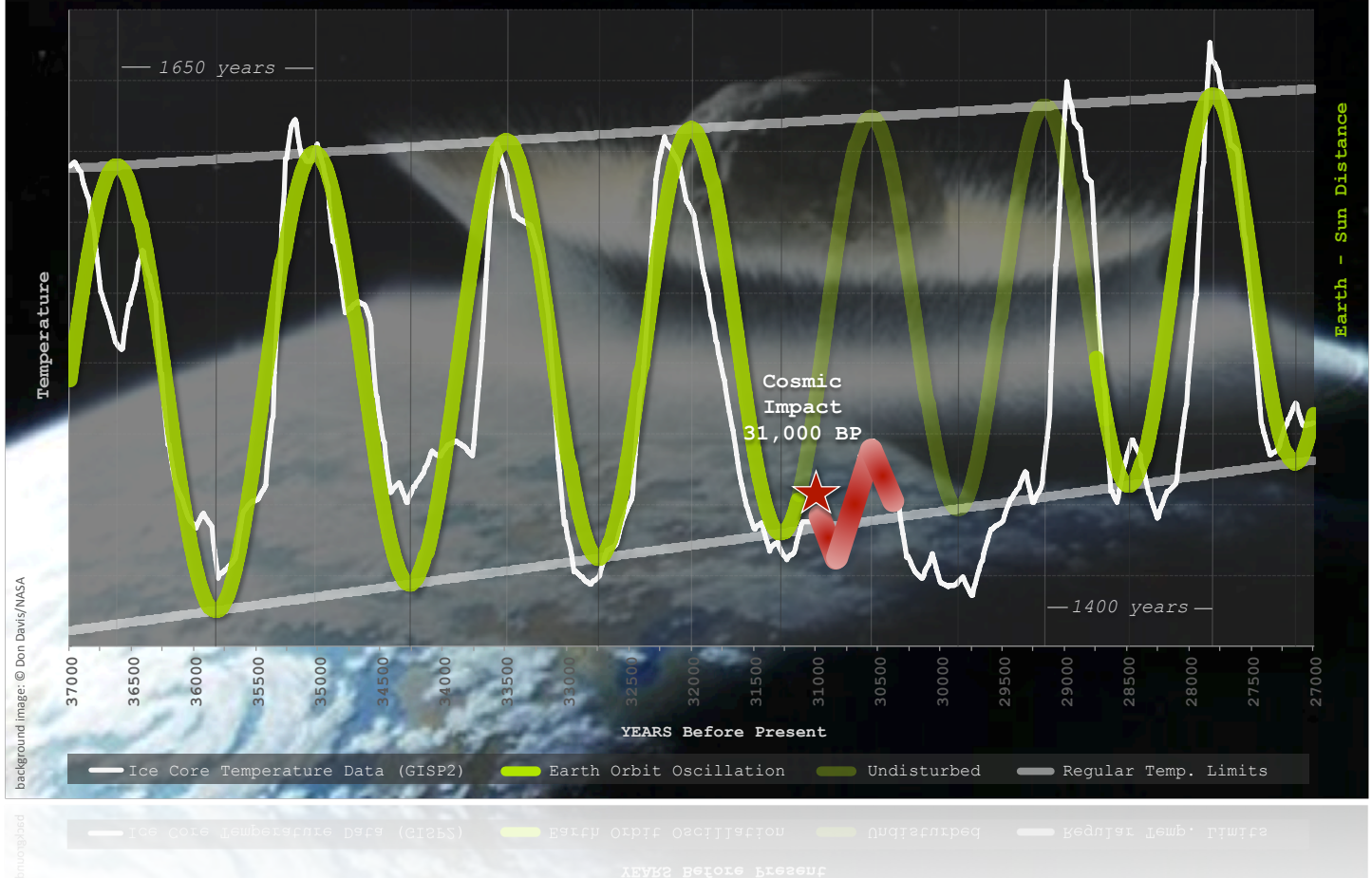


Climate Oscillation By Earth Orbit Oscillation



Five climate-forcing mechanisms govern 20,000 years of climate change

We dedicate ourselves to identify five macro-climatic mechanisms in our study that govern a long time span of 20,000 years. In order to “govern”, they have to comply with two basic requisites: (1) clear visibility in paleoclimate proxy records and (2) continuous presence or multiple recurrence in a longer than one millennium time frame.

