



THE GLOBAL ENGINEERING CONFERENCE ON SUSTAINABLE  
DEVELOPMENT AND WORLD FEDERATION OF ENGINEERING  
ORGANISATIONS EXECUTIVE COMMITTEE MEETINGS.

15<sup>th</sup> - 18<sup>th</sup> October 2024, Kigali, Rwanda

# Theme: Engineering Innovations for a Sustainable Future

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# From Crisis to Opportunity: Leveraging Innovation for a Thriving Continent

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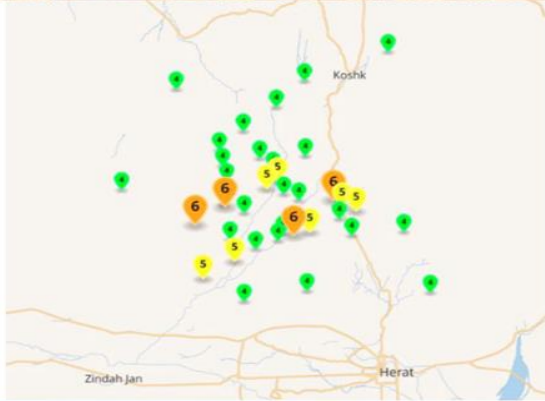
# The Reality of Hunger and Starvation



## Climate in Africa



## Afghanistan 2023



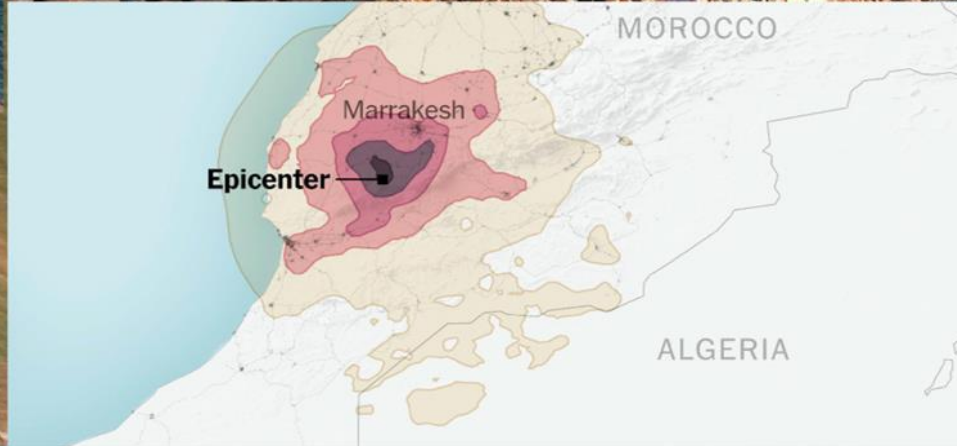
## Turkey, Syria 2023



## Libya 2023



## Morocco 2023



## Pakistan 2022



## Bangladesh 2022

**'The worst flood in the region in the last 122 years'**

Shadhan Kumar Das on the devastating impacts of the historical floods in Bangladesh — and how the country can adapt to climate change

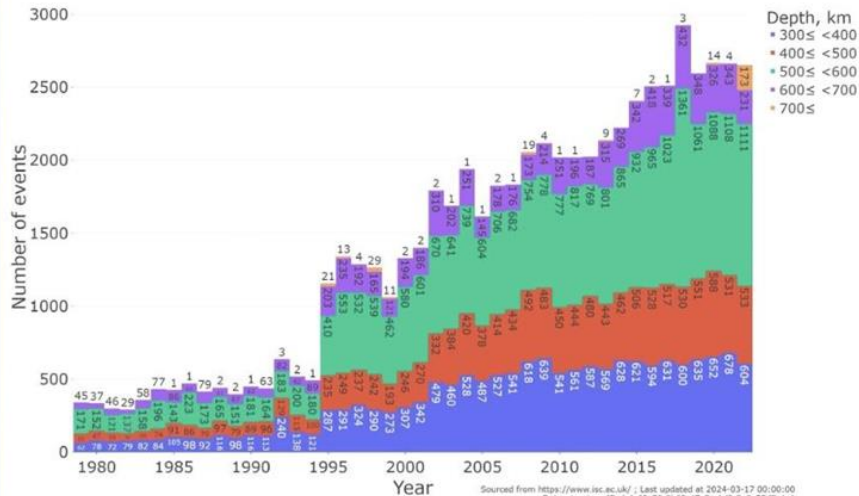




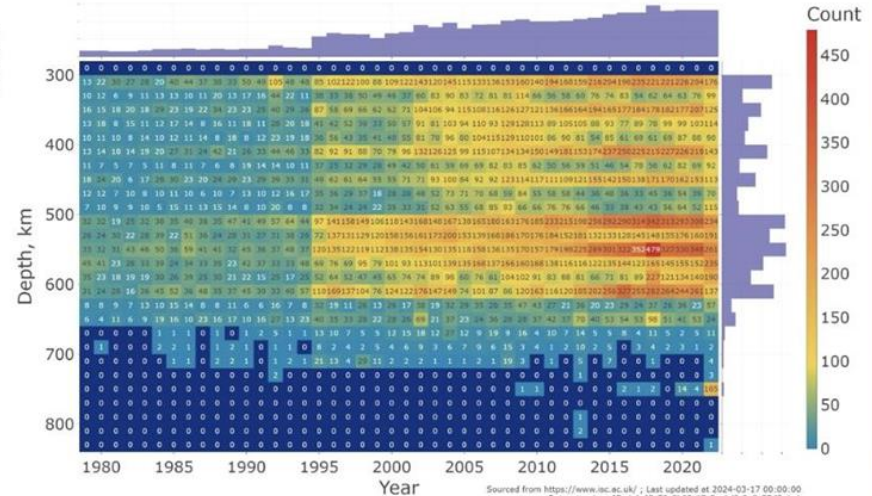
**INCREASING SEISMIC ACTIVITY**

# INCREASE IN DEEP-FOCUS EARTHQUAKES

M3+ Deep-Focus Earthquakes Globally 1979-2022



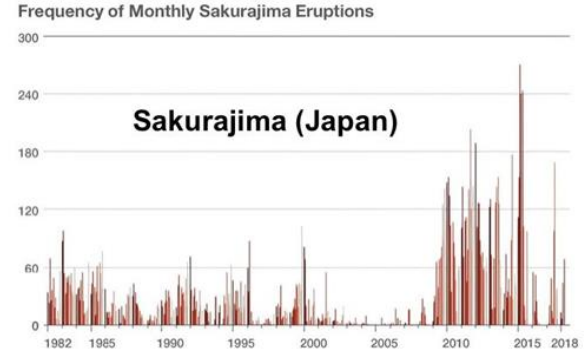
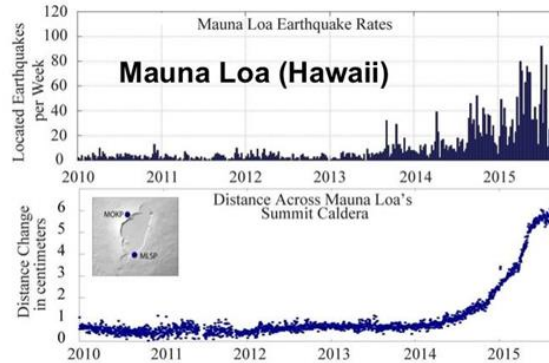
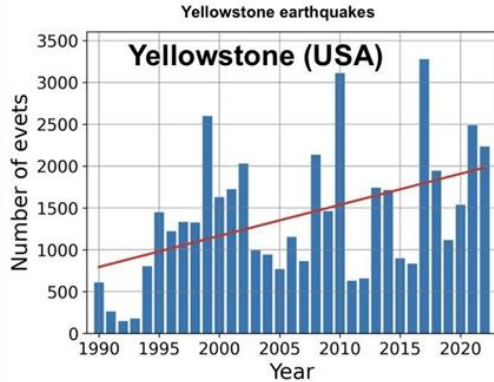
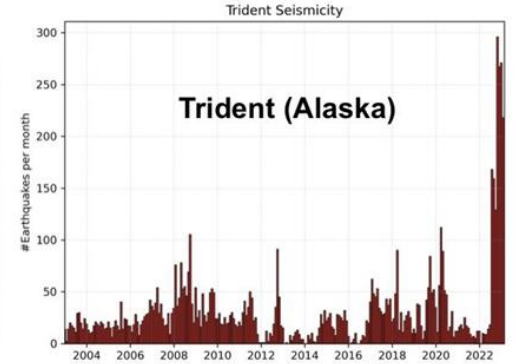
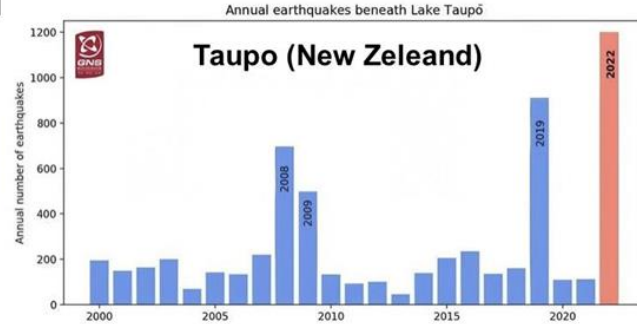
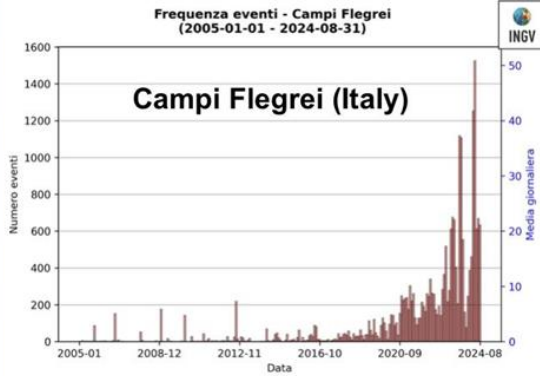
M3+ Deep-Focus Earthquakes Globally 1979-2022



