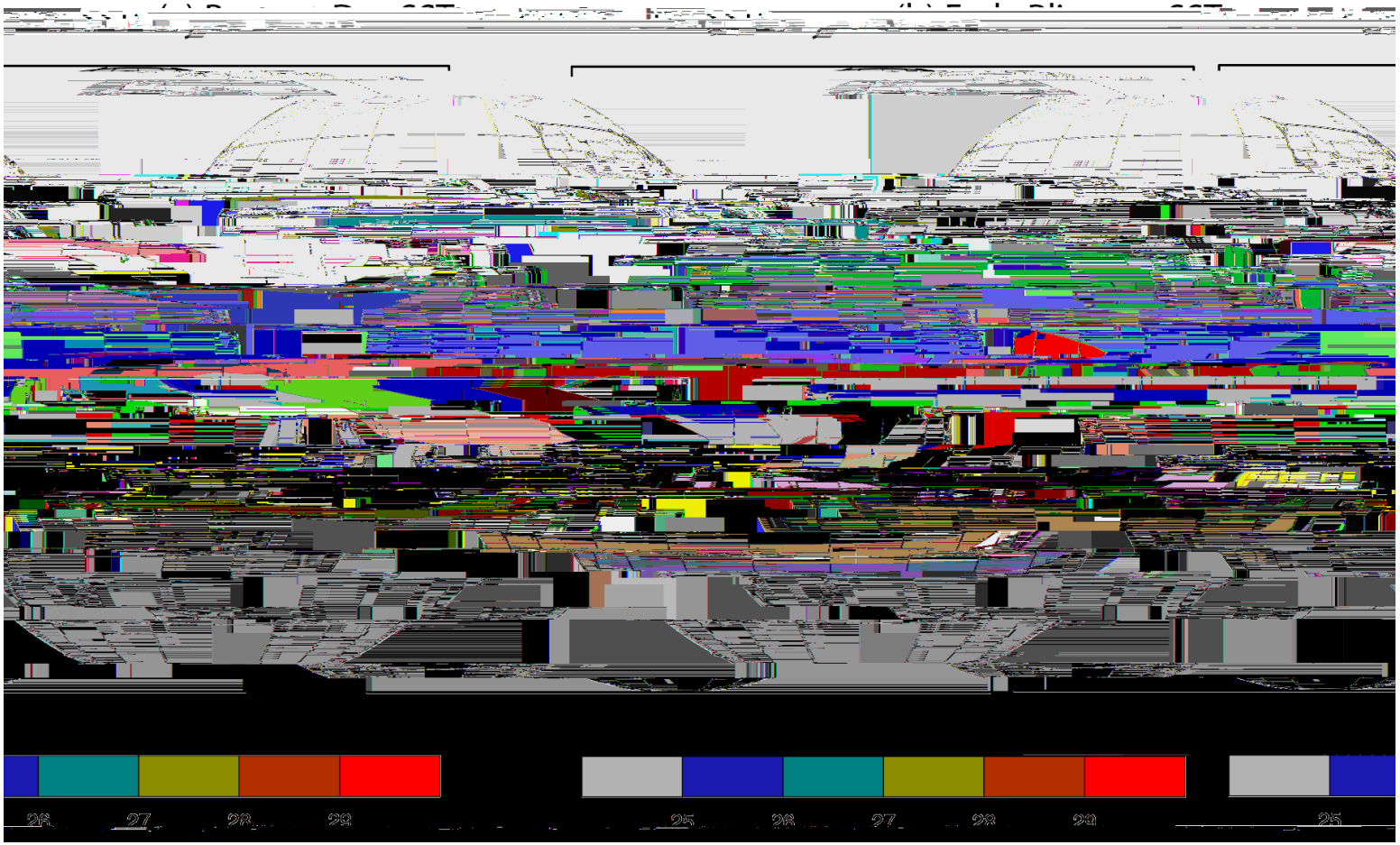


