

JERKS AS A GUIDING INFLUENCE ON THE GLOBAL ENVIRONMENT

Paper No.: 945155



**Effects on the Solid Earth,
Its Angular Momentum and Lithospheric Plate Motions,
the Atmosphere, Weather, and Climate**

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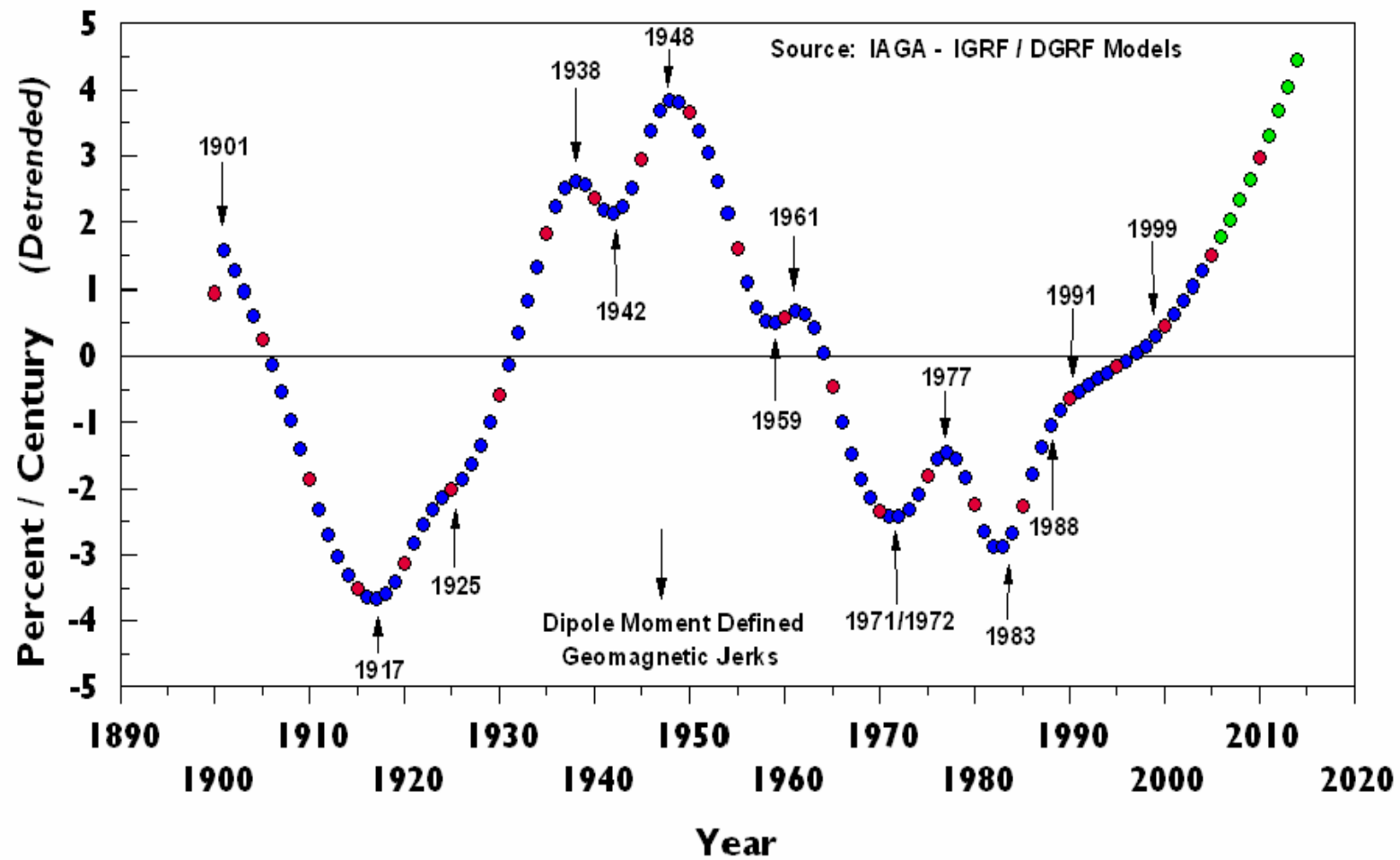
San Francisco AGU Meeting, December, 2010

WHAT ARE JERKS?

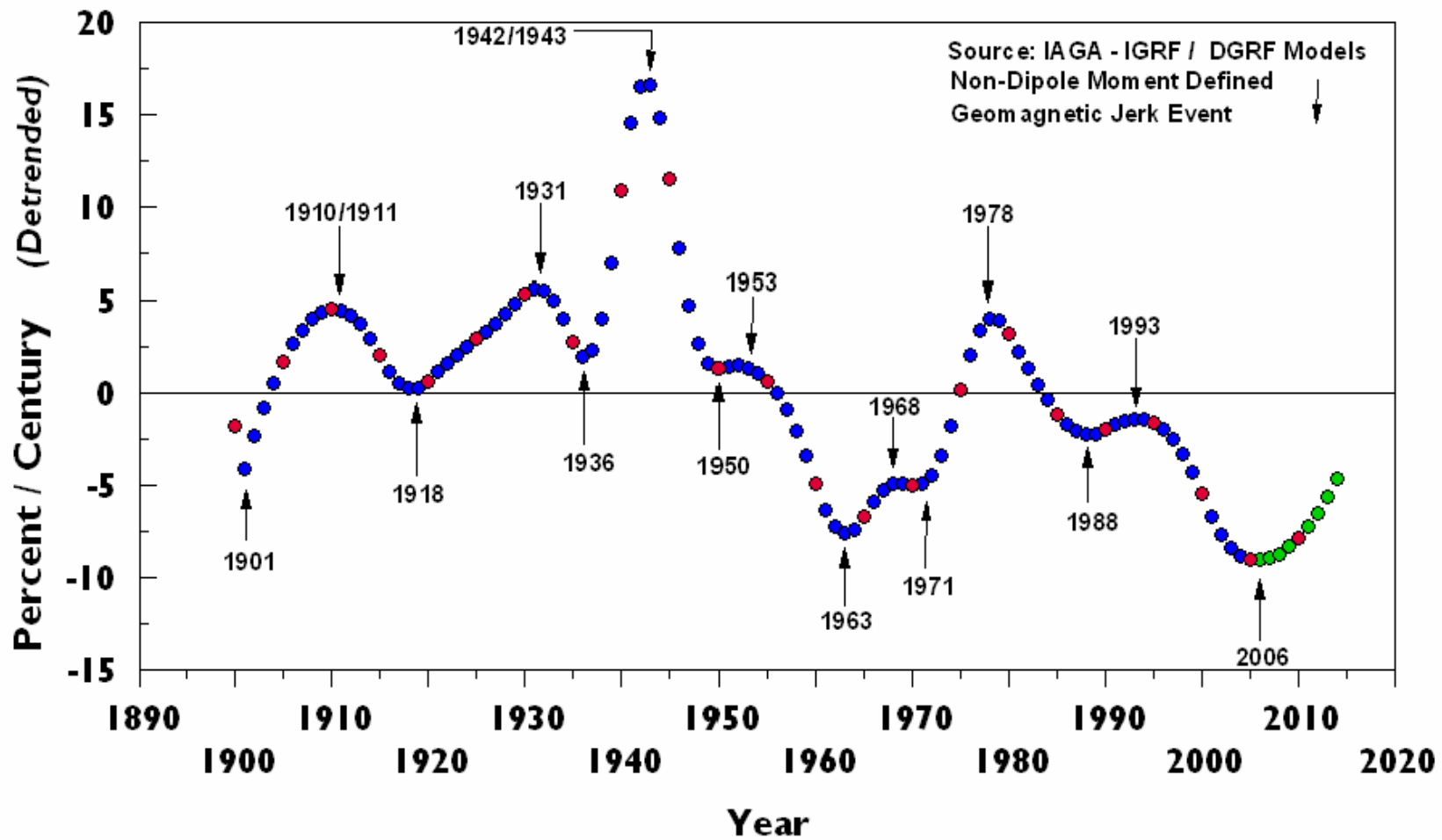
- **Jerks are Sudden Decade Variation Changes in Geophysical and Environmental Parameters or Their Rates-of-Change**
- **Identified as:**
 - **Peaks**
 - **Troughs**
 - **Saddle Points**
 - **Jumps**
 - **Inflection Points**

GEOMAGNETIC DIPOLE MOMENT

Percent Change Per Century

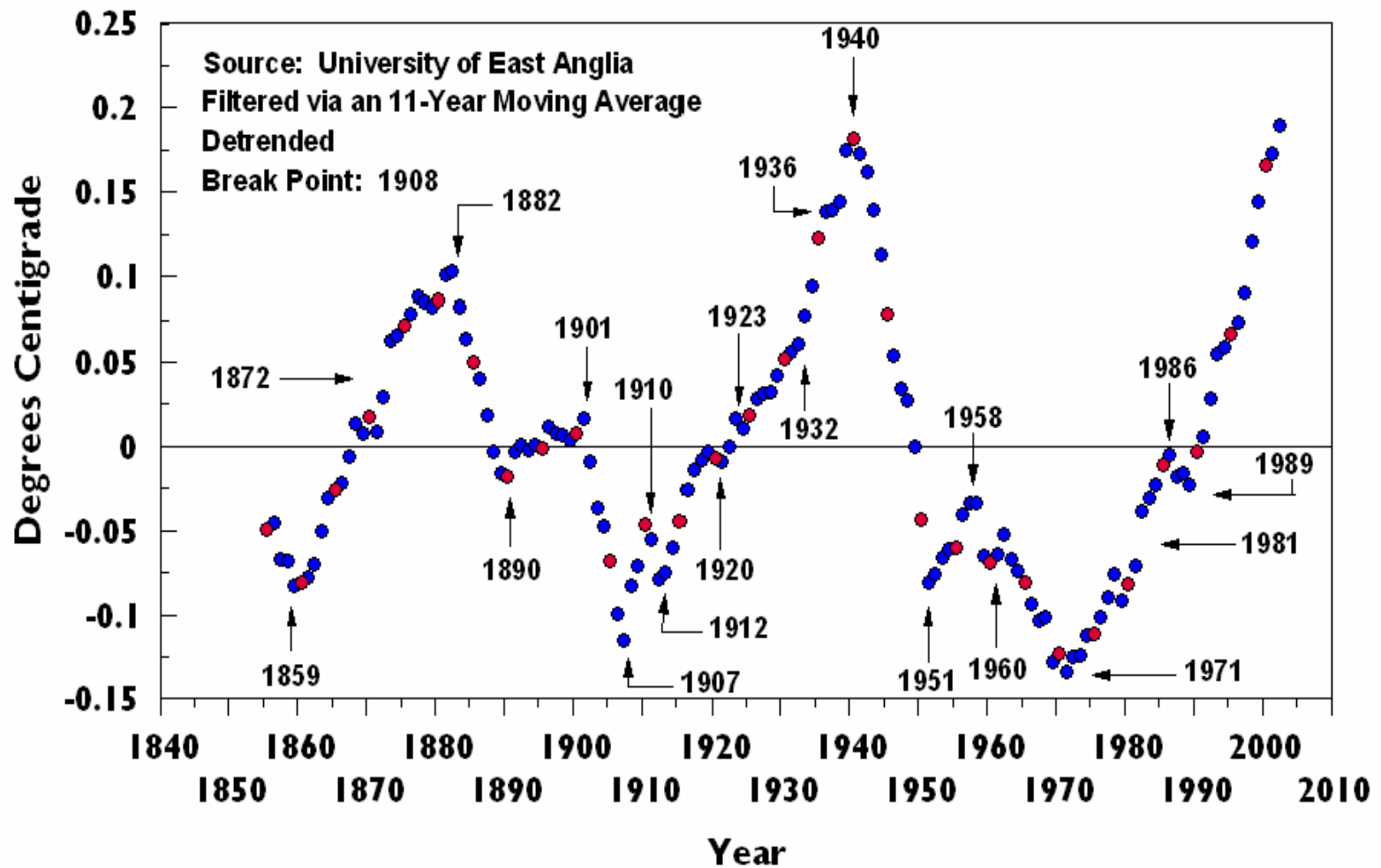


NON-DIPOLE MOMENT (Percent Change per Century)

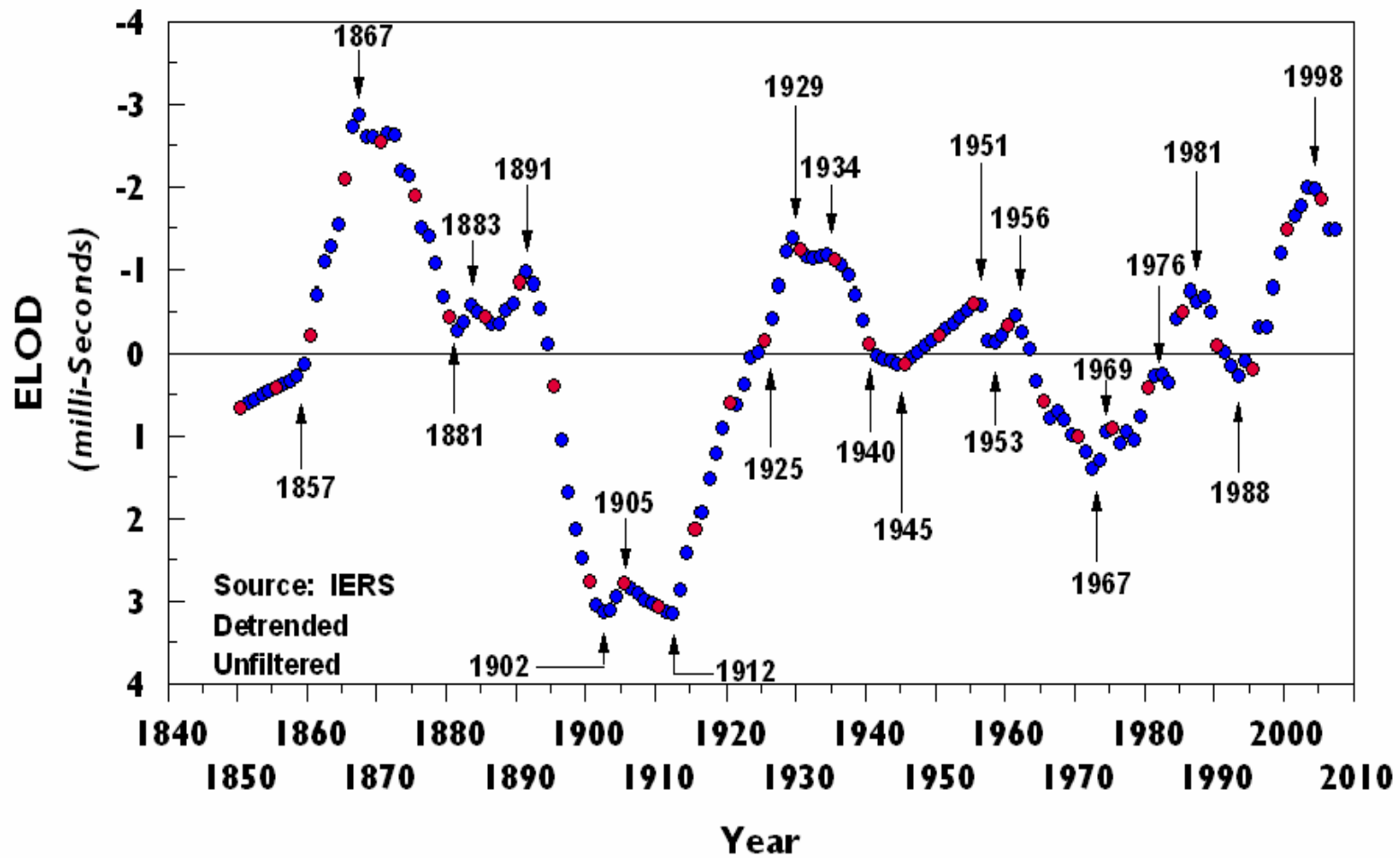


GLOBAL TEMPERATURE ANOMALY

(Decade Variation Annual Means - Jerks Annotated)



EXCESS LENGTH OF DAY (Annual Means with Jerks)



20'th CENTURY JERK EVENTS

Dipole

1901

1917

1925

1938

1942

1948

1959

1961

1971

1977

1983

1986

1991

1999

non-Dipole

1901

1910

1918

1931

1936

1943

1950

1953

1963

1968

1971

1978

1988

1993

2006

GTA

1901

1907

1910

1912

1920

1923

1932

1936

1940

1951

1958

1960

1971

1981

1986

1989

1993

ELOD

1902

1905

1912

1925

1929

1934

1940

1945

1951

1953

1956

1962

1967

1969

1971

1976

1981

1988

1998

WHAT ARE JERKS (Cont.)?

- **Jerks Originate as CMB Torques via:**
 - Electromagnetic Induction (Due to CMB / Mantle Differential Electrical Conductivity)
 - Gravitation & Tidal Induced Stress/Strain Causing Mechanical Slippage
- **Induction: Driven by Solar-Terrestrial Interactions That Affect the Geodynamo**
 - Solar Wind
 - Interplanetary Magnetic Field
 - Geomagnetic Field
- **Slippage: Driven by Gravity**
 - Bari-Center Motion (w.r.t.: Sun, Earth, Moon, & Other Planets)
 - Earth Rotation
 - Tides

JERKS

- **Influence Earth Activity on Three Time Scales**
 - Secular ≥ 100 Years
 - Decade ≥ 10 Years & < 100 Years
 - Annual & Inter-Annual < 10 Years
- **Affect:**
 - **Geophysical Activity**
 - Earth's Rotation Rate (ELOD)
 - Earth Orientation (MPP)
 - Geomagnetic Field Generation
 - Fluid Flow at the Core-Mantle Boundary
 - Tectonics (including volcanism and seismicity)
 - **Environmental Activity**
 - Weather (Global Warming, El Nino, La Nina)
 - Fluid Circulation (Oceans, Atmosphere, & Outer Core)
 - Tropical Storms & Hurricanes
 - Planetary Out-Gassing (CO₂, Methane, Etc.)

JERK SCENARIO

- **1) Energy Slowly Builds-Up at the CMB Via Solar Electromagnetic Trickle-Charging and/or Stress/Strain Accumulation From Bari-Center Motion**
- **2) A Critical Potential Energy Level is Reached at the CMB**
- **3) The Accumulated Energy is Released at the CMB as a Sudden Torque (JERK)**

JERK SCENARIO (Cont.)

- 4) Fluid Flow at the CMB is Altered
- 5) The Geomagnetic Field at the CMB is Altered & Sensed at Earth's Surface 6 to 12 Months Later
- 6) Earth's Angular Momentum is Altered
 - Excess Length of Day (ELOD)
 - Mean Pole Position (MPP)

JERK SCENARIO (CONT.)

- **7) Joule Heating Ensues in the Solid Earth, Oceans, Atmosphere, Ionosphere, and Magnetosphere Due to the Sudden Geomagnetic Field & Angular Momentum Changes Which Generate Electric Currents That Eventually Dissipate as Joule Heat**
- **8) Plate Motion, Volcanism, & Seismicity Ensur From Stress/Strain & Frictional Heat, All Driven by the Sudden Torque Which Causes Solid-Earth Torsions, Vibrations, Out-Gassing, and Magma Extrusion**

JERK SCENARIO (CONT.)