- Exponential increase in the number of deep-focus M3+ earthquakes globally.
- A notable jump in the number of events can be observed in 1995.
- The highest number of deep-focus earthquakes occurs at depths in the 500-600 km range.

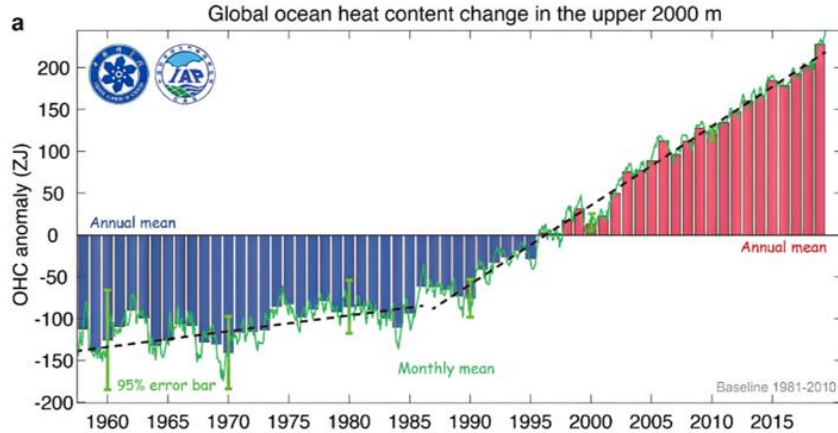
# ACTIVATION OF VOLCANOES

# ACTIVATION OF VOLCANOES



# WORLD OCEAN HEATING

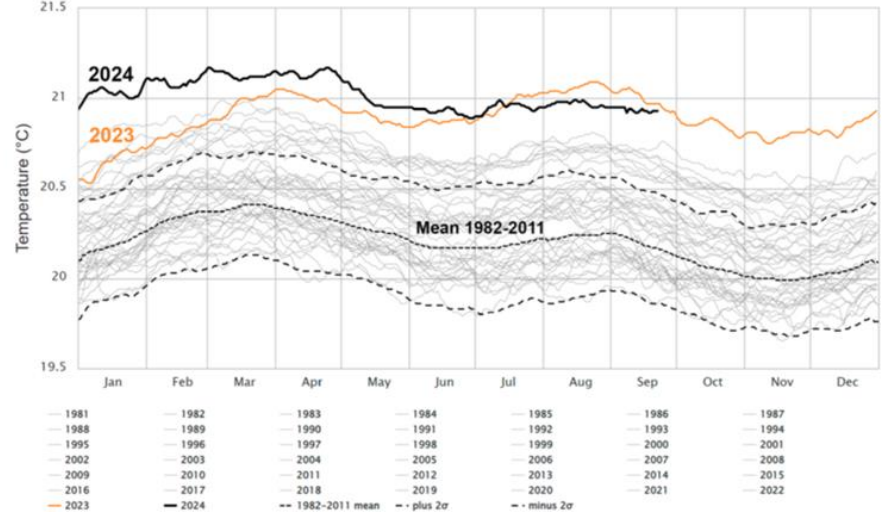
# WORLD OCEAN HEATING



Cheng, L. et al. Record-Setting Ocean Warmth Continued in 2019.  
*Adv. Atmos. Sci.* **37**, 137–142 (2020).

## Daily Sea Surface Temperature, World (60°S–60°N, 0–360°E)

Dataset: NOAA OISS V2.1 | Image Credit: ClimateReanalyzer.org, Climate Change Institute, University of Maine

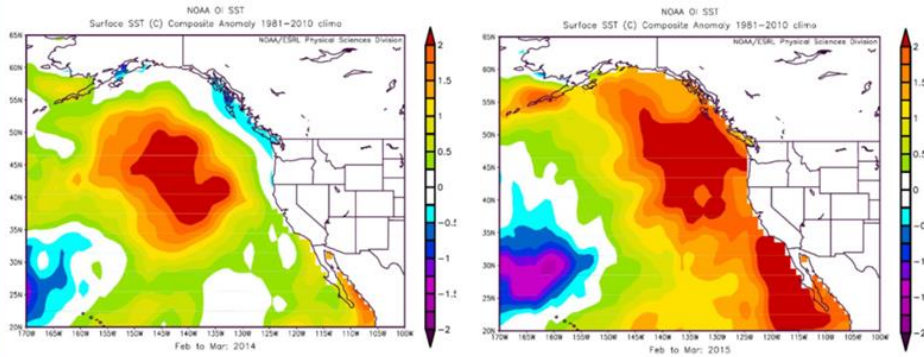


ClimateReanalyzer.org, Climate Change Institute, University of Maine, Dataset.

NOAA OISS [https://climatoreanalyzer.org/clim/sst\\_daily](https://climatoreanalyzer.org/clim/sst_daily)

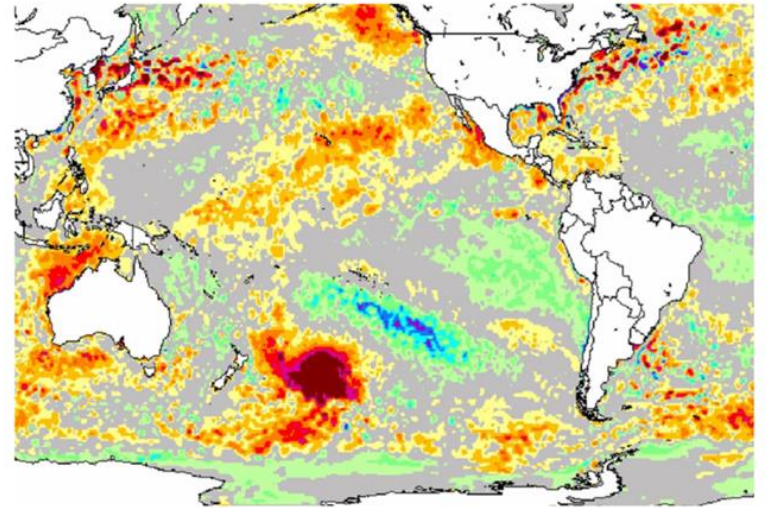
- As of 2020, ocean warming has increased by 450% over the past 30 years.
- An all-time historical record for ocean surface temperatures was broken in 2023 and next in 2024.

# WORLD OCEAN HEATING



Source: NOAA

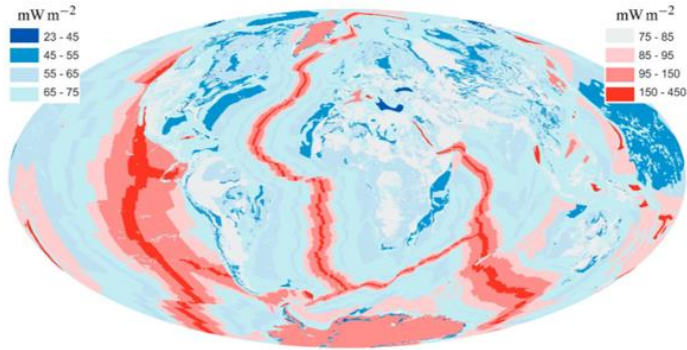
- The blob 2013-2016 in the west Pacific Ocean covered an 4,000,000 square kilometers (larger than the size of India). The water temperatures were 5-6 degrees Celsius above average in some places.



