

Nem lenne szabad lebecsülni a természet fantáziáját!

Szarka László Csaba
Sopron

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63. Videókávészó Szalon
2022. január 15.

Bemutakozás

Elektromágneses geofizika (MTA GGKI, 1977-2010) és környezettudomány (NYME, 2000-2010)
MTA Titkárság Kutatóintézeti Főosztály (2010-2015), CSFK (2016-2018)
Nyugdíjas (Sopron, 2019-)

Geofizika+környezettudomány (1988)

Geophysical aspects of man-made electromagnetic noise in the earth—A review

[László Szarka](#)

[Surveys in Geophysics](#) 9, 287–318(1988) | [Cite this article](#)

Környezettudomány+geofizika+biológia (2000)

C.R. Acad. Sci. Paris. Sciences de la vie / Life Sciences 323 (2000) 559–563
© 2000 Académie des sciences/Éditions scientifiques et médicales Elsevier SAS. Tous droits réservés
S0764446690001797/FLA

Plant biology and pathology / Biologie et pathologie végétales

Annual fluctuation in amplitudes of daily variations of electrical signals measured in the trunk of a standing tree

András Koppán^a, László Szarka ^{*a}, Viktor Wetztergom^a

^a Institute of Earth Sciences, University of West-Hungary and Geodetic and Geophysical Research Institute of the Hungarian Academy of Sciences, H-9401 Sopron, POB 5, Hungary

Received 3 December 1999; accepted 12 May 2000

Communicated by Jean-Louis Le Mouél

Éghajlattudomány (2021):



Advances in Space Research
Volume 67, Issue 1, 1 January 2021, Pages 700–707



How the astronomical aspects of climate science were settled? On the Milankovitch and Bacsák anniversaries, with lessons for today

László Szarka ^a, Willie W.-H. Soon ^b, Rodolfo G. Cionco ^c

Éghajlattudomány (2021):

Research in Astronomy and Astrophysics

INVITED REVIEWS • FREE ARTICLE

How much has the Sun influenced Northern Hemisphere temperature trends? An ongoing debate

Ronan Connolly^{1,2}, Willie Soon¹, Michael Connolly², Sallie Baliunas³, Johan Berglund⁴, C. John Butler⁵, Rodolfo Gustavo Cionco^{6,7}, Ana G. Elias^{8,9}, Valery M. Fedorov¹⁰, Hermann Harde¹¹ [+ Show full author list](#)

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[Research in Astronomy and Astrophysics](#), Volume 21, Number 6

Citation Ronan Connolly et al 2021 Res. Astron. Astrophys. 21 131

+továbbiak, magyarul

Tartalom

1. Földünk éghajlata szakadatlanul változik; a jelenkori éghajlatváltozás nem példátlan.

2. Bizonytalanságok:

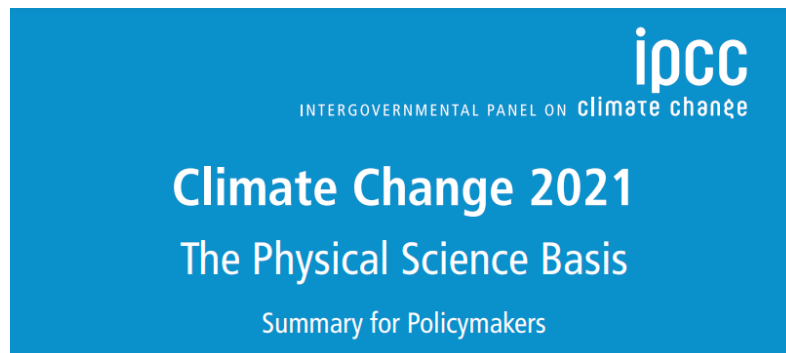
- az ún. teljes napbesugárzás (Total Solar Irradiance, TSI)**
- a globális átlaghőmérséklet,**
- a Föld albedója (fényvisszaverő-képessége),**
- a légköri CO₂-tartalom és annak következményei**

3. A CO₂-üvegházhatás alapú klímamodellezés által lebecsült, de a valóságban erőteljesen működő kozmikus és földfizikai jelenségek

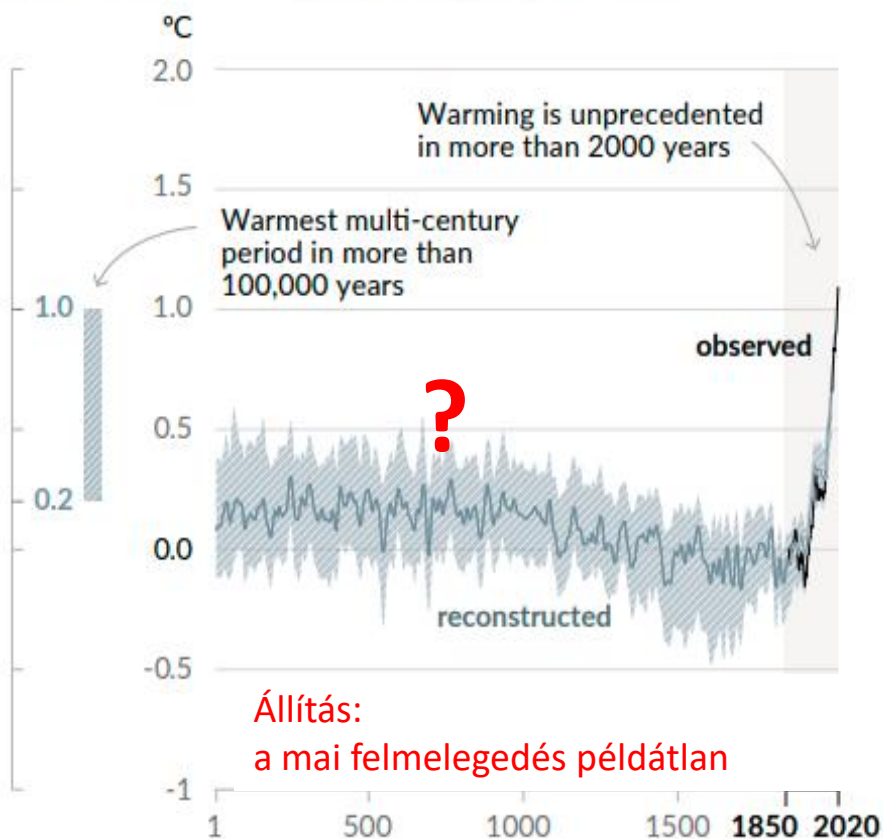
- 1. Földünk éghajlata szakadatlanul változik;
a jelenkori éghajlatváltozás nem példátlan.**

A 2021. augusztusi IPCC 6. jelentés vezetői összefoglalójának (SPM) első ábrája

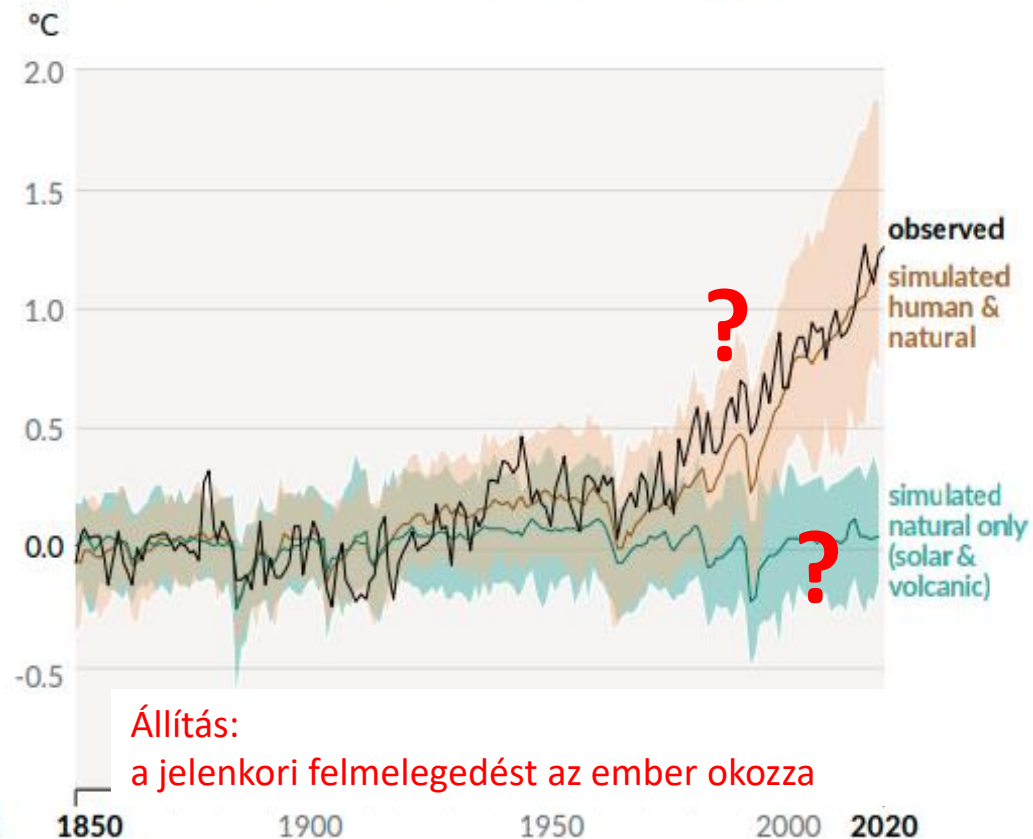
(IPCC: Éghajlatváltozási Kormányközi Testület)



a) Change in global surface temperature (decadal average) as **reconstructed** (1-2000) and **observed** (1850-2020)



b) Change in global surface temperature (annual average) as **observed** and simulated using **human & natural** and **only natural** factors (both 1850-2020)





TÉNY

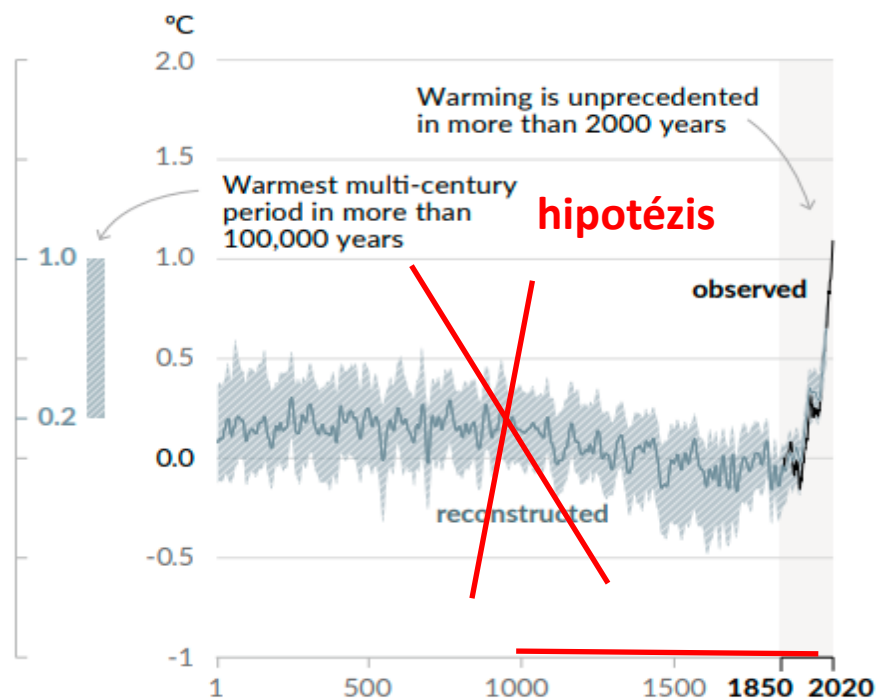
Ezeréves fatönkök – Mendenhall-gleccser, Juneau (Alaszka) mellett
(Abbey Lowell, 2013)



