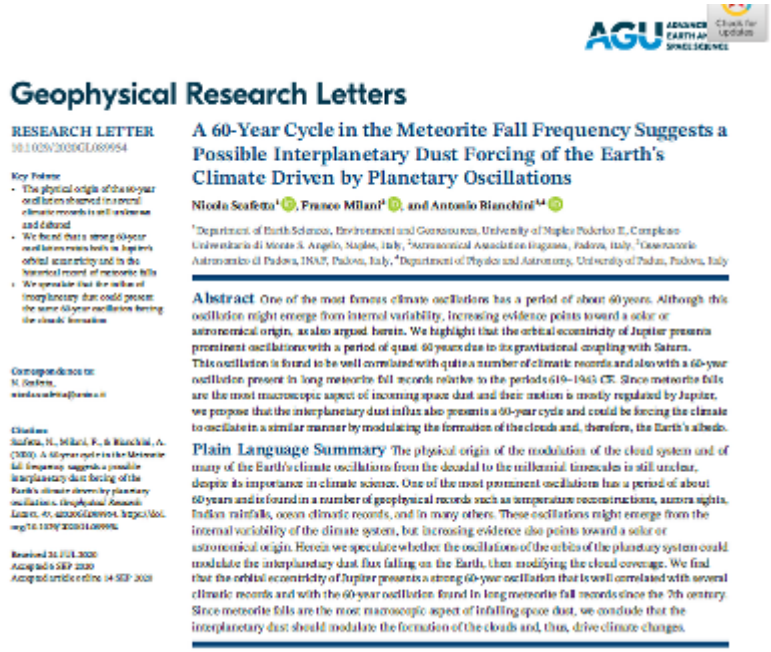
Pubblicata su ***Associazione Astronomica Euganea*** (http://www.astronomia-euganea.it/drupal)

Geophysical Research Letters: nuovo articolo

Inviato da admin il Ven, 25/09/2020 - 14:00

Un nuovo articolo è stato pubblicato su Geophysical Research Letters, dal titolo "**A 60?Year Cycle in the Meteorite Fall Frequency Suggests a Possible Interplanetary Dust Forcing of the Earth's Climate Driven by Planetary Oscillations**" , di cui due co-autori sono nostri soci onorari. Orgogliosi di averli tra i nostri soci un grazie e tante congratulazioni ad Antonio Bianchini e Franco Milani.

click su immagine per ingrandire



Geophysical Research Letters

RESEARCH LETTER

10.1029/2020GL089954

Key Points

- The physical origin of the 60-year oscillation observed in several climate records is still unknown and debated
- We find that a strong 60-year oscillation exists both in Jupiter's orbital eccentricity and in the historical record of meteorite falls
- We speculate that the influx of interplanetary dust could present the same 60-year oscillation forcing the clouds' formation

Correspondence to:
N. Scafetta,
nicola.scafetta@uniroma1.it

Citation:
Scafetta, N., Milani, F., & Bianchini, A. (2020). A 60-year cycle in the Meteorite fall frequency suggests a possible interplanetary dust forcing of the Earth's climate driven by planetary oscillations. Geophysical Research Letters, 47, e2020GL089954. https://doi.org/10.1029/2020GL089954.

Received 31 JUL 2020
Accepted 8 SEP 2020
Accepted article online 14 SEP 2020

A 60-Year Cycle in the Meteorite Fall Frequency Suggests a Possible Interplanetary Dust Forcing of the Earth's Climate Driven by Planetary Oscillations

Nicola Scafetta[1], Franco Milani[2], and Antonio Bianchini[3,4]

[1]Department of Earth Sciences, Environment and Georesources, University of Naples Federico II, Complesso Universitario di Monte S. Angelo, Naples, Italy, [2]Astronomical Association Euganea, Padova, Italy, [3]Osservatorio Astronomico di Padova, INAF, Padova, Italy, [4]Department of Physics and Astronomy, University of Padua, Padova, Italy

Abstract One of the most famous climate oscillations has a period of about 60 years. Although this oscillation might emerge from internal variability, increasing evidence points toward a solar or astronomical origin, as also argued herein. We highlight that the orbital eccentricity of Jupiter presents prominent oscillations with a period of quasi 60 years due to its gravitational coupling with Saturn. This oscillation is found to be well correlated with quite a number of climatic records and also with a 60-year oscillation present in long meteorite fall records relative to the periods 619–1943 CE. Since meteorite falls are the most macroscopic aspect of incoming space dust and their motion is mostly regulated by Jupiter, we propose that the interplanetary dust influx also presents a 60-year cycle and could be forcing the climate to oscillate in a similar manner by modulating the formation of the clouds and, therefore, the Earth's albedo.

Plain Language Summary The physical origin of the modulation of the cloud system and of many of the Earth's climate oscillations from the decadal to the millennial timescales is still unclear, despite its importance in climate science. One of the most prominent oscillations has a period of about 60 years and is found in a number of geophysical records such as temperature reconstructions, aurora sights, Indian rainfalls, ocean climatic records, and in many others. These oscillations might emerge from the internal variability of the climate system, but increasing evidence also points toward a solar or astronomical origin. Herein we speculate whether the oscillations of the orbits of the planetary system could modulate the interplanetary dust flux falling on the Earth, thus modifying the cloud coverage. We find that the orbital eccentricity of Jupiter presents a strong 60-year oscillation that is well correlated with several climatic records and with the 60-year oscillation found in long meteorite fall records since the 7th century. Since meteorite falls are the most macroscopic aspect of infalling space dust, we conclude that the interplanetary dust should modulate the formation of the clouds and, thus, drive climate changes.

[1]

Osservazione e Ricerca [2]

Tutti i loghi e marchi in questo sito sono di proprietà dei rispettivi proprietari.
I commenti e gli articoli sono di proprietà dei rispettivi autori mentre il resto © dal 2002 ad oggi è di proprietà dell'Associazione Astronomica Euganea.

Associazione Astronomica Euganea
C.F. 92068330288
via C. Battisti, 59D - 35010 LIMENA (PD)
info@astronomia-euganea.it

Credits

URL di origine (Salvata il *18/04/2025 - 05:17*): http://www.astronomia-euganea.it/drupal/articoli/geophysical-research-letters-nuovo-articolo

Links:
[1] http://www.astronomia-euganea.it/drupal/sites/default/files/articoli/GEOPH-RESEARCH-LETTER-MilaniF.PNG
[2] http://www.astronomia-euganea.it/drupal/category/attivit%C3%A0/osservazione-e-ricerca