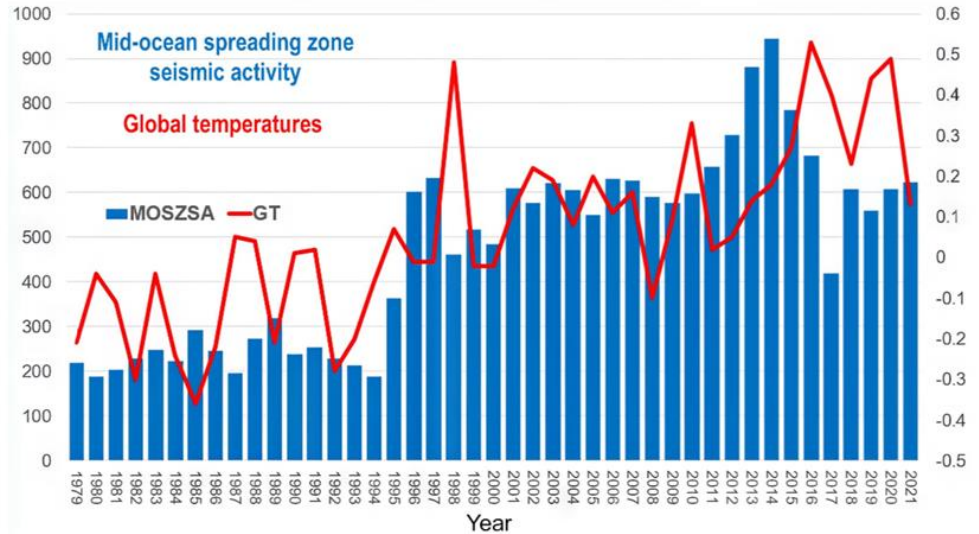
Source: Morton, A.

- The blob (2019) in east of New Zealand in the South Pacific, with temperatures 6°C above average on certain days. The blob covered an area of more than 1,000,000 square kilometers.

# WORLD OCEAN HEATING



Davies, J. H. & Davies, D. R. Earth's surface heat flux.  
Solid Earth 1, 5–24 (2010).



Viterito, A. 1995: An Important Inflection Point in Recent Geophysical History.  
Int J Environ Sci Nat Res 29, 556271 (2022).

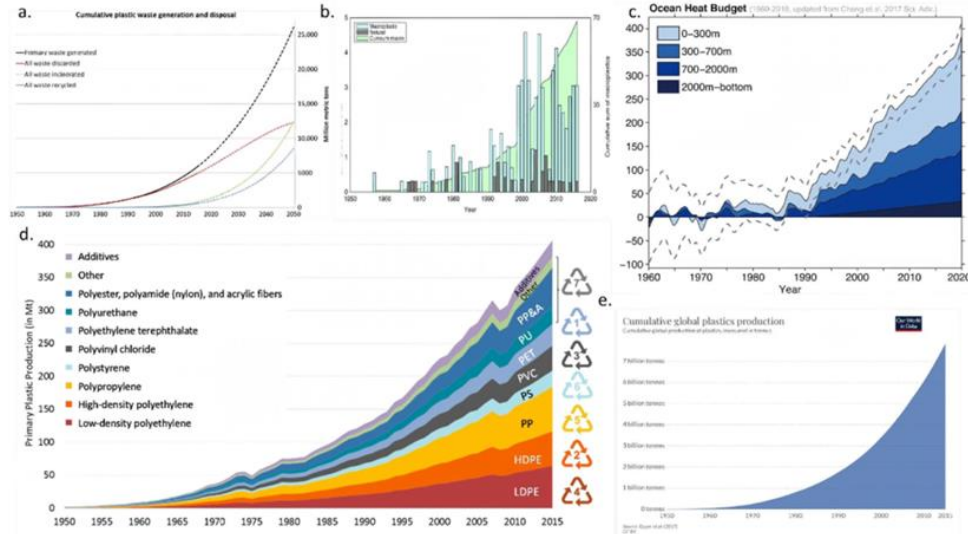
- There is an increase in the number of earthquakes with magnitudes of 4-6 on the ocean floor along mid-ocean spreading zones since 1995.
- The simultaneous increase in the this number of earthquakes with and global atmospheric temperatures.



**The Ocean role and the effect of polymers and micro plastics :**

# ROLE OF SYNTHETIC POLYMERS

Diagrams of changes in ocean temperature from 1960-2019 and their comparison with the diagrams of growth in the production of synthetic polymers, their use in various sectors of economy, and disposal of plastic waste in the ocean (from various sources).

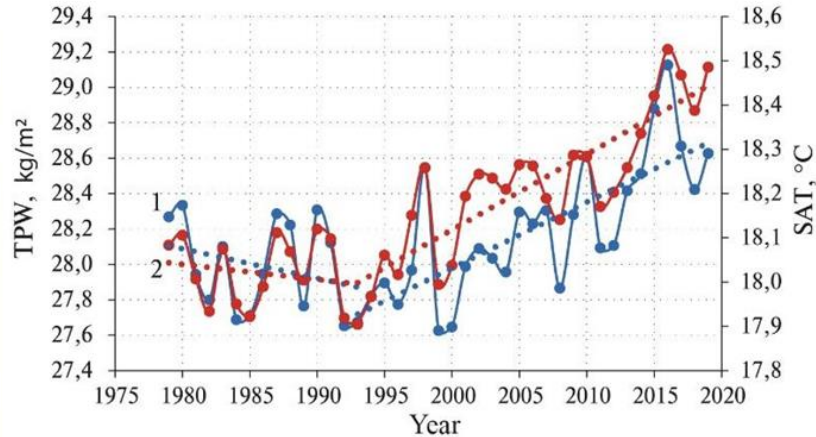


- The ocean plays a crucial role in the planet's thermoregulation. It covers about 70% of the Earth's surface and extends deep into the Earth's crust.
- Humankind has significantly reduced the ocean's heat-conducting function due to dumping of hydrocarbon products and synthetic polymers into it.

# **INTENSIFICATION OF STORMS, AND TORNADOES**

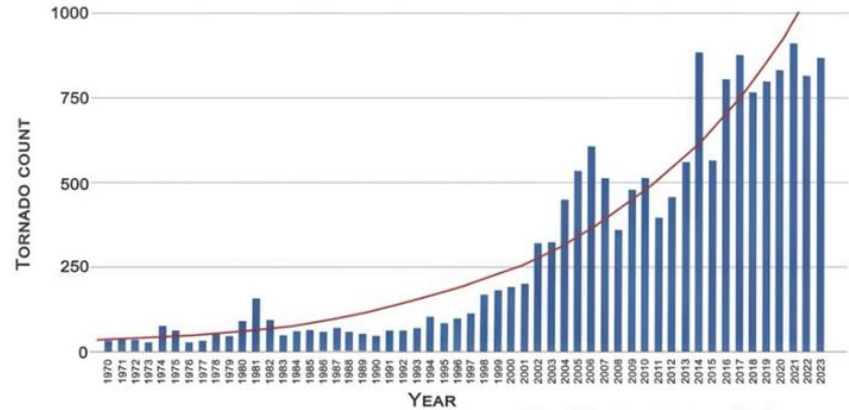
# INTENSIFICATION OF STORMS

## Atmospheric moisture content

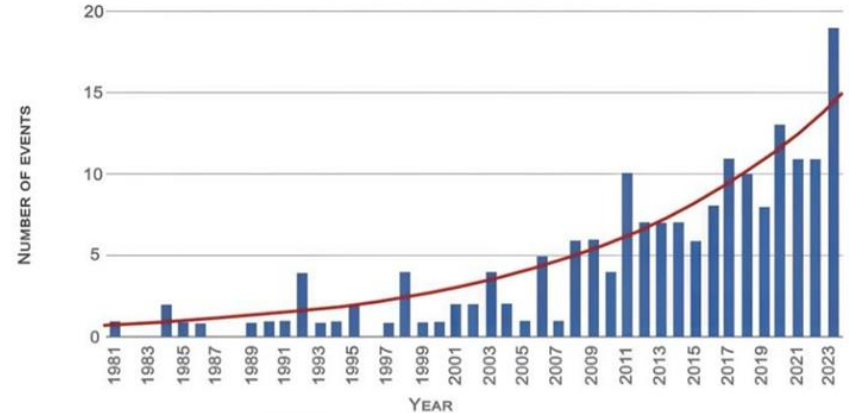


- The increase in air humidity due to ocean evaporation leads to an event many events like storms, tornadoes, abnormal temperatures, precipitation, and floods.