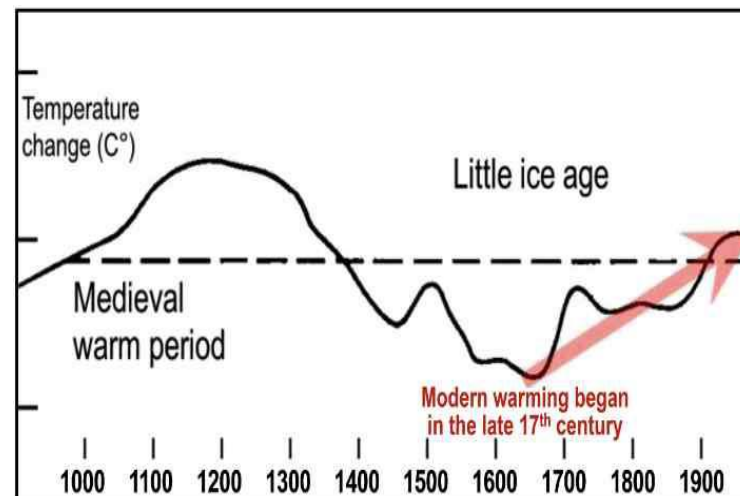
TÉNY

Hvalsey katolikus templomromja Grönlandon

a) Change in global surface temperature (decadal average)
as **reconstructed** (1-2000) and **observed** (1850-2020)

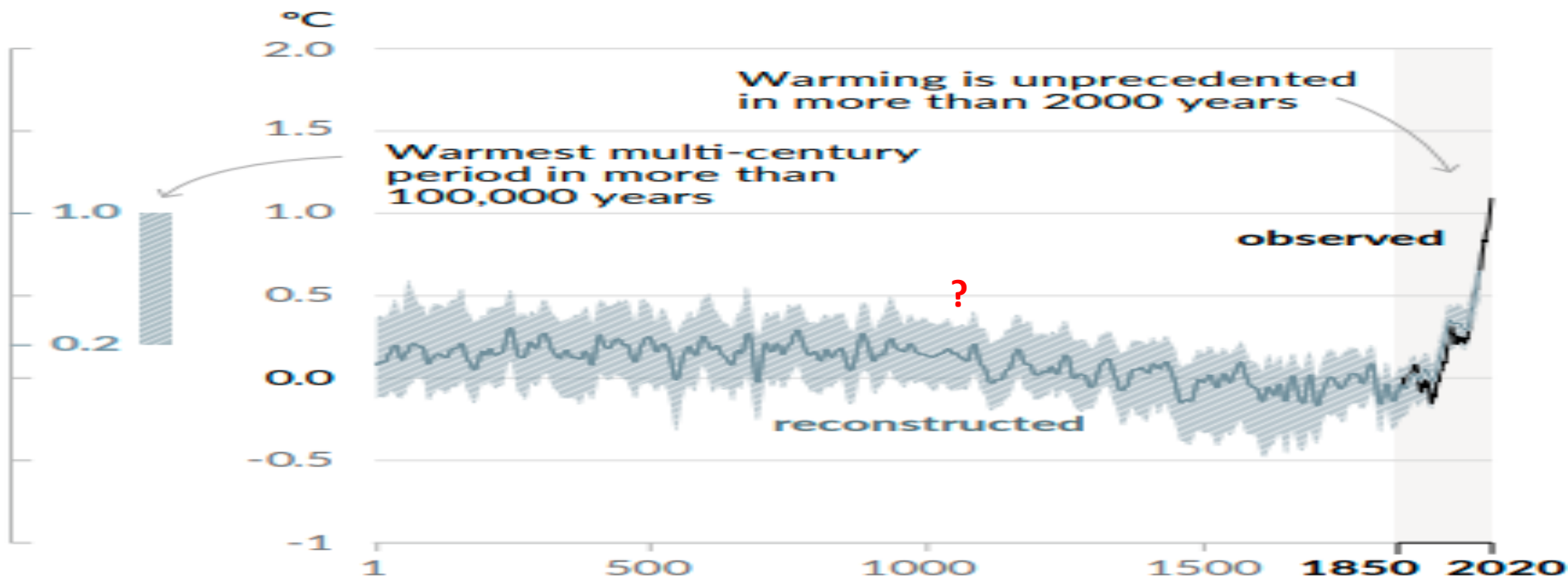


IPCC First Assessment Report, 1990:



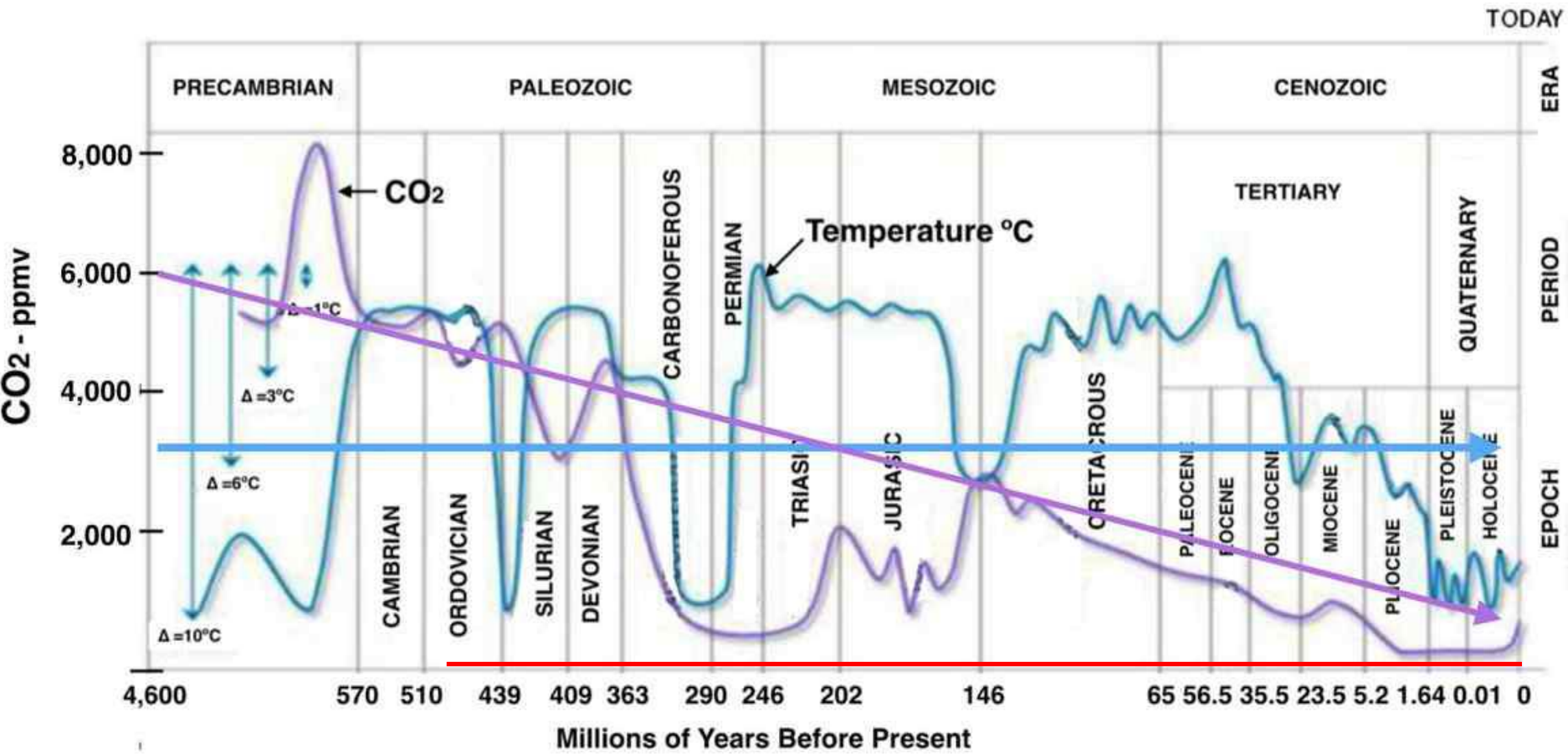
IPCC 6th Assessment Report, SPM 2021:

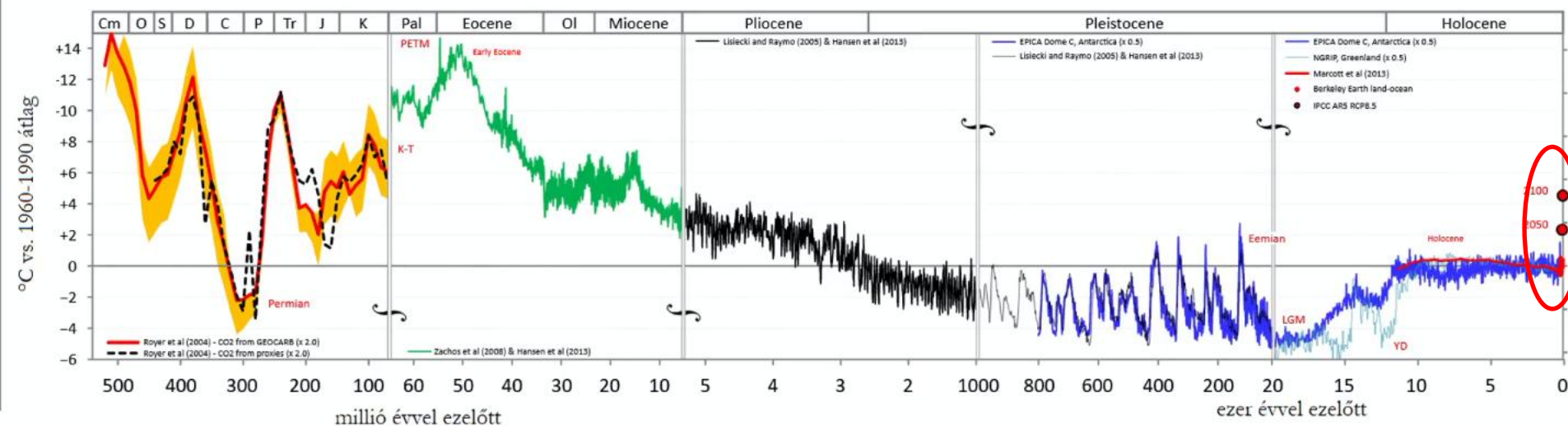
a) Change in global surface temperature (decadal average) as reconstructed (1-2000) and observed (1850-2020)