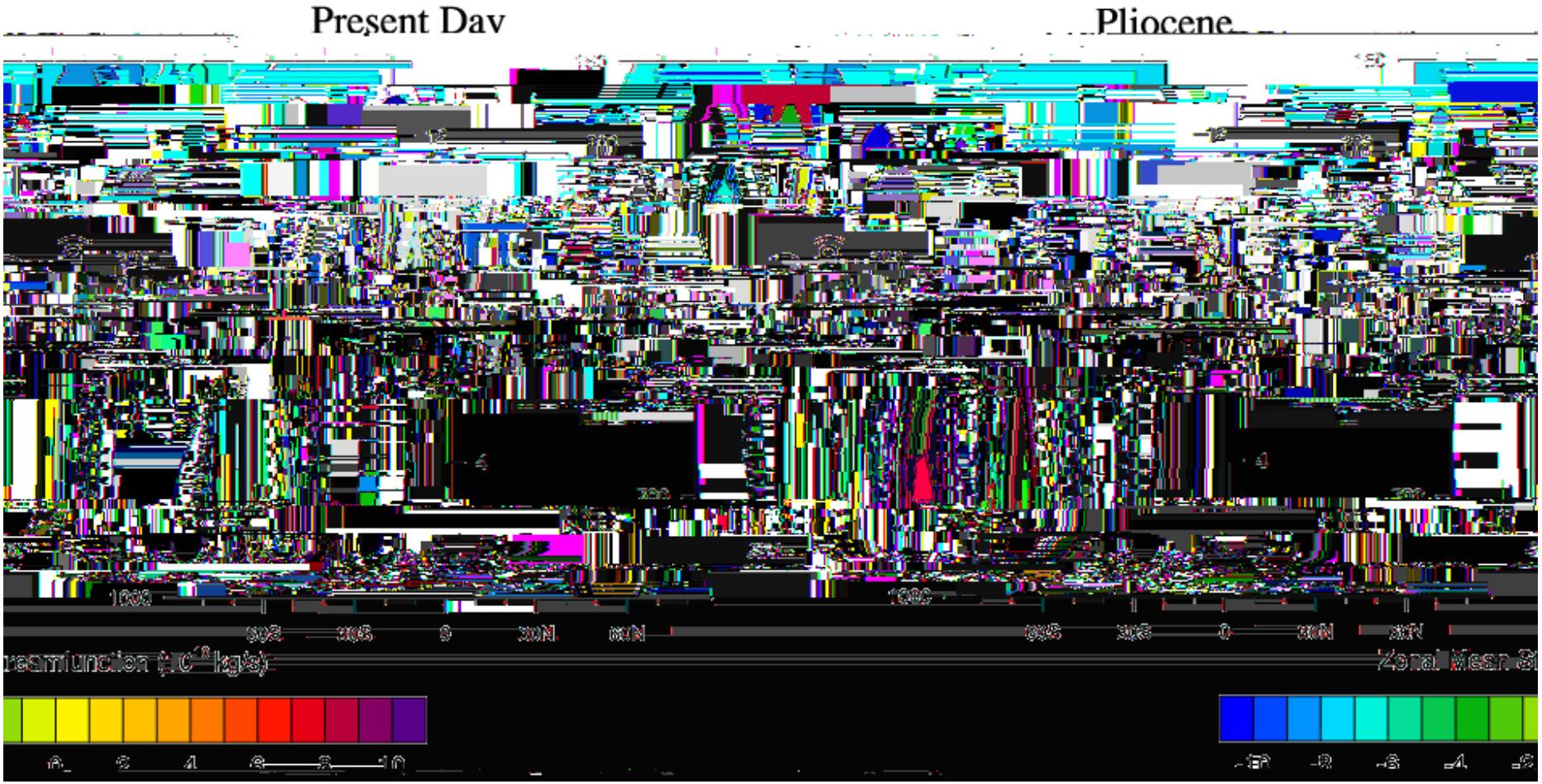
Present Day with Pliocene Obs.