## INCREASE IN THE NUMBER OF TORNADOES IN EUROPE

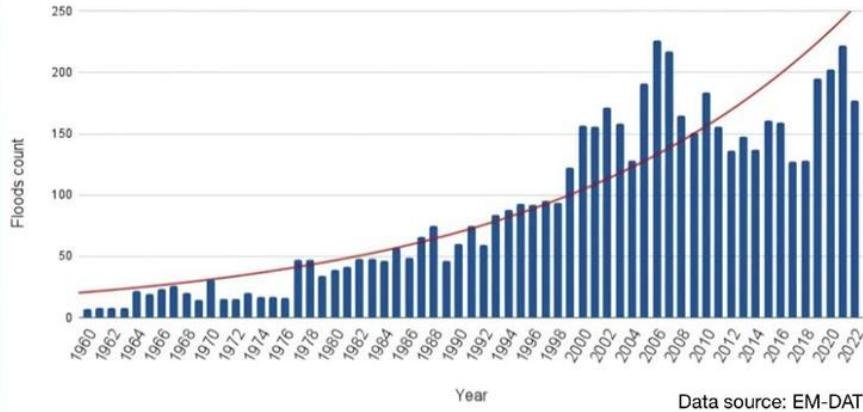


## Billion-dollar severe storms

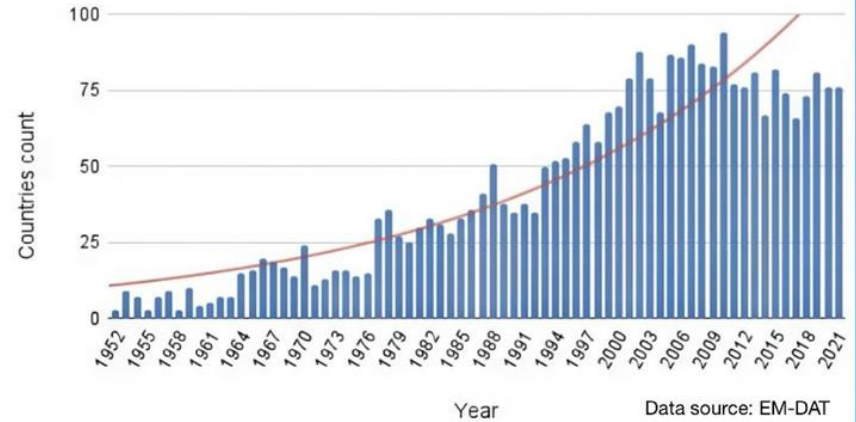


# INTENSIFICATION OF STORMS

## Total number of large-scale floods globally



## Total number of countries affected by floods



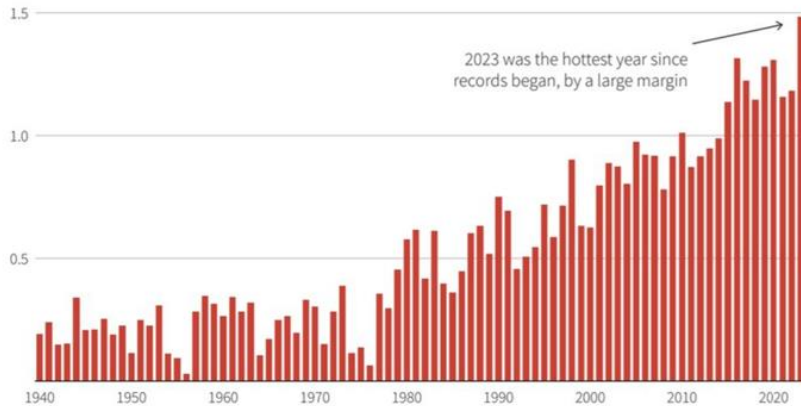
In the 1970s, there were only 260 severe floods, whereas the number of floods in 2014 - 2023 had increased to 1,500, (6 times as many floods).

# CHANGES IN ATMOSPHERE

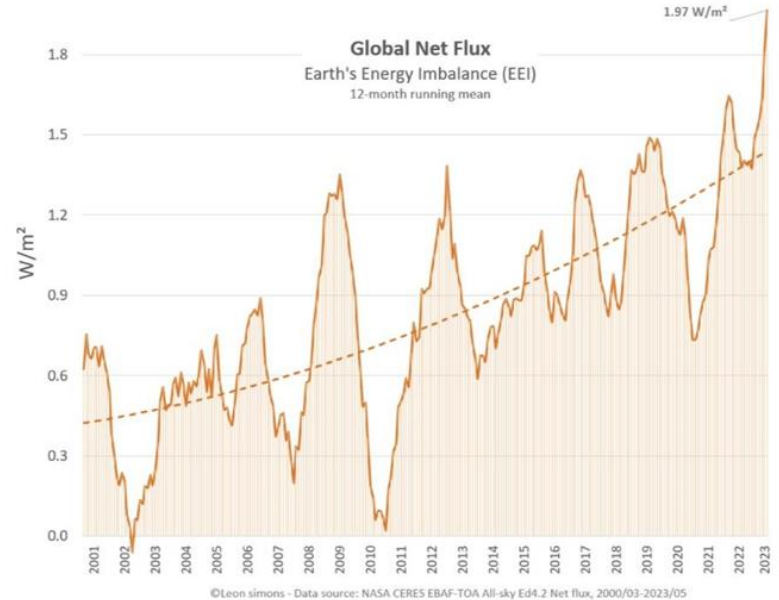
# WARMING OF LOWER LAYERS OF THE ATMOSPHERE

## 2023 was the world's hottest year on record

Global surface temperature increase versus the average during the 1850-1900 pre-industrial period (°C)



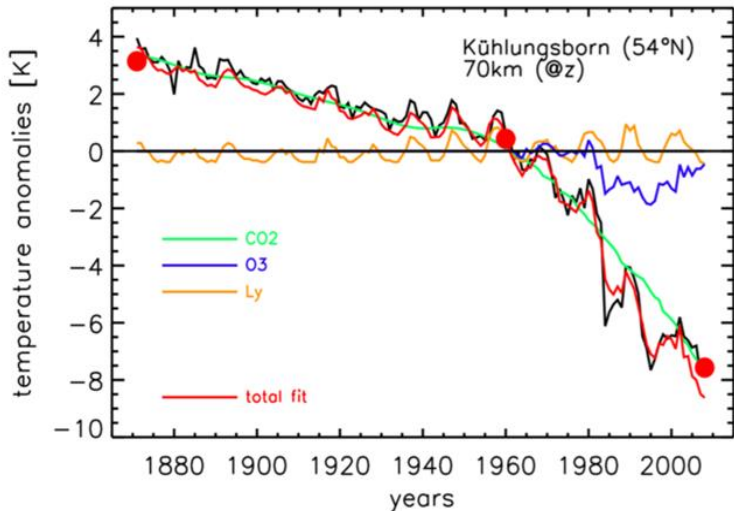
Source: Copernicus Climate Change Service/ECMWF



- “The long term trends we understand, and it’s being driven by the greenhouse gases, it’s being driven by anthropogenic effects... **But what happened in 2023 was that, and then plus something.** And that ‘plus something’ is much larger than we expect, or as yet can explain.” – NASA’s top climatologist, Gavin Schmidt.

# CHANGES IN UPPER LAYERS OF THE ATMOSPHERE

Temperature anomalies in the mesosphere

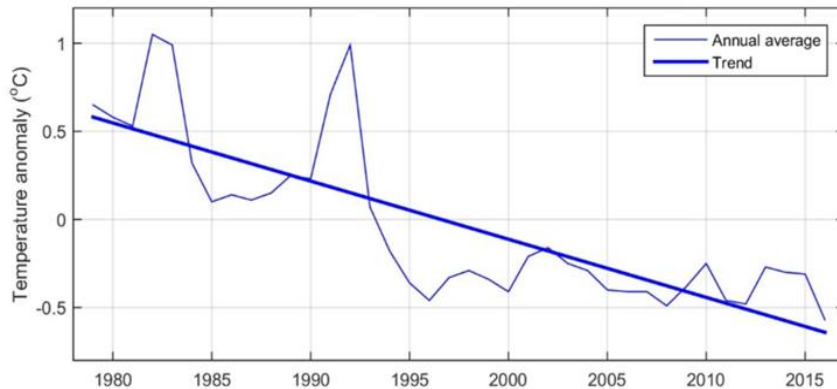


L bken, F. -J., Berger, U. & Baumgarten, G. JGR Atmospheres **118**, (2013).