-4,6 milliárd évtől máig: hőmérséklet és CO₂

Geological Timescale: Concentration of CO₂ and Temperature fluctuations

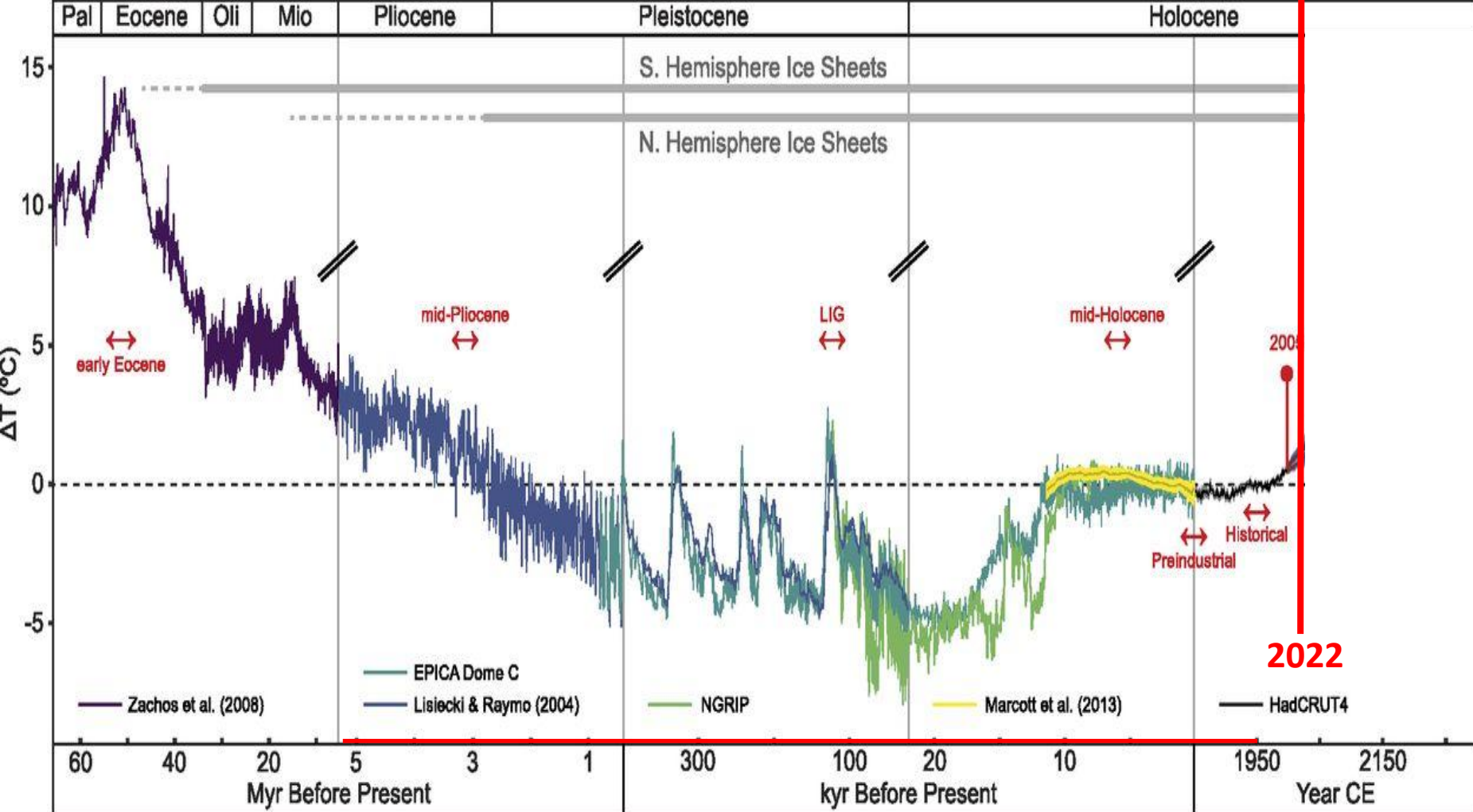




Vincze Miklós ATOMCSIL előadása, 2022. január 13.

Megjegyzés (SzL):

1. A paleohőmérsékleti becslések és a klímamodellezési előjelzés nem rajzolható egybe!
2. Azt a képzetet kelti, mintha a földtörténeti múltban nem lettek volna hasonló
– igen rövid idejű – dinamikus változások

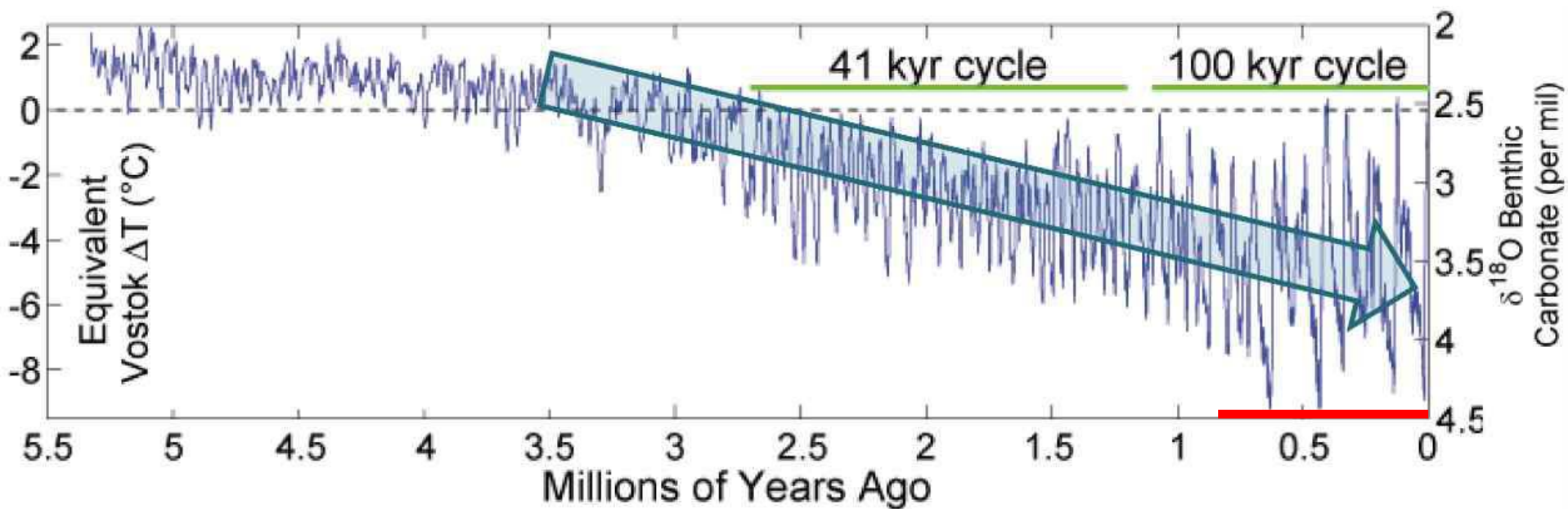


K. D. Burke, J. W. Williams, A. Chandler, A. M. Haywood, D. J. Lunt, and B. L. Otto-Bliesner: Pliocene and Eocene provide best analogs for near-future climates. PNAS December 26, 2018 115 (52) 13288-13293

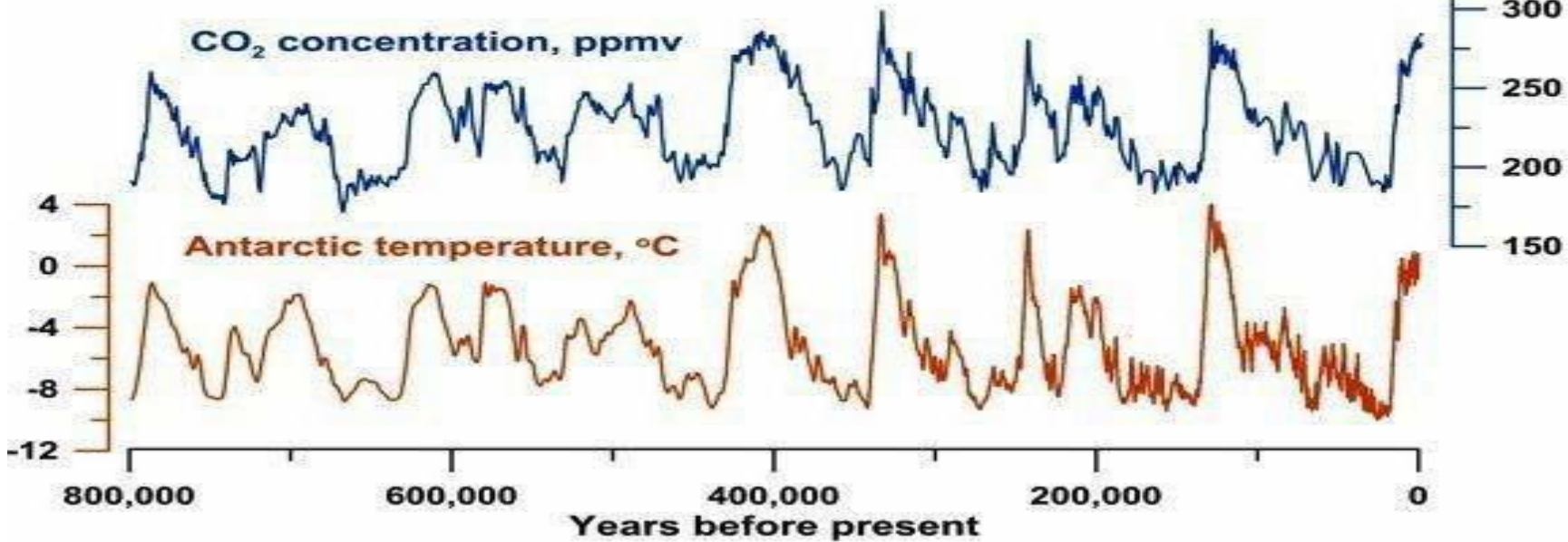
ÚN. KLÍMAVÉSZHELYZETET KIZÁRÓLAG A KLÍMAMODELLEK SUGALLNAK.

(Az ENSZ Biztonsági Tanácsban a „klímavészhelyzetet” 2021. február 23-án Oroszország megvétózta.)