Simulation with Quadrupled CO_2

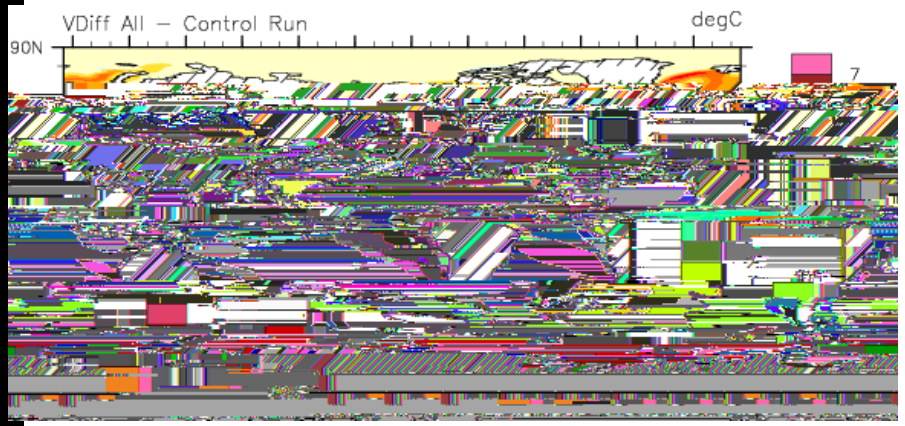


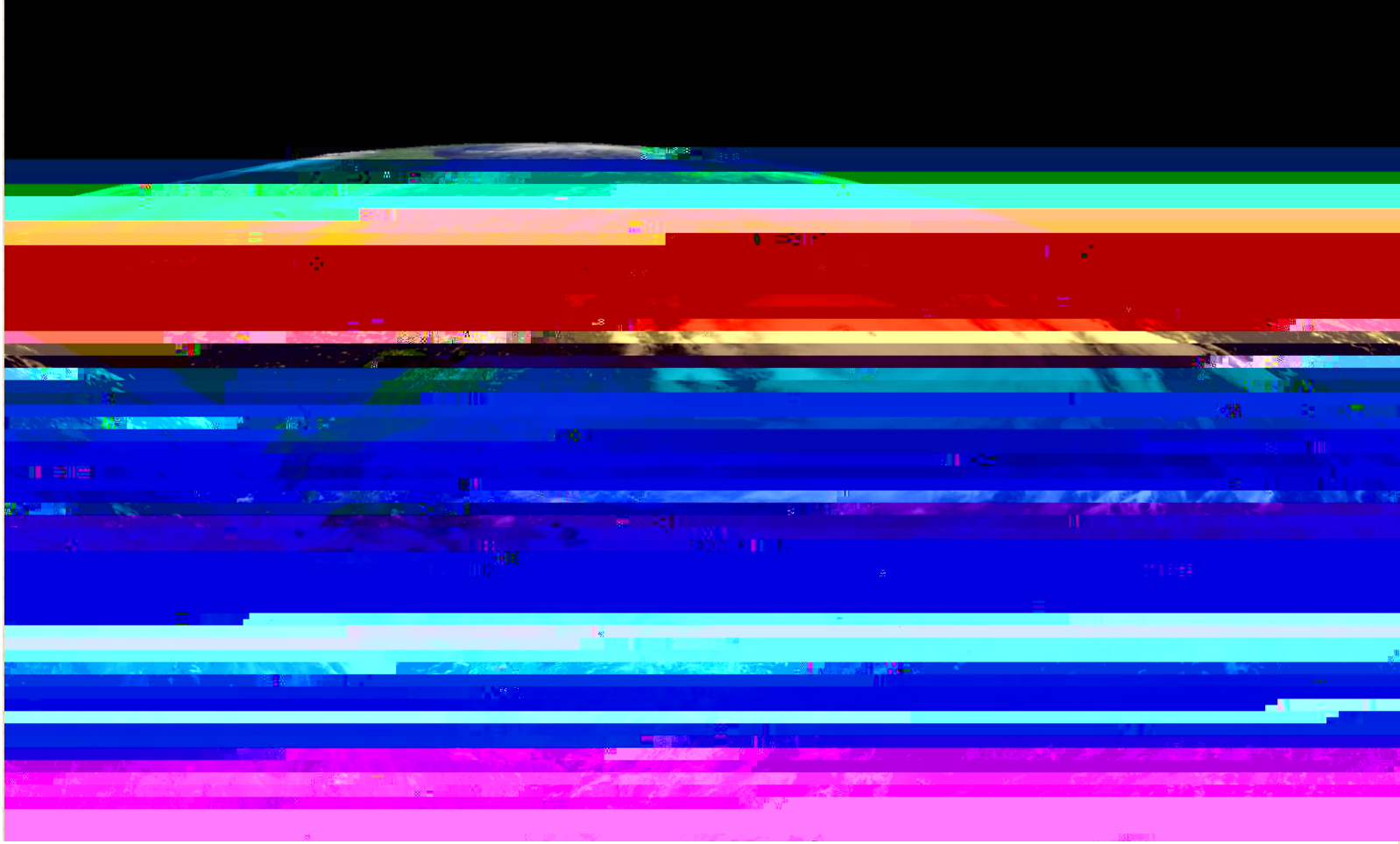



Present Dav
Pliocene

Sea Surface Temperature (10x, ctl)

