Mega Life, Mega Death, and the invisible hand of the Sun:

Towards a quasi-predictive model for the rise and fall of civilisations

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04Apr07

Figure 2: Predictible, smooth, long-term Galactic cycles
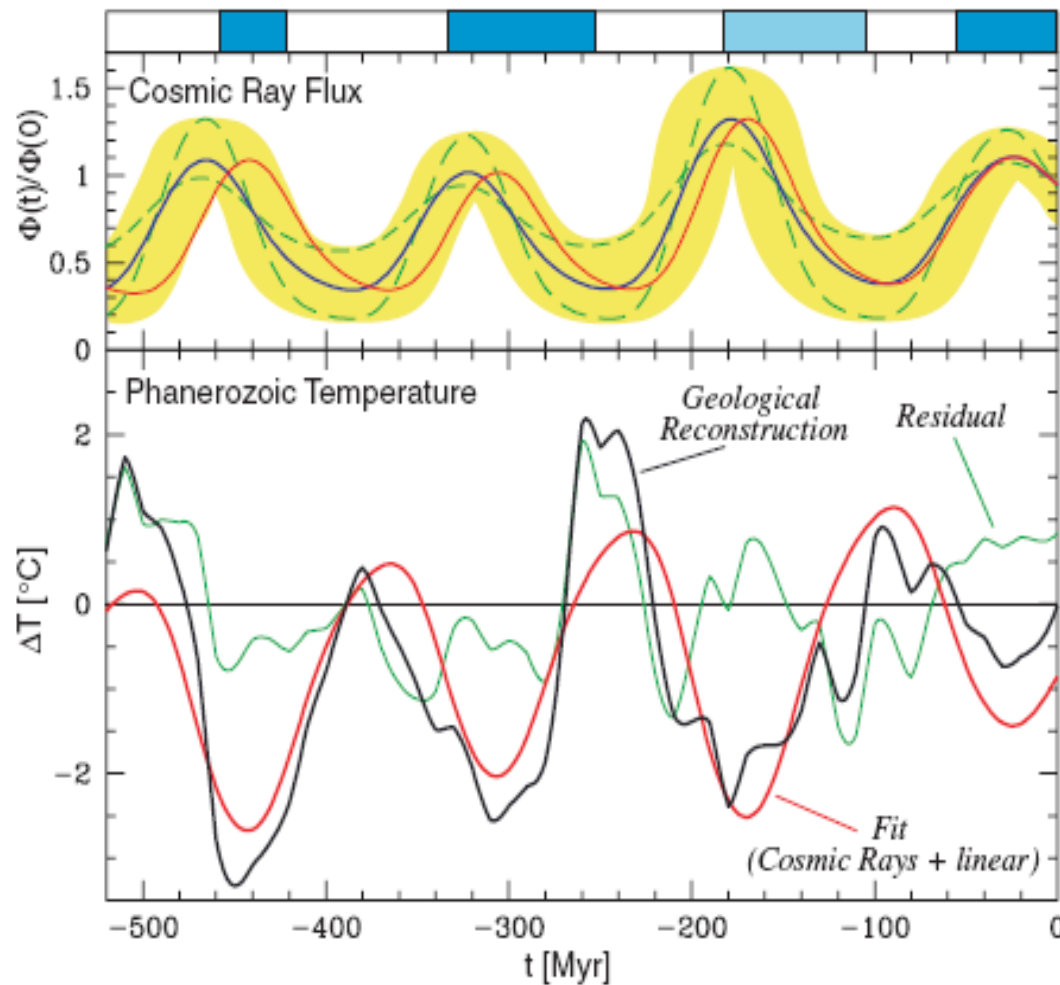
Reference: Shaviv & Veizer

Figure 2. The cosmic ray flux (Φ) and tropical temperature anomaly (ΔT) variations over the Phanerozoic. The upper curves describe the reconstructed CRF using iron meteorite exposure age data (Shaviv, 2002b). The blue line depicts the nominal CRF, while the yellow shading delineates the allowed error range. The two dashed curves are additional CRF reconstructions that fit within the acceptable range (together with the blue line, these three curves denote the three CRF reconstructions used in the model simulations). The red curve describes the nominal CRF reconstruction after its period was fine tuned to best fit the low-latitude temperature anomaly (i.e., it is the "blue" reconstruction, after the exact CRF periodicity was fine tuned, within the CRF reconstruction error). The bottom black curve depicts the 10/50 m.y. (see Fig. 1) smoothed temperature anomaly (ΔT) from Veizer et al. (2000). The red line is the predicted ΔT_{model} for the red curve above, taking into account also the secular long-term linear contribution (term $B \times t$ in equation 1). The green line is the residual. The largest residual is at 250 m.y. B.P., where only a few measurements of $\delta^{18}O$ exist due to the dearth of fossils subsequent to the largest extinction event in Earth history. The top blue bars are as in Figure 1.

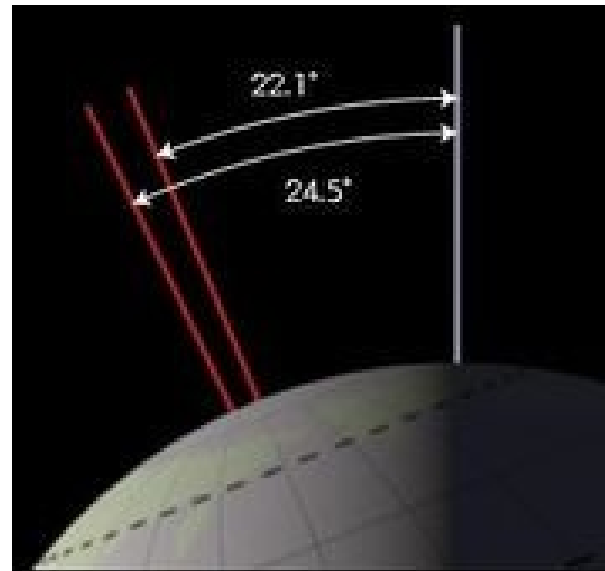# Figure 3: Predictible, smooth, mid-term Milankovic cycles

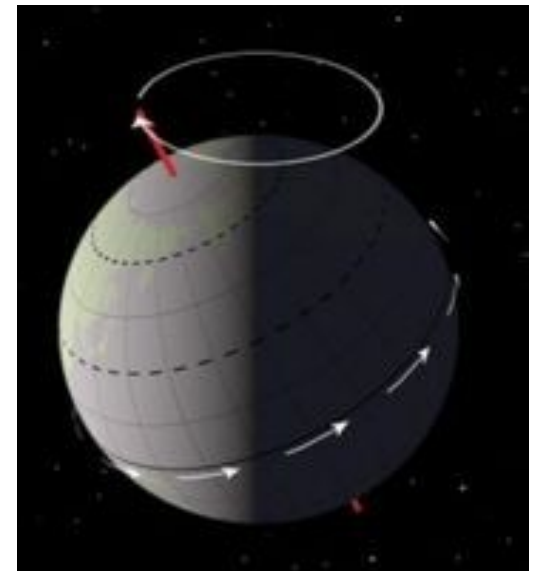Orbit Eccentricity   Earth Axis Tilt   Earth axis precession