- **9) Environmental Parameters Change**
 - Global Temperatures
 - Atmospheric & Ocean Circulations
 - Jet Stream Patterns
 - Weather & Climate
- **10) Non-Linear Reactions, Interactions, and Feedback Ensnare Among:**
 - Earth's Core Fluid Motion & Density Distribution
 - Earth's Magnetic Field
 - Earth's Angular Momentum (Rotation Rate & Orientation)
 - Global Heat Flow
- **(11) The Process Eventually Damps Out**

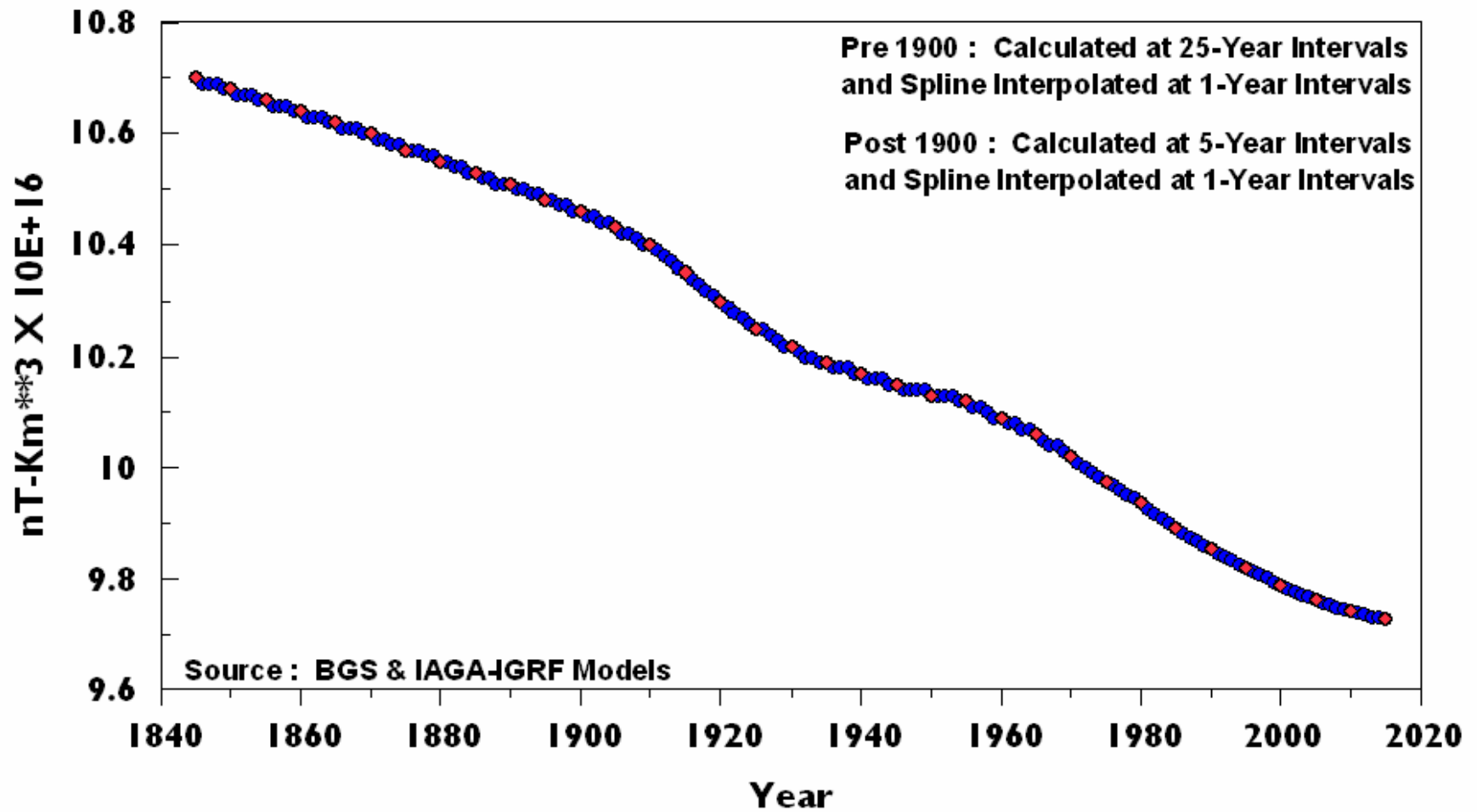
SOLAR-TERRESTRIA RELATIONSHIPS

SECULAR TIME SCALE

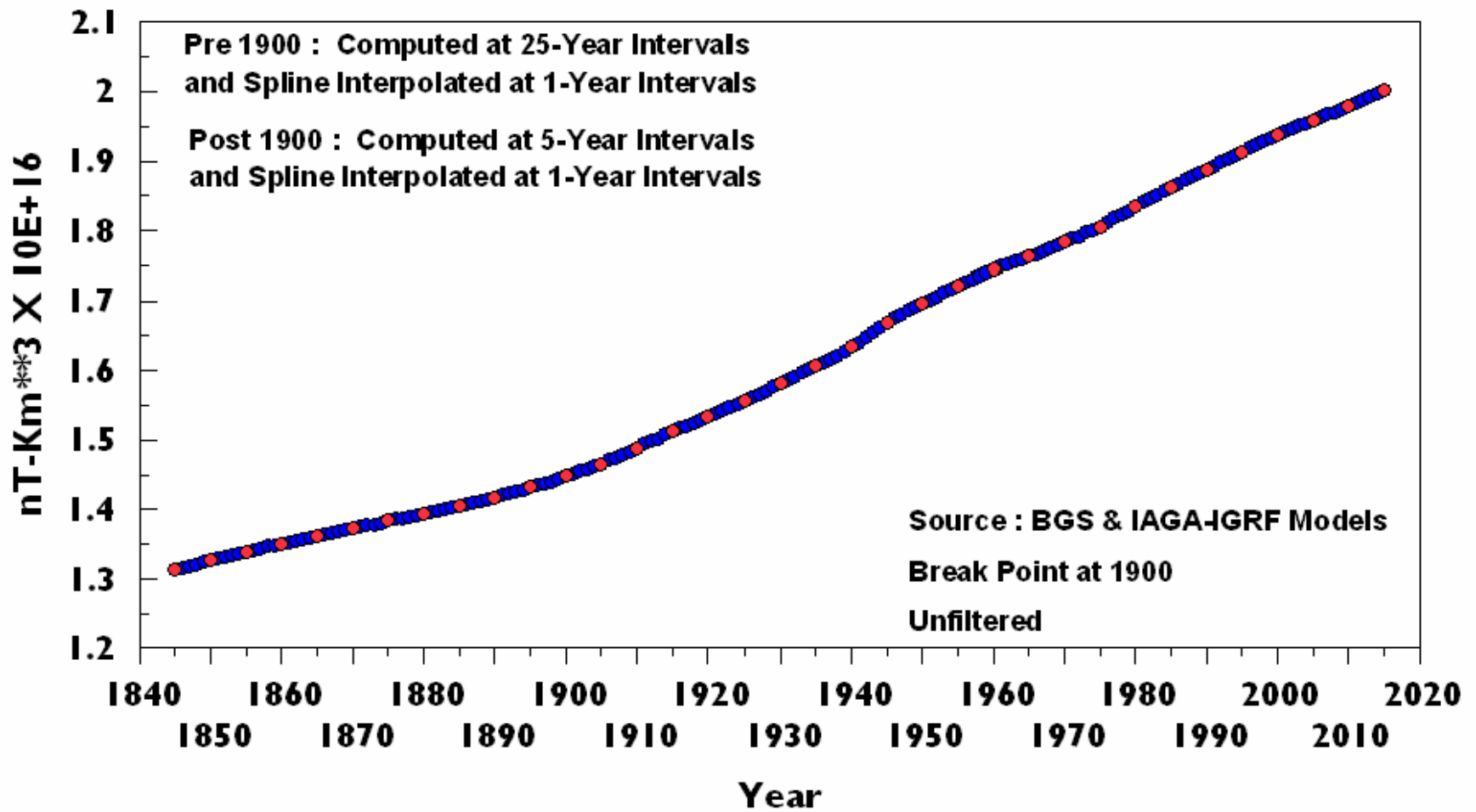
**Evidence of Solar Influence on the GTA
and**