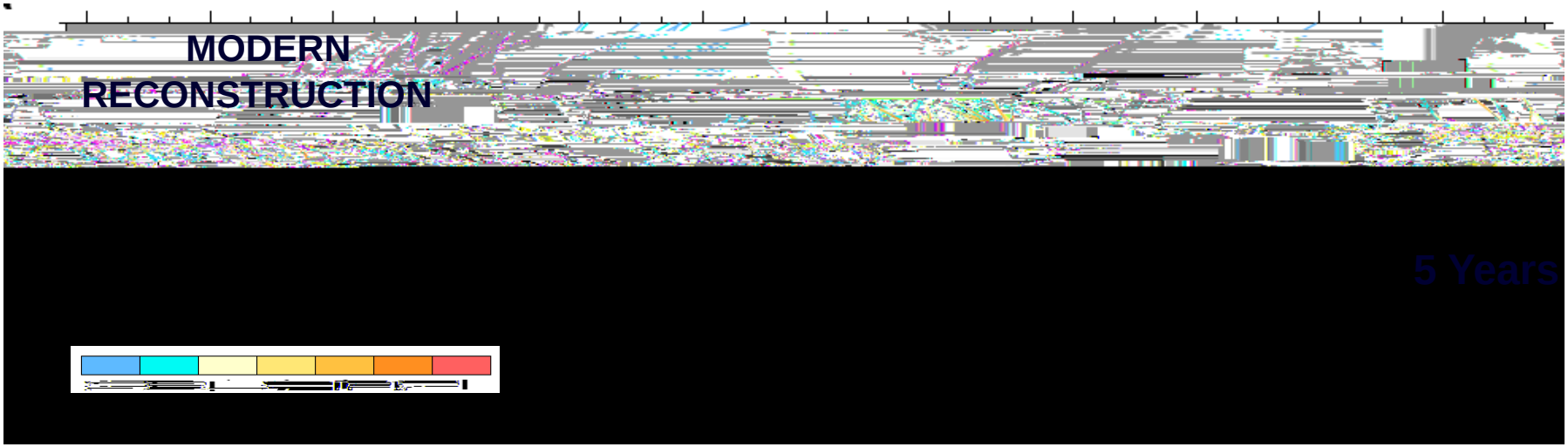
Difference



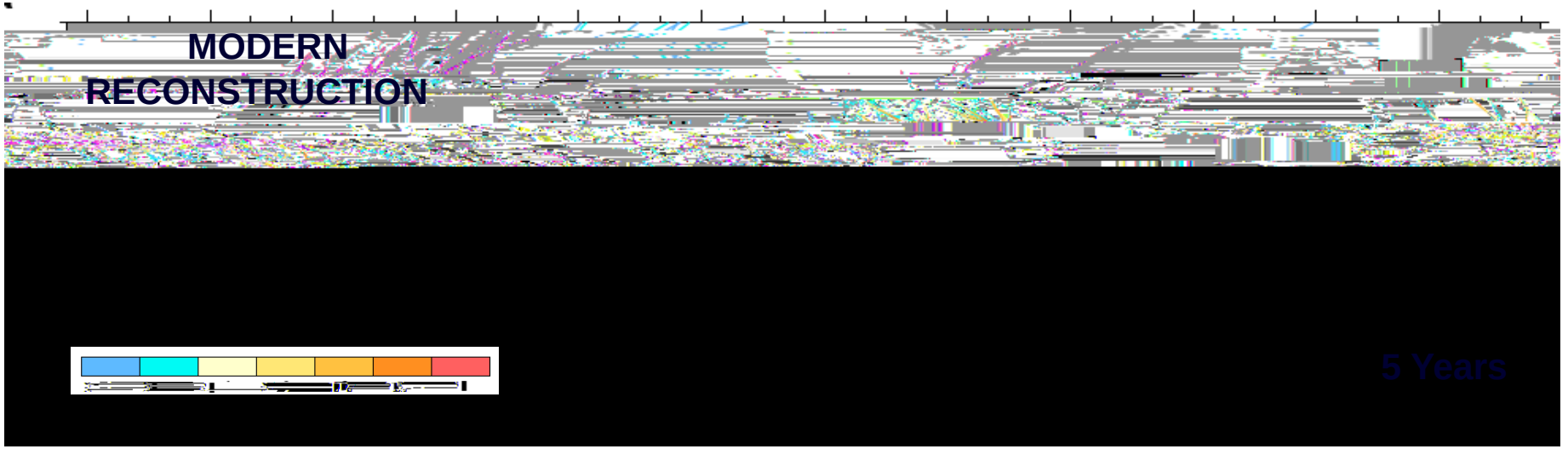


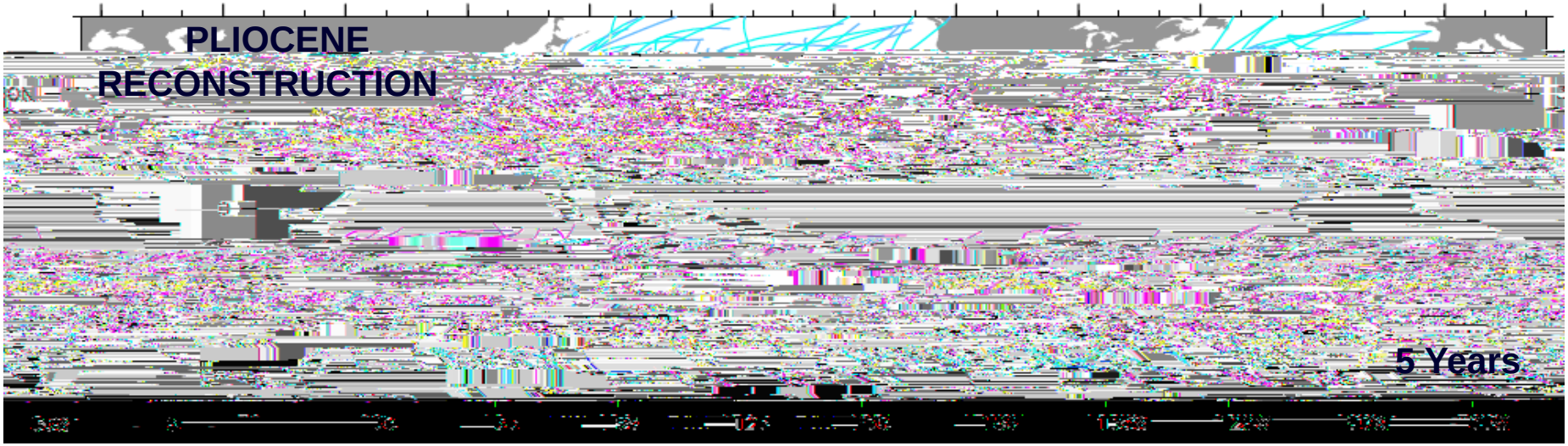
Fatalities from the 7 major cyclone events (> 10,000 deaths) from 1584 up to Cyclone Nargis compiled from the Emergency Events Database (EM-DAT) and other