The state of the art in climate-forcing mechanism analysis is that presently available General Circulation Models (GCMs) underperform substantially in terms of predictive power, showing significant mismatches and model deficiencies in model-data comparisons. This may not surprise when macro-forcing mechanisms were substituted by coupled micro- and nano-forcings and feedbacks. It is evaluated in the literature that all GCMs perform well for the first 500 years backwards from the present, but then lack skill for the previous 9,500 Holocene years. This is critical for climate models, as they have also to show their validity on time frames of more than 1,000 years.

Our study proceeds with the selection of 10,000 years of the entire Holocene interglacial and, for comparison, of another 10,000 years of a purely glacial time span (37,000-27,000 BP). For the purpose of identifying macro-forcing mechanisms, we use the GISP2 record due to its high time and temperature resolution and its visibility of macro- and micro-temperature swings.

The presented climate-forcing study considers the effects of Milankovitch cycles, atmospheric CO₂-concentrations, Solar Inertial Motions (SIM), the retrograde tri-synodic Jupiter/Saturn cycle, and of two major mechanisms, the Earth Orbit Oscillation (EOO) and the Cosmic Impact Oscillation (CIO).

Summary

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Full Paper

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Key Points

- Covers 20,000 years of paleoclimatic temperature proxy records: the entire Holocene and 10,000 years of glacial time
- Long-term climate-forcing based on cosmic cycles and mechanisms
- Regular climate oscillation by Earth Orbit Oscillation as the main driver of earth's fluctuating solar forcing
- Stochastic climate disturbances by cosmic impacts
- Resulting Cosmic Impact Oscillation interrupts Earth Orbit Oscillation in a regular pattern for several hundred years
- Climate-forcing mechanism outlook for the upcoming 500 years

After detrending the GISP2 data according to SIM and Milankovitch cycles, the EOO and CIO remain as dominant climate drivers. Both the two EOO and CIO cycles act as solar amplifiers: They do not act by increasing overall solar output, but they vary Earth-Sun distances, thus increasing or decreasing energy input received on Earth.

Detailed mechanisms for both oscillations are provided; their calculation methods are pointed out. The Holocene proves to be highly CIO disturbed over 8,000 years, whereas the 37-27k years BP time period remains CIO-calm with just one CIO-event to be noted.

As shown in the picture presented, the climate of the 37-27k period is overwhelmingly governed by the Earth Orbit Oscillation. We permit remaining small to medium deviations of the EOO from the GISP2 curve to undergo GCM-analysis for identifying and attributing micro- and nano-drivers in coupled systems. The EOO oscillation cycle is a continuously occurring mechanism. By knowledge of its dynamics, we are able to reconstruct the EOO cycle line from 37-27 ka BP, as displayed in the graphics. Comparison of the reconstruction line to GISP2 data yields an accurate curve match. Only one minor CIO impact event occurred at 31,000 BP. By knowing impact date and energy, we were able to reconstruct the missing EOO oscillation peak.

Concerning the most interesting time span of 10,000 years Holocene: We were able to identify 13 CIO events out of 24, which, according to impact mechanism dynamics, must send Holocene temperatures steeply down after each impact event. As the Earth orbital line oscillates, temperature recoveries follow after each cold temperature peak. The striking feature of this recovery pattern consists of a higher solar energy yield and higher GISP2 temperatures compared to the temperature level given for the date of any impact. We demonstrate this important feature in detail, because it remains left out in present GCMs, another modeling deficiency and obvious cause for GCM model-data mismatches.

The 37-27 ka BP period, as presented in the graphic, can easily be reconstructed based on the calculated EOO cycle combined with one minor CIO impact. The same applies to the Holocene, which can easily be reconstructed based on the course of the EOO cycle, and then enhanced with the superimposition of given 13 random CIO events.

Concluding the study, we zoom in onto EOO and CIO forcing of the past 3,000 years (1,000 BC to present) and provide an outlook onto forcing mechanisms, which are expected to act within the future 500 years. The GISP2 proxy temperature curve and macro-forcing mechanisms are compared to the Hockey Stick temperature evolution pattern.

Details of demonstrated astro-climatic relations are as of today, 2012, new and original climate change knowledge. The IPCC has not been able to provide supplementary data on cycle mechanics. The identification of 5 macro-climatic drivers, missing in current GCMs, unmistakably proves that climate science is not settled yet. One missing driver may be excused, but not five. The notion of "The Science is Settled", upheld since the days of Galileo, is a spiritual relict of the past. All GCMs will be rectified soon.

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