-5,5 millió évtől: hőmérsékletváltozás (proxy)

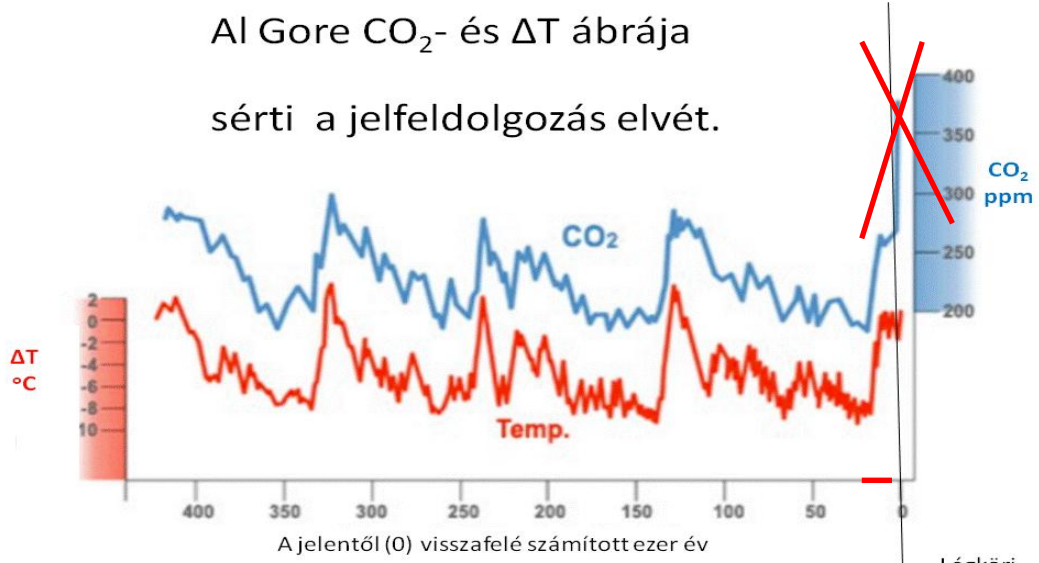


-400 ezer évtől (hőmérséklet- és CO₂-proxik antarktiszi jégfurat-beli buborékokból)

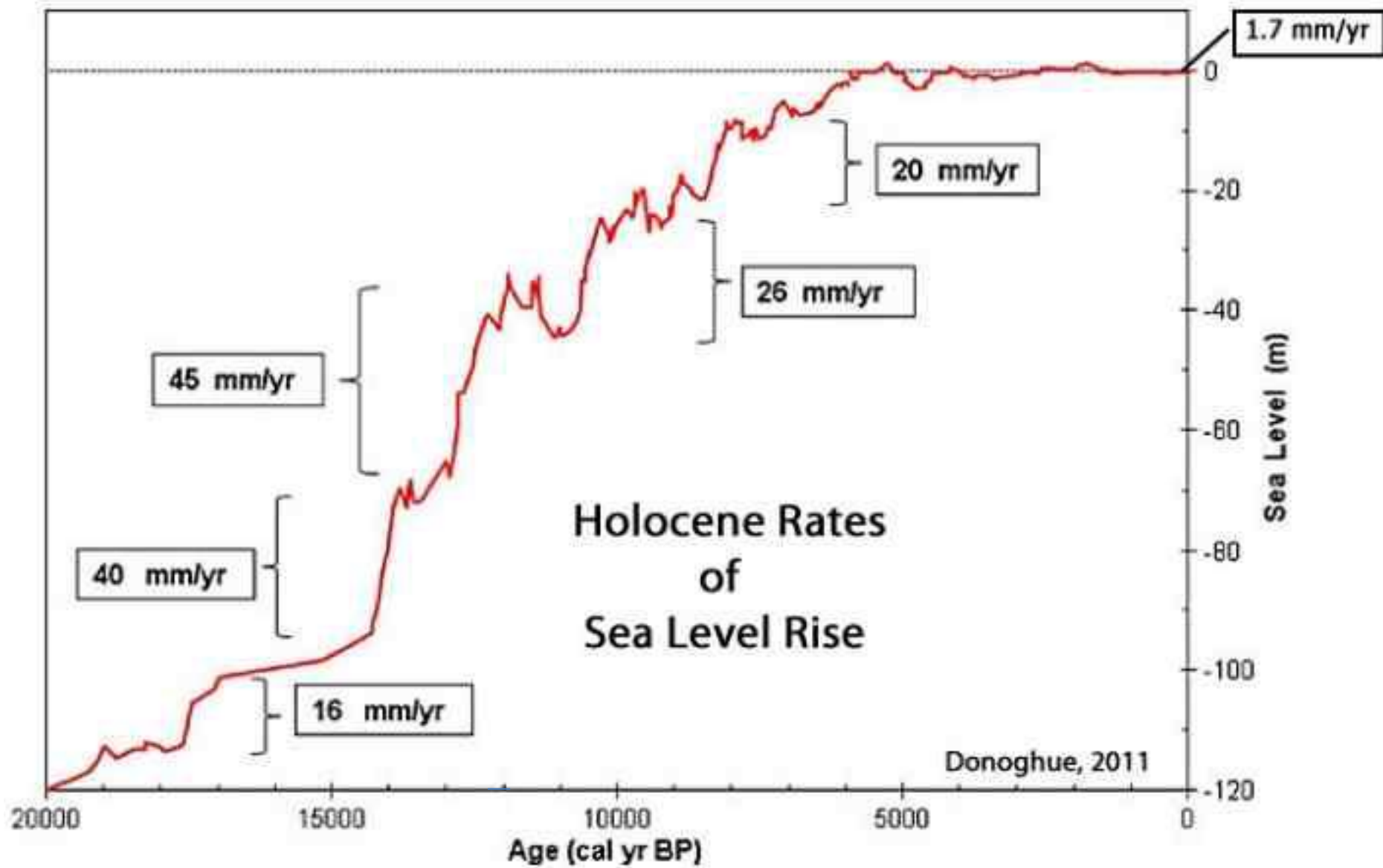


Al Gore CO₂- és ΔT ábrája
sérti a jelfeldolgozás elvét.

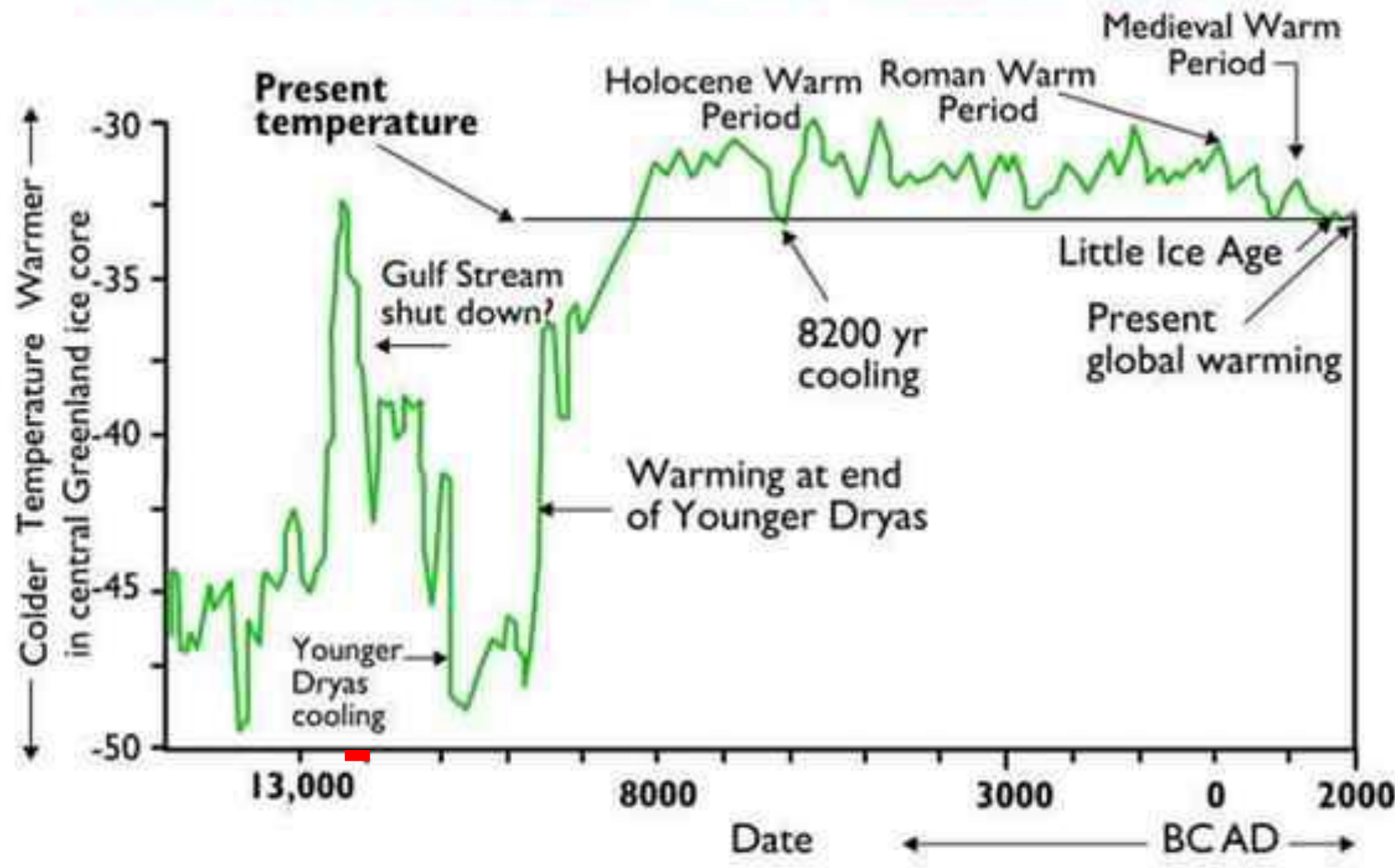
Al Gore: ábrája
(**Kellemetlen igazság** c. film, amiben összerajzolták a proxy-t és a légkörben 1958 óta mért értékeket, noha a jégbuborékok csak három évszázad múltán záródnak be.)