sources with storm track and wind speed compared against 2004 Indian Ocean tsunami deaths. Additional cyclone track: 2006 Cyclone Mala with 22 deaths in Myanmar. *Fritz et al. Nature Geosci. (2009)*

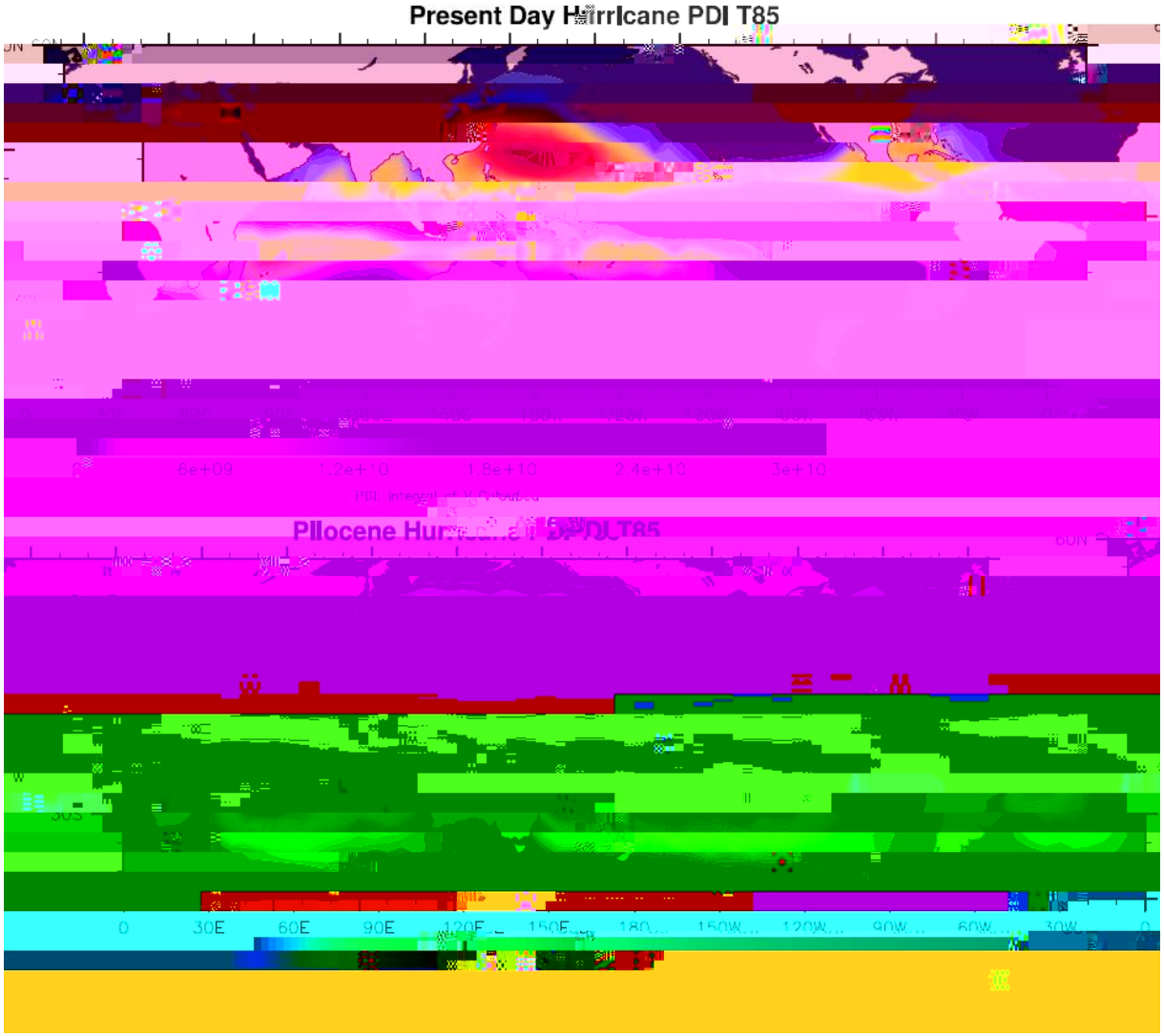
Pliocene was both warmer with weaker wind shear