- The mesosphere and the stratosphere have significantly cooled over the past 30 years.
- The concentration of O2 has decreased by 2-4 times at an altitude of 130 km in mid-latitudes

(Givishvili, G. V., Leshchenko, L. N. Solar-Terrestrial Physics **8**, 51-57 (2022) and News. Russian Academy of Sciences. Atmospheric and Ocean Physics 58 601-614 (2022))

Annual global temperature anomalies in the stratosphere

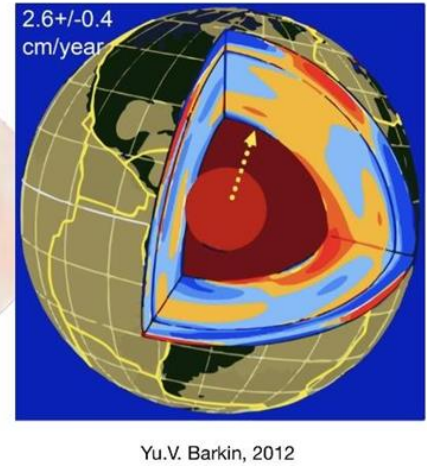
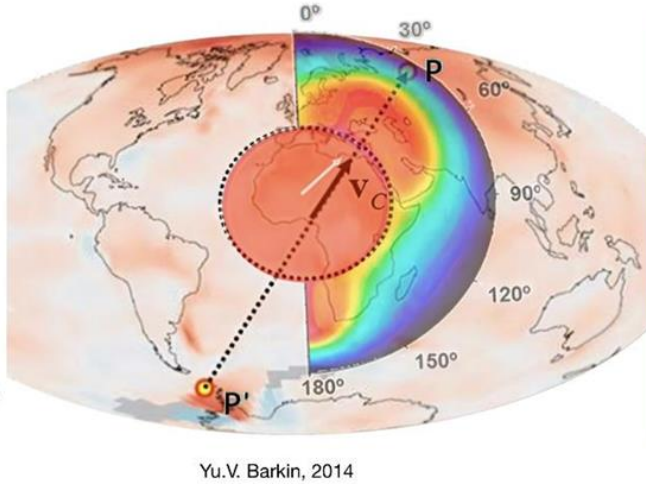
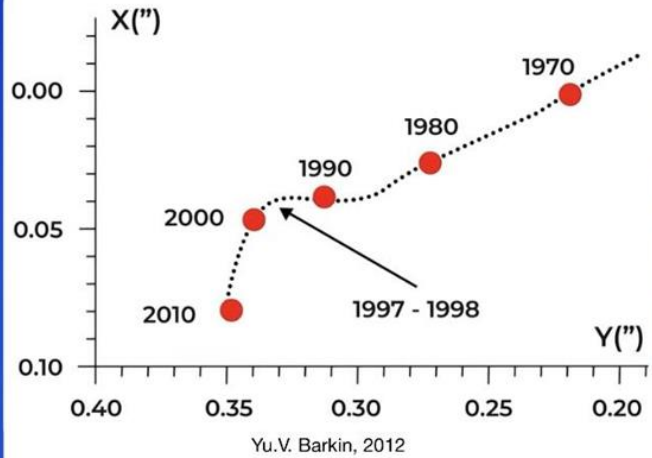


Data source: NOAA



# PLANETARY-SCALE CHANGES

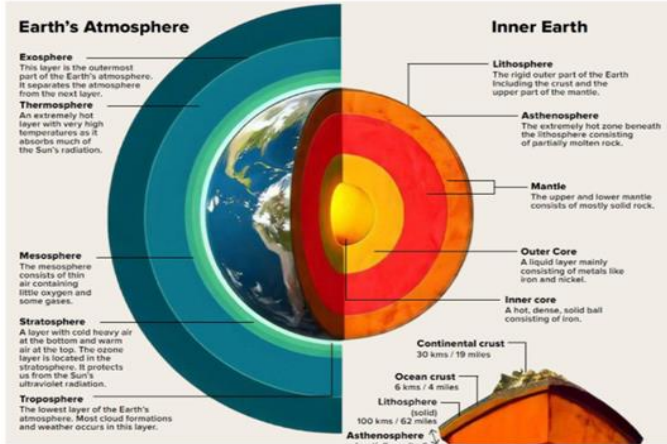
# DISPLACEMENT OF THE EARTH'S CORE IN 1998



- In 1997-1998 scientists recorded an unparalleled phenomenon — a displacement of the Earth's inner core by studying the Earth's center of mass via satellite.
- The planet's core shifted northward along the line from West Antarctica to Western Siberia.

Zotov, L. V., Barkin, Y. V. & Lyubushin, A. A.. In 3rd. conf. Space geodynamics and modeling of global geodynamic processes, Novosibirsk, 98-101 (2009).  
Smolkov, G. Ya. Physics & Astronomy International Journal 2, 310-321 (2018).

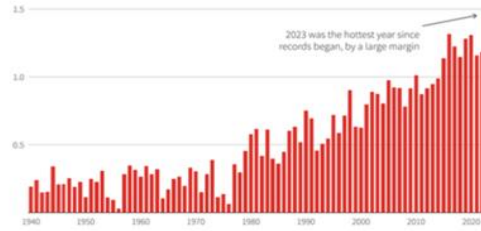
# PLANETARY CHANGES IN ALL SHELLS



## Atmosphere

### 2023 was the world's hottest year on record

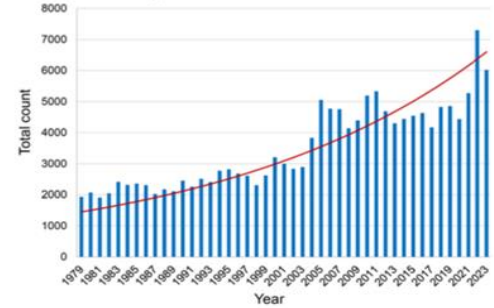
Global surface temperature increase versus the average during the 1850-1900 pre-industrial period (°C)



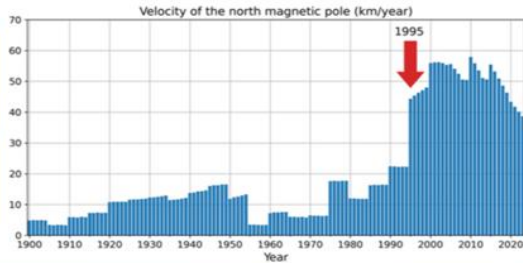
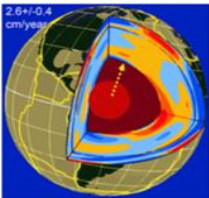
Source: Copernicus Climate Change Service/ECMWF

## Crust

### Earthquakes from ISC M 5+ 1979-2023

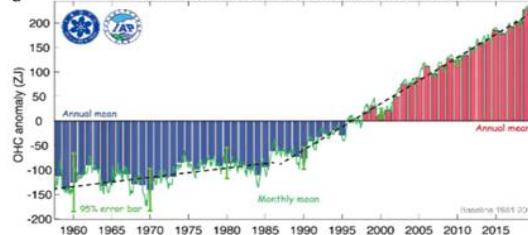


## Core



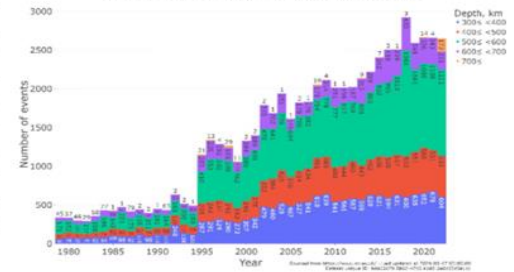
## Ocean

### Global ocean heat content change in the upper 2000 m



## Mantle

### M3+ Deep-Focus Earthquakes Globally 1979-2022





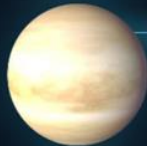
# **CHANGES ON OTHER PLANETS OF THE SOLAR SYSTEM**

# CHANGES ON PLANETS OF THE SOLAR SYSTEM



## MERCURY

2019-2015  
19 SURFACE CHANGES ON MERCURY DUE TO ENDOGENIC ACTIVITY  
DOI:10.1029/2022JGU100783



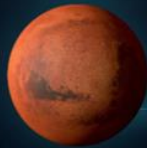
## VENUS

2006-2002 INTENSIFICATION OF WINDS  
DOI:10.1029/2006GL023618

2006-2008 MAGMATIC HOTSPOTS DISCOVERED  
DOI:10.1029/2006GL022765

2019-2018 VOLCANIC ACTIVITY INCREASES  
DOI:10.1029/2019GL027551

2019 RESEARCH CONDUCTED IN 2020 CONFIRMED THAT VENUS IS CURRENTLY VOLCANICALLY ACTIVE  
DOI:10.1029/2019GL027551 and DOI:10.1029/2019GL027551 and DOI:10.1029/2019GL027551



## MARS

2003, 2006 ACTIVE METHANE EMISSIONS DETECTED FROM MARS'S INTERIOR  
DOI:10.1029/2003GL018243

2004-2020 A NEW TYPE OF MARTIAN AURORA WAS OBSERVED FOR THE FIRST TIME IN THE SOUTHERN HEMISPHERE  
DOI:10.1029/2020GL028767