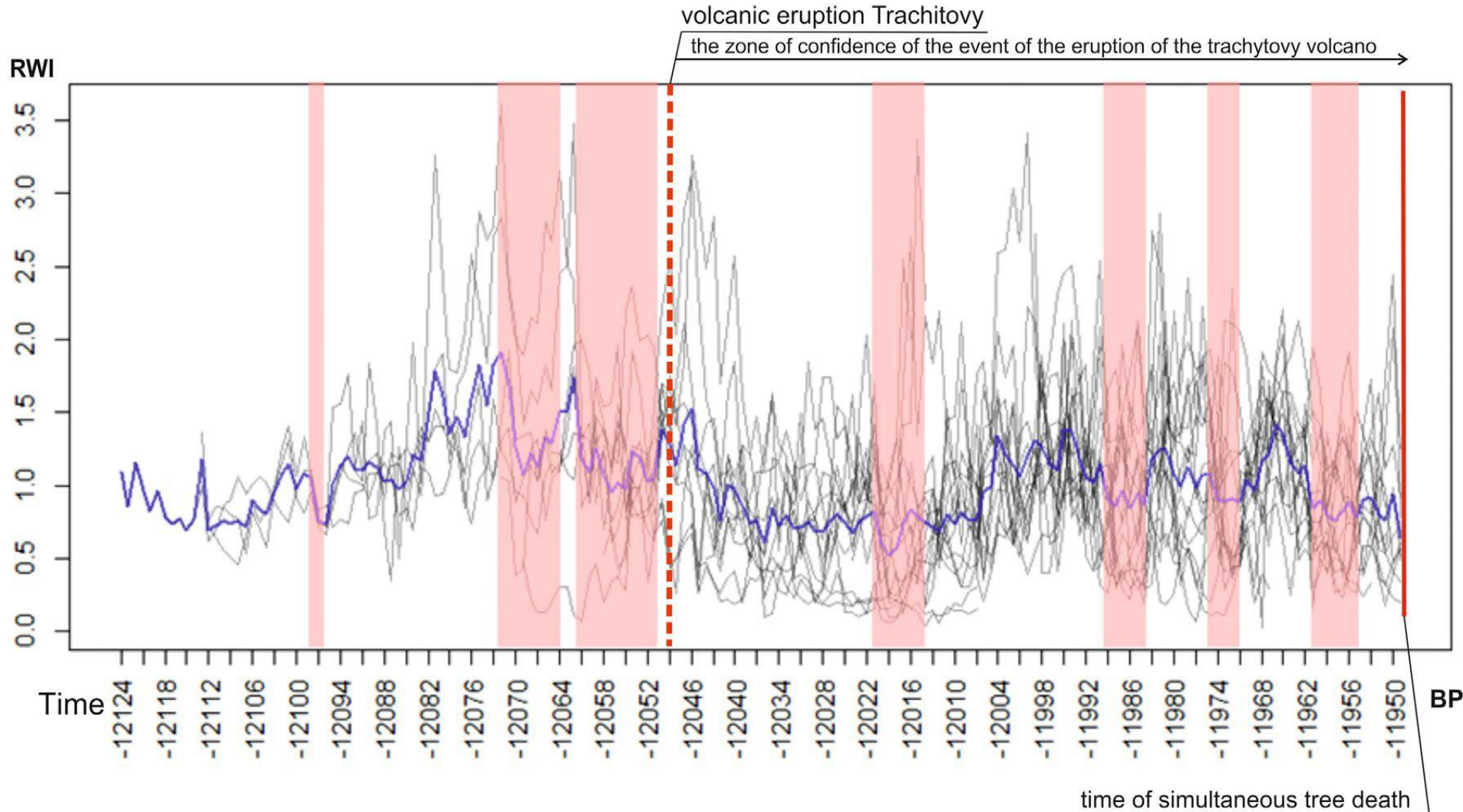
← Jégfuratokból származó CO₂ becslések →
Légköri CO₂ adatok 1958 óta



TEMPERATURE CURVE LAST FIFTEEN THOUSAND YEARS



-12124-től -11950-ig (174 év)



RWI (Ring Width Index) egyedi évgűrű sorozatok (az átlagérték kékel, a gyenge növekedés jellemző időszakai pirossal kiemelve).

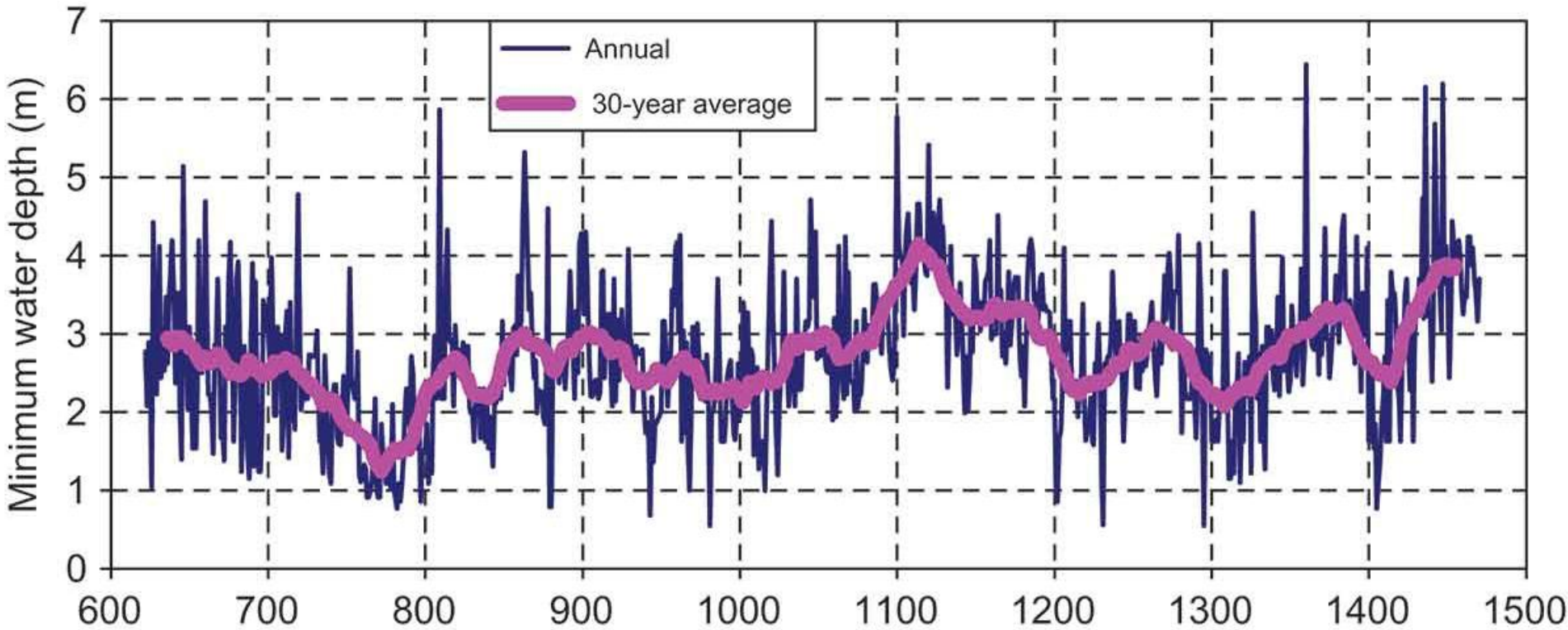
Ineshin et al. Limnology and Freshwater Biology 2021 (1): 1115-1125

622 és 1469 között



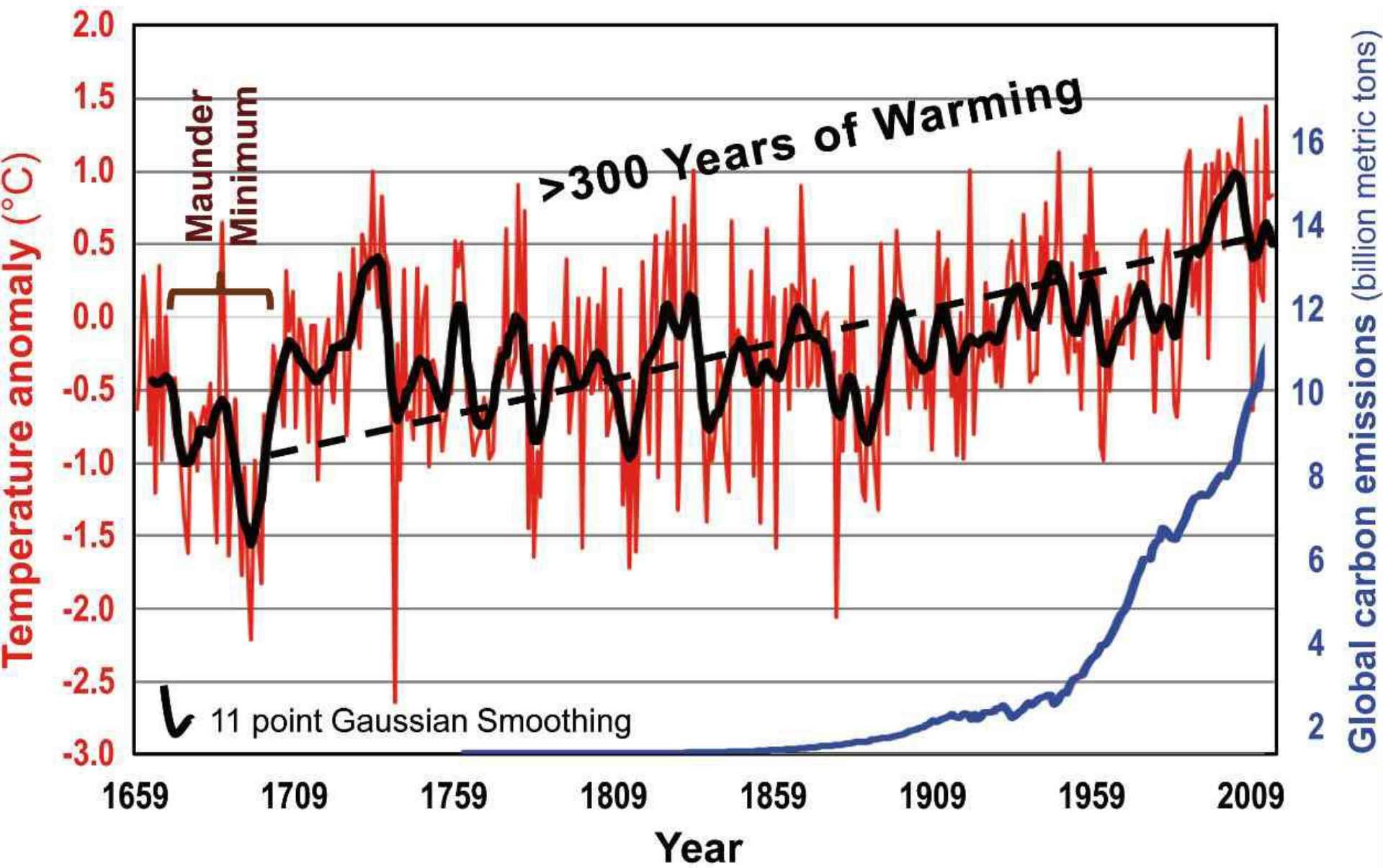
Egy egyedülálló idősor:
A Nílus vízszintingadozásai (Kairó)
(Adatok: Hurst 1951; Ábra: Koutsoyiannis 2013)

Hosszú távú perzisztencia; Hurst-kitevő, $H=0,87$



Ruzmaikin et al. (2007, JGR, 111, D21114): 11y, 88y and >200y periódusok
Magyarázata: „a naptevékenység modulálja a vízgyűjtőre kiható NAM távkapcsolatot”