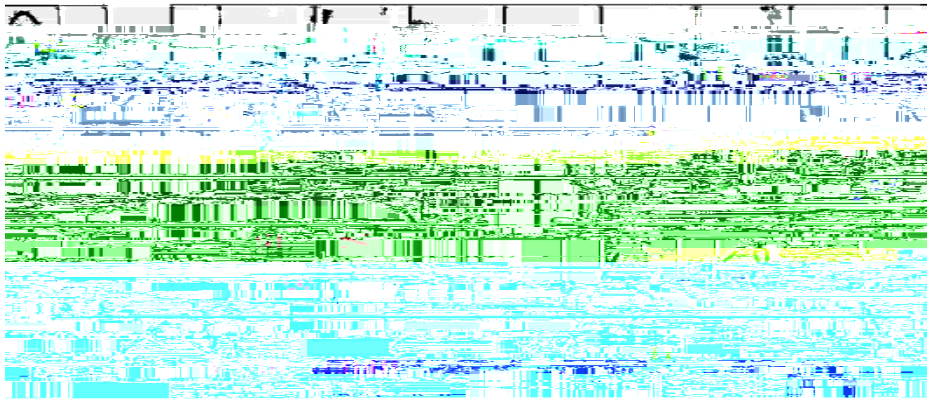


Tracks of tropical cyclones, 1985-2005 (Wikipedia)