2009 SUDDEN SHRINKAGE OF THE SOUTH POLAR CAP  
DOI:10.1007/978-1-4414-4628-8\_10

2010-2020 278 DISCRETE POLAR AURORAS WERE RECORDED ON MARS  
DOI:10.1029/2020GL029428

2015 DISCOVERY OF PROTON AURORAS  
DOI:10.1029/2014GL024689

2018 LIQUID WATER FOUND BENEATH THE SOUTH POLE ICE CAP  
DOI:10.1029/2017GL039392

2019-2021 OVER 1,300 MARSQUAKES OCCURRED  
DOI:10.1029/2022JGU100790

2019-2020 LOW-FREQUENCY REPETITIVE MARSQUAKES LINKED TO VOLCANIC ACTIVITY UNDER CERBERUS FOSSAE  
DOI:10.1029/2019GL027159

2012 GEOPHYSICAL EVIDENCE FOR A GIANT MANTLE PLUME UNDERneath ELYSIUM PLAINIA  
DOI:10.1029/2011GL015103

MAY 6, 2022 THE LARGEST M4.7 MARSQUAKE DETECTED  
DOI:10.1029/2022GL030303

2022 POLAR AURORAS ENCOMPASSED HALF OF THE PLANET  
twitter.com/HopeMarsMission/status/1521702768006704



## EARTH

1995 ACCELERATED DRIFT OF THE EARTH'S NORTH MAGNETIC POLE  
DOI:10.1029/2001GL014907

SINCE 1994 ATLANTIC HURRICANE ACTIVITY HAS INCREASED SIGNIFICANTLY  
DOI:10.1029/2005GL019667

1997 (FEBRUARY 28, MT, AND MAY 10, M6) EARTHQUAKES IN IRAN RESULTED IN OVER 2,600 DEATHS  
DOI:10.1029/1996GL018298

1998 (FEBRUARY 4 AND MAY 30) EARTHQUAKES IN AFGHANISTAN — OVER 7,000 DEATHS  
DOI:10.1029/1997GL019036

2009 THE MOST SEVERE FLOOD IN THE HISTORY OF BANGLADESH — 65 PERCENT OF THE COUNTRY'S TERRITORY FLOODED  
DOI:10.1029/2009GL012788

1980 MALPA LANDSLIDE, INDIA  
DOI:10.1029/1979GL012322

MAR 28, 1998 EXTREME HEATWAVE REACHING 50°C IN INDIA  
DOI:10.1029/1998GL010211

MAY 30, 1998 MAGNITUDE 7 EARTHQUAKE IN AFGHANISTAN  
DOI:10.1029/1998GL012322

JULY 17, 1998 MAGNITUDE 7 EARTHQUAKE AND 15-METER TSUNAMI IN PAPUA NEW GUINEA  
pubs.usgs.gov/publication/70022643



## JUPITER

BETWEEN 1982-1996 A MAGNETIC ANOMALY INTENSIFIED IN JUPITER'S NORTHERN HEMISPHERE  
DOI:10.1029/2001GL014907

2000-2007 JUPITER'S INTERNAL HEAT INCREASED BY 37% SINCE 1980 WHEN THE VOYAGER'S RESEARCH WAS DONE, AND THIS INTERNAL HEATING IS GREATER THAN THE ENERGY RECEIVED FROM THE SUN  
DOI:10.1029/2005GL020250

2005-2006 FOR THE FIRST TIME, FORMED ANOTHER POWERFUL RED SPOT — JUNIOR  
DOI:10.1029/2005GL020250

2009-2020 THE WIND SPEEDS WITHIN THE GREAT RED SPOT INCREASED BY 8%  
DOI:10.1029/2019GL026782

2021 JUPITER'S UPPER-ATMOSPHERIC ABNORMAL HEATING OVER THE GREAT RED SPOT IS DRIVEN FROM BELOW  
DOI:10.1029/2021GL029693

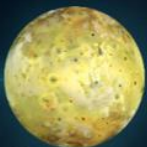
2009-2020 ANOMALOUS LIGHTNINGS WERE RECORDED IN THE UPPER LAYERS OF THE ATMOSPHERE  
DOI:10.1029/2020GL028507

2021 STRONG EQUATORIAL JET DETECTED  
DOI:10.1029/2021GL029693

2021 JUPITER'S MAGNETIC FIELD UNDERWENT GLOBAL CHANGES COMPARED TO THE 1980S, ESPECIALLY IN THE REGION OF THE GREAT BLUE SPOT  
DOI:10.1029/2021GL029693

2019 ANOTHER HURRICANE APPEARED AT THE SOUTH POLE, WHEREAS THERE HAD ALREADY BEEN ONLY 5 HURRICANES THERE  
news.gov.uk/stories/201908010102768006704

2019 NARROW EQUATORIAL STRATOSPHERIC JET DETECTED WITH WIND SPEEDS OF ABOUT 515 KM/H  
DOI:10.1029/2019GL027352



## IO

IN THE 2000s THE ERUPTION CYCLE OF IO'S LARGEST VOLCANO, LOKI, WAS INTERRUPTED, IT BEGAN TO ERUPT MORE OFTEN  
EPSC Abstracts Vol. 13, EPSC-CP52019-769-1, 2019

2003-2005 ERUPTIONS OF 4 NEW YOUNG VOLCANOES  
DOI:10.1029/2003GL019254

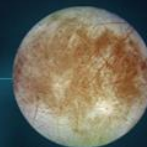
2000, 2006 MAJOR ERUPTIONS OF TVASHTR VOLCANO  
DOI:10.1029/2001GL014907

2013-2019 NEW UNIQUE HOT SPOTS AND ERUPTIONS DISCOVERED  
DOI:10.1029/2013GL022650

2020-2022 SEVEN NEW, MOST ENERGETIC VOLCANIC EVENTS DISCOVERED  
DOI:10.1029/2020GL029693

2012 POWERFUL VOLCANIC ERUPTIONS  
DOI:10.1029/2012GL016792

2022 SUBSURFACE MAGMA OCEAN DISCOVERED  
DOI:10.1029/2022GL030287



## EUROPA

1997 FIRST EVIDENCE OF A PLUME WHICH EMERGED DUE TO THE HEATING  
DOI:10.1029/1996GL018243

2000 NO MAJOR GEOLOGICAL ACTIVITY DETECTED BY COMPARISON OF VOYAGER AND GALILEO SURFACE IMAGES.  
DOI:10.1029/1999GL013039

2016-2017 WATER VAPOR ABOVE THE SURFACE IS DISCOVERED  
DOI:10.1029/2016GL035100

2020 SURFACE THERMAL ANOMALIES DETECTED USING ALMA OBSERVATIONS  
DOI:10.1029/2020GL029693

2022 ENDOGENOUS CARBON DIOXIDE DETECTED ON EUROPE  
DOI:10.1029/2022GL030287

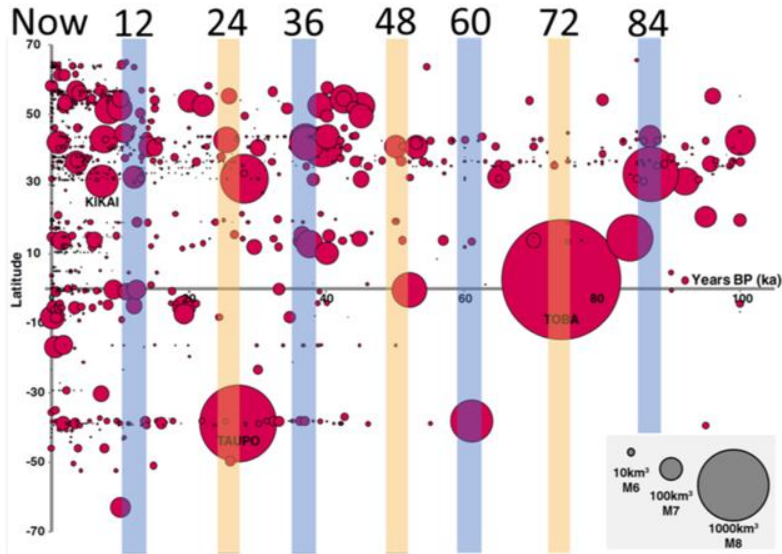


THIS HAPPENS EVERY 12,000 YEARS

# **ASTRONOMICAL PROCESSES AND THEIR CYCLICITY**

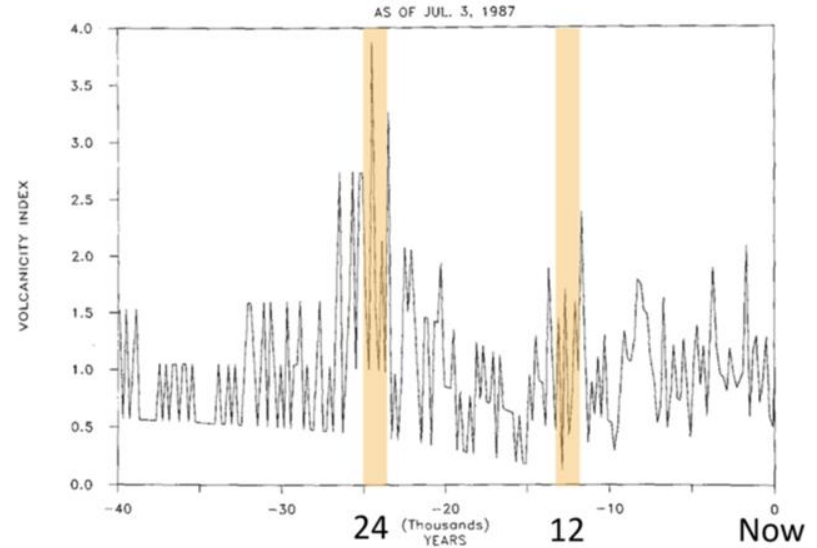
# ASTRONOMICAL PROCESSES AND THEIR CYCLICITY