1659-től 2009-ig: mért hőmérséklet és a CO₂-kibocsátás

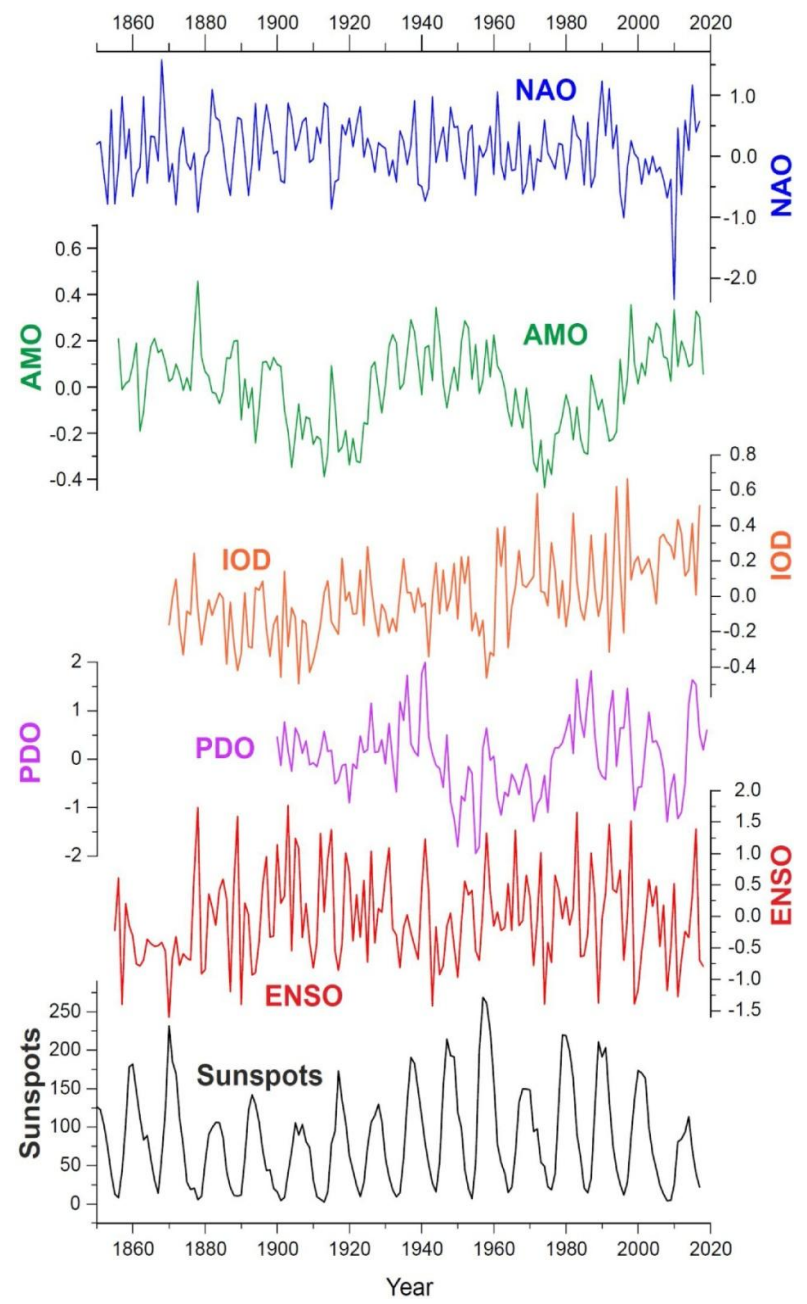


1850-2020: Távkapcsolatok (teleconnections)

Távkapcsolatok és társaik, ABC sorrendben

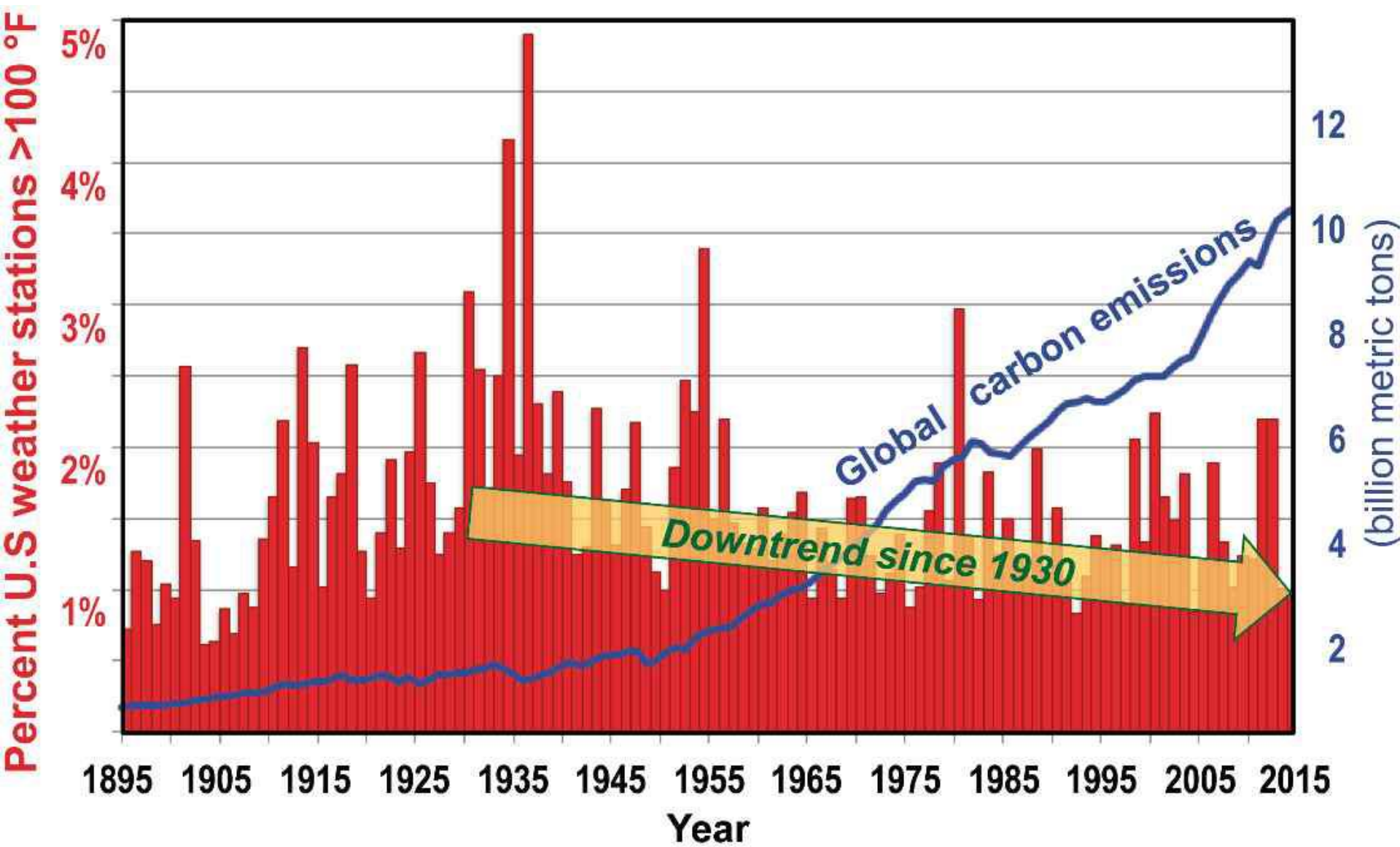
Antarctic Circumpolar Wave	ACW
Arctic Dipole aAomaly	ADP
Arctic Oscillation/Northern Annular Mode	AO/NAM
Atlantic Equatorial Mode	AEM
Atlantic Multidecade Oscillation	AMO
Atlantic Meridional Over-Turning Circulation	AMOC
Brewer-Dobson Circulation	BDC
Cold Ocean-Warm Land	COWL
El Niño-Southern Oscillation	ENSO
Equatorial Indian Ocean Monsoon Oscillation	EQUINCO
European Wind storms	
Gravity waves	
Indian Ocean Dipole	IOD
Interdecadal Pacific Oscillation	IPO
Jet streams	
Madden-Julian Oscillation	MJO
North Atlantic Oscillation	NAO
North Pacific Gyre	NPG
North Pacific Oscillation	NPO
Northern Annular Mode /Pattern	NAM
Pacific North-American Pattern	PNA
Pacific Decadal Oscillation Pattern	PDO
Pineapple Express	
Planetary Waves	
Polar Vortex	
Quasi-Biennial Oscillation	QBO
Seasonal lag	
Semiannual Oscillation	SAO
Southern Annular Mode/Antarctic Oscillation	SAM/AAO
Southern Oscillation Index	SOI
Stratospheric Variability	
Sudden Stratospheric Warmings SSW	SSW
Walker circulation	

Lüdecke et al. (2021)

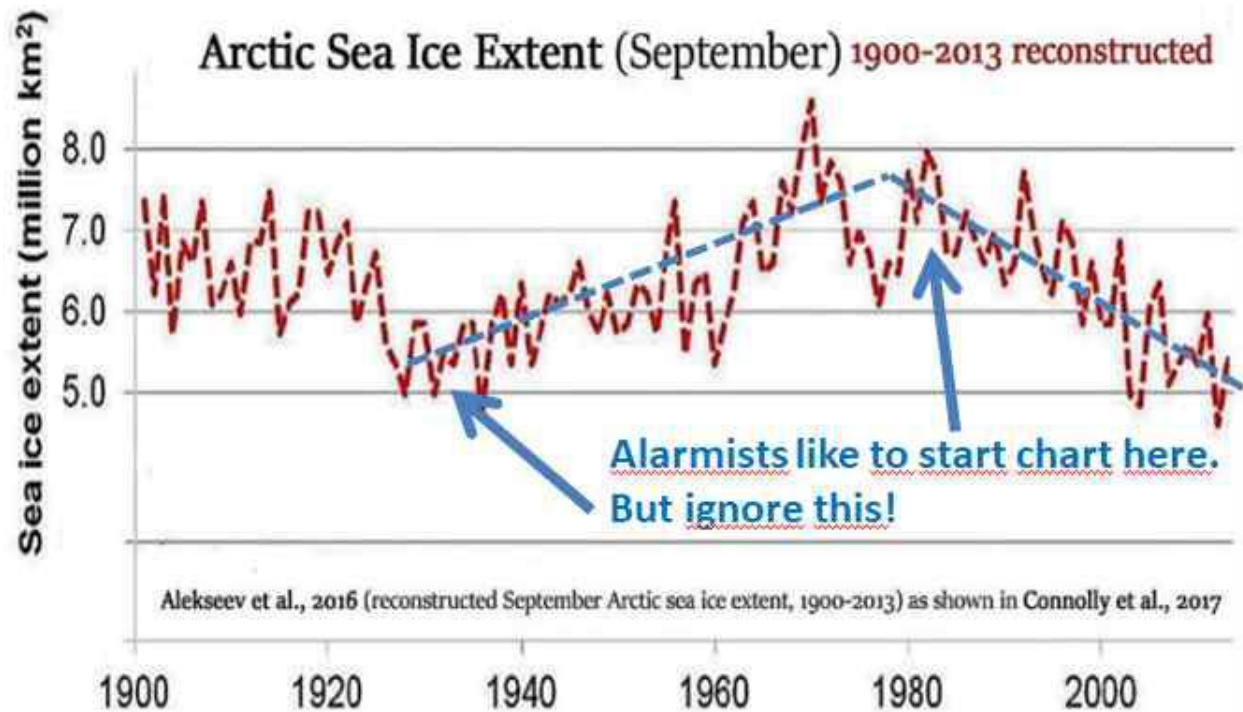


„Weather drives weather.” ???