The Implausibility of CO₂ Influence on the GTA

GEOMAGNETIC DIPOLE MOMENT

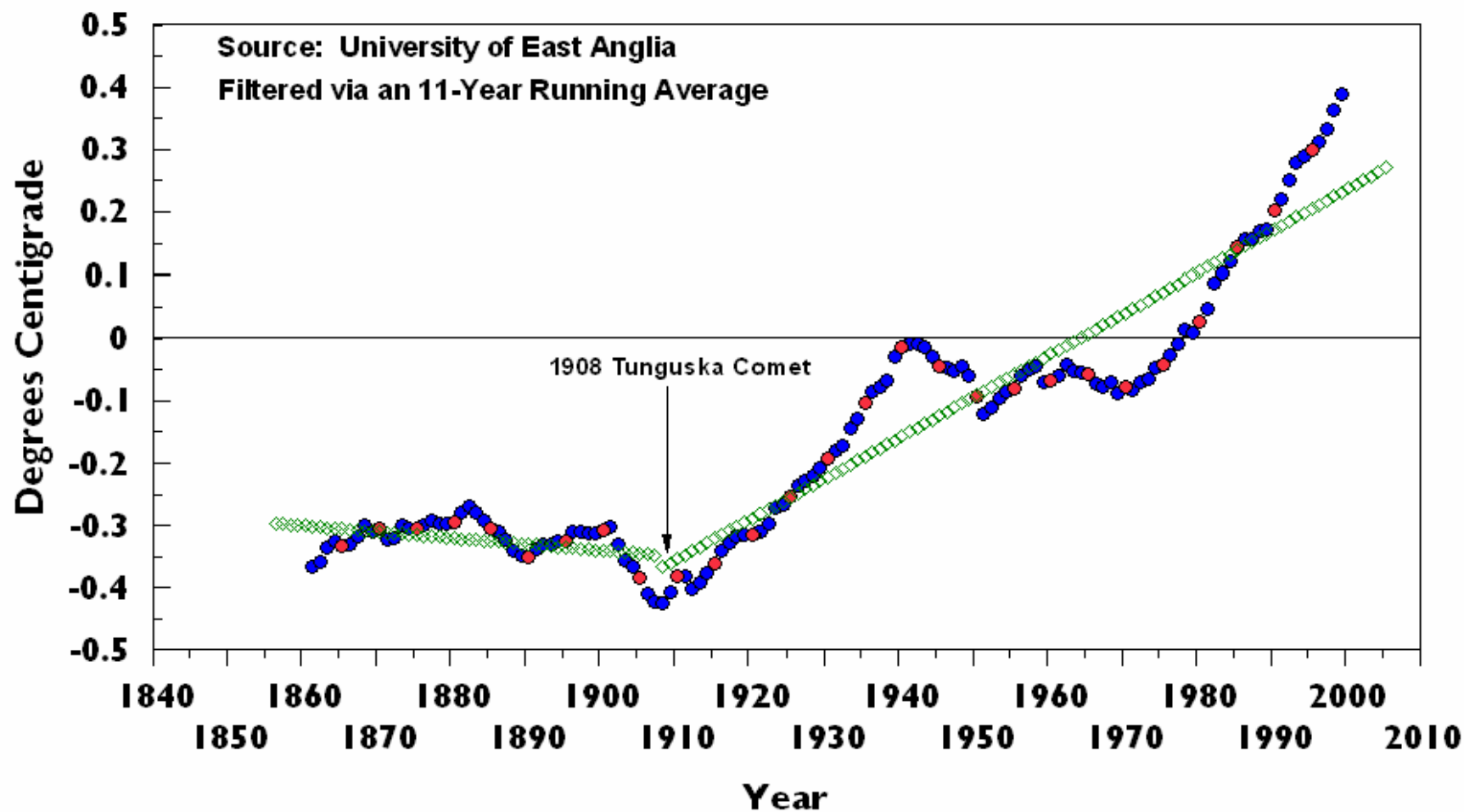


GEOMAGNETIC NON-DIPOLE MOMENT

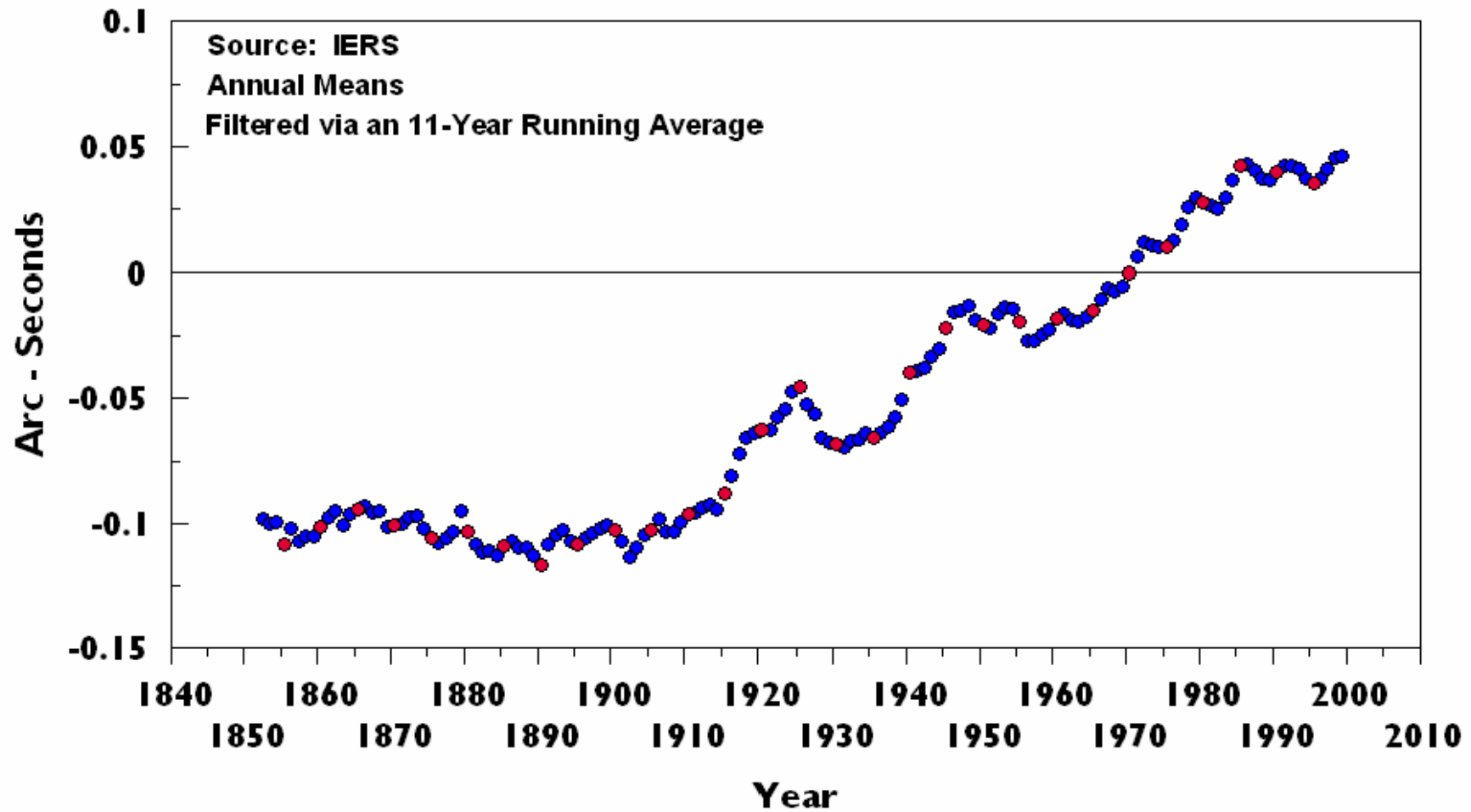


GLOBAL TEMPERATURE ANOMALY

Annual Means

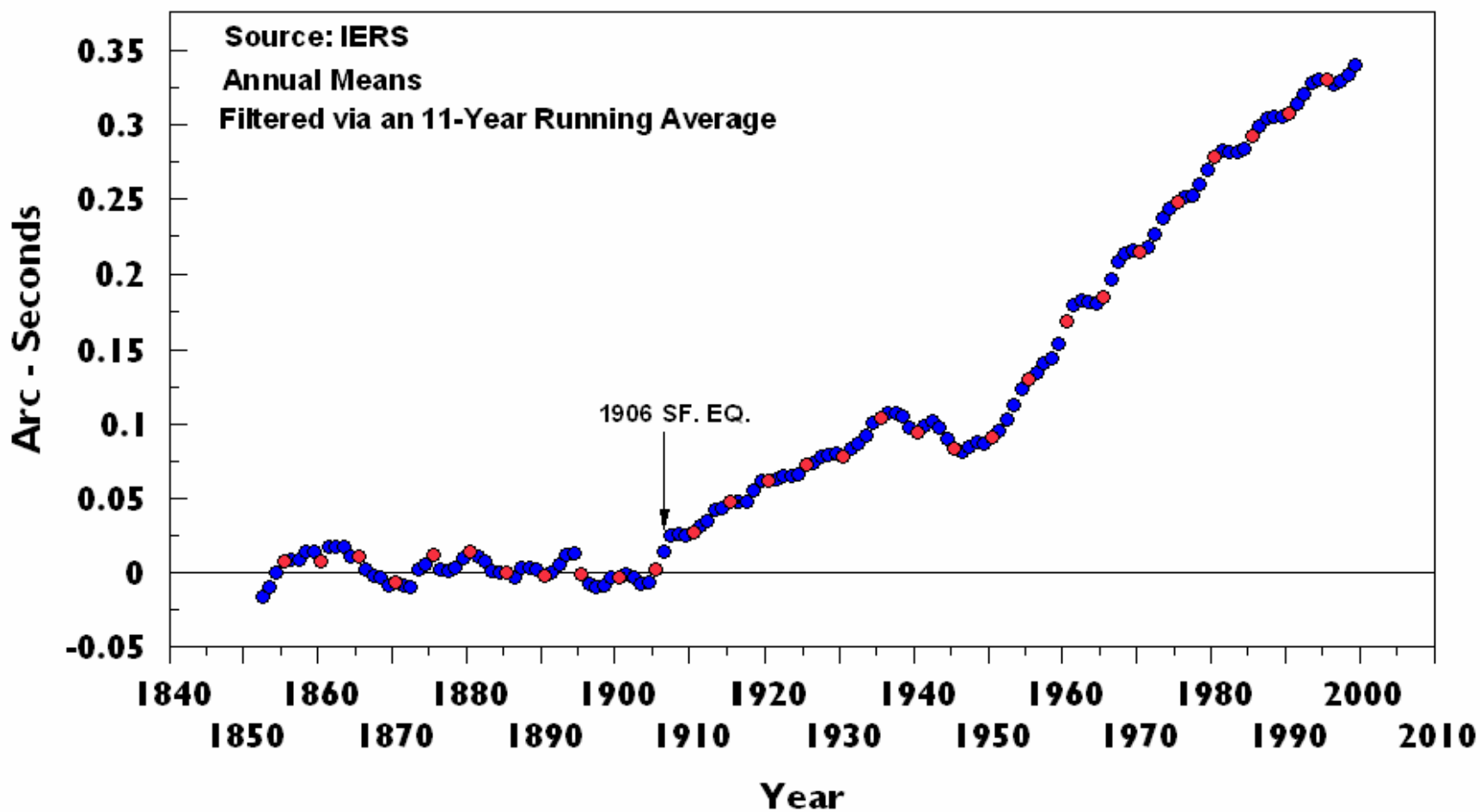


Mean Pole Position X - Component

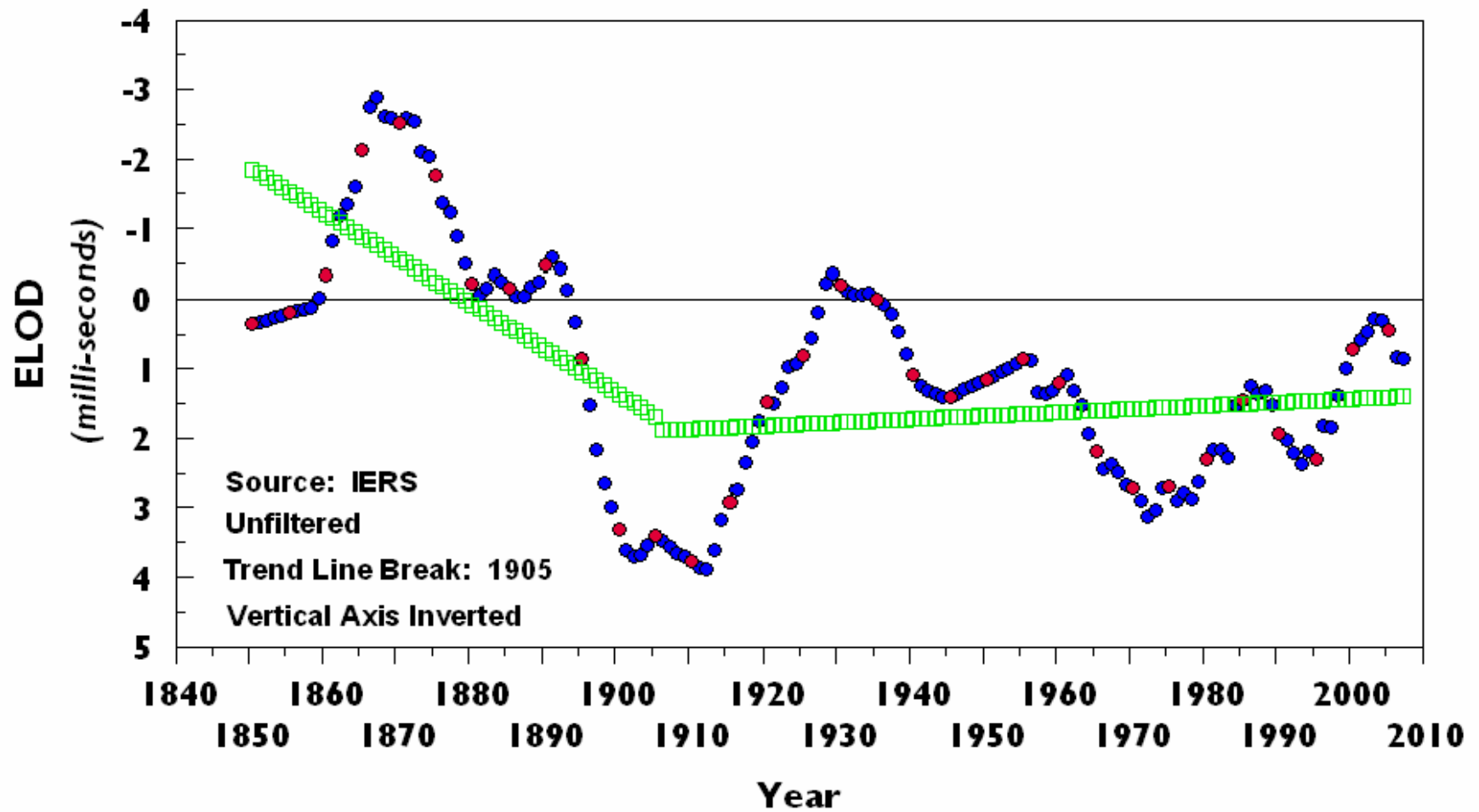


MEAN POLE POSITION

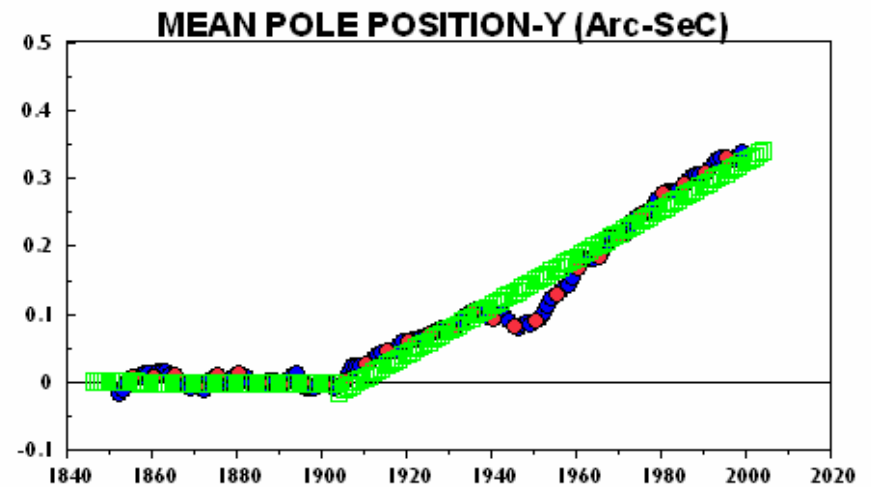
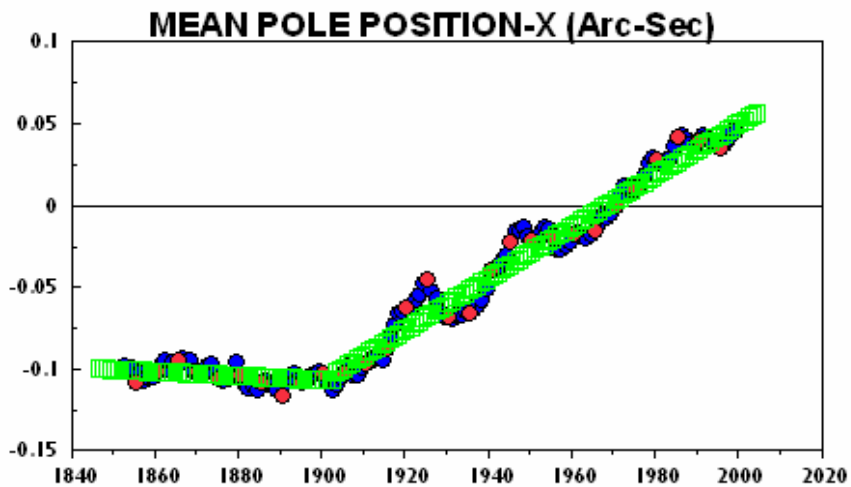
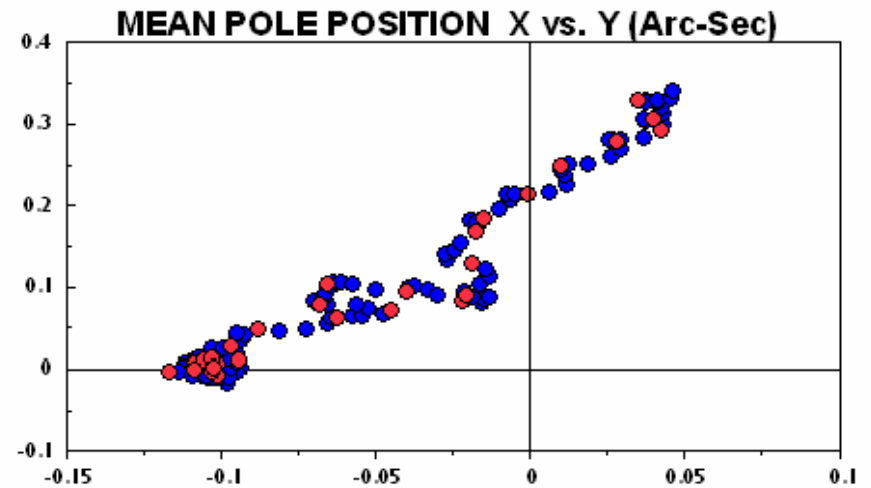
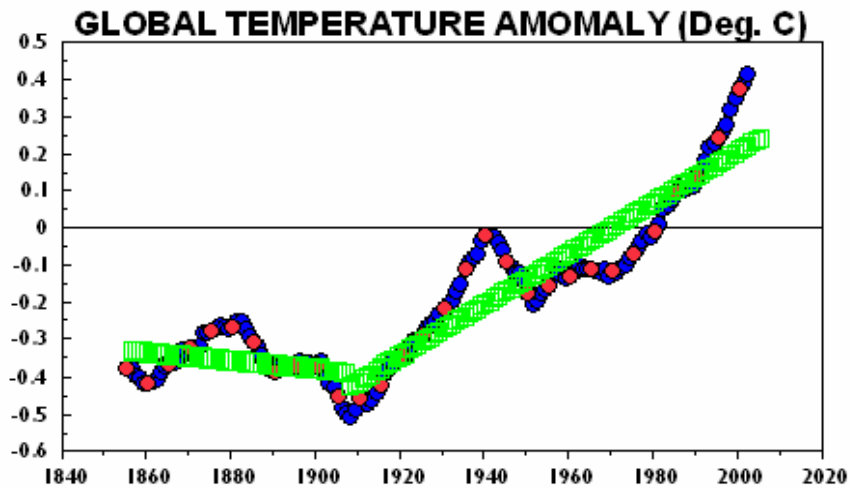
Y - Component



EXCESS LENGTH OF DAY (Annual Means)

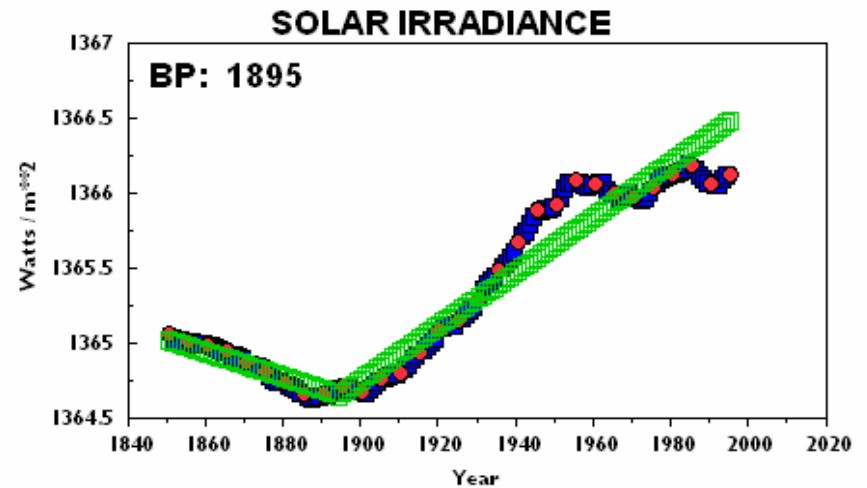
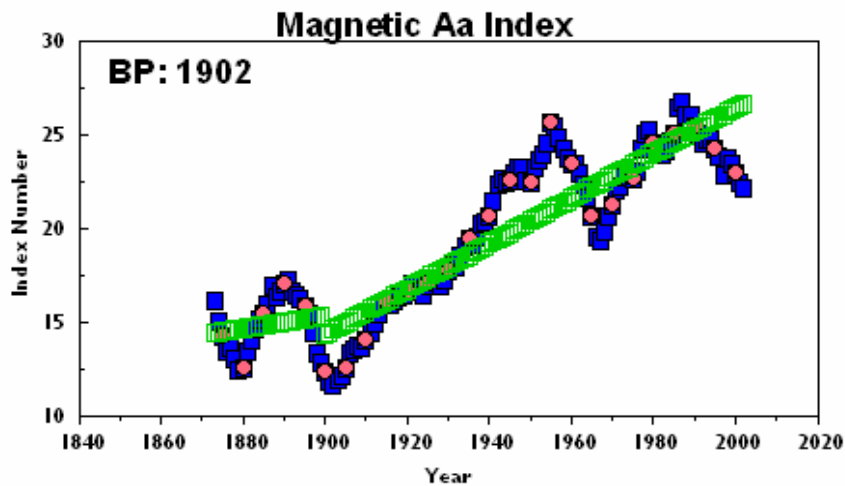
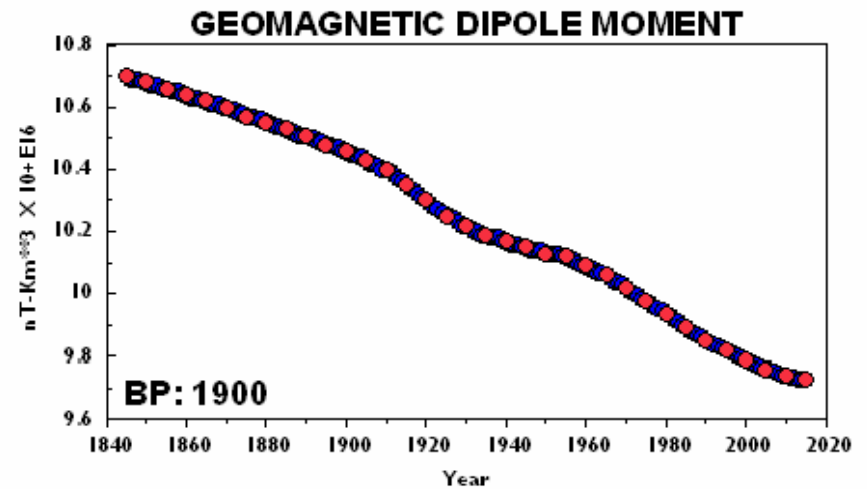
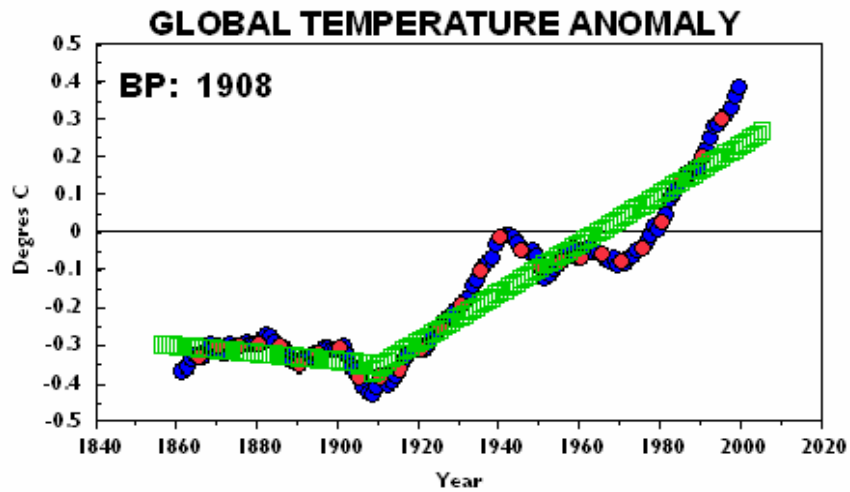


GLOBAL TEMPERATURE ANOMALY VS. MEAN POLE POSITION



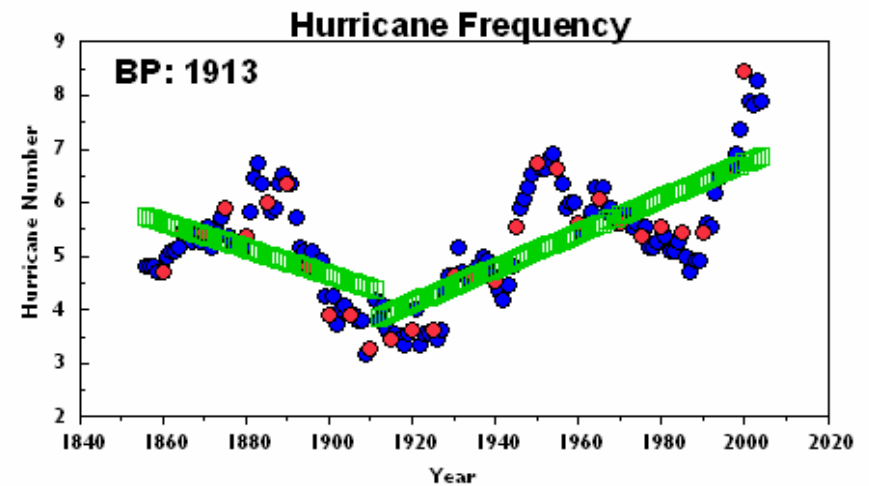
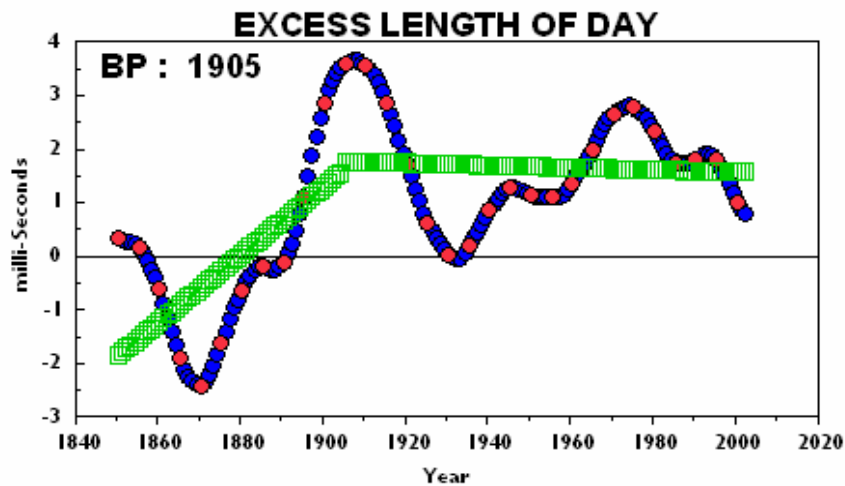
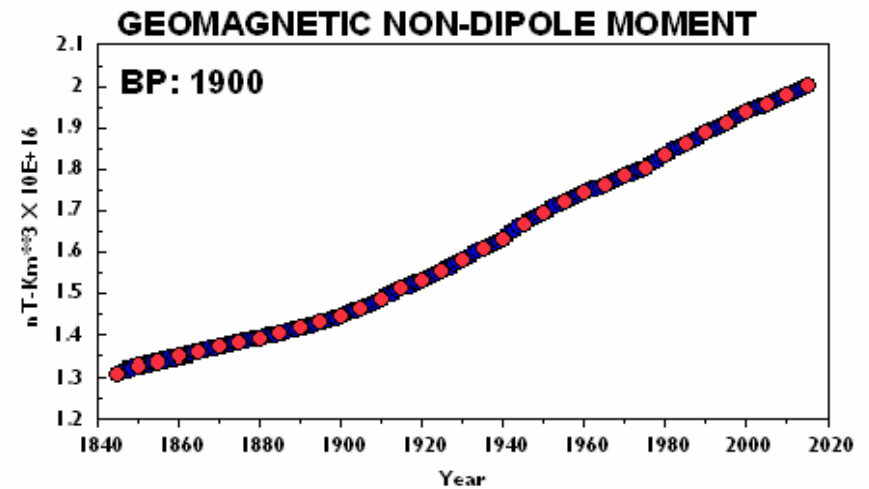
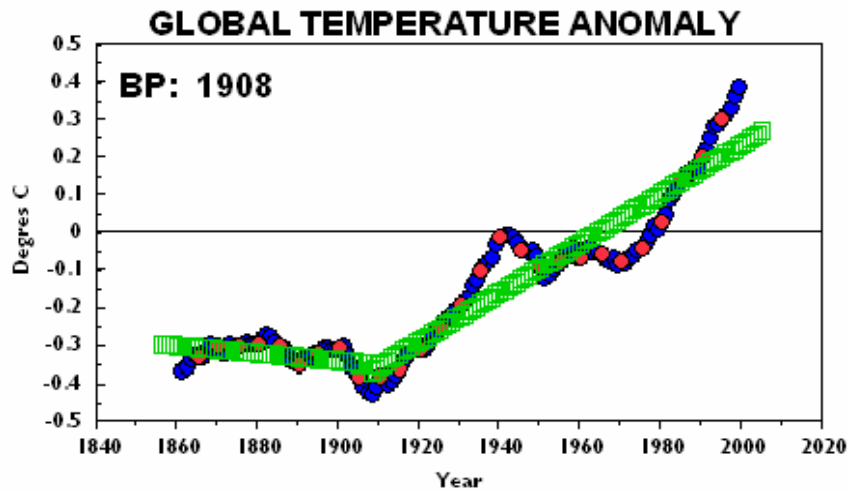
SECULAR VARIATIONS I

(Break Points Annotated)



SECULAR VARIATIONS II

(Break Points Annotated)



SECULAR TIME LEADS(-)/LAGS(+) with respect to the GEOMAGNETIC DIPOLE MOMENT

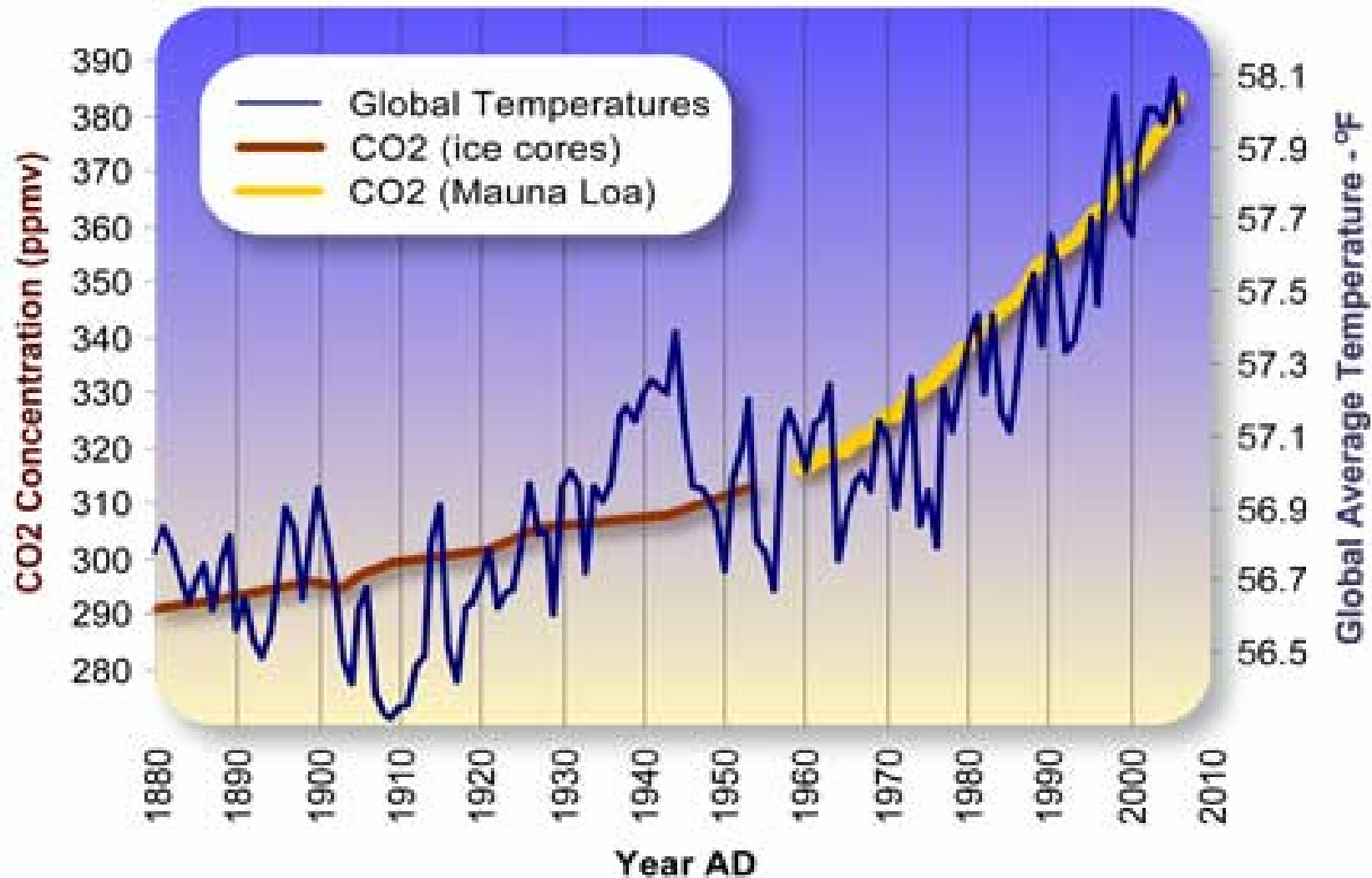
Parameter	Break Point (Year)	Lead/Lag (Years)
– Solar Irradiance	1895	-5
– Geomagnetic Dipole Moment	1900	0
– Geomagnetic non-Dipole Moment	1900	0
– Geomagnetic Aa Index	1902	+2
– MPP-X	1902	+2
– MPP-Y	1903	+3
– ELOD	1905	+5
– GTA	1908	+8
– Hurricane Frequency	1911	+11

SOLAR-TERRESTRIAL INTERACTIONS

EXCURSIONS & IMPULSES

(1930's Dust Bowl & the 1947 Impulse)

Global Average Temperature and Carbon Dioxide Concentrations, 1880 - 2006



Data Source Temperature: ftp://ftp.ncdc.noaa.gov/pub/data/anomalies/annual.land_and_ocean.90S.90N.df_1901-2000mean.dat