Figure 4: Predictible, smooth, mid-term Milankovic cycles
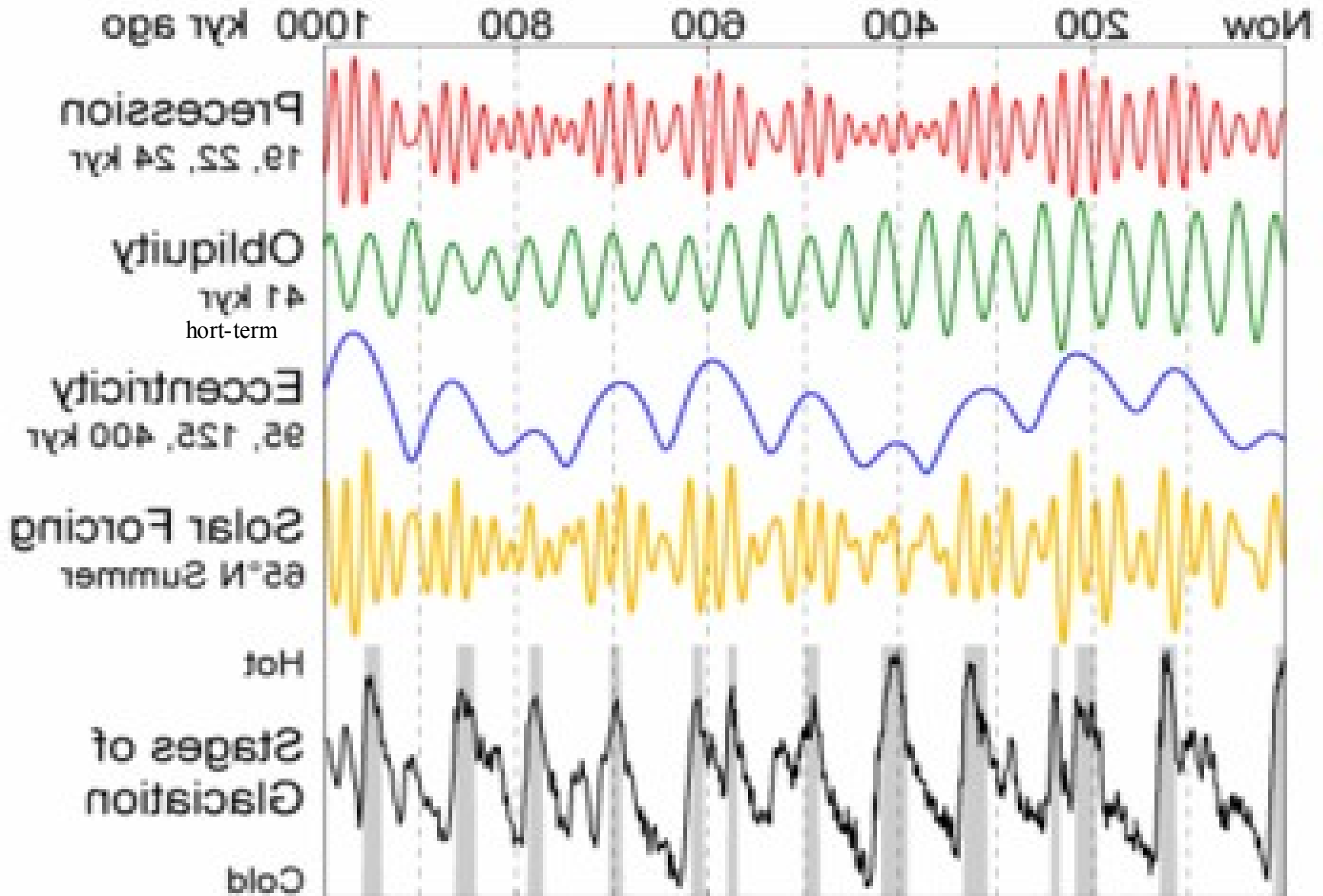
Reference: Wikipedia encyclopedia,

Figure 5: Holocene period - regional insolation by season

Reference: Laskar etal   www.BillHowell.ca

Month-of-year Insolation for Mayans

Legend:
- Global
- Mayan
- Spring 21Mar-21Apr
- Summer 21Jun-20Jul
- Autumn 21Sep-21Oct
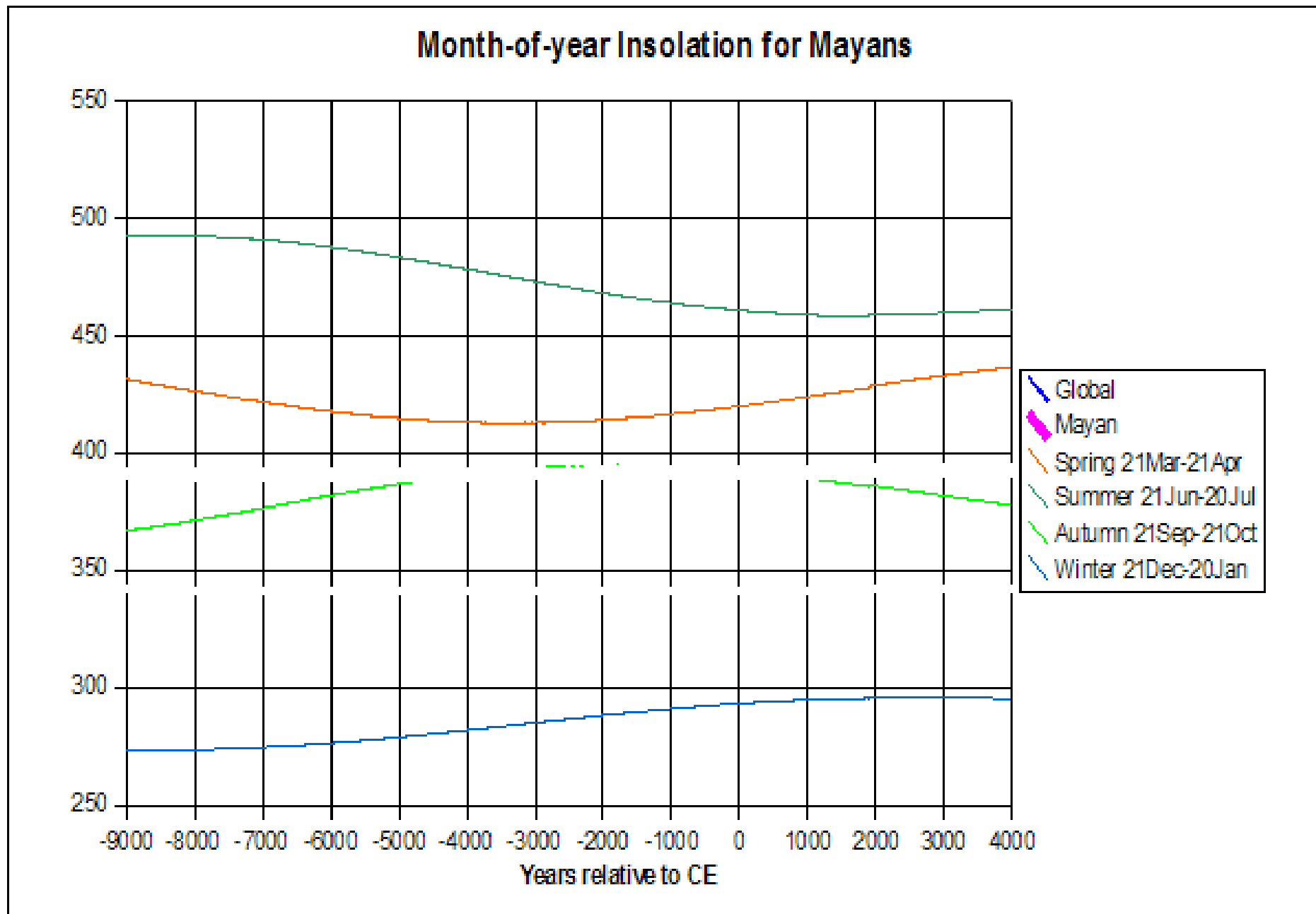- Winter 21Dec-20Jan