Global-scale eruptions from 2013 AD to 100,000 cal.



Brown, S.K., Croweller, H.S., Sparks, R.S.J. et al. *J Appl. Volcanol* 3, 5 (2014).

Volcanicity index chronology



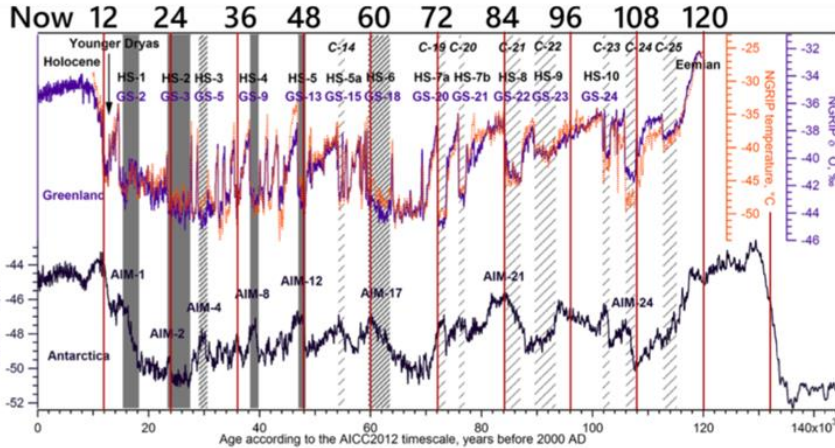
Bryson, R.A. *Theor Appl Climatol* 39, 115–125 (1989).

- In geology, paleontology and archaeology, there is a number of evidence of previous disasters of the cycle.
- The large red circles indicate that every 24,000 years volcanic eruptions are more disastrous.



# ASTRONOMICAL PROCESSES AND THEIR CYCLICITY

Temperature anomalies from Greenland and Antarctic ice core



Heinrich, H. *Quat. res.* **29**, 142–152 (1988).

Event	Age in thousands of years before present		
	Hemming (2004)	Bond & Lotti (1995)	Vidal <i>et al.</i> , (1999)
H0	~12		
H1	16.8		14
H2	24	23	22
H3	~31	29	
H4	38	37	35
H5	45		45
H6	~60		

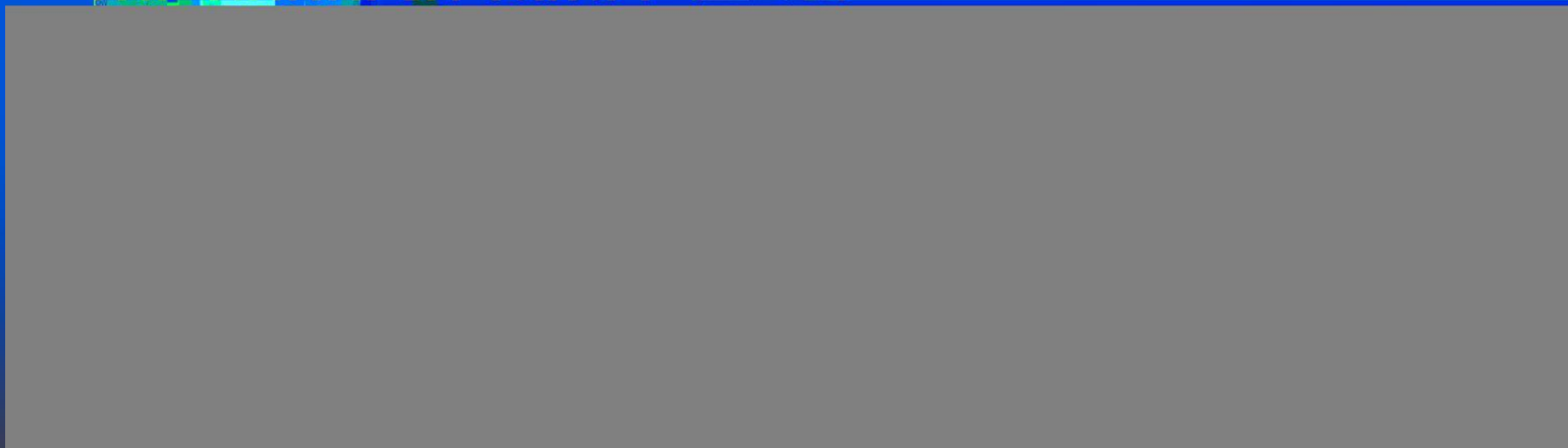
H1 and H2 are identified using radiocarbon dating, H3-6 are correlated with GISP2.

- This hypothesis suggests that geodynamic changes on Earth are primarily derivatives of astronomical processes and their cyclicity.
- A significant factor in the increase of catastrophes today is the accumulation of additional energy in the Earth's interior from external cosmic influences.

Magnetic pole drift, magnetic field weakening, catastrophic eruptions and extinctions every 12,000 years

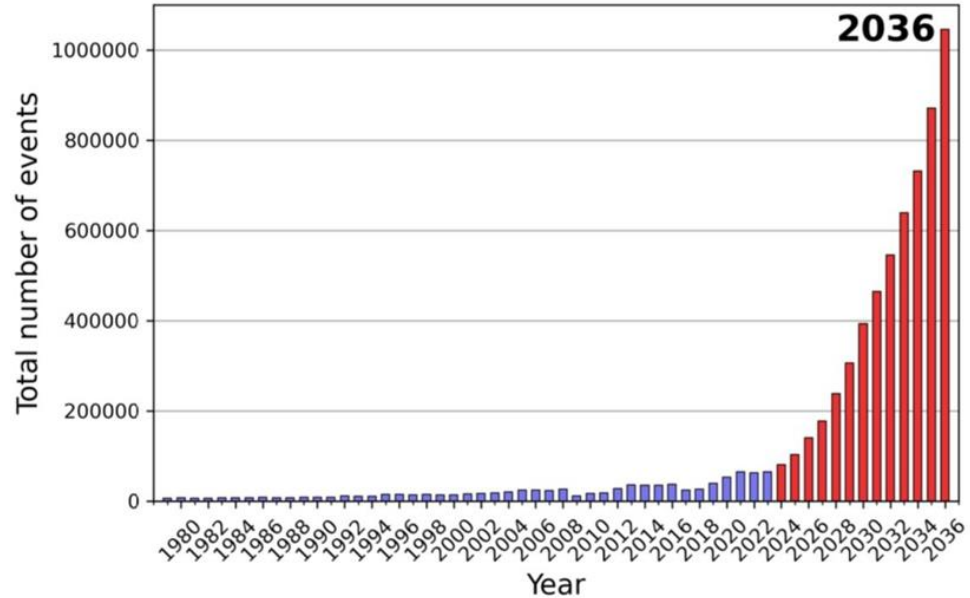
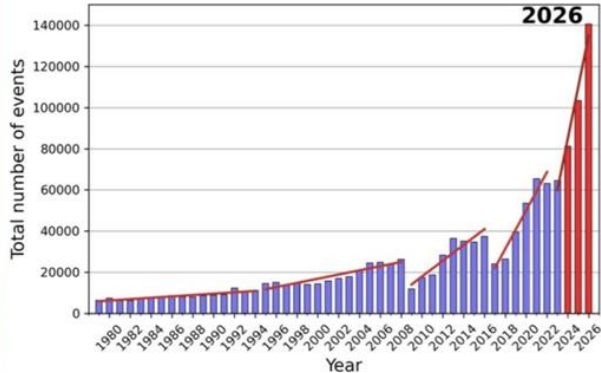
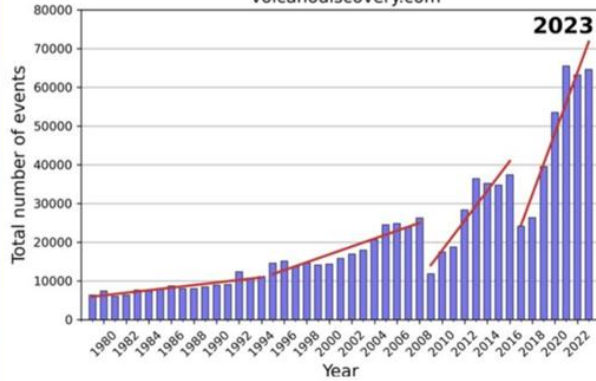
Time (Years Ago)	Magnetic Event	Volcanic Candidates	Biosphere Stresses
~12,000	Gothenburg	Eifel Complex (German), Phlegraean Fields (Italy)	Mega-Faunal Extinction, Global
~25,000	Lake Mungo	Aira Caldera (Japan), Taupo (New Zealand)	Mega-Faunal Extinction, Australia/Eurasia, W.Africa Human Abandonment
~36,000	Mono Lake	Campi Flegrei (Italy), Gorley (Russia)	Mega-Faunal Extinction, North America
~47,000	Laschamp	Kulje Lake (Russia), Lake Shitkotsu (Japan)	Mega-Faunal Extinction, Global, Neanderthal Extinction
~60,000	Vostok	(None VEI 7 or Greater)	(No Major Discoveries)
~72,000	Toba	Toba (Indonesia), Santorini (Greece)	Largest Human Bottleneck, <5000 Humans Survived
~84,000	(unnamed)	Atitlan (Guatemala)	(No Major Discoveries)
~96,000	(unnamed)	Mount Aso (Japan)	(No Major Discoveries)
~105,000	Blake?	(None VEI 7 or Greater)	Mega-Faunal Extinction?
~120,000	Blake?	Mount Aso (Japan)	Mega-Faunal Extinction?