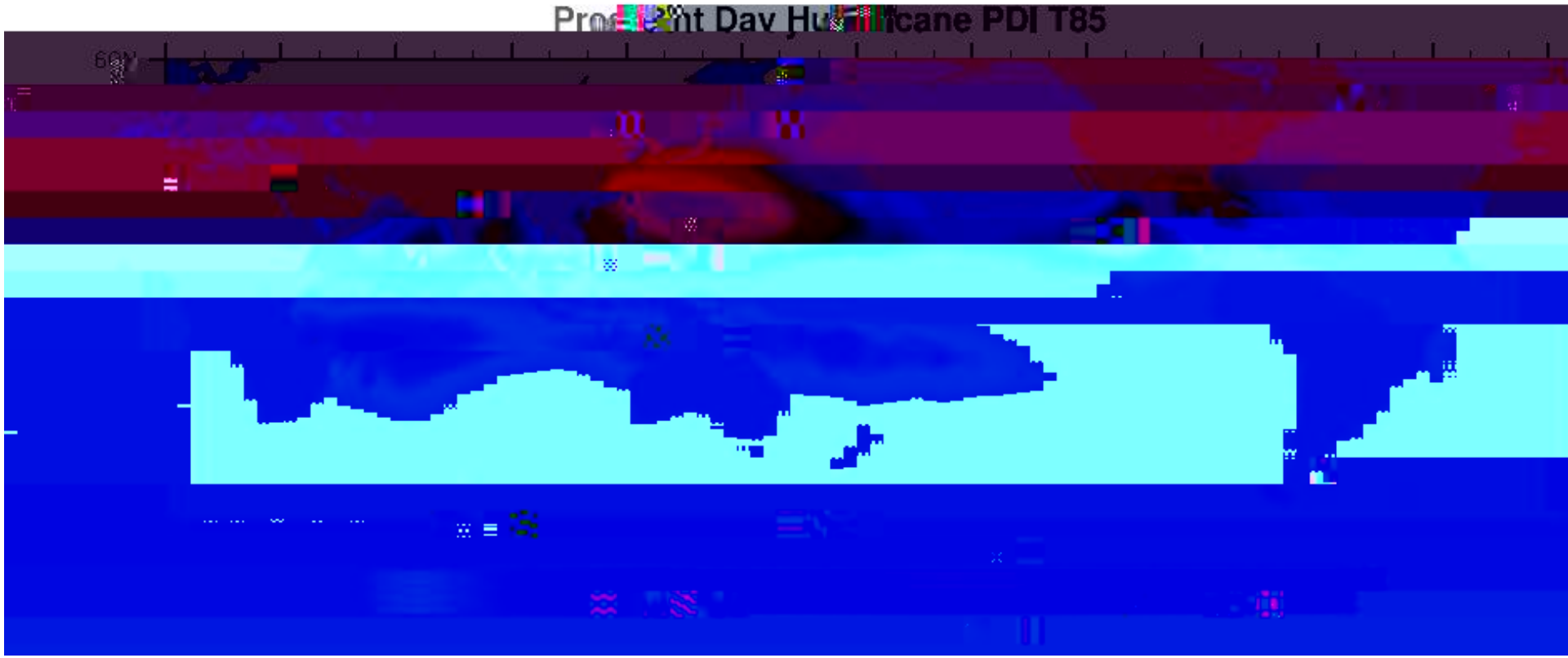

MODERN
RECONSTRUCTION
5 Years


PLIOCENE
RECONSTRUCTION
5 Years

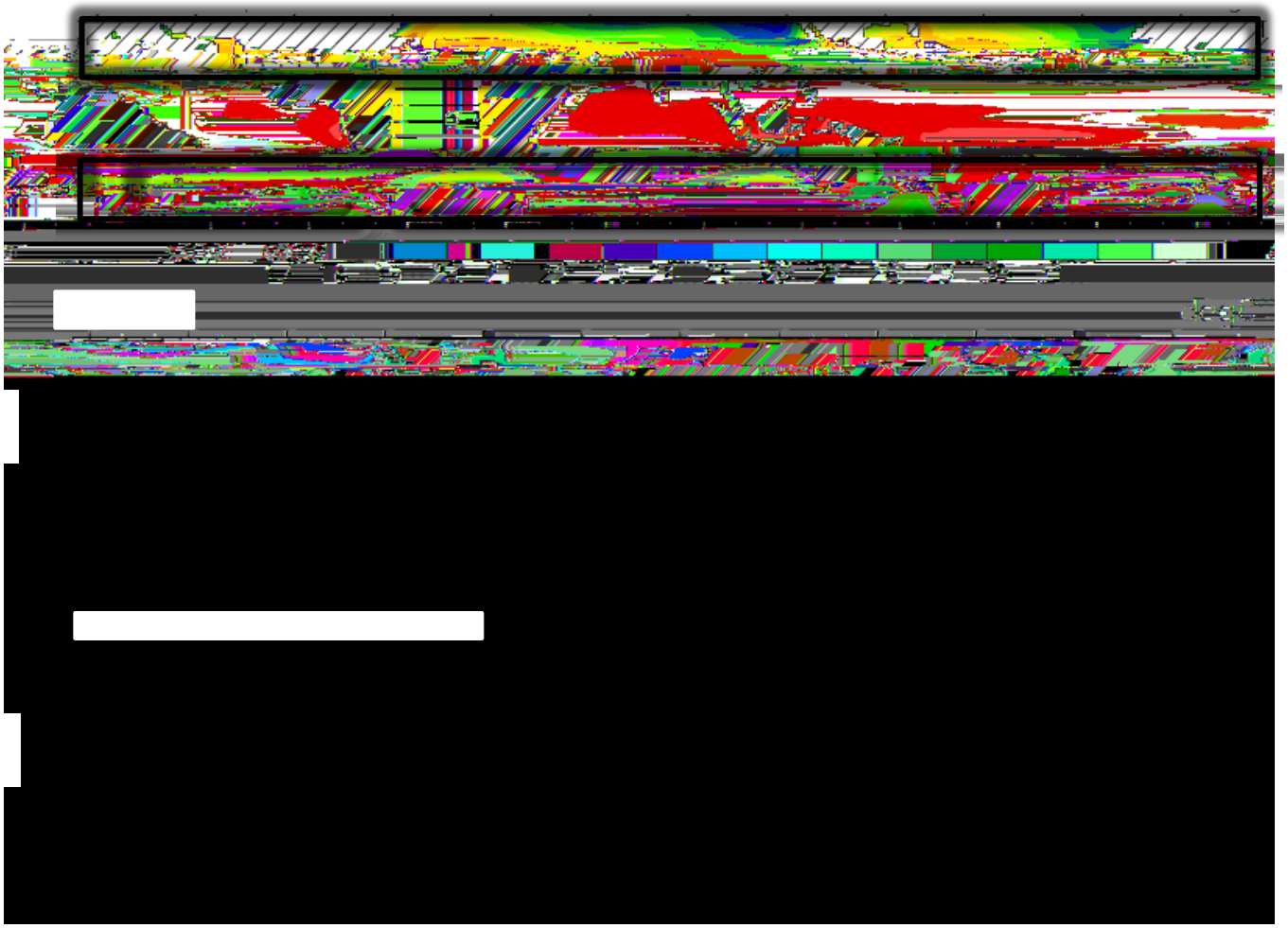

Present Day Hurricane PDI T85
0
6e+09
1.2e+10
1.8e+10
2.4e+10
3e+10
0
30E
60E
90E
120E
150E