X-axis: Years relative to CE

Figure 6: Un-Predictible, erratic, short-term Milankovic cycles

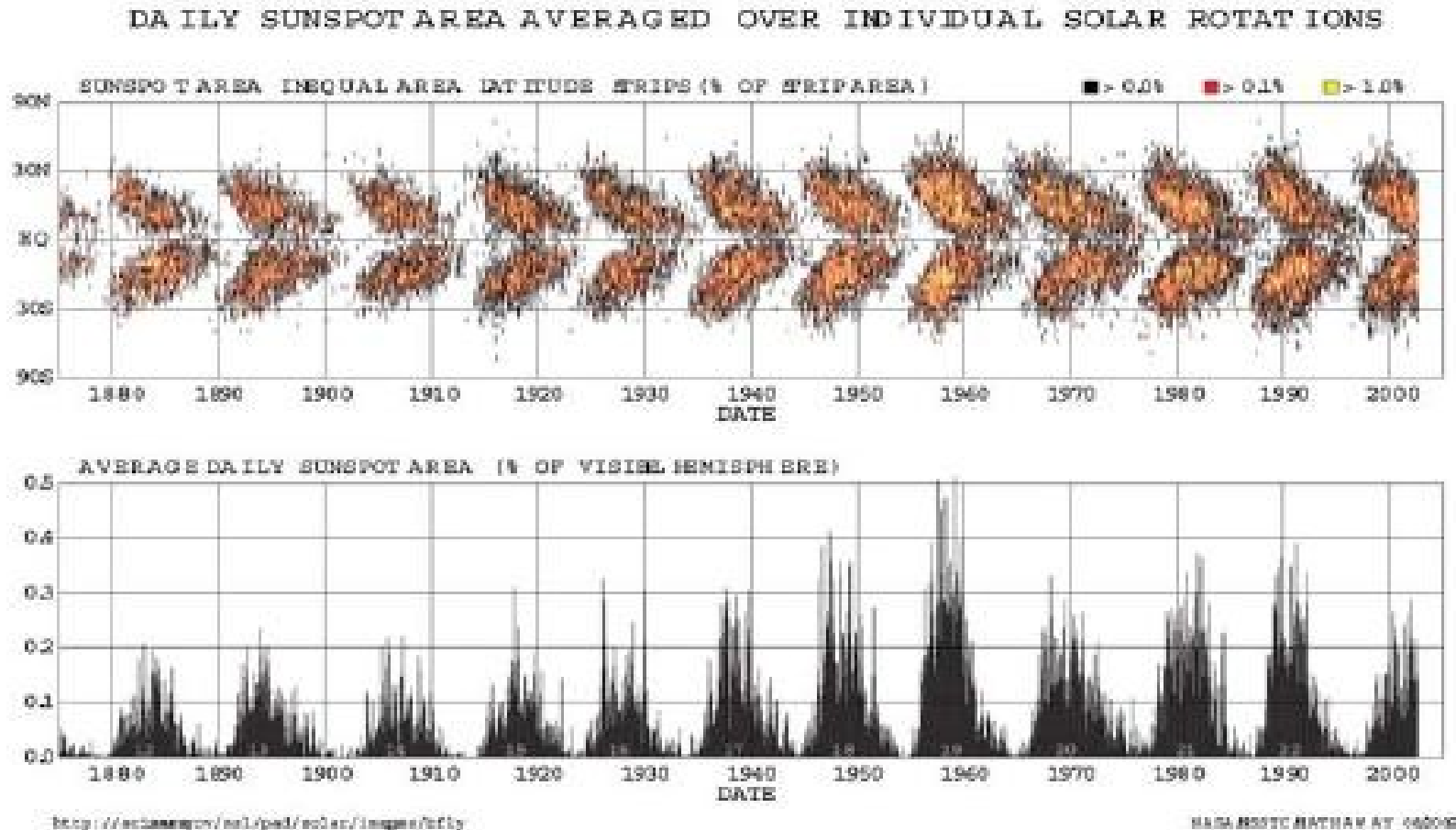Reference: Wikipedia encyclopedia,

Fig. 2.1. Butterfly diagram (*upper panel*) and record of relative solar surface area covered by sunspots (*lower panel*). *Upper panel*: the vertical axis indicates solar latitude, the horizontal axis time. If a sunspot or a group of sunspots is present within a certain latitude band and a given time interval, then this portion of the diagram is shaded, with the colour of the shading indicating the area covered by the sunspots. (Figure courtesy of D. Hathaway, http://science.nasa.gov/ssl/pad/solar/sunspots.htm).