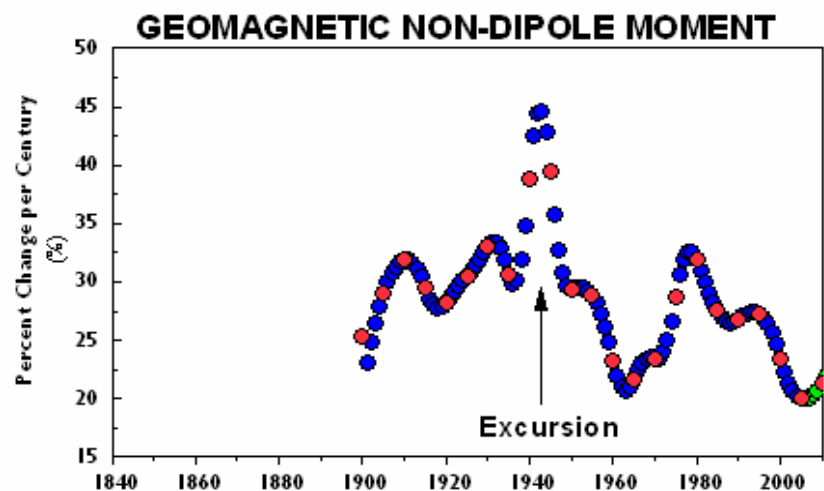
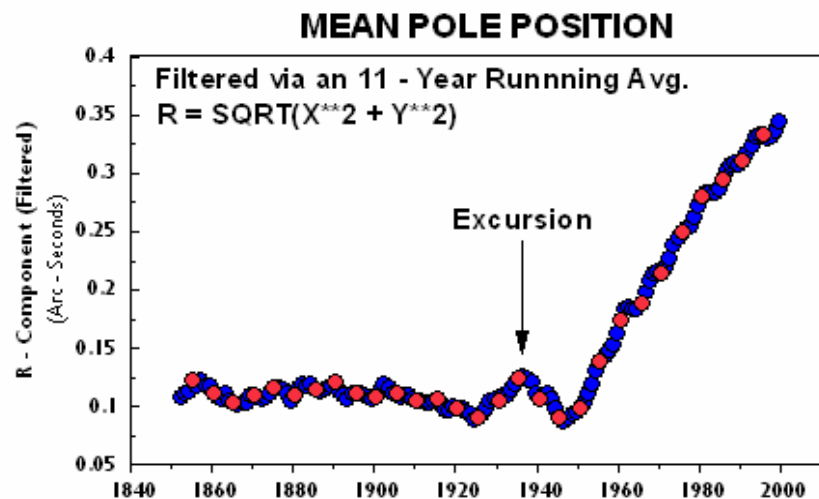
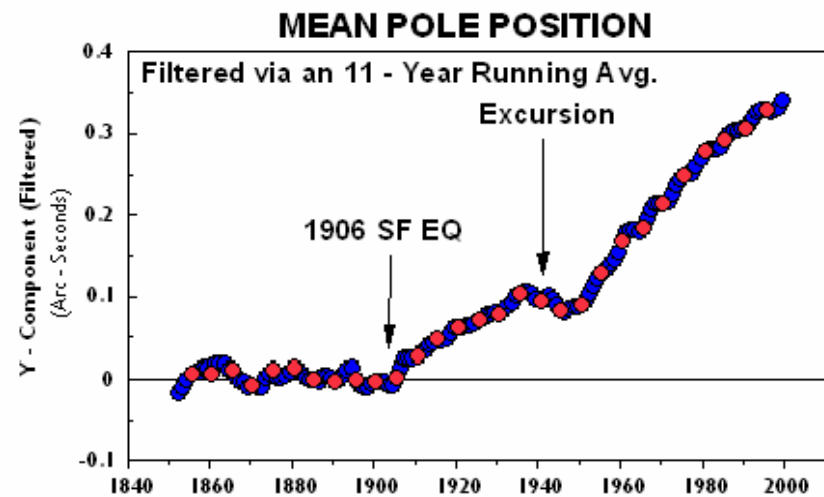
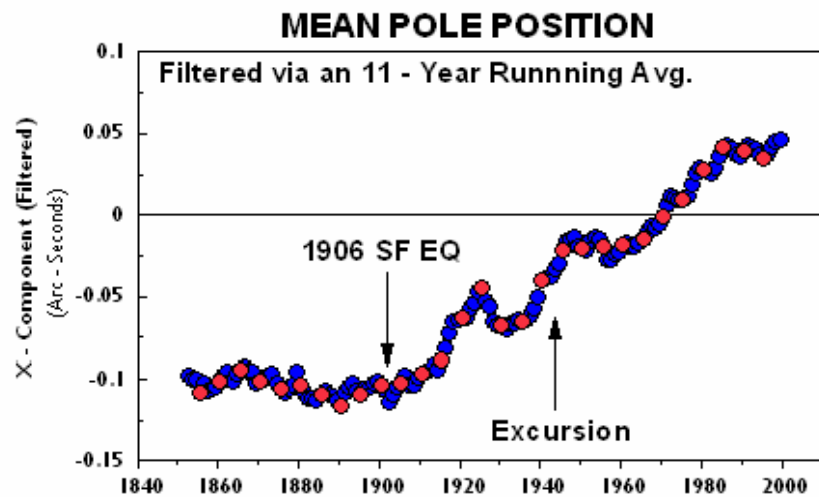
Data Source CO2 (Siple Ice Cores): <http://cdiac.esd.ornl.gov/ftp/trends/co2/siple2.013>

Data Source CO2 (Mauna Loa): <http://cdiac.esd.ornl.gov/ftp/trends/co2/maunaloa.co2>
& http://www.esrl.noaa.gov/gmd/webdata/cogg/trends/co2_mm_mlo.dat

Graphic Design: Michael Ernst, The Woods Hole Research Center



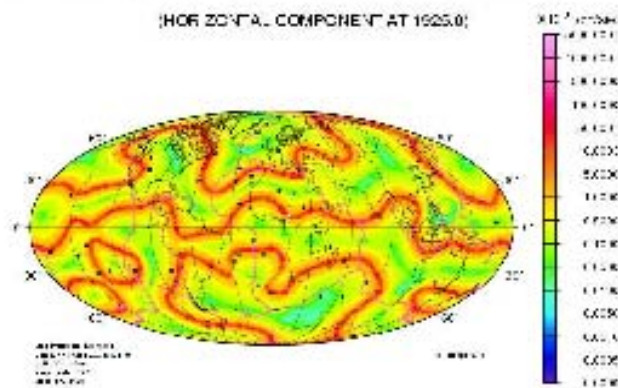
POLAR MOTION VS GEOMAGNETIC NON-DIPOLE EXCURSION



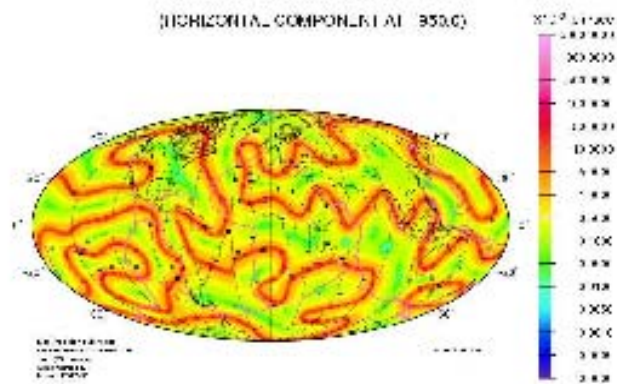
CMB NON-DIPOLE FLUID FLOW (1925 - 2000)

1947 Impulse and Subsequent Decay

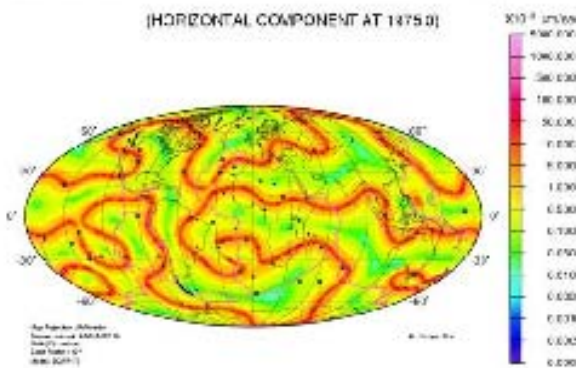
NON-DIPOLE FLUID VELOCITY AT CORE-MANTLE BOUNDARY



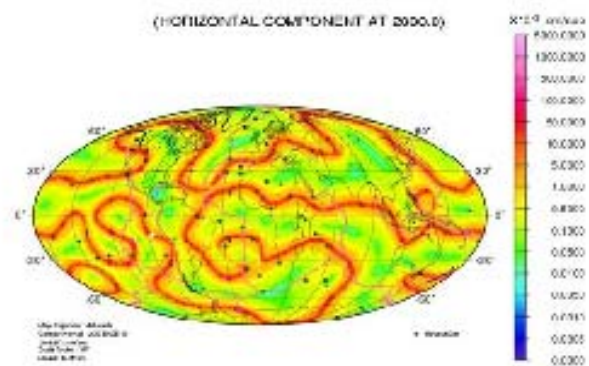
NON-DIPOLE FLUID VELOCITY AT CORE-MANTLE BOUNDARY



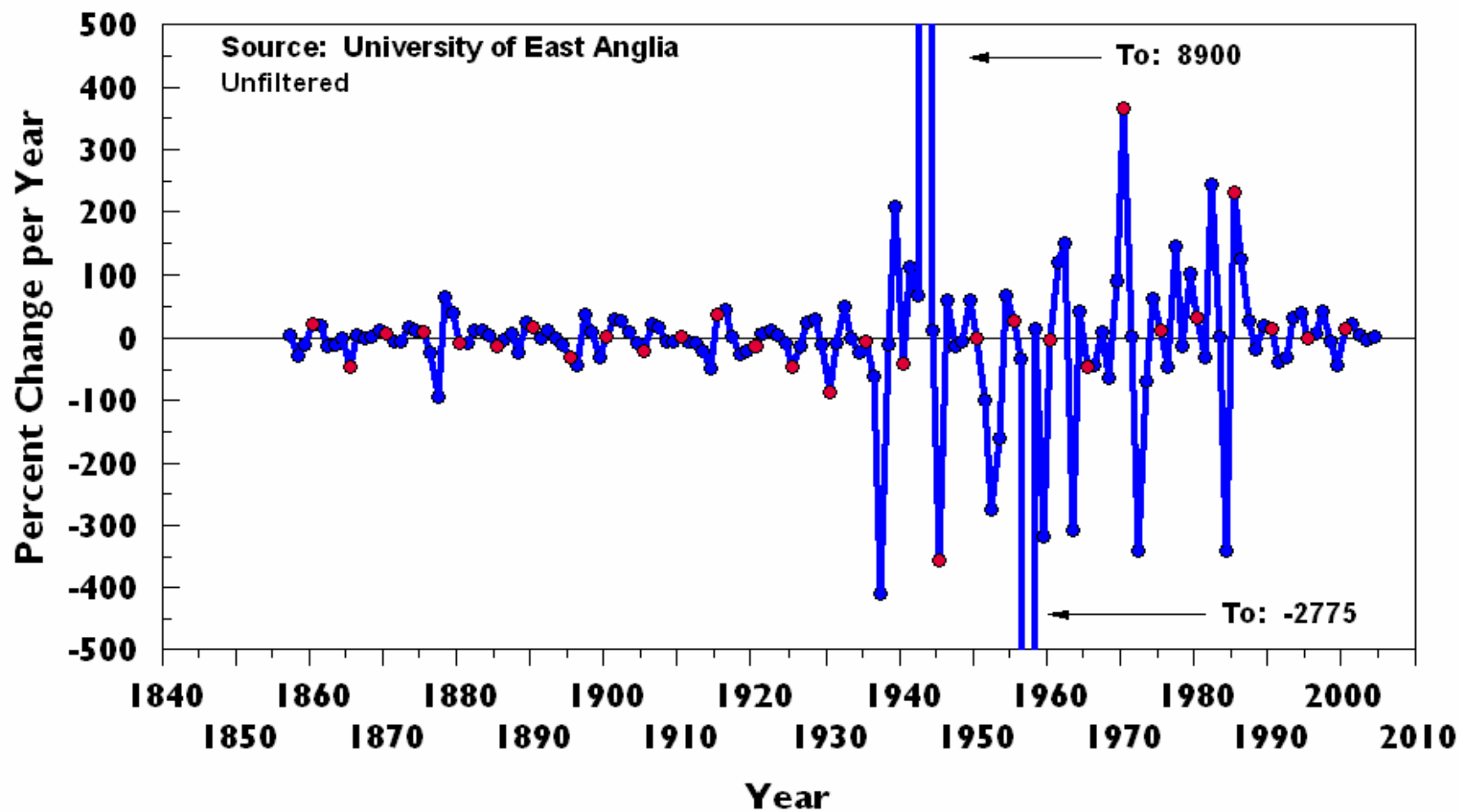
NON-DIPOLE FLUID VELOCITY AT CORE-MANTLE BOUNDARY



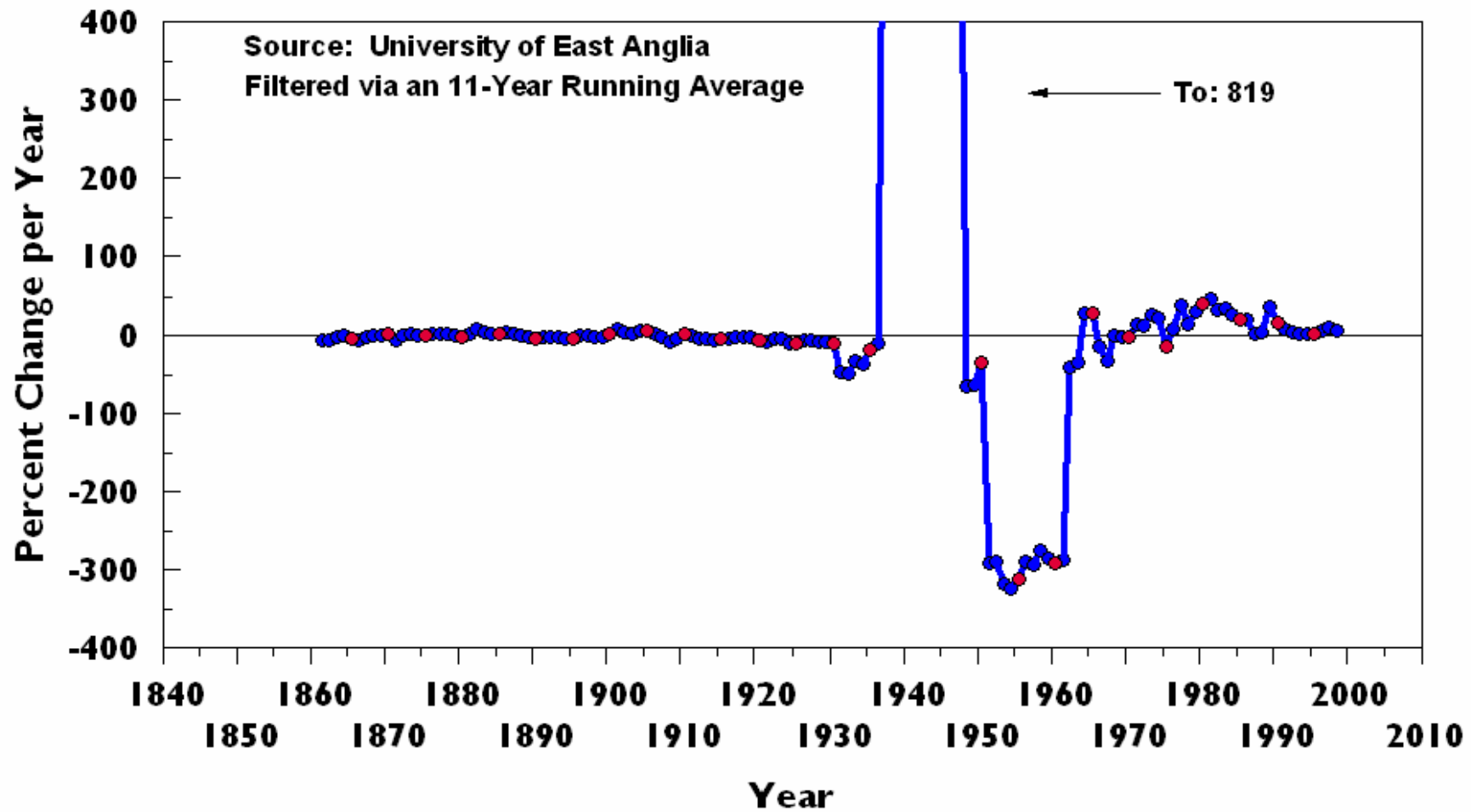
NON-DIPOLE FLUID VELOCITY AT CORE-MANTLE BOUNDARY



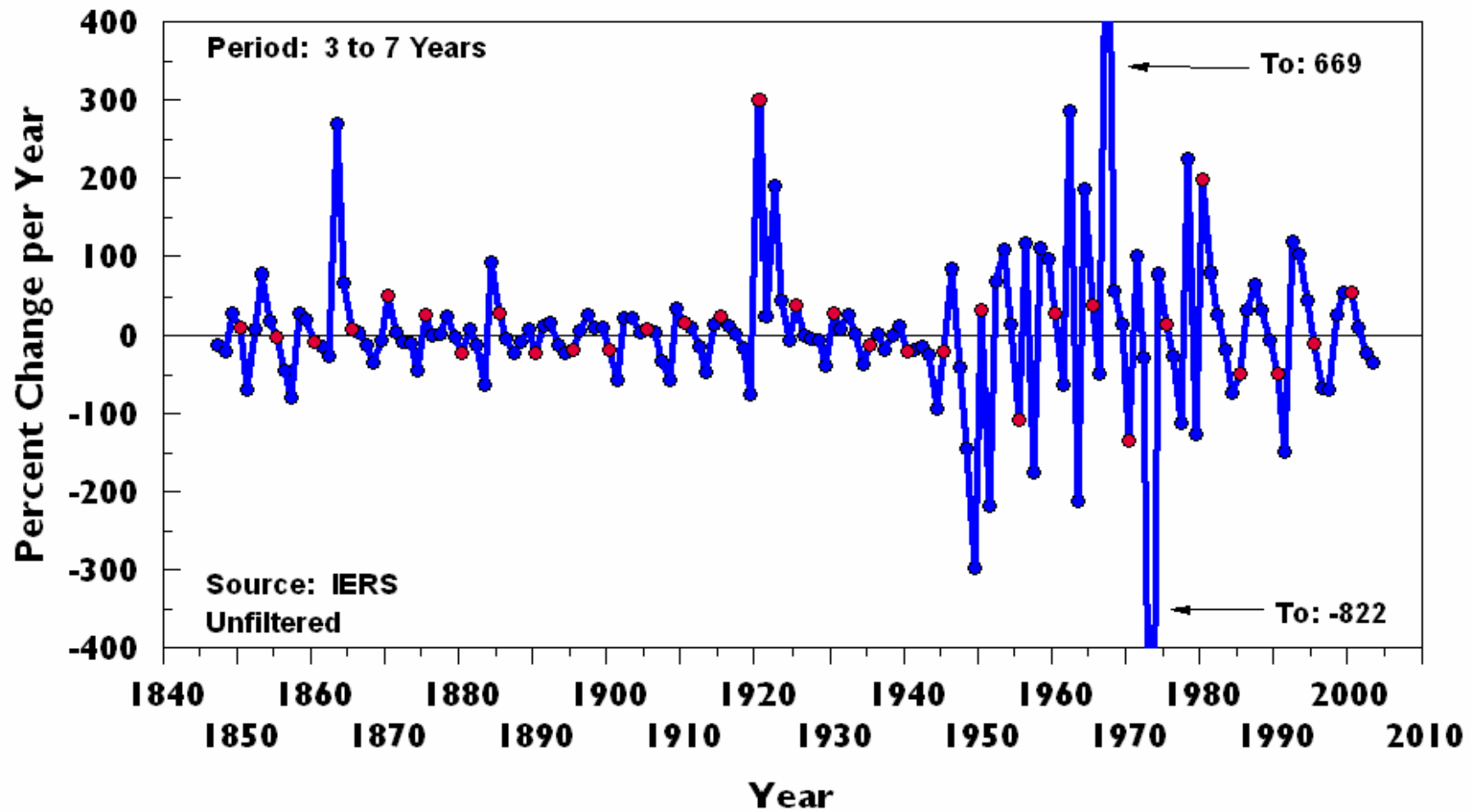
GLOBAL TEMPERATURE ANOMALY (Percent Change)



GLOBAL TEMPERATURE ANOMALY (Percent Change)