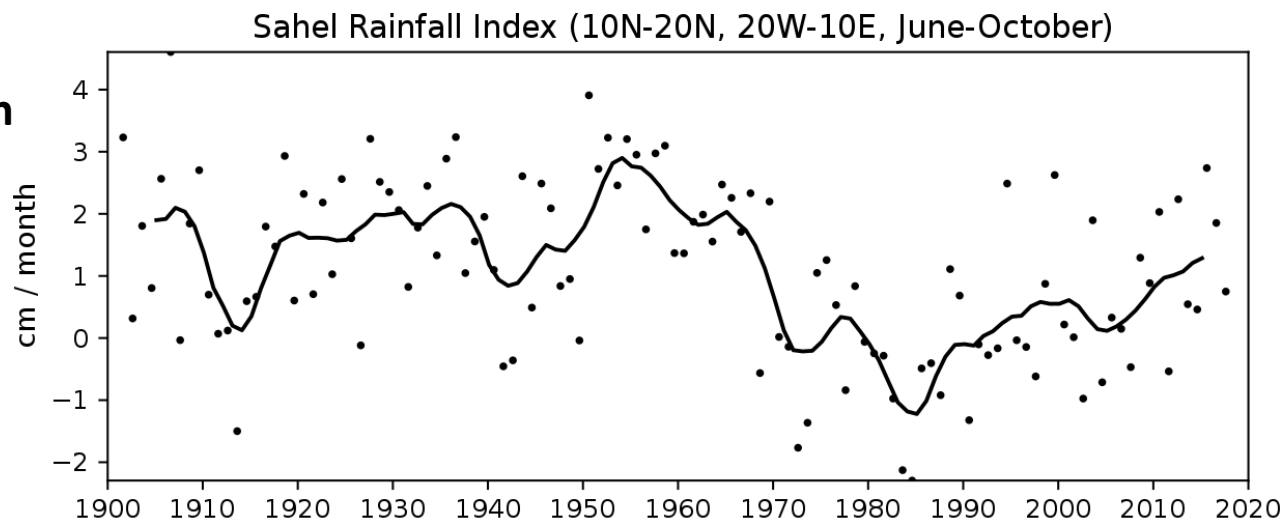
1895-2015: Hőmérsékleti csúcsok (USA)



1900-2013:
Északi sarkvidéki
jégkiterjedés
(szeptember)



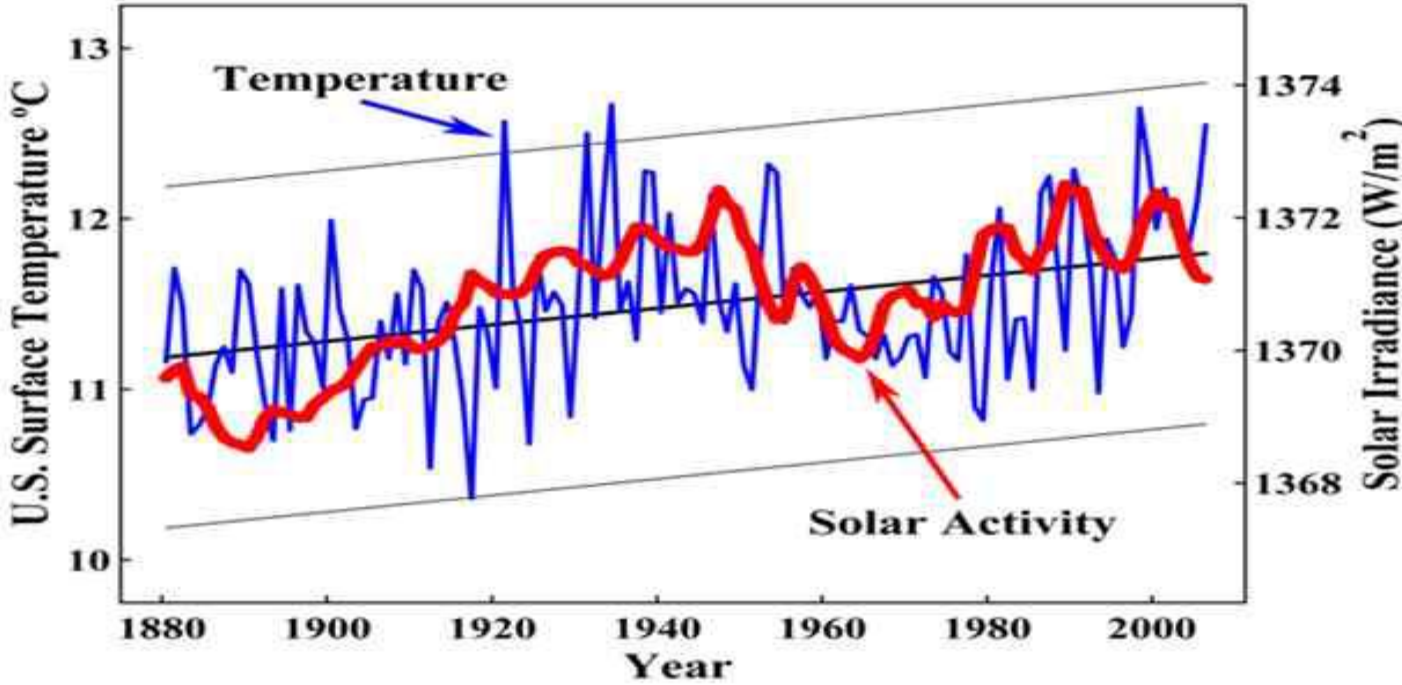
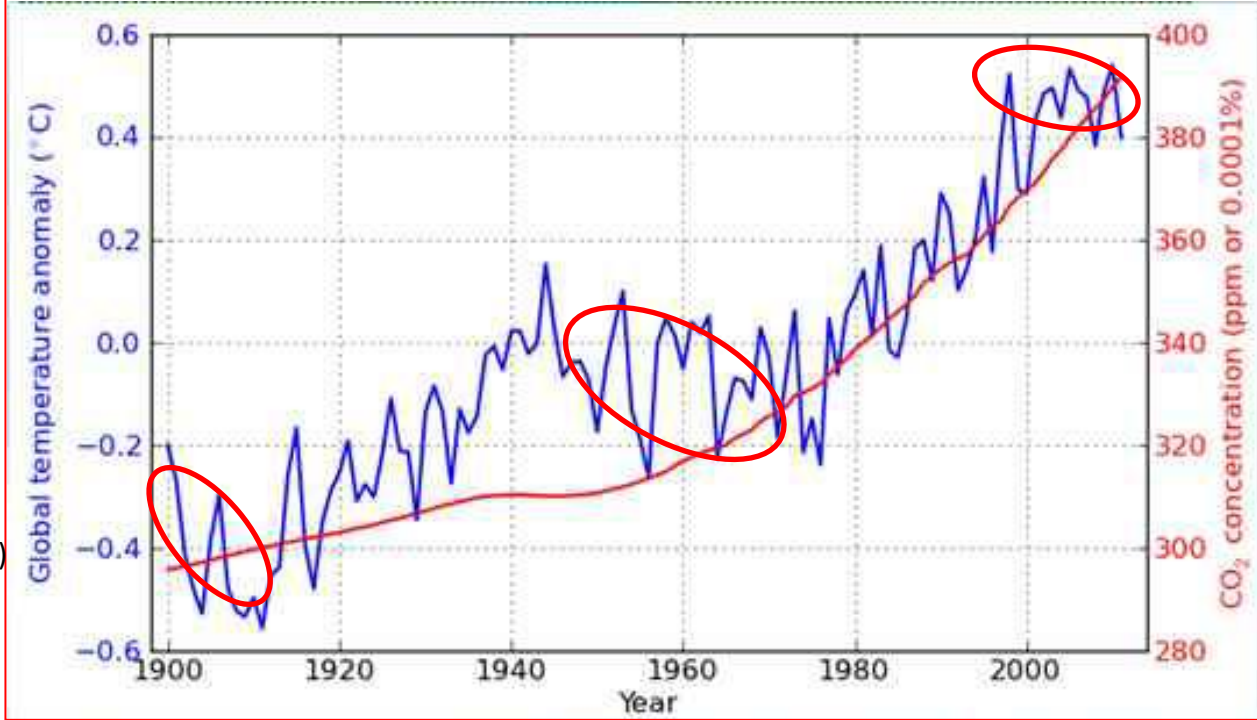
1900-2020:
Csapadéindex
a Száhel-övezetben



1880 (1900)-tól

Hőmérsékletváltozás és
széndioxid-koncentráció
(1958-tól folyamatos mérés)