Figure 7: Un-predictible, erratic, short-term solar minima
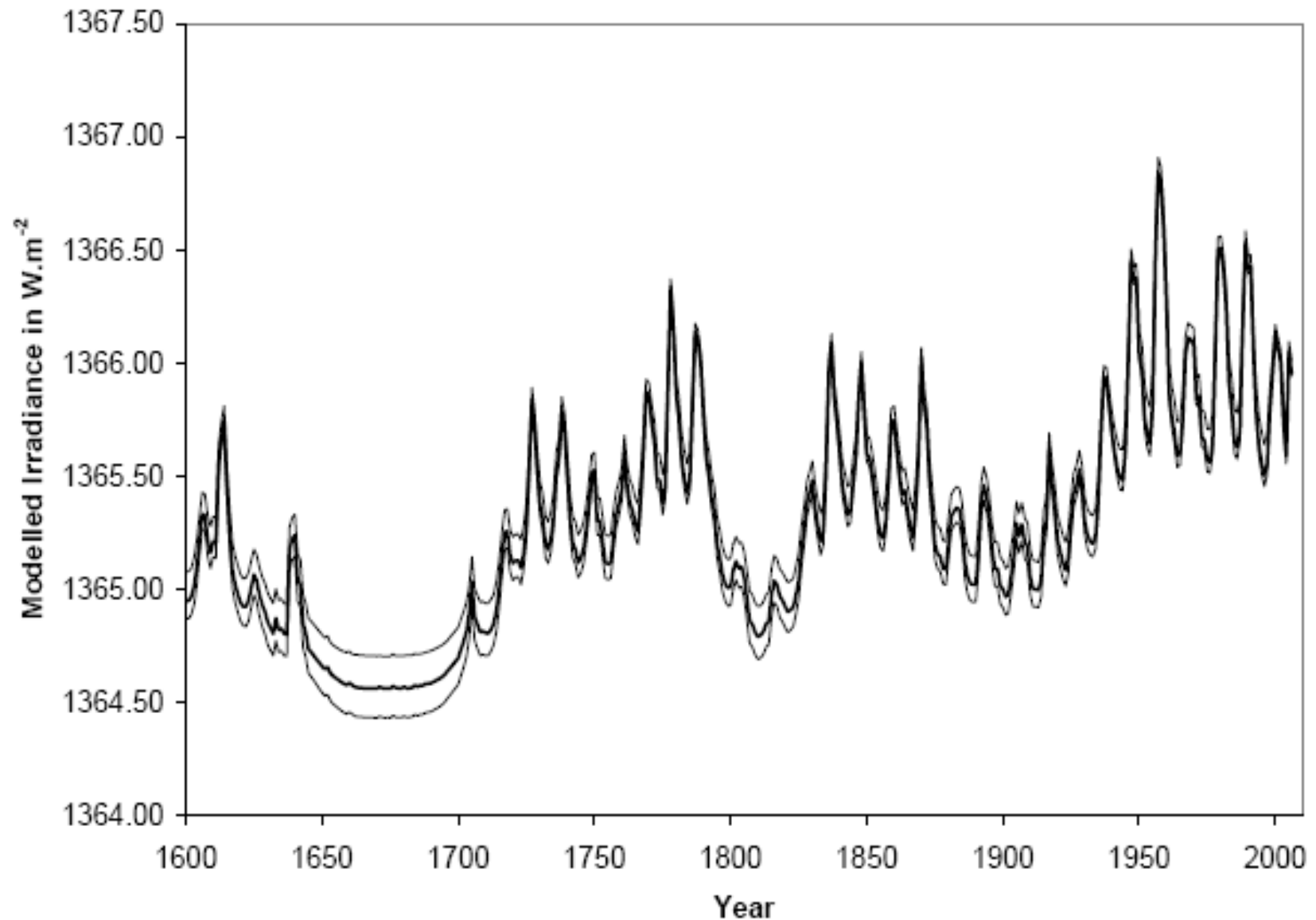
Reference: Ken Tapping etal 2007?

Figure 8: Holocene period - global and regional insolation
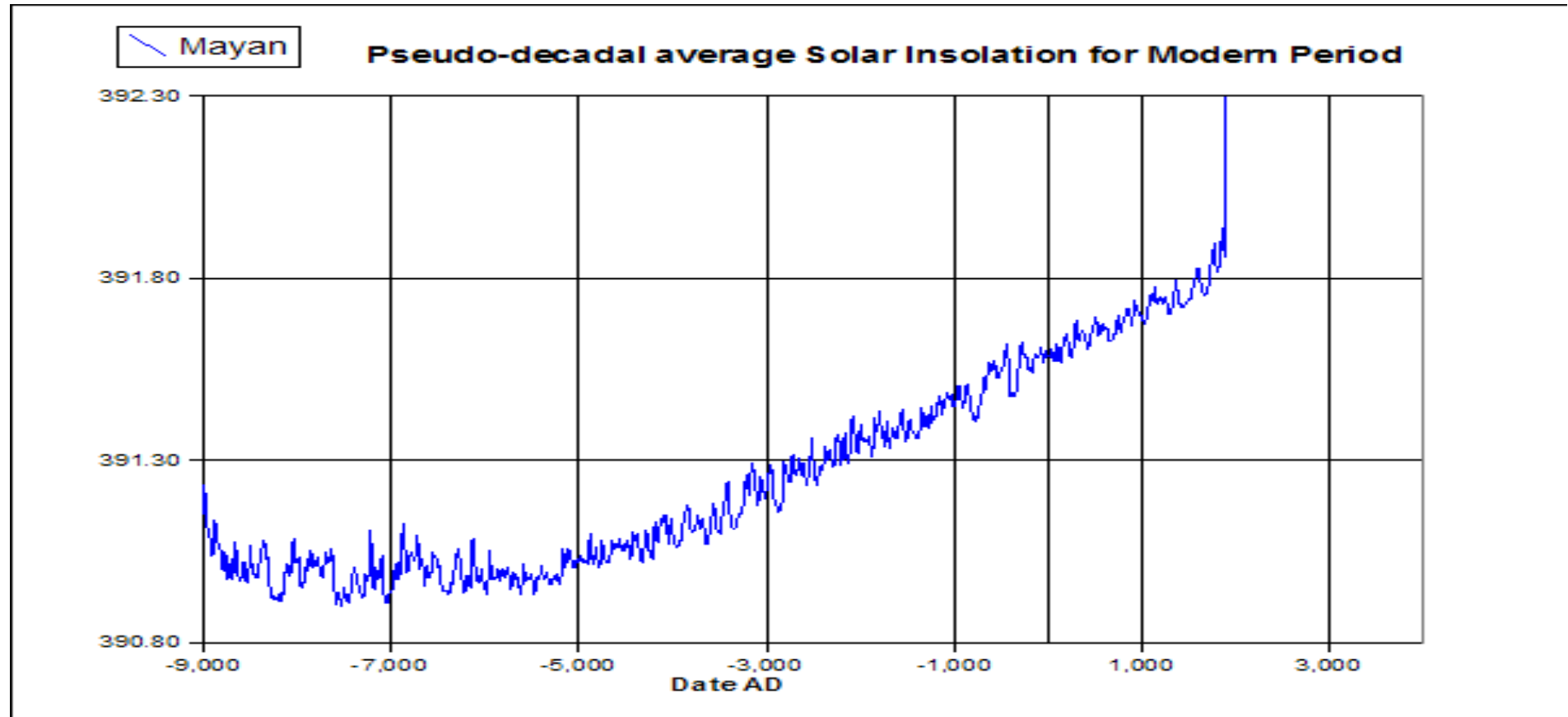
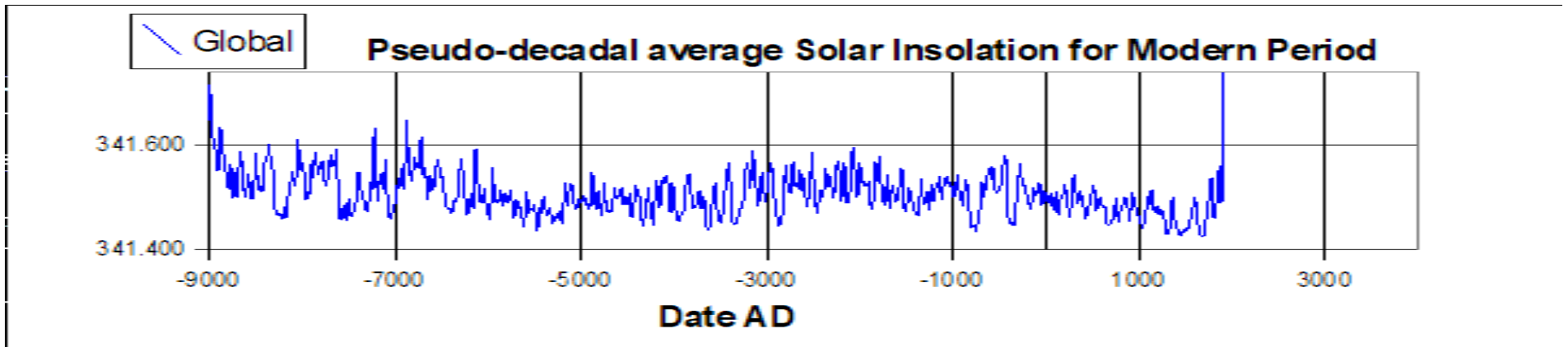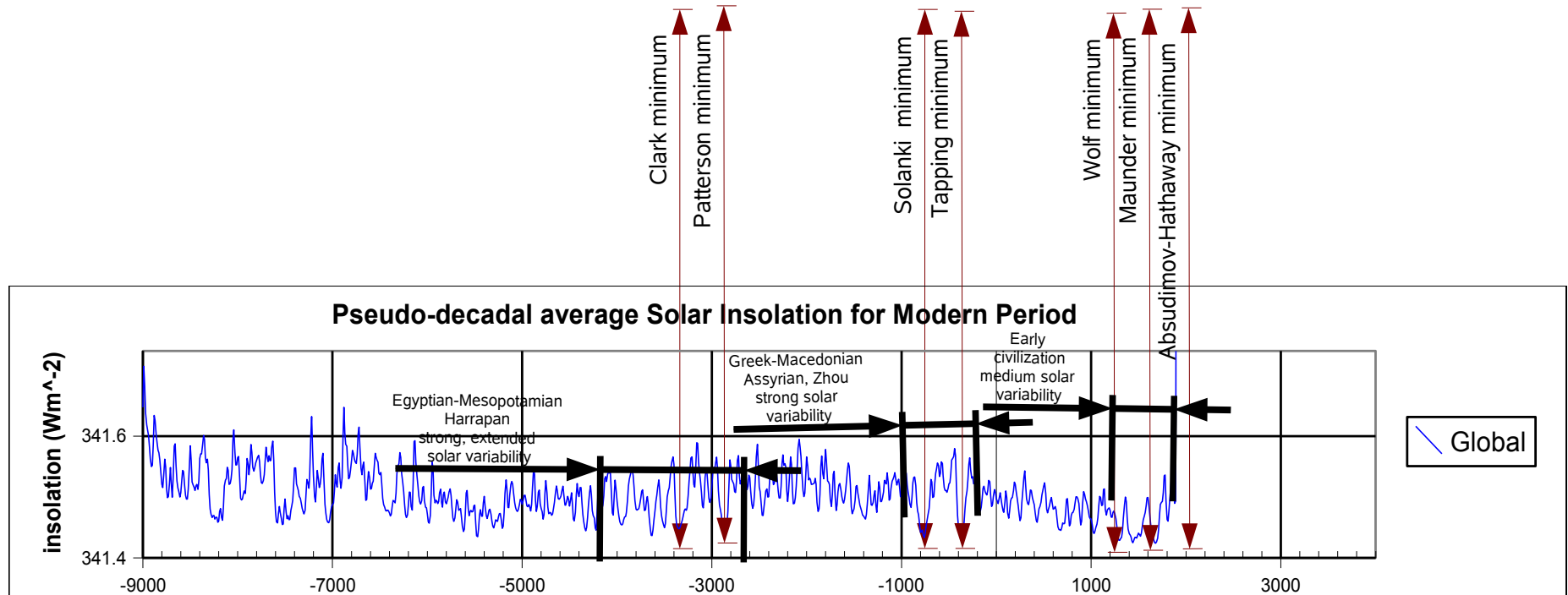Reference: Laskar etal   www.BillHowell.ca