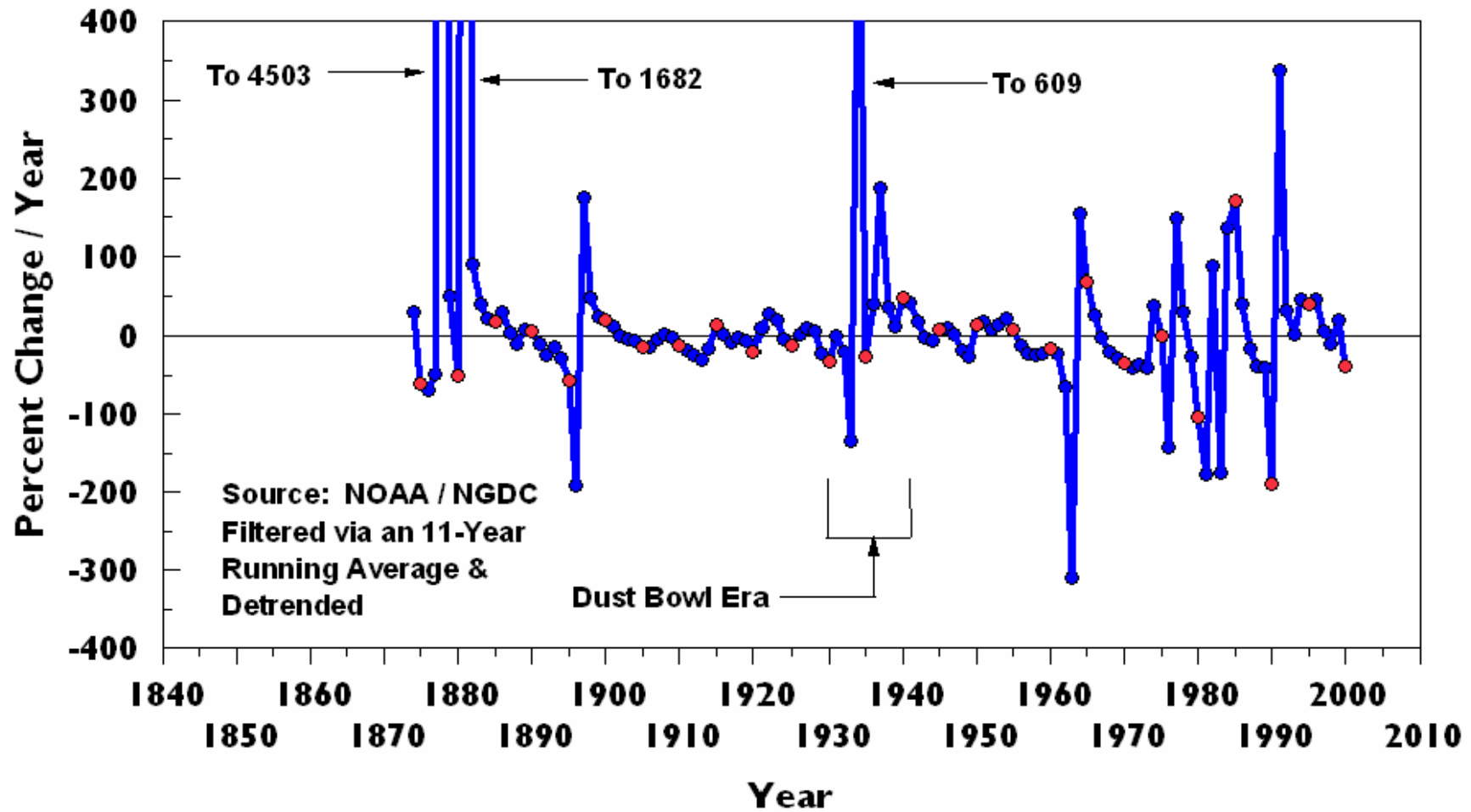


MEAN POLE POSITION X-Component Annual Means

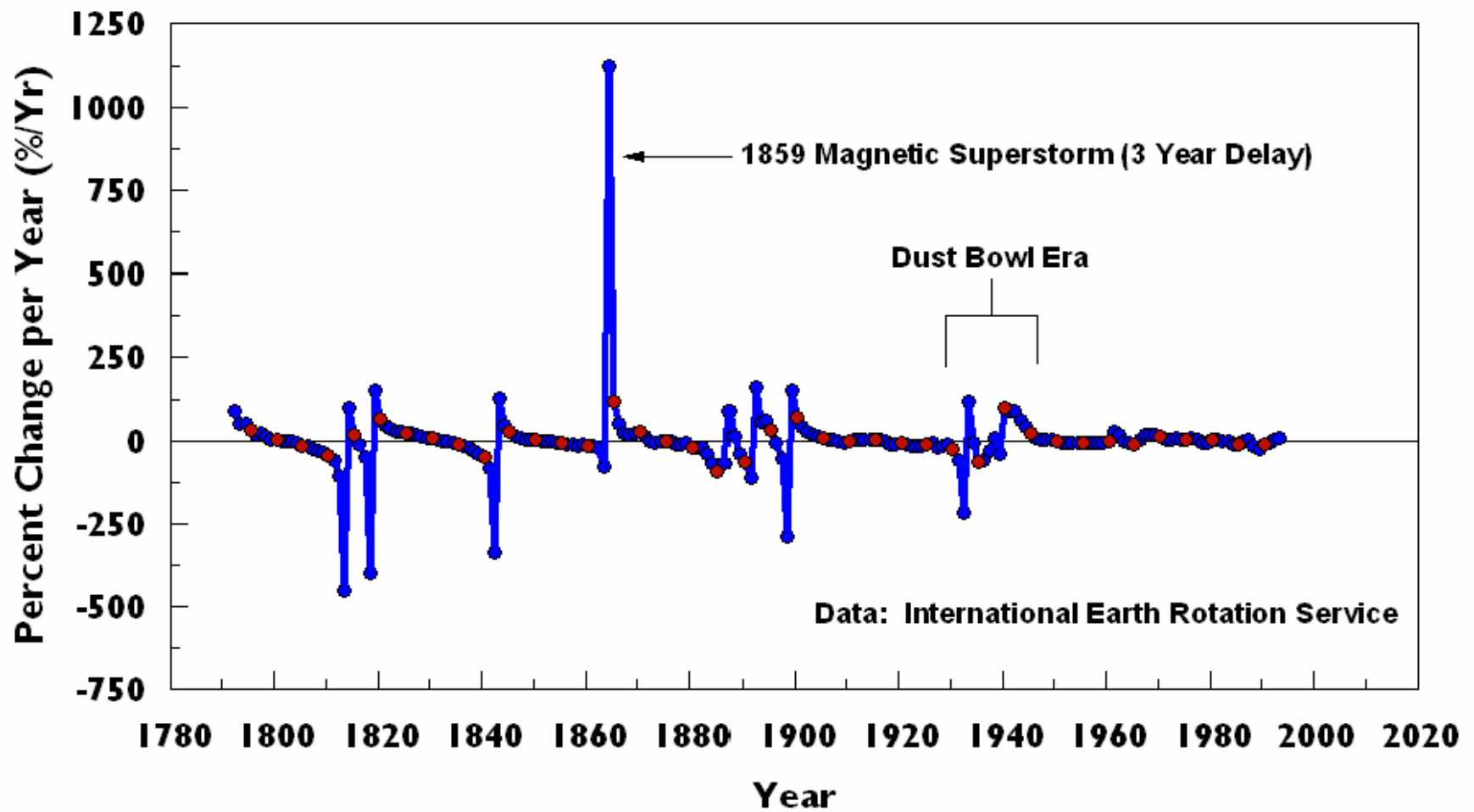


GEOMAGNETIC AA INDEX

(Percent Change per Year)

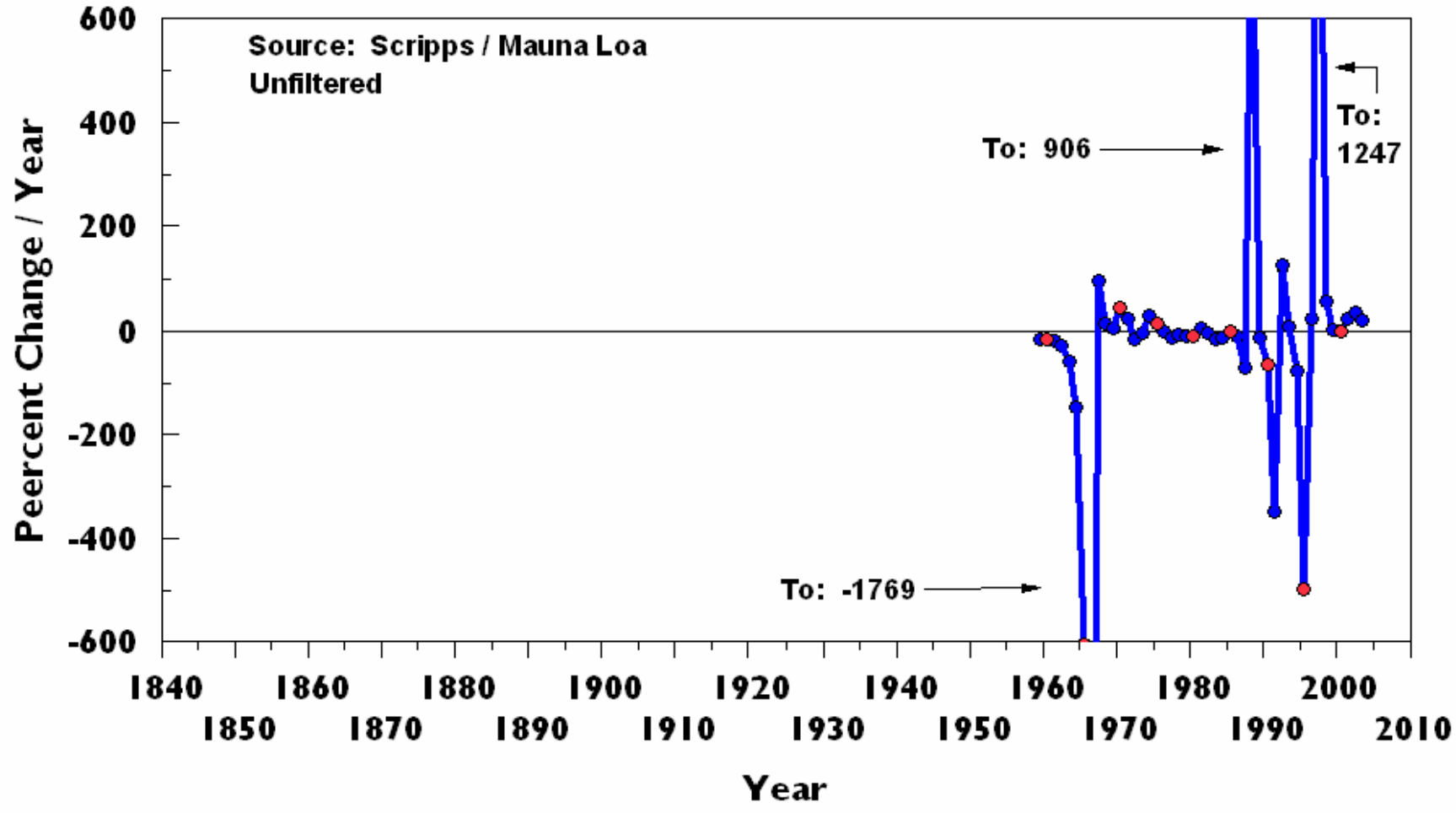


EXCESS LENGTH OF DAY



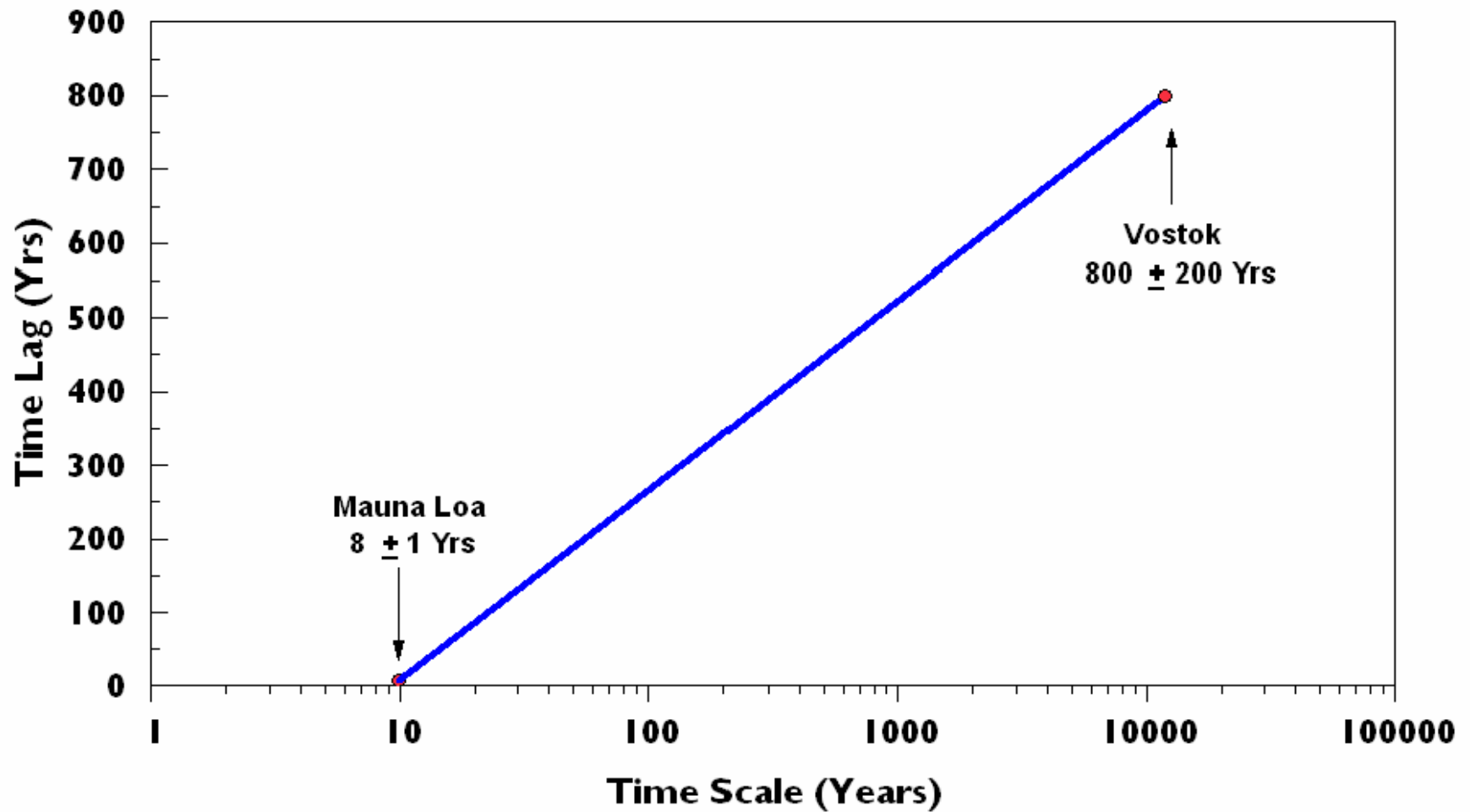
ANOMALOUS CO2 CONCENTRATION

(Percent Change per Year)



TIME LAG

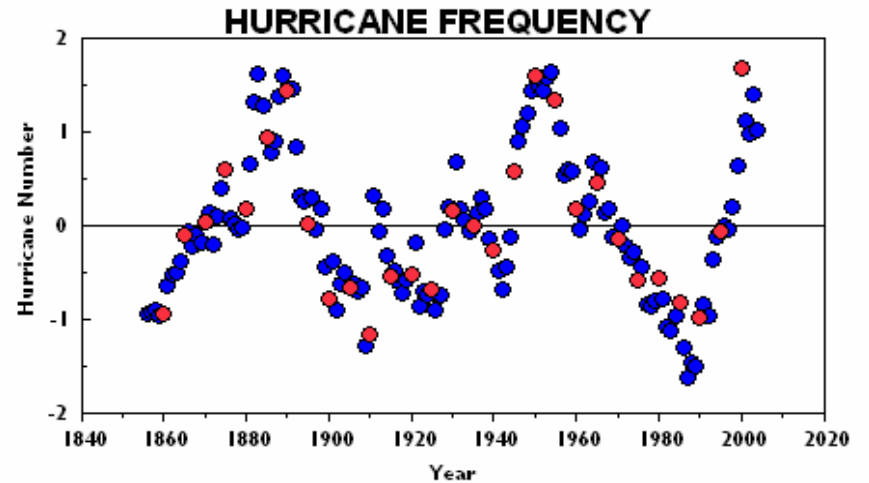
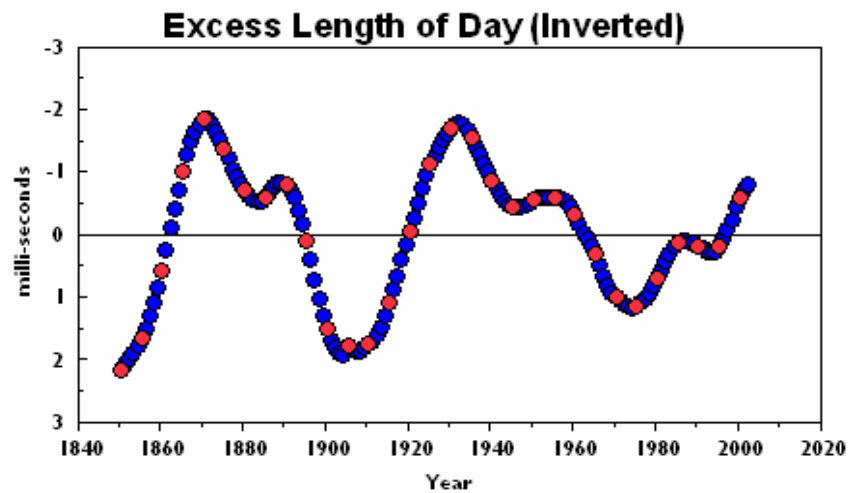
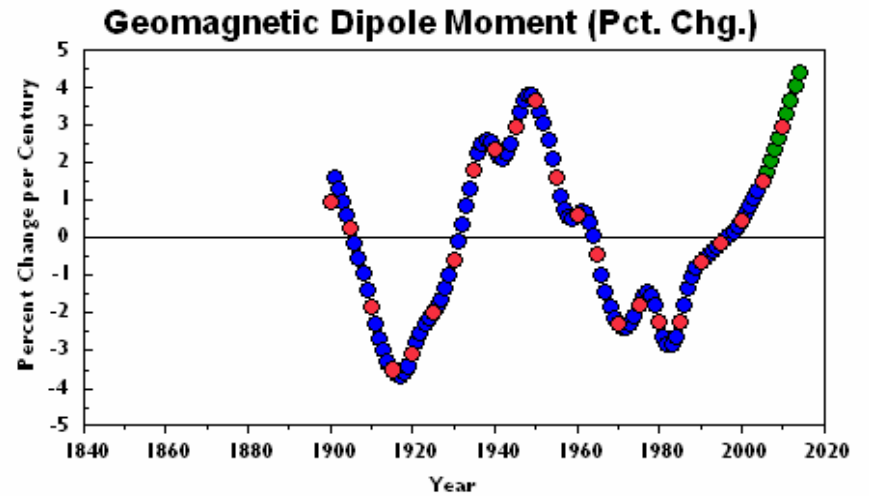
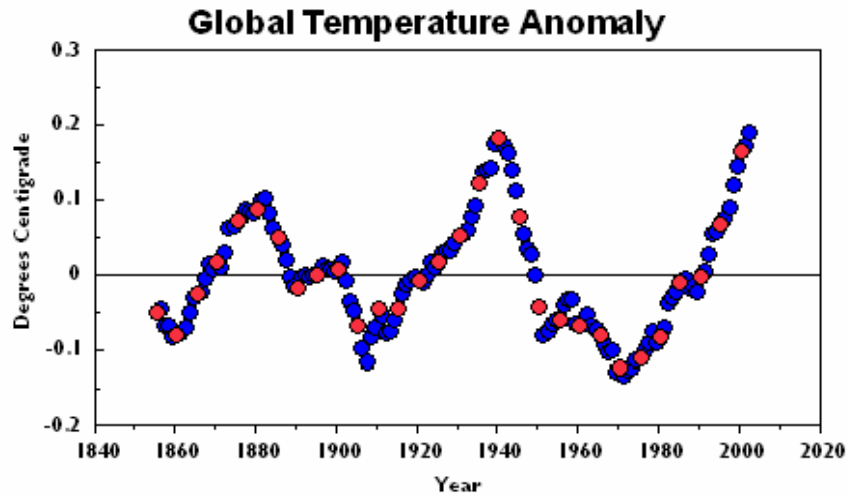
(Temperature - CO2)



DECADE TIME SCALE

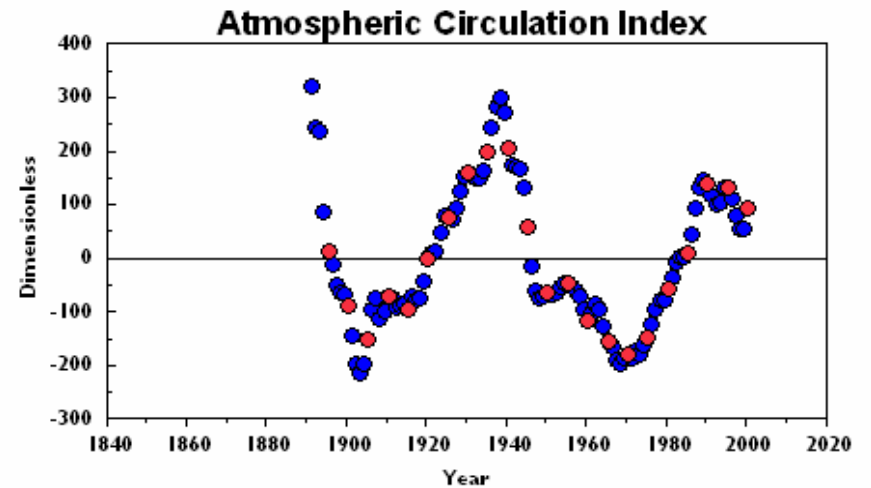
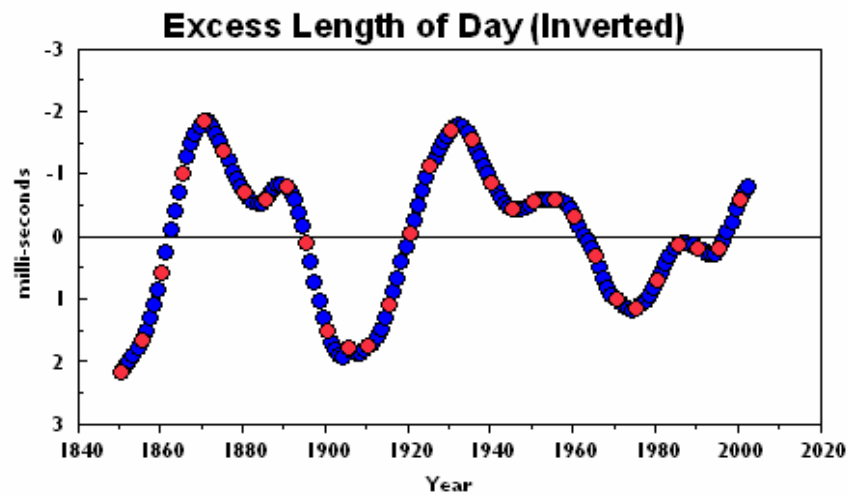
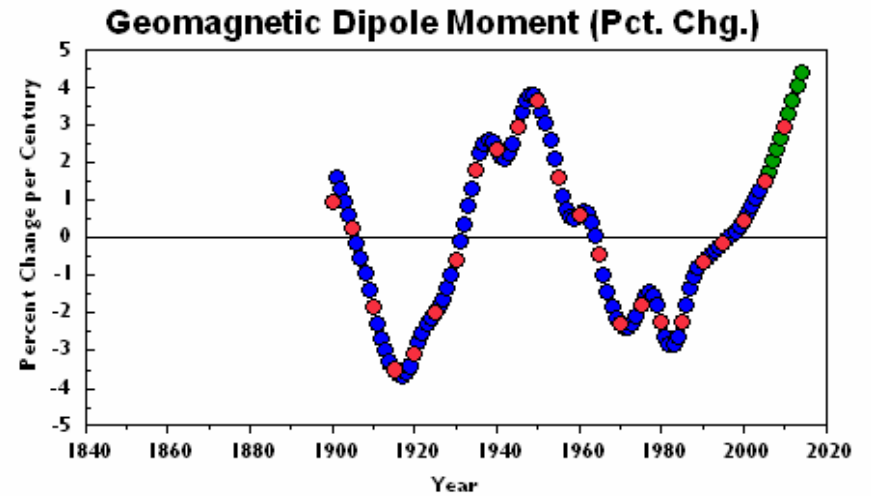
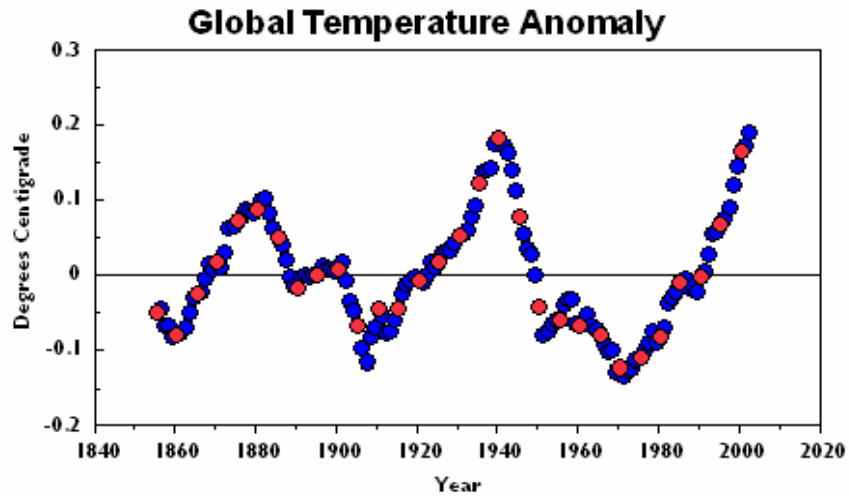
DECADE VARIATIONS I