## THE CURRENT CYCLE OF THE



# MODEL OF THE EXPONENTIAL GROWTH OF CATAclysms

Earthquakes in the World M3+ 1979-2023  
volcanodiscovery.com



- Model is based on buildup of energy and tension within the Earth's depths and an exponentially increasing release of energy.

**SOLUTION**

# **Waterfrom Air: The Path to Saving Humanity**

THE PRINCIPLE OF CLEANING UP  
THE OCEAN WITH THE HELP OF

---



Moses West

Founder & President at the Moses West Foundation



Filtration & mineralization



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Gerald Sloan

Founder & CTO at Freewater4u



With our integrated atmospheric water generator

**FUEL-FREE ENERGY**



# ROSCH Innovations

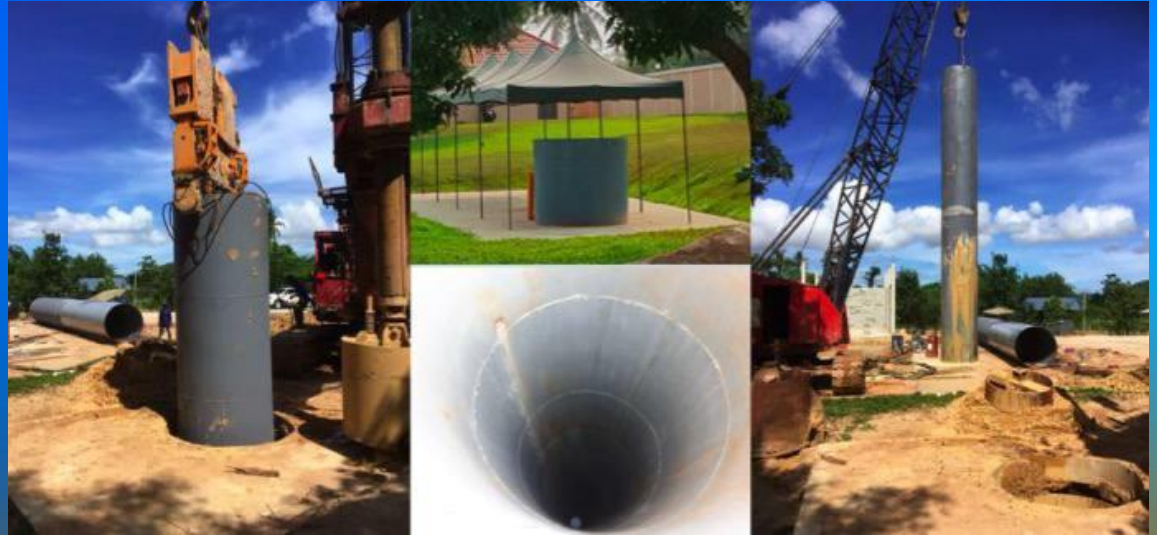
Kinetic Power Plant 100kW



Kinetic Power Plant 500kW



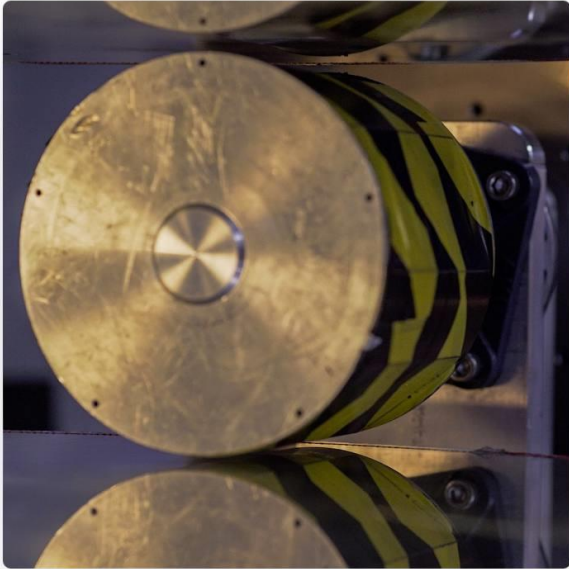
## Kinetic Power Plant Generator Electrogravitomagnetizm



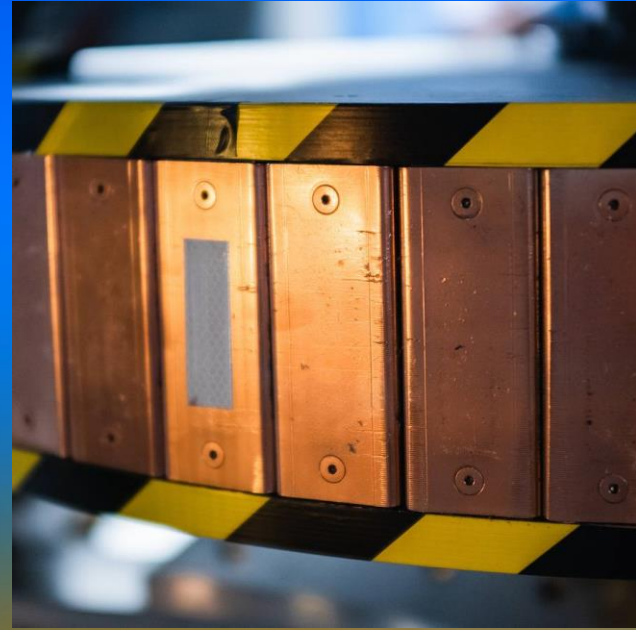
ki-tech.global

## Earth Engine is in production

Currently, IE has developed, manufactured, and is installing 7.5 to 25-kilowatt engines, capable of driving up to 4,000 pounds of inertia power and delivering in excess of 25 kilowatts.



## Earth Engine propelled by Asymmetrical Magnetic Propulsion



ie.energy

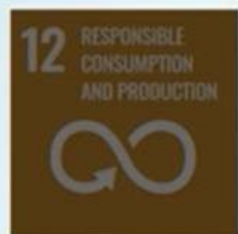
**IN FUTURE**

An aerial photograph of a mountain valley. In the background, there are large, green mountains with some snow patches. A large, light blue lake is situated in the middle ground. In the foreground, a river flows through a dense forest of green trees. A red rectangular box with a white border is overlaid on the center of the image, containing the text "2-3 years".

**2-3 years**



CREATIVE  
SOCIETY





THE GLOBAL ENGINEERING CONFERENCE ON SUSTAINABLE  
DEVELOPMENT AND WORLD FEDERATION OF ENGINEERING  
ORGANISATIONS EXECUTIVE COMMITTEE MEETINGS.

15<sup>th</sup> - 18<sup>th</sup> October 2024, Kigali, Rwanda

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