Figure 9: Holocene period - solar shocks
(Note: refer to the much larger chart on my website!)

Reference: Laskar etal, Solanki etal, Tapping etal,   www.BillHowell.ca

Historical Kingdoms, Ages, periods are not coherent nor well-defined.

Even within small geographical areas there can be high diversity and divergence of fates.

However, archaeologists/ historieans have found it useful to describe periods.

If nothing else, it helps communication.

Figure 10: Solar shock scorecard for the Rise and fall of civilisations

Reference: www.BillHowell.ca

Figure 11: Influenza pandemics & solar phase

K.F. Tapping, R.G. Mathias, D.L. Surkan, Canadian J. Infectious Diseases, vol 12, no 1, pp 61-62, Jan-Feb 2001
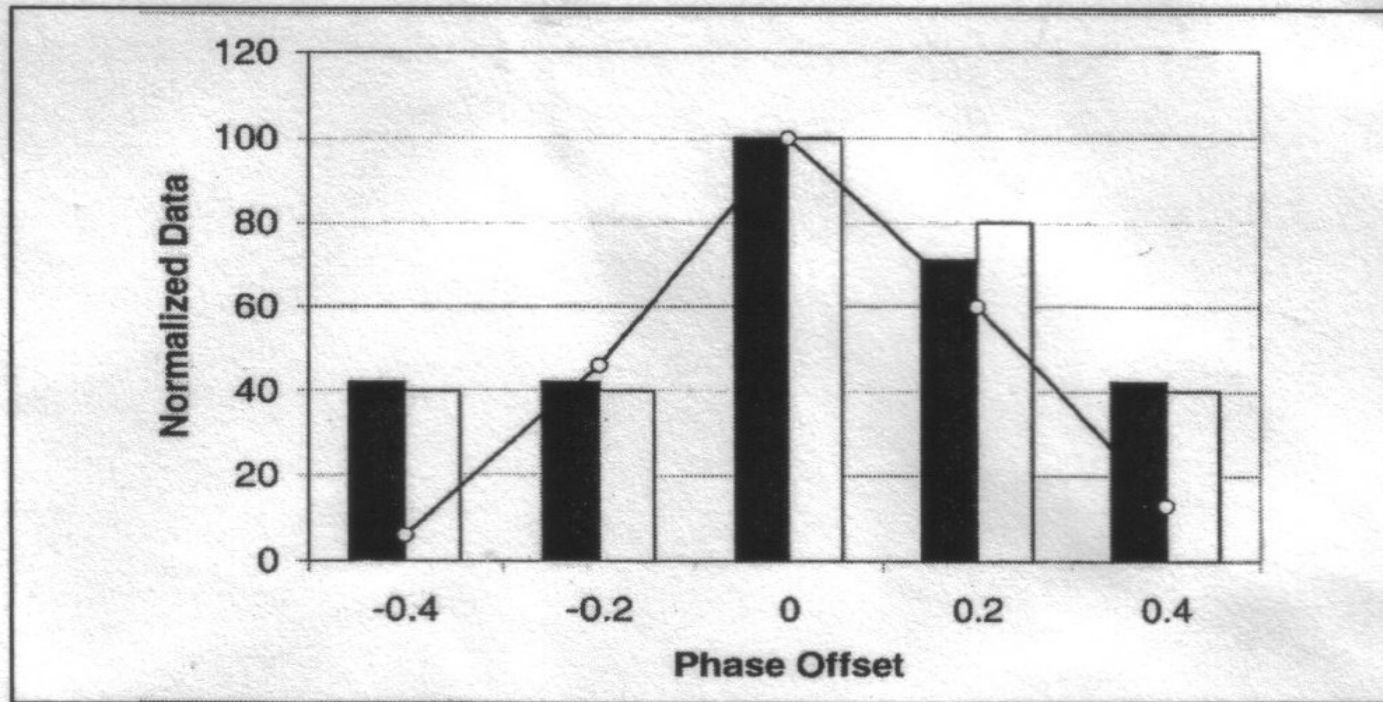