(Long Period)

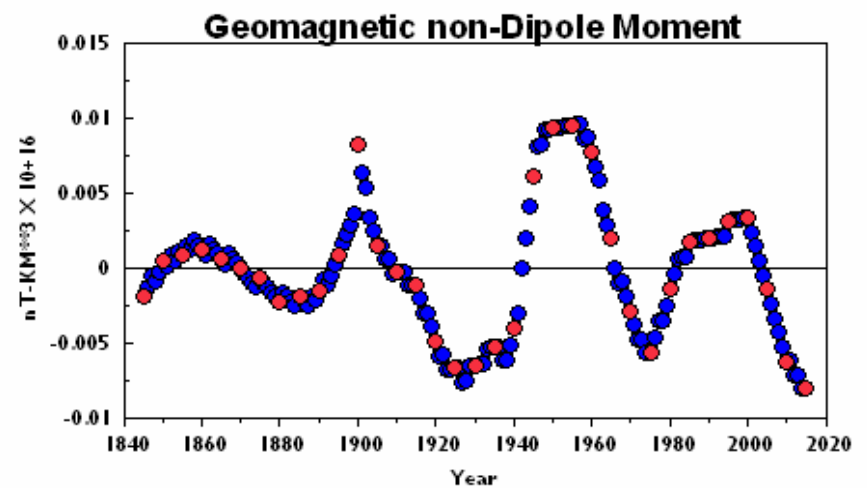
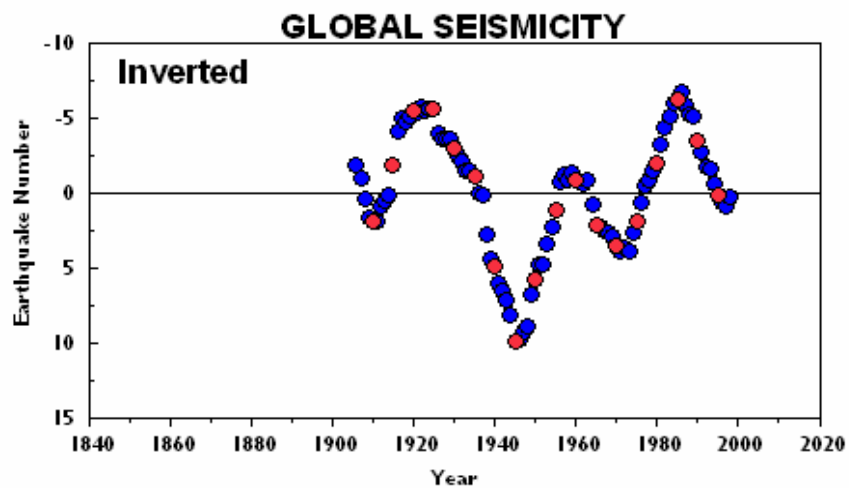
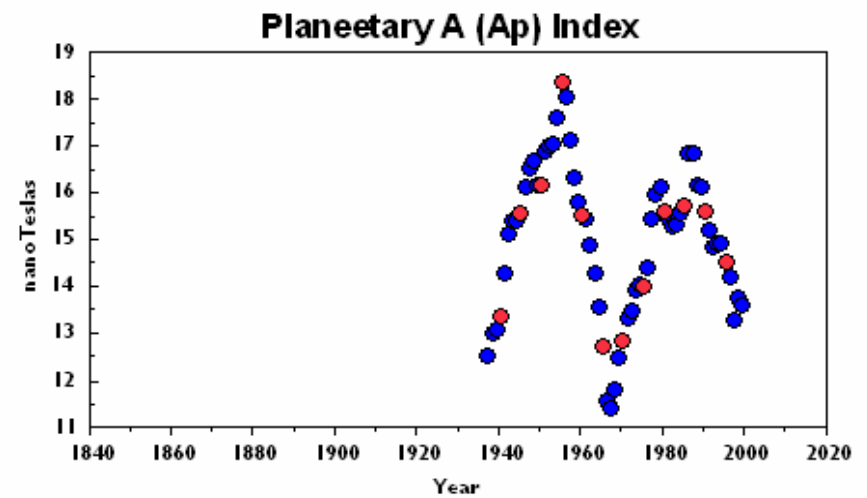
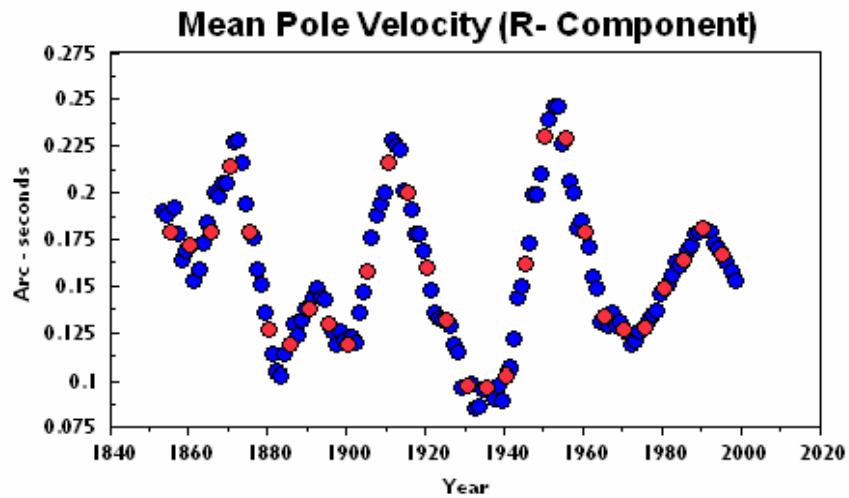


DECADE VARIATIONS II

(Long Period)

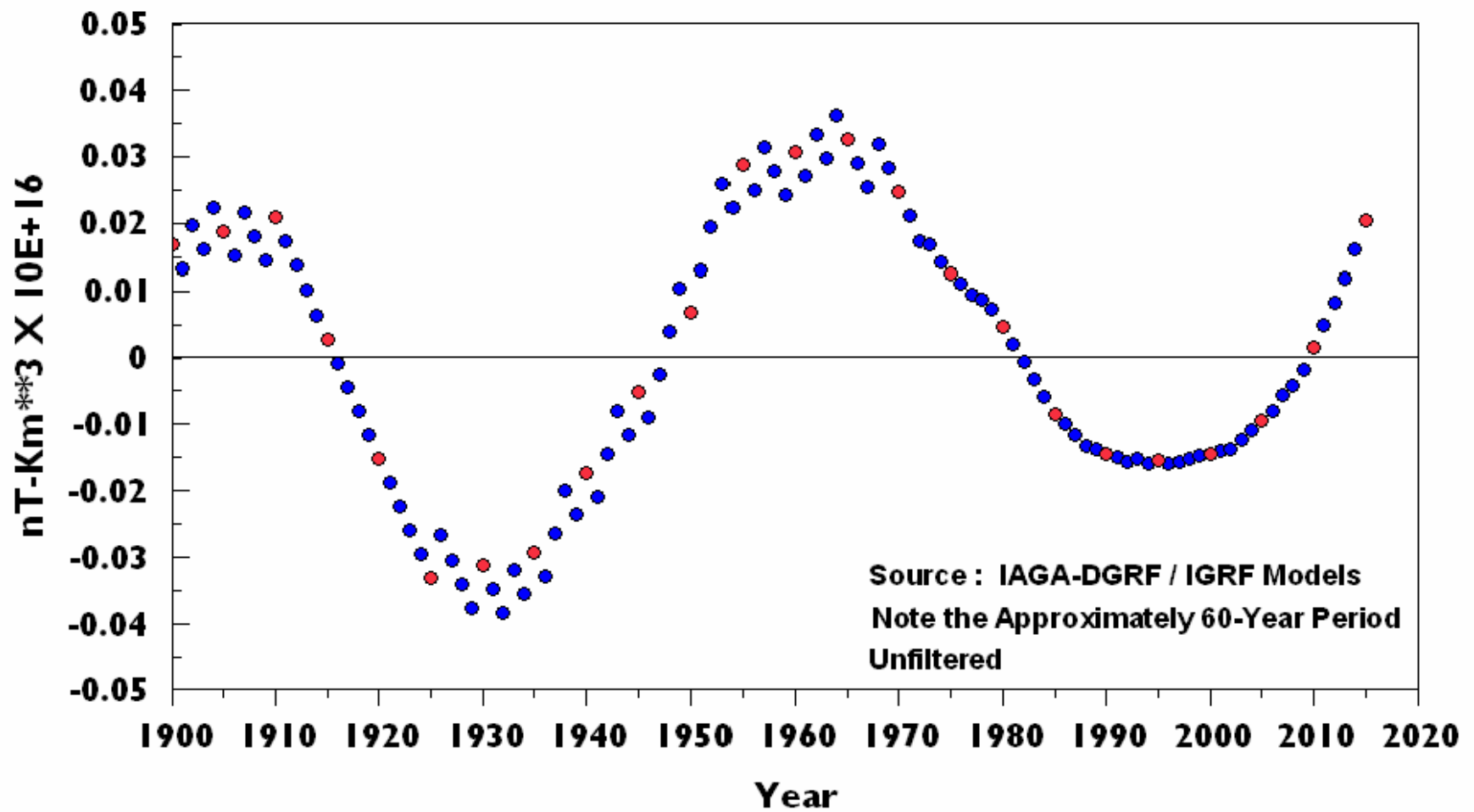


DECADE VARIATIONS IV (Short Period)

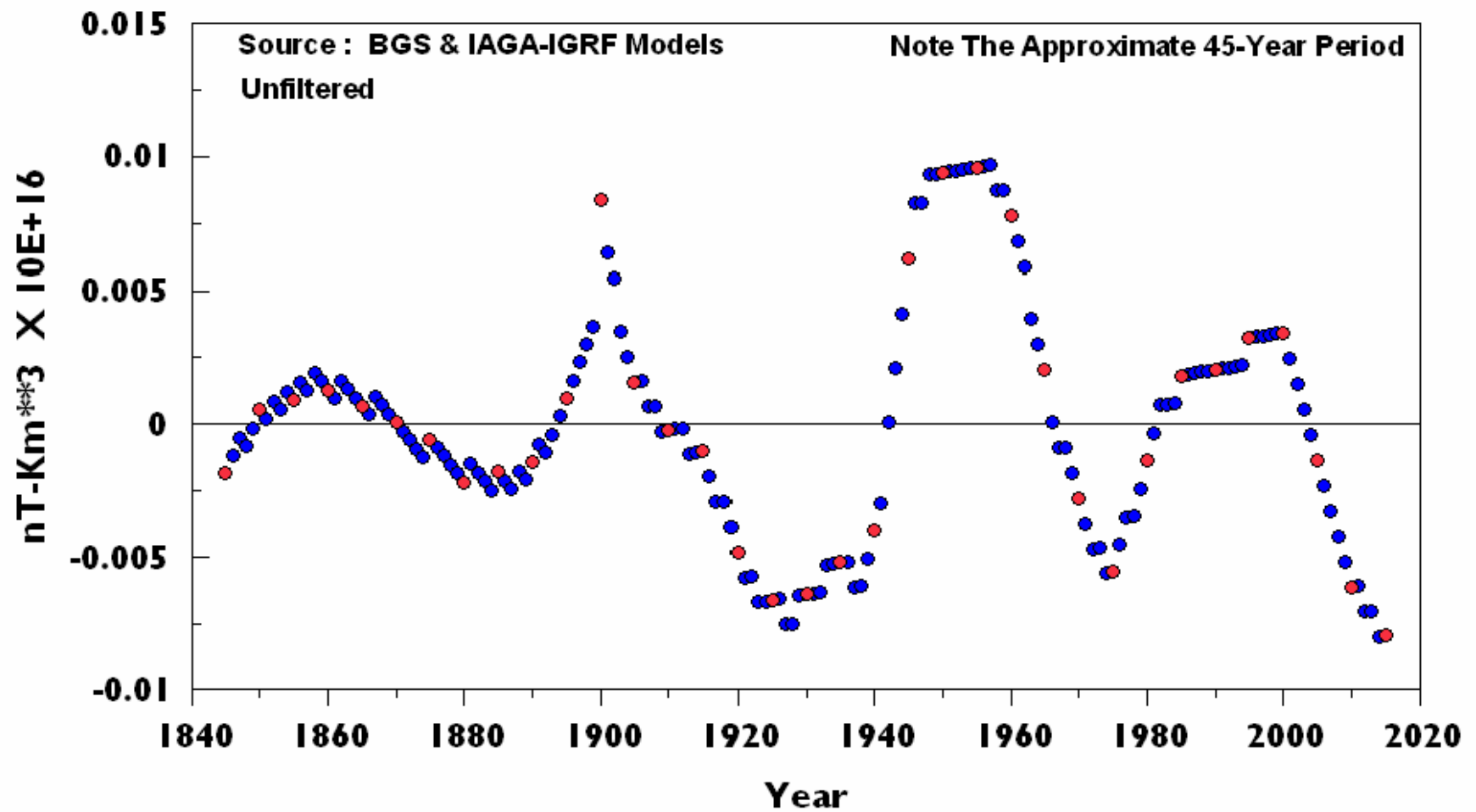


GEOMAGNETIC DIPOLE MOMENT

(Decade Variation)

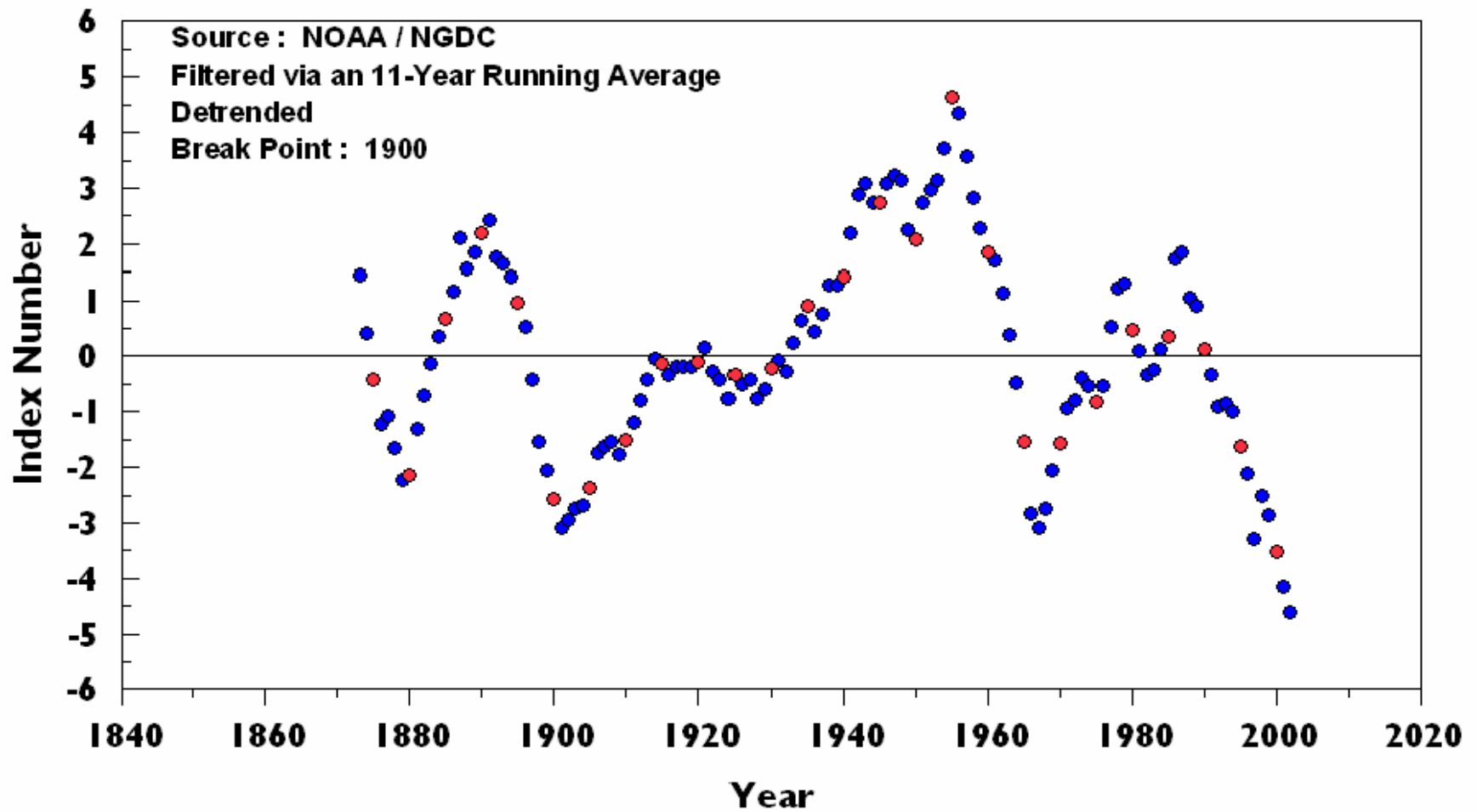


GEOMAGNETIC NON-DIPOLE MOMENT (Decade Variations)



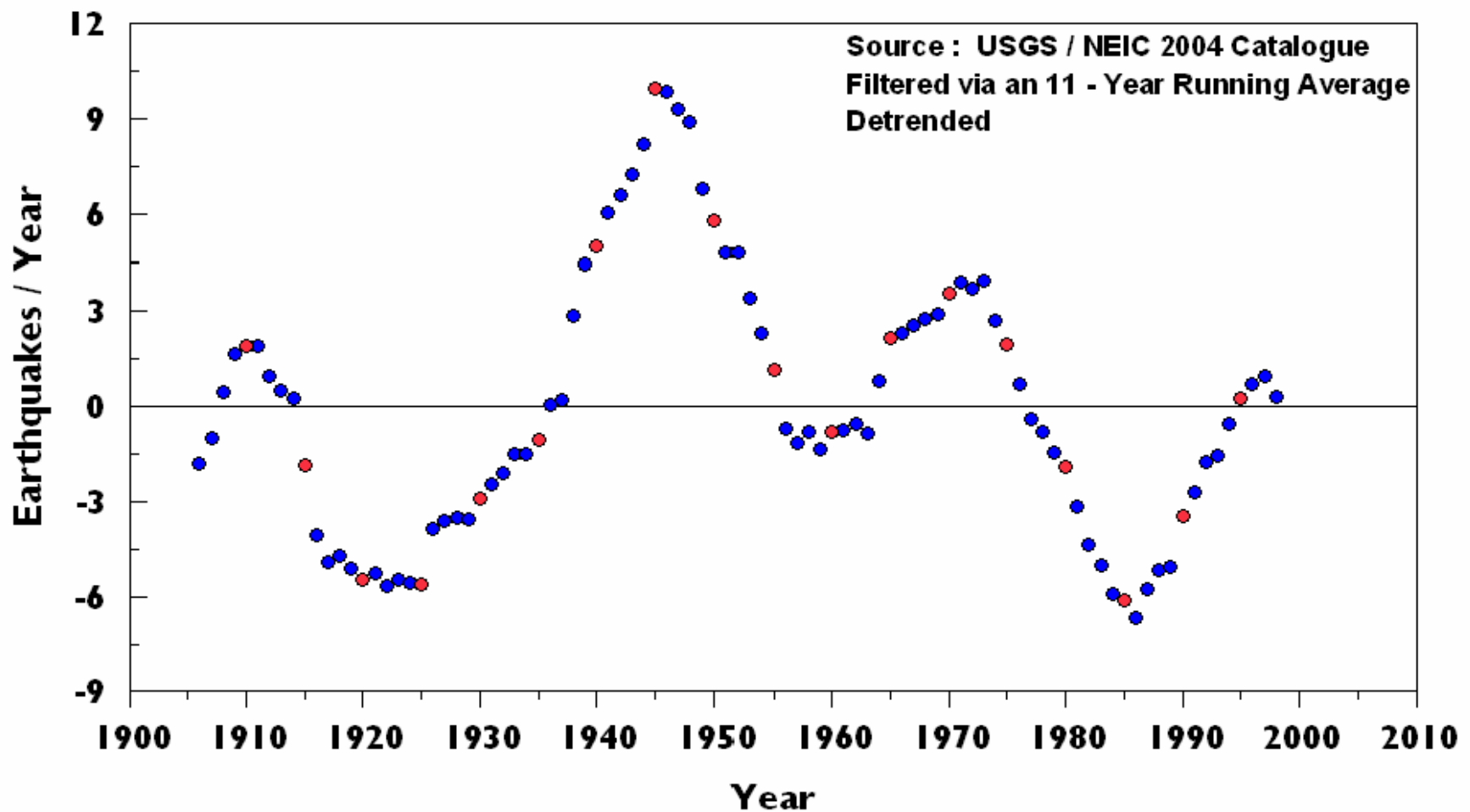
GEOMAGNETIC Aa INDEX

(Decade Variation)