180
150W
120W
90W
60W
30W
0

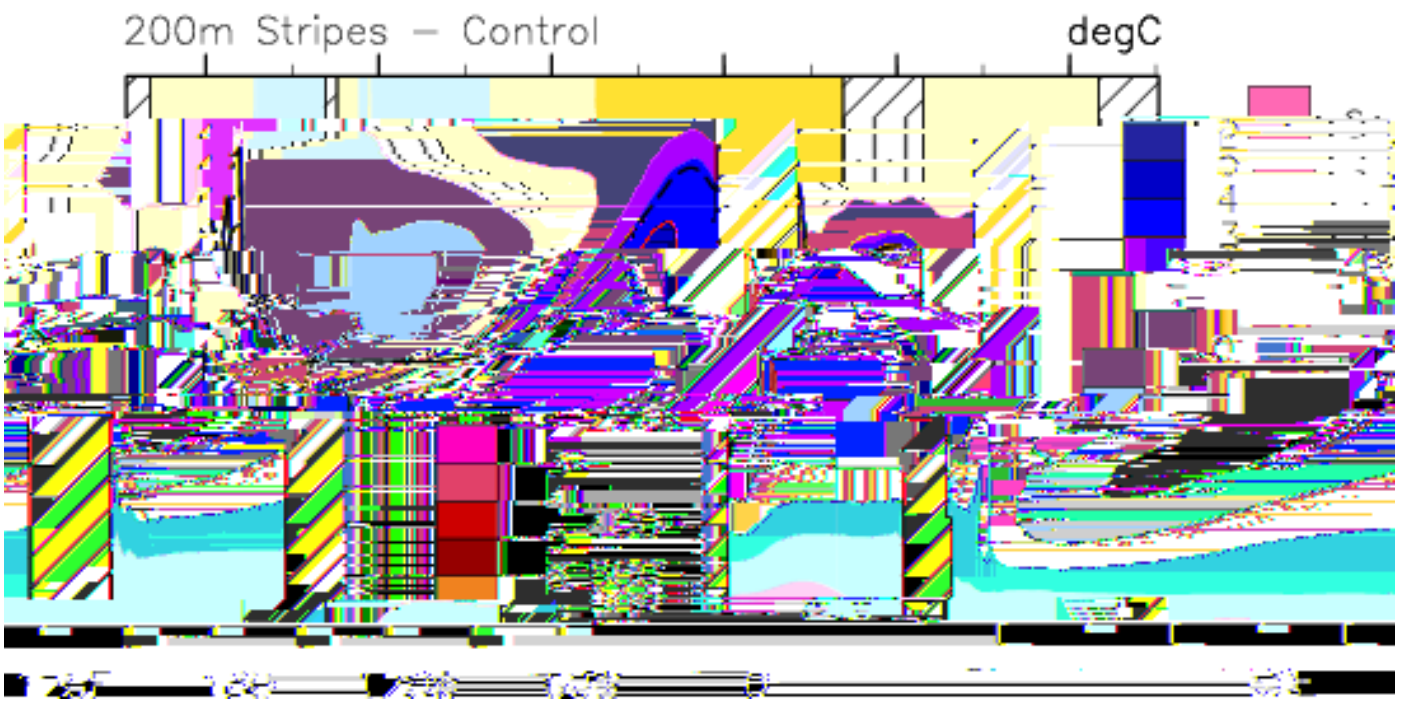


Philander „97


Present Day Hurricane PDI T85

Including “tropical cyclone” mixing





Solid line: 20°C isotherm in mixing run
Dashed line: 20°C isotherm in control run