Figure 1) *The two distributions of pandemic count versus phase offset scaled to a peak value of 100. Pandemics listed by Garrett (4) and Potter (5) are shown, respectively, in solid black and white. The circles connected by solid lines show an average solar activity cycle, also scaled to have a peak value of 100*

Figure 12: Influenza pandemics and solar activity

K.F. Tapping, R.G. Mathias, D.L. Surkan "Pandemics and Solar Activity - Elaborated" Unpublished as of 09Mar06
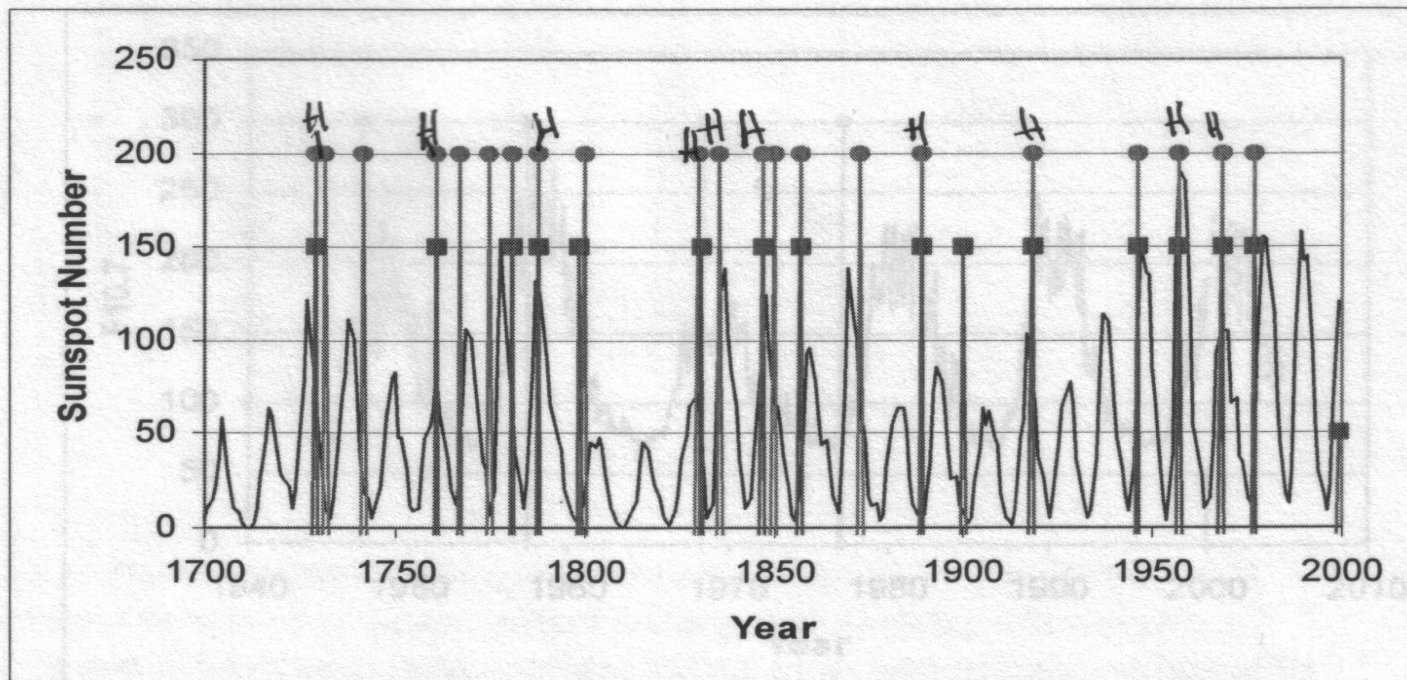

Figure 1: A plot of start years of pandemics (shown as spikes) and sunspot number. Pandemics listed by Garrett (1994) are shown as spikes to 200, topped with diamonds, and those listed by Potter (1998) as spikes to 150, topped with squares. The square at the 50 level, in 1999, represents the flu epidemic of 1999-.

Figure 13: Influenza pandemics and solar activity

K.F. Tapping, R.G. Mathias, D.L. Surkan "Pandemics and Solar Activity - Elaborated" Unpublished as of 09Mar06
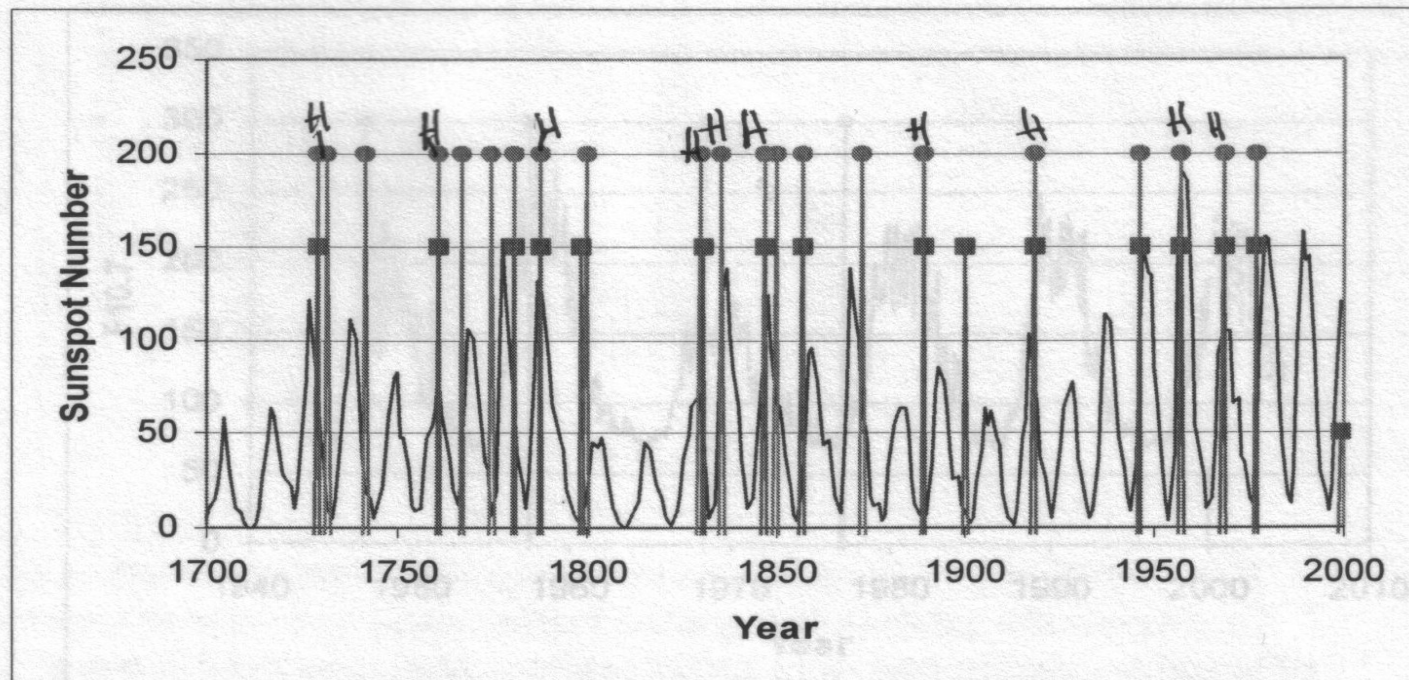