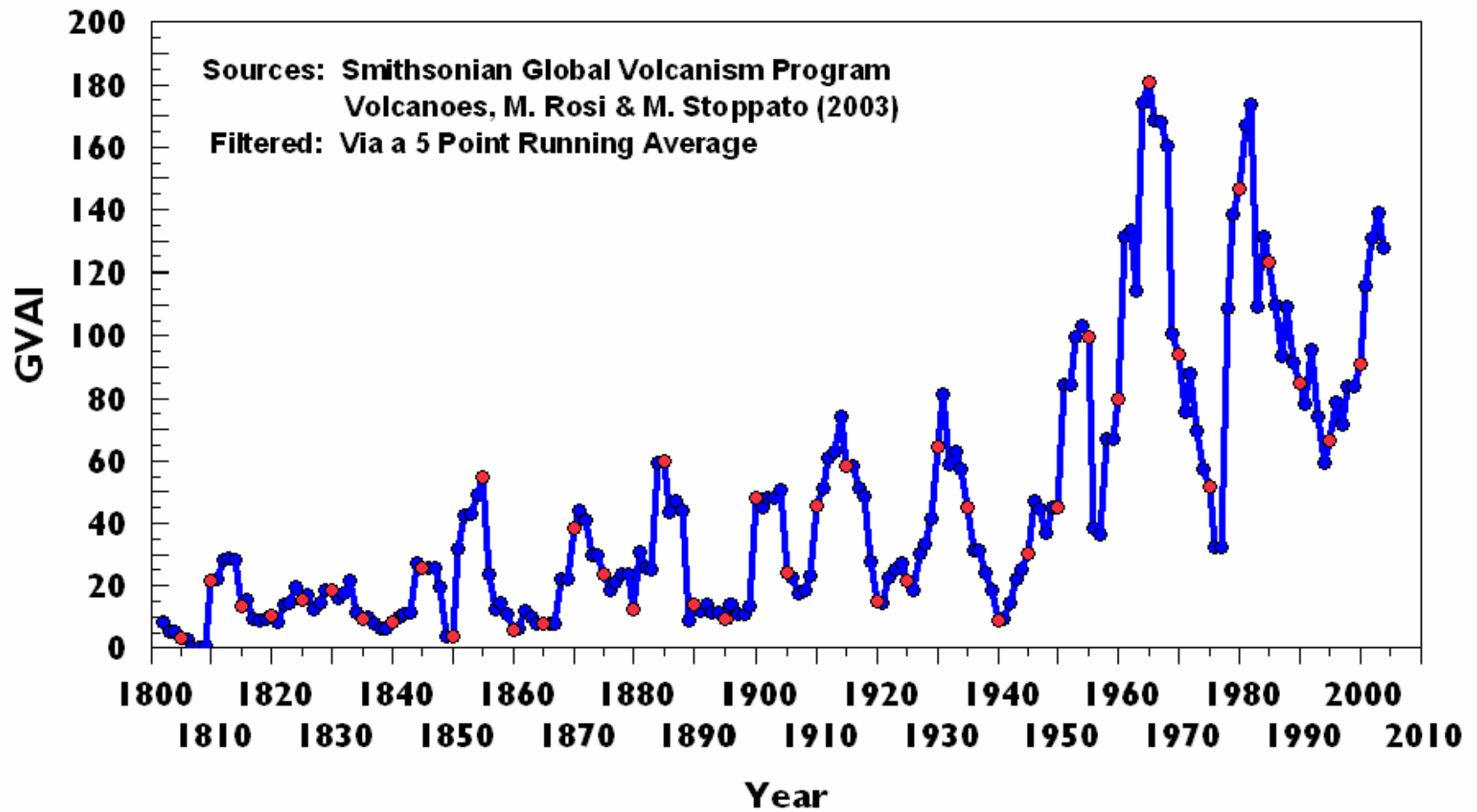


Volcanism & Seismicity

GLOBAL SEISMICITY: $M \geq 7$

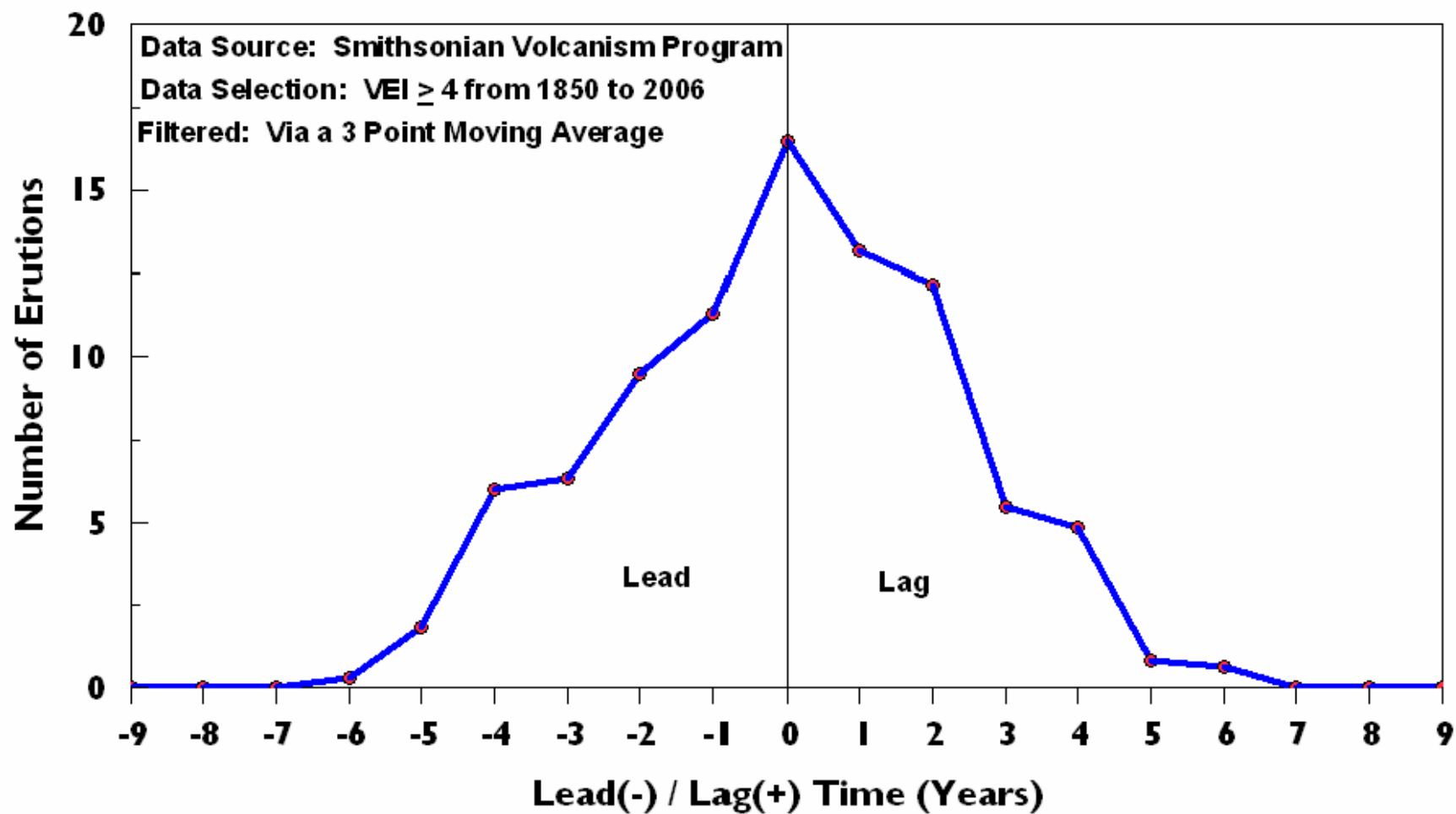


GLOBAL VOLCANIC ACTIVITY INDEX (VEI ≥ 3)