Figure 1: A plot of start years of pandemics (shown as spikes) and sunspot number. Pandemics listed by Garrett (1994) are shown as spikes to 200, topped with diamonds, and those listed by Potter (1998) as spikes to 150, topped with squares. The square at the 50 level, in 1999, represents the flu epidemic of 1999-.

Figure 14: Recent Influenza Pandemics

K.F. Tapping, R.G. Mathias, D.L. Surkan "Pandemics and Solar Activity - Elaborated" Unpublished as of 09Mar06
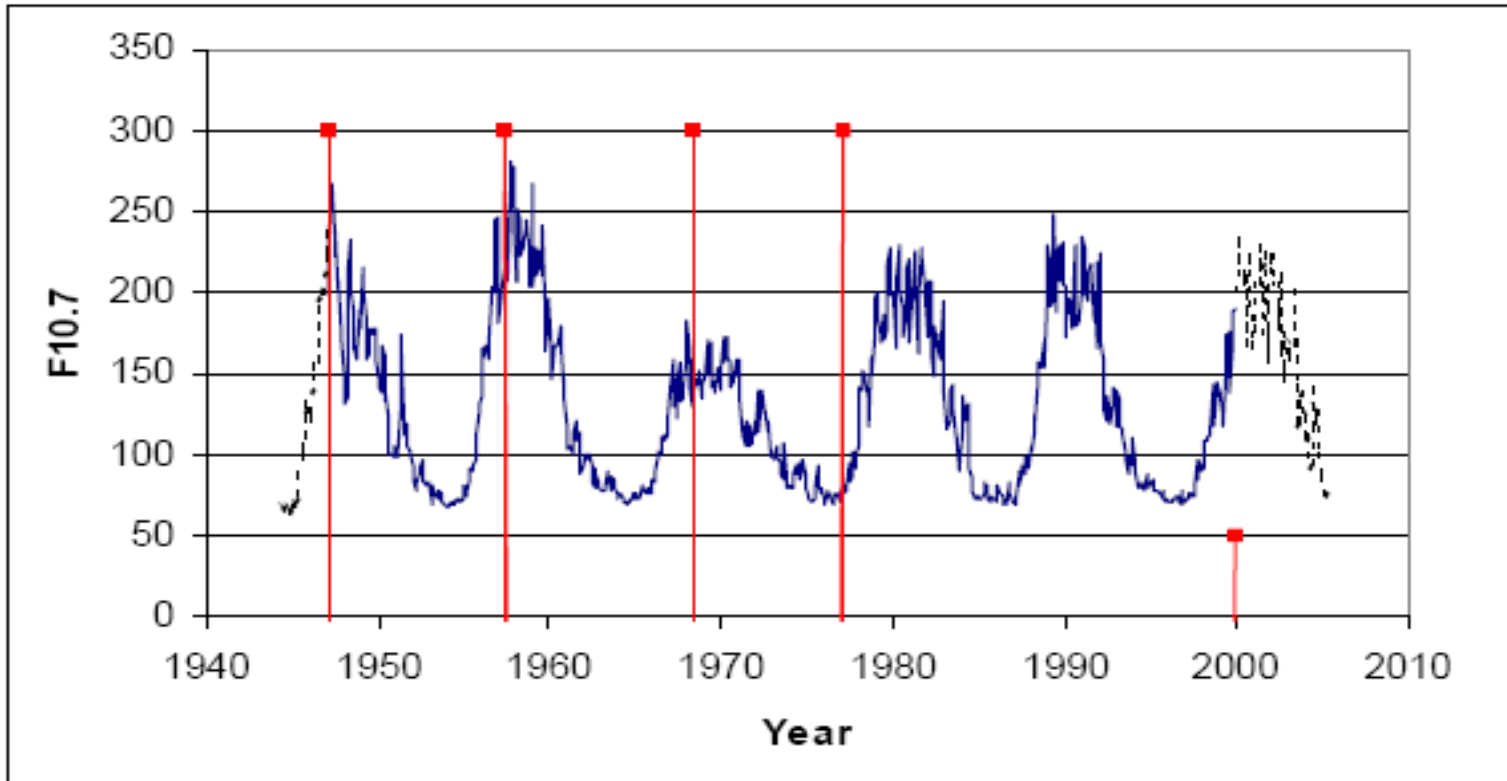

Figure 2: The 1946, 1957, 1968 and 1977 pandemics (shown as spikes) on a plot of the 10.7cm Solar Flux index. The flux values prior to 1947 (shown dotted) are estimated from sunspot data, and those beyond 2000 (also dotted) are estimated from a previous activity cycle. The small spike in 1999 represents the influenza epidemic in progress at that time.