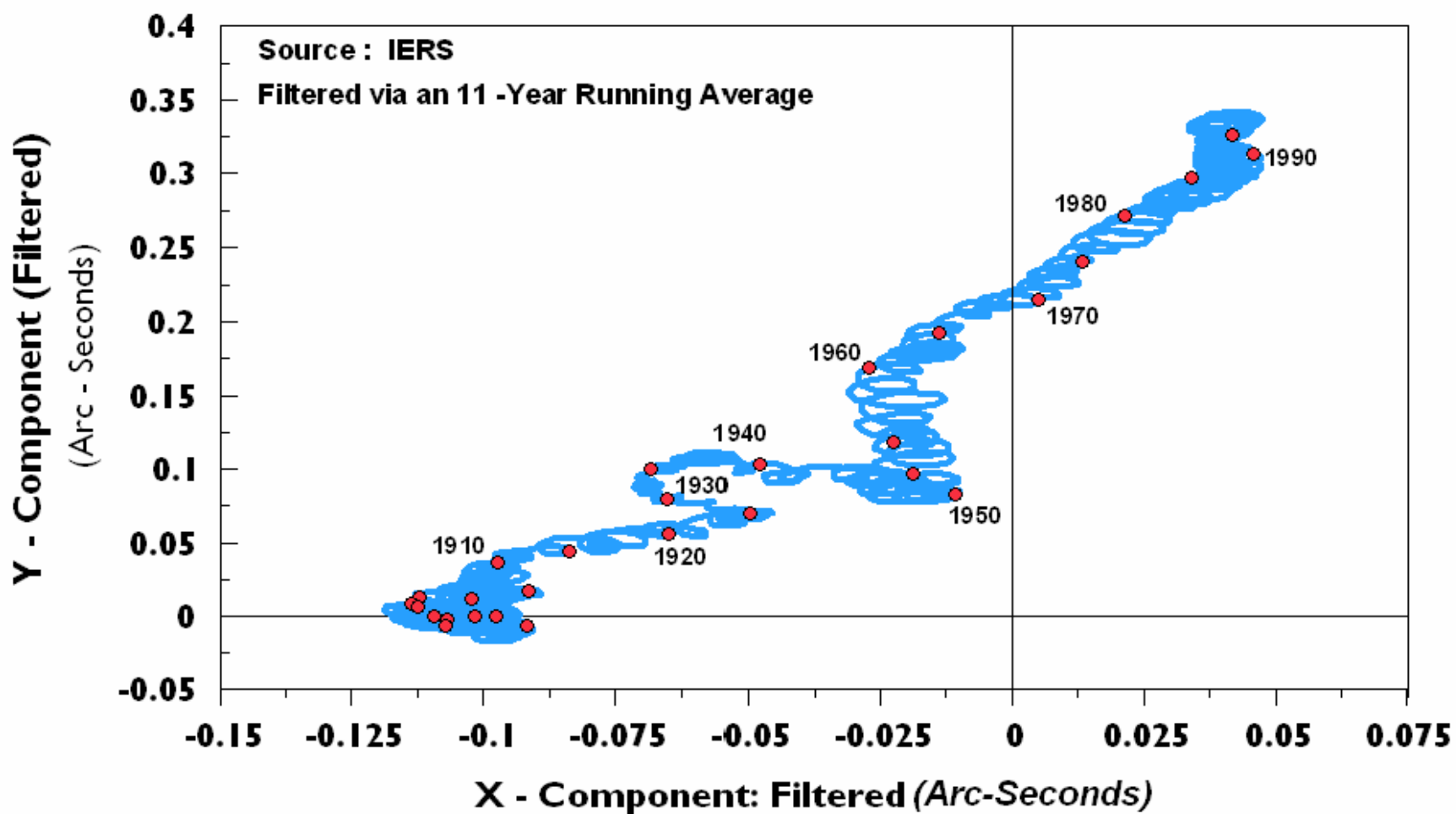
VOLCANIC ERUPTIONS VS GEOMAGNETIC JERKS

Lead / Lag Time



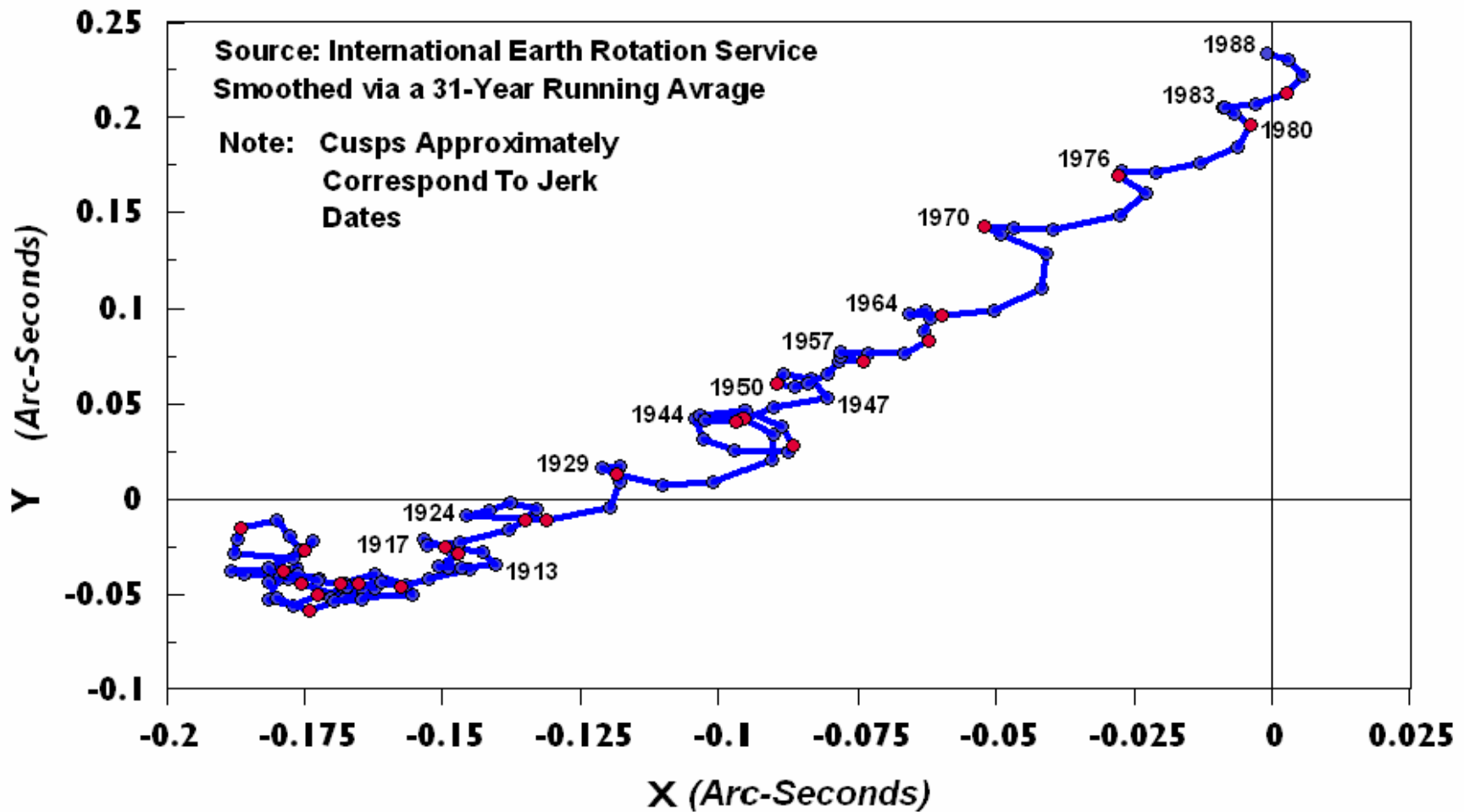
MEAN POLE POSITION

Daily Means



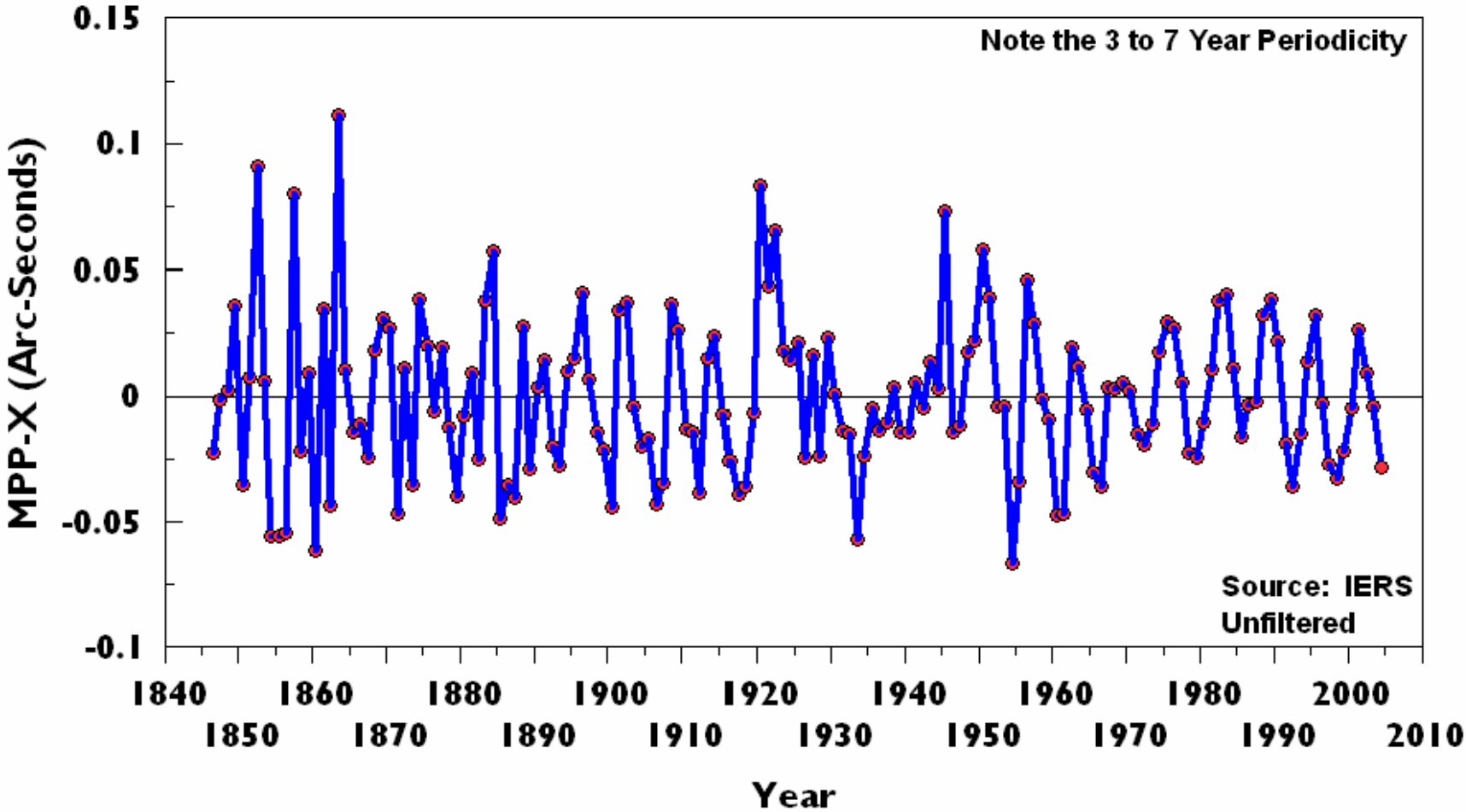
MEAN POLE POSITION

Annual Means

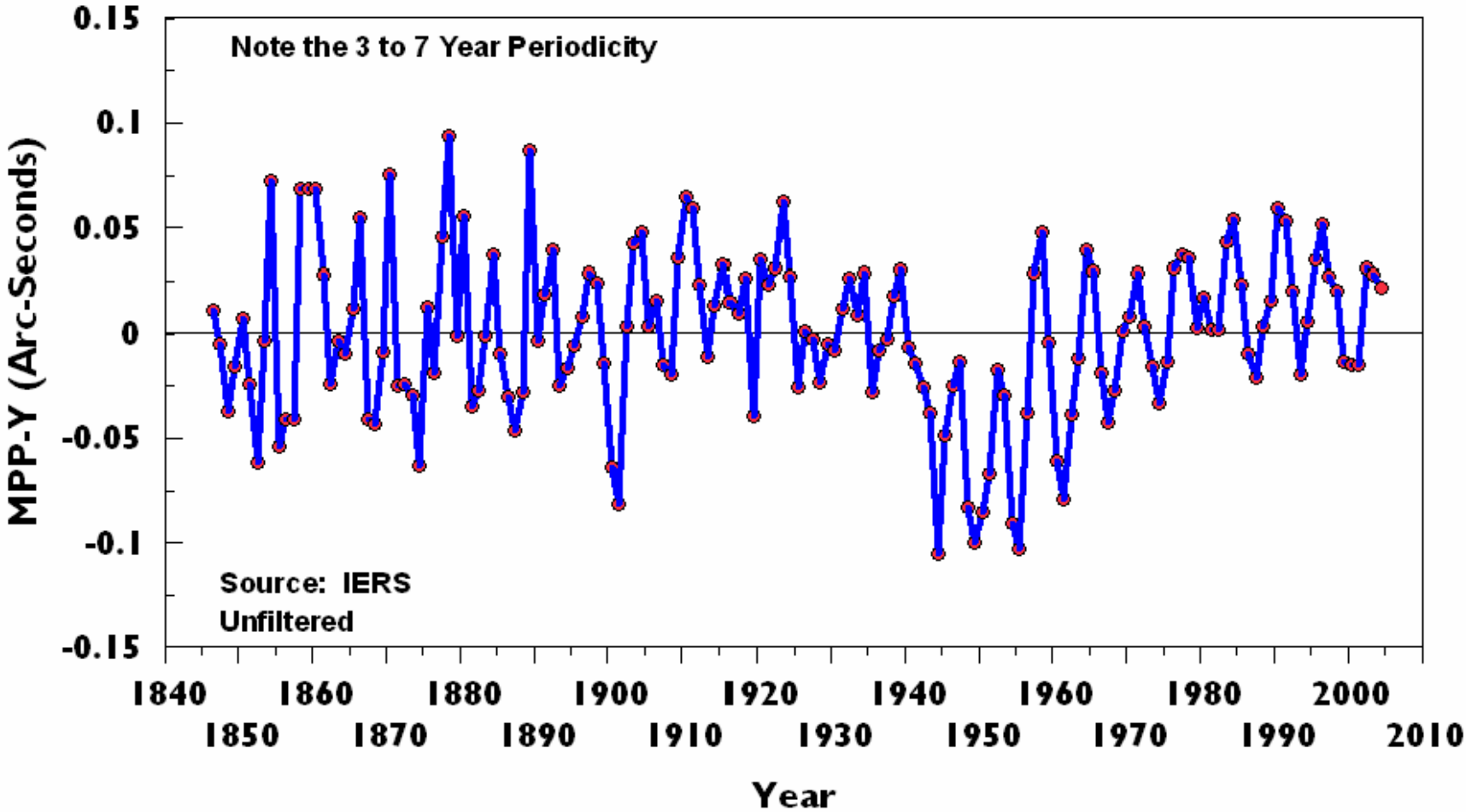


EI NINO & La NINA

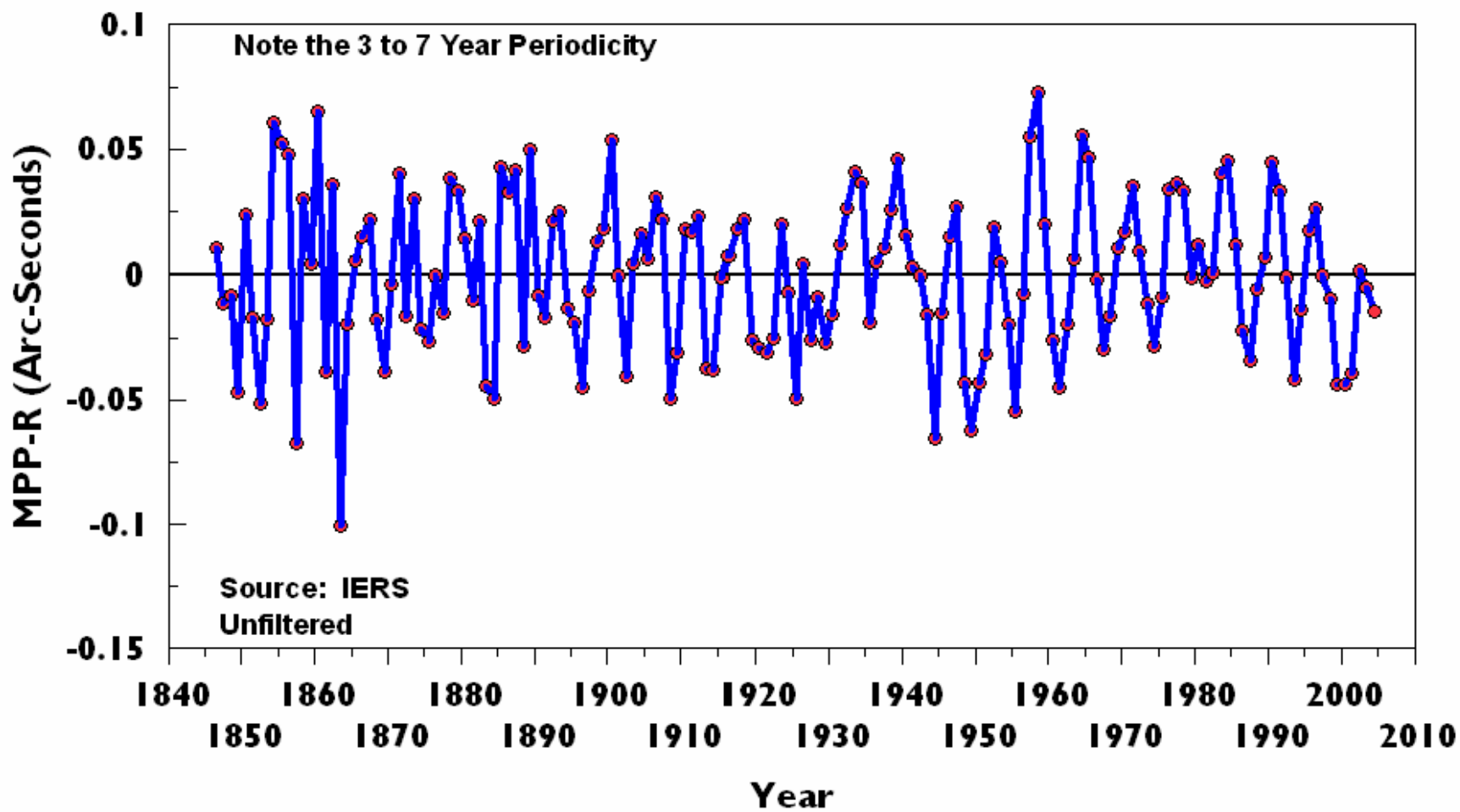
MEAN POLE POSITION (X-Component Residuals)



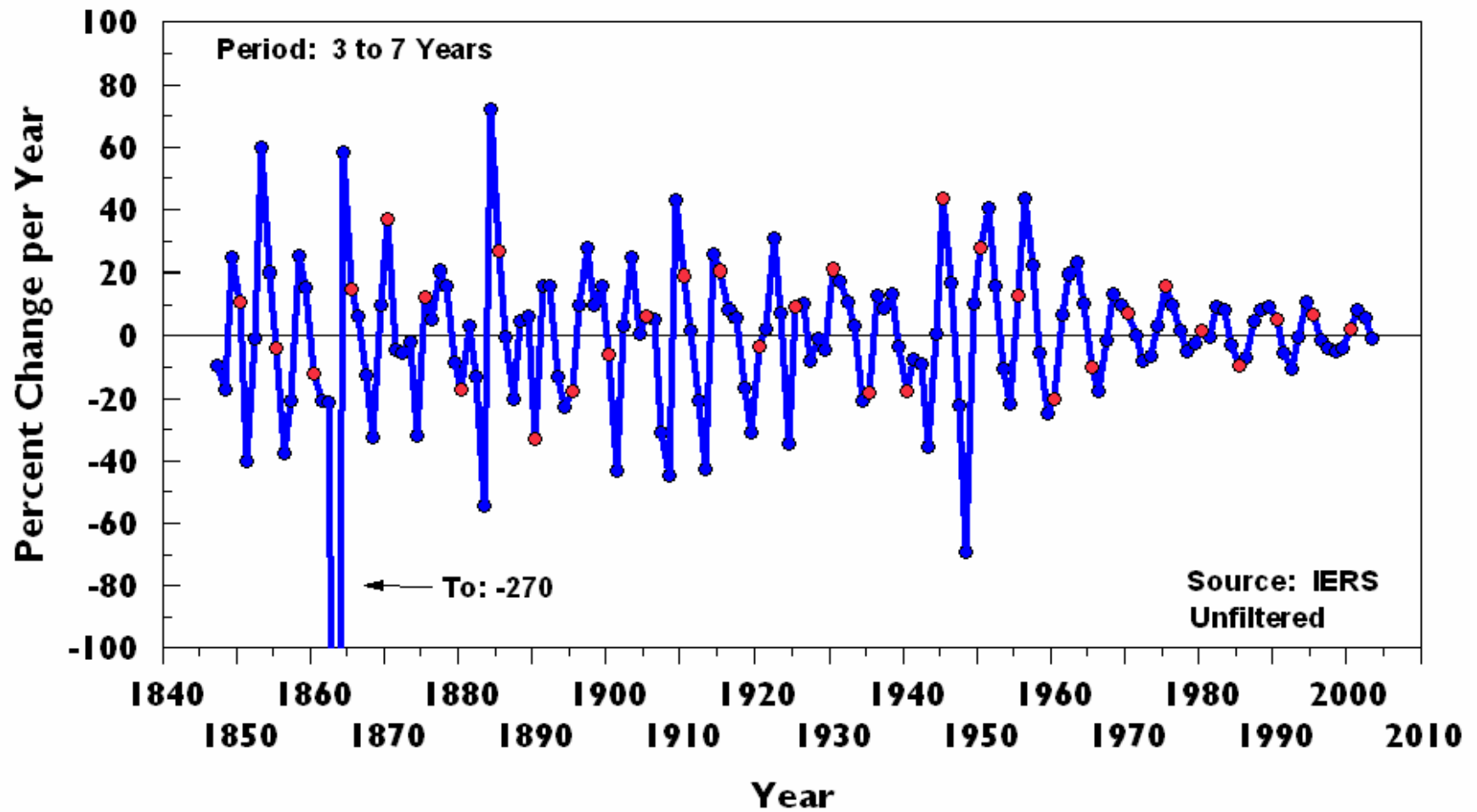
MEAN POLE POSITION (Y-Component Residuals)



MEAN POLE POSITION (R-Component Residuals)

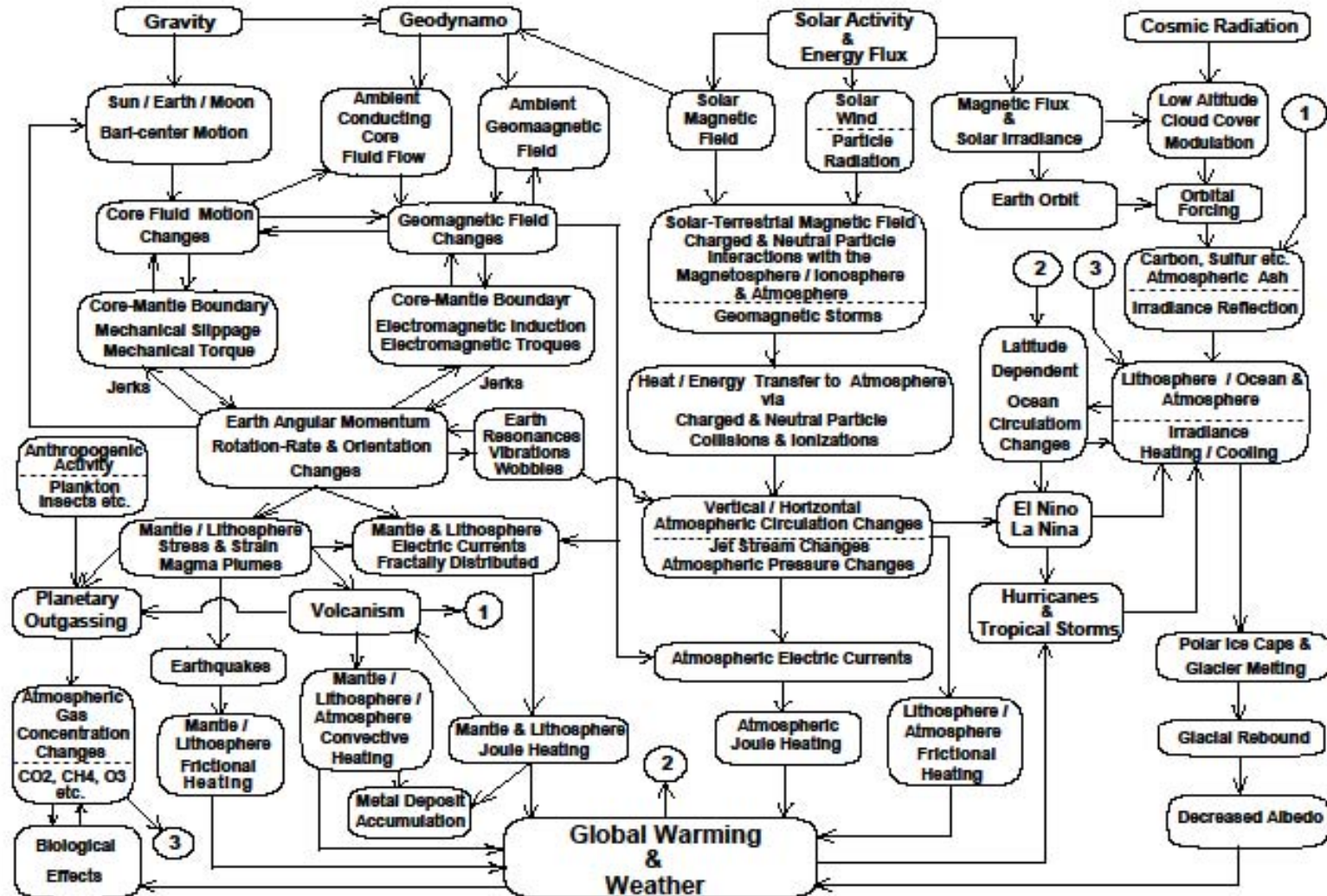


MEAN POLE POSITION R-Component Annual Means



SOLAR-TERRESTRIAL THEORY of GLOBAL WARMING

John M. Quinn



GLOBAL WARMING: Geophysical Counterpoints to the *Enhanced Greenhouse Theory*

Dorrance Publishing Co., Inc., Pittsburgh, PA

2009

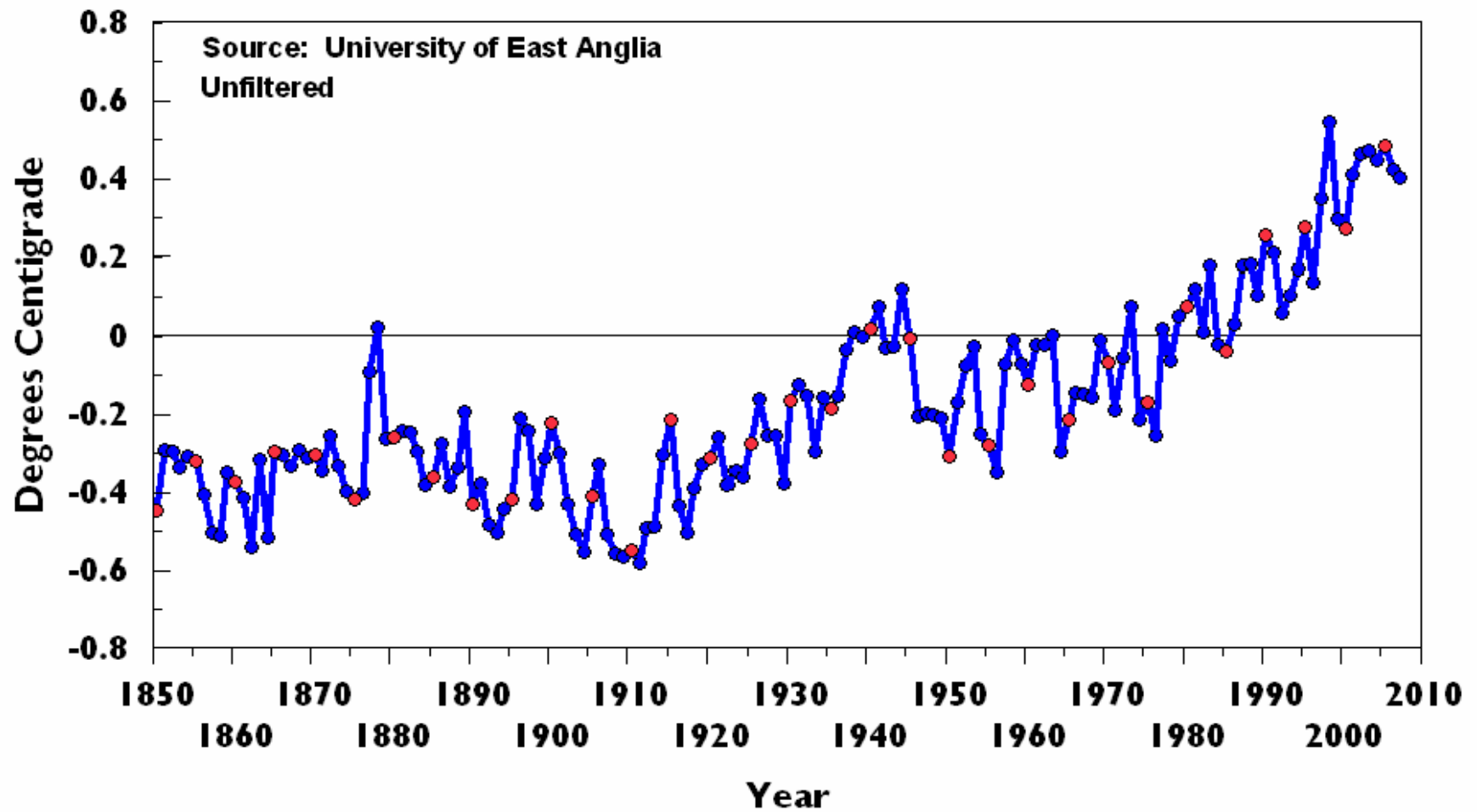
ISBN 978 - 1 - 4349 - 0581 - 9

CONCLUSIONS

- **The Enhanced Greenhouse Theory Is Invalid**
 - **Time Lag**
 - 8-Year (Decade)
 - 800-Year (Millennium)
 - **Greenhouse Gasses Lack the Pondermotive Force to Affect Solid Earth Parameter Changes (ELOD, MPP, Magnetic Moments, etc.)**
- **The Solar-Terrestrial Theory Is Offered as an Alternative**
- **Jerks Tend to Trigger Earth Events**
 - **Dust Bowl**
 - **Global Warming**
 - **Weather/Climate**
 - **Tectonics**
 - Plate Motions
 - Volcanism
 - Seismicity

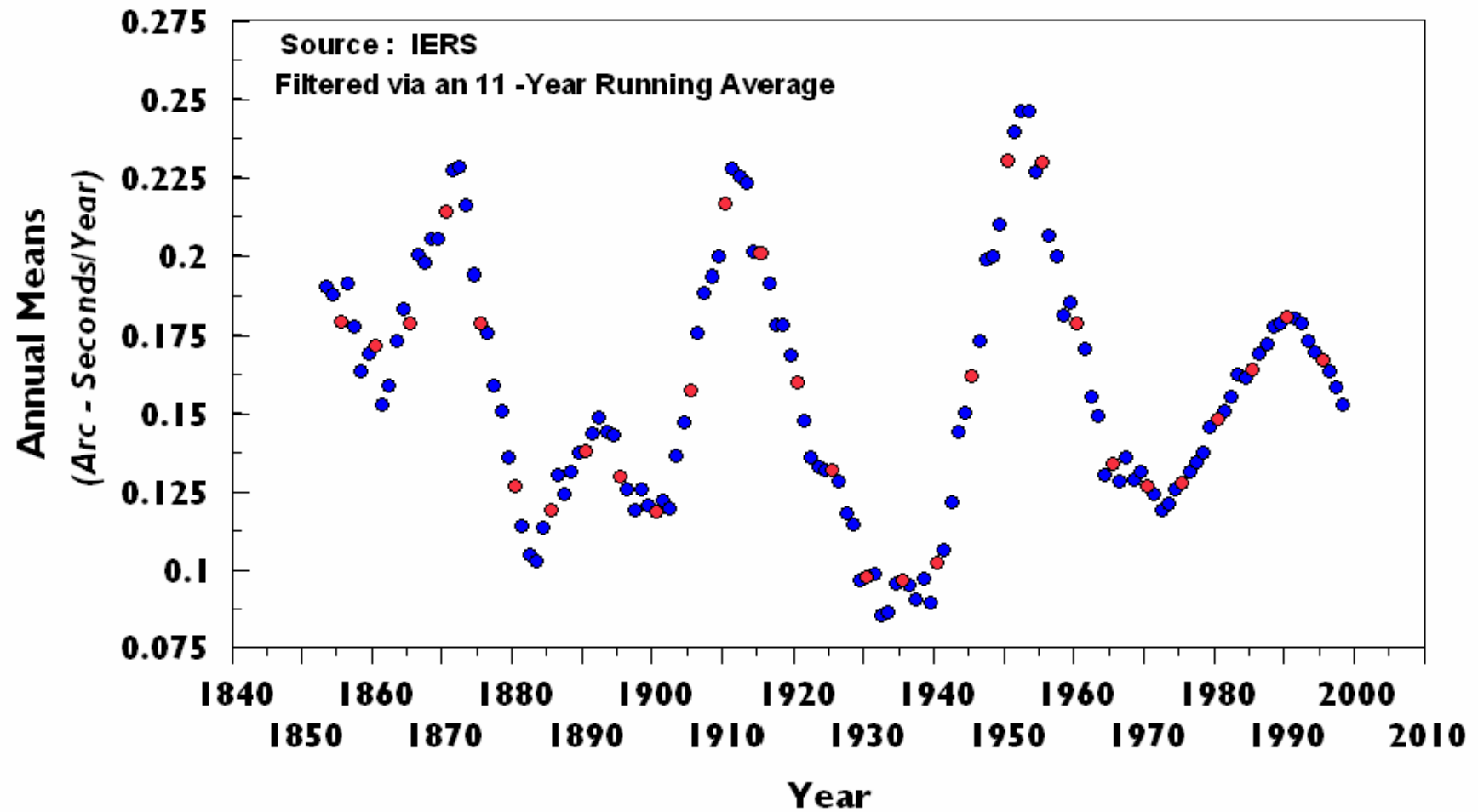
MISCELLANEOUS/EXTRA SLIDES

GLOBAL TEMPERATURE ANOMALY (Annual Means)



MEAN POLE VELOCITY

R - Component



SOLAR-TERRESTRIAL INTERACTIONS

- **Sun-Earth System Viewed as a Tandem Generator**
 - Sun is the Primary Generator
 - Earth is the Secondary Generator and Battery
- **Energy is Transmitted to Earth's Core via**
 - Earth and Solar Magnetic Field Interactions
 - Geomagnetic Field Interactions with the Solar Wind
- **Electrical Energy Accumulates at the CMB**
 - Due to Mantle/Core Electrical Conductivity Differential
 - Energy Accumulated at the CMB is Episodically Released Causing JERKS in Numerous Earth Parameters

GLOBAL HEAT SOURCES

- **Gravity & Magnetic Fields Pervade Earth's:**
 - Core, Mantle, Lithosphere
 - Oceans. Atmosphere
 - Ionosphere, Magnetosphere
- **Each Region is Subject to:**
 - Joule Heating via Solar-Terrestrial Magnetic Induction
 - Joule Heating from Geomagnetic Field Decay
 - Frictional Heating from Earth Angular Momentum Decay / Gravitational Tides / Solid Earth Torsions & Vibrations
 - Heating from the Earth's Core Dynamo
 - Jerk Related Joule Heating as Sudden Geomagnetic Field and Angular Momentum Changes Occur
- **Additional Energy Comes From:**
 - Solar Irradiance
 - Solar Wind Interactions with the IMF and Geomagnetic Field
 - Cosmic Radiation
 - Interactions among all of the Energy Sources Listed Above

JERKS

- **Parameters Exhibiting Jerks**
 - **Global Temperature Anomaly**
 - **Earth Angular Momentum**
 - **Earth Rotation Rate (Excess Length of Day)**
 - **Earth Orientation (Mean Pole Position)**
 - **Magnetic Dipole and Non-Dipole Moments**
 - **CMB Fluid Flow**
 - **Oceanographic / Atmospheric Indices (PDO, SOI, AMO)**
 - **Solar / Terrestrial Magnetic Indices (AA, AP, Dst)**
 - **Volcanism**
 - **Seismicity**
 - **Plate Motion**
 - **And Many Others**

KEY JERK FACTORS

- **Particles and Electromagnetic Fields**
 - Sun's Inter-Planetary Magnetic Field (IMF)
 - Earth's Magnetic Field
 - Solar Wind (composed of both neutral and charged particles)
- **Gravity**
 - Tides
 - Bari-Center Motion Among Earth, Planets, Moon, and Sun
- **The Geodynamo**
 - Magnetic Dipole Field
 - Magnetic non-Dipole Field
 - CMB Fluid Flow
- **Earth's Angular Momentum**
- **Solar Activity**