Figure 15: OPTIMAL ELECTRICAL DISTRIBUTION NETWORK DESIGN USING GENETIC ALGORITHMS
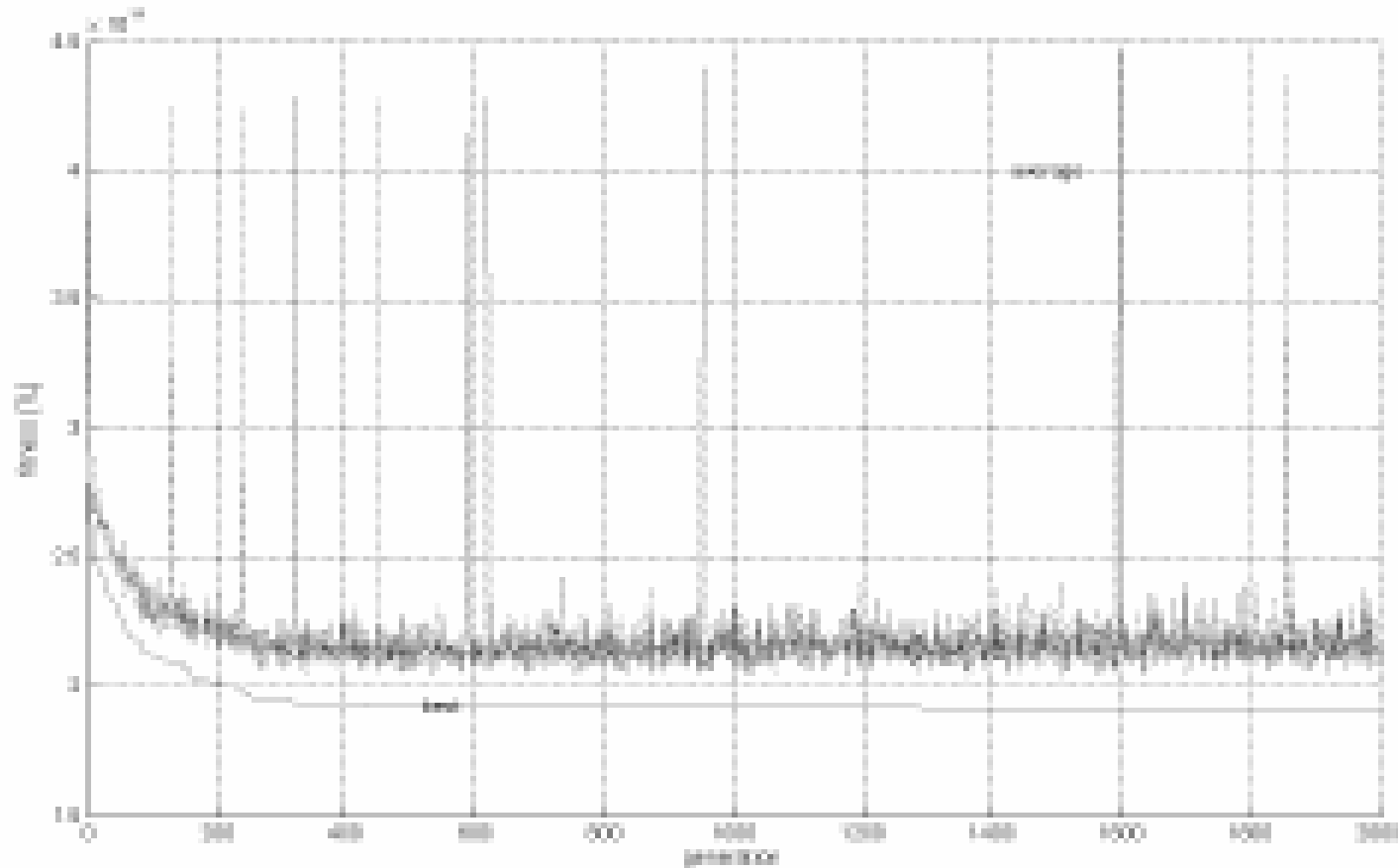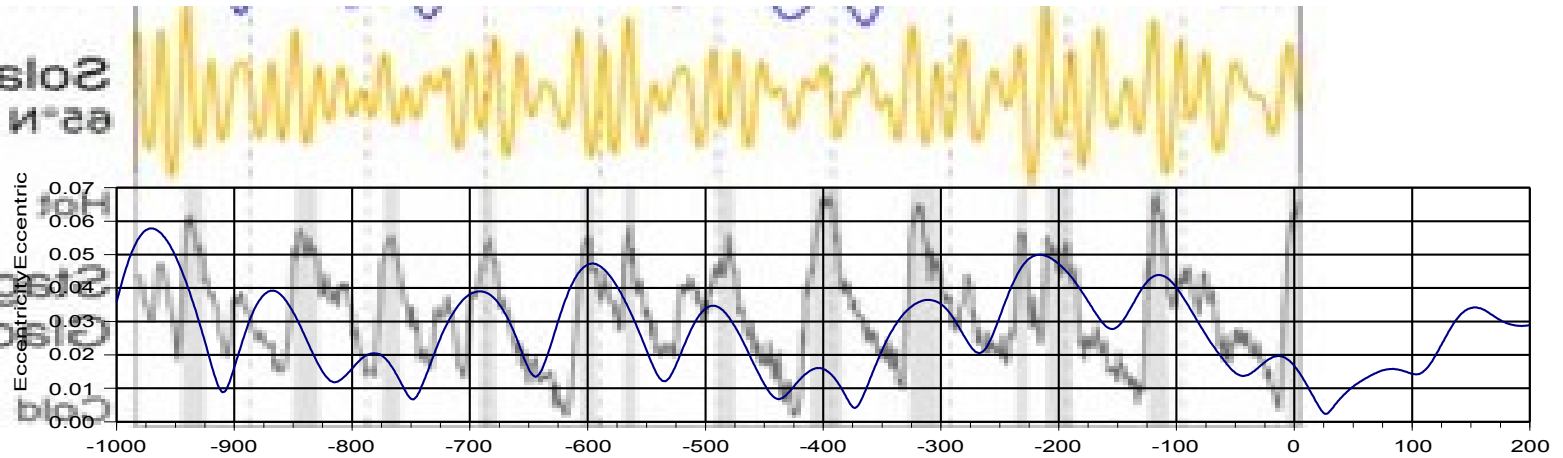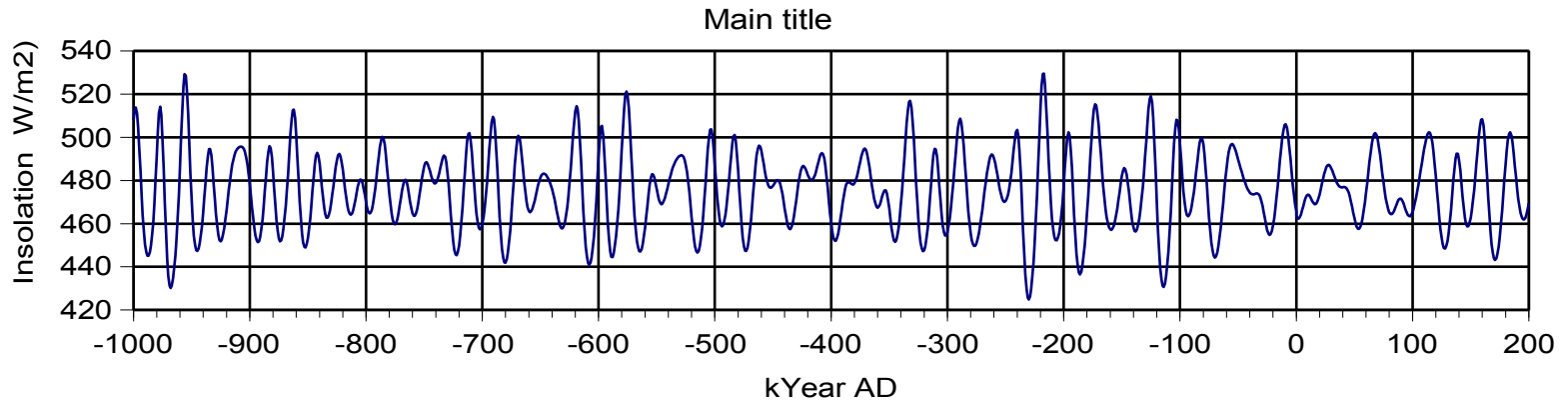
Reference: ?Turkish conference?

Figure 2
Fitness graphic

Figure 16: The predictable side of a Sunny future

Reference: Laskar etal   www.Wikipedia.com   www.BillHowell.ca   Figures shown for latitude 65 N

Main title

17. Conclusion

Solar Physicists
Prepare for Glory!