Hőmérsékletváltozás és
naptevékenység



Global Cooling

December
1973



January
1977



April
1977



December
1979



1970-es évek

Seok Park: <https://www.youtube.com/watch?v=PiVrKufqr6s>

Global Warming

October
1987



April
2001



April
2006



July
2007

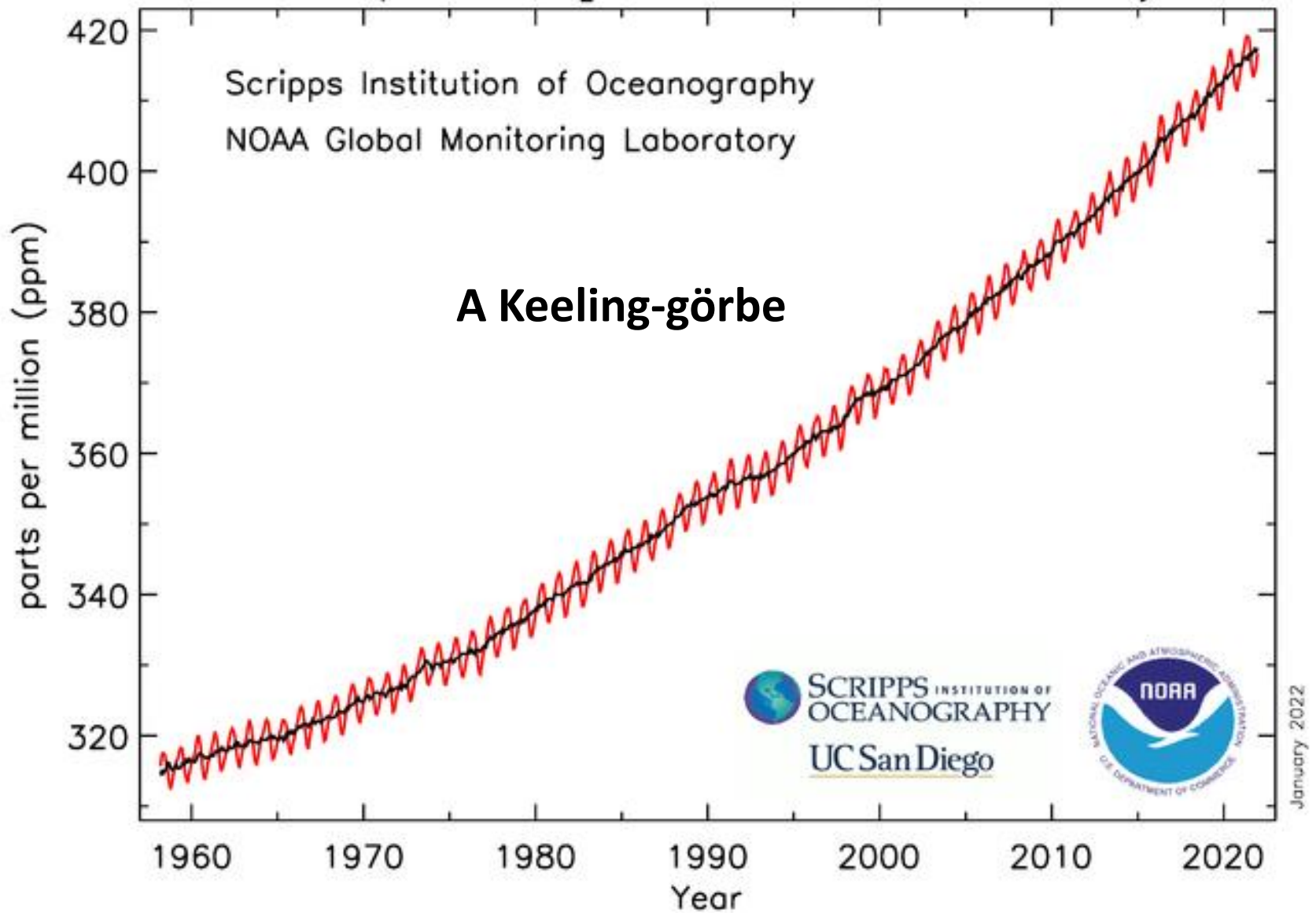


1987-től

Atmospheric CO₂ at Mauna Loa Observatory

Scripps Institution of Oceanography
NOAA Global Monitoring Laboratory

A Keeling-görbe



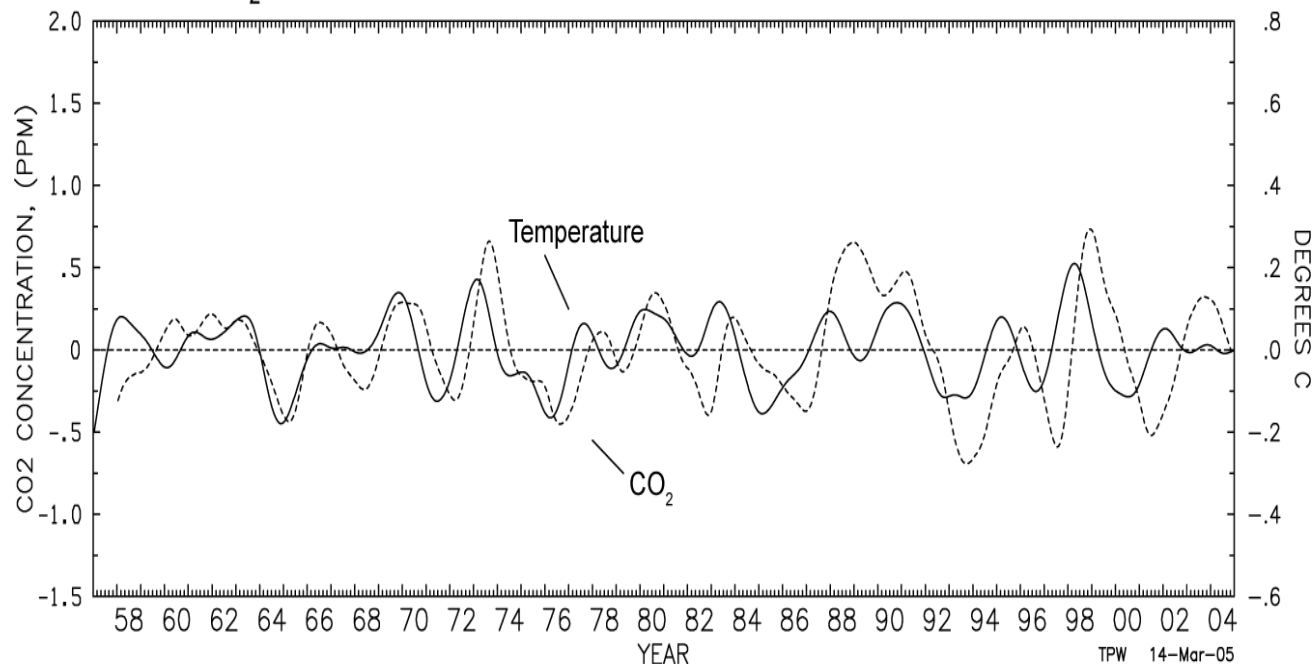
Mi van előbb:
 ΔT vagy ΔCO_2 ?

ΔT^a
 és
 ΔCO_2^a

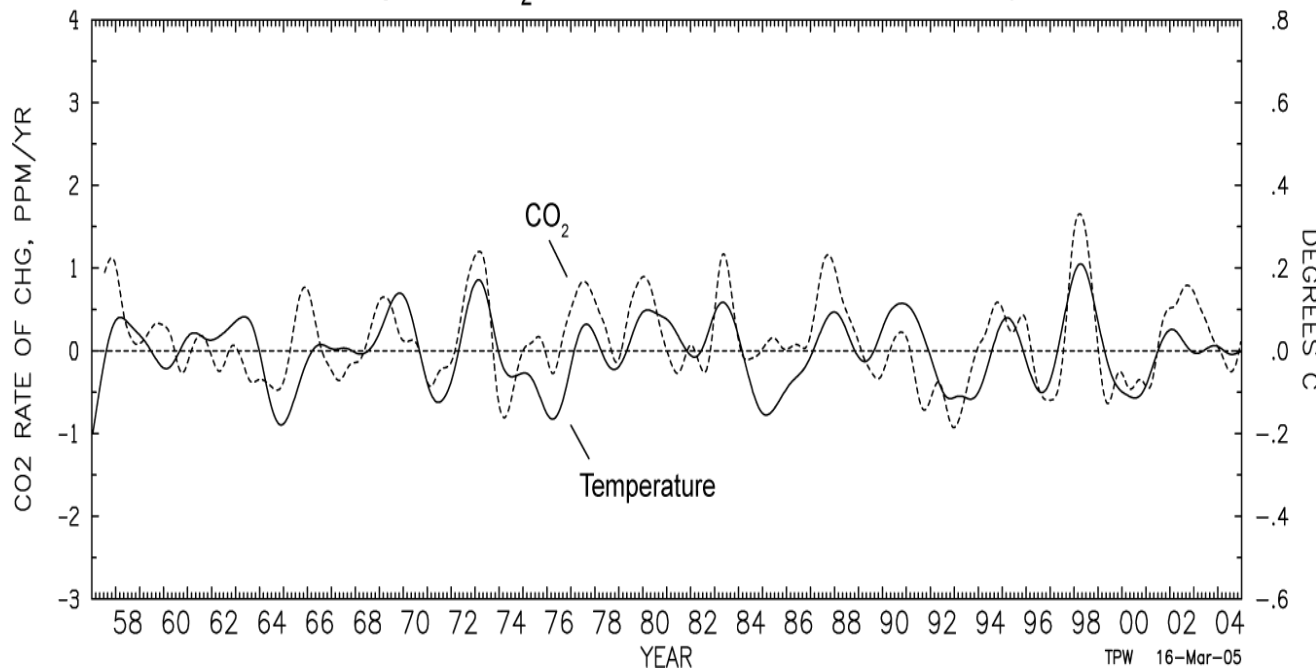
Charles David KEELING
 (2005, Tyler Prize
 Lecture)

ΔT^a
 és
 $\Delta CO_2^a / \Delta t$

Global CO_2 Anomaly & Global Air Temperature Anomaly both Detrended



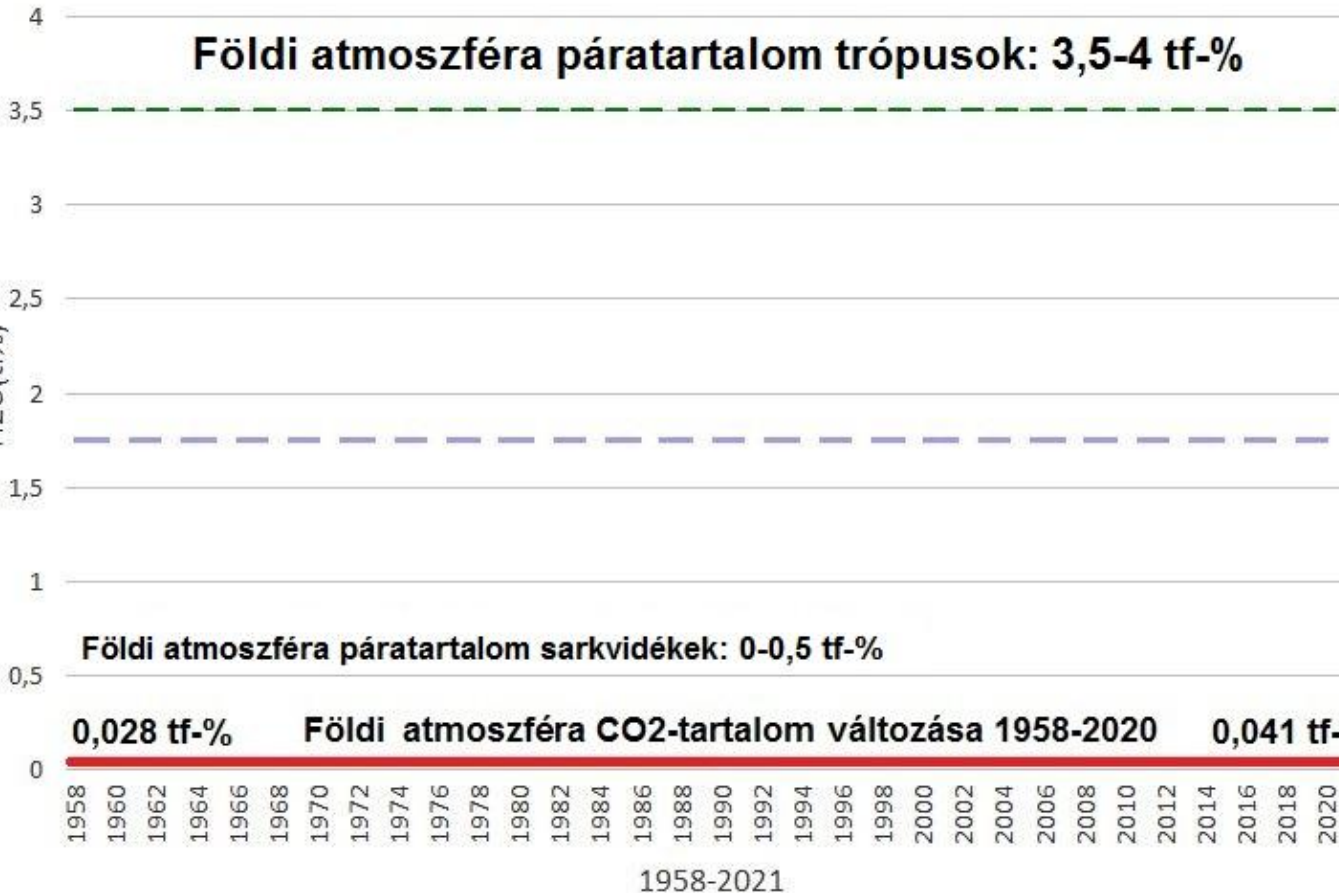
Global Rate of Change in CO_2 and Air Temperature Anomaly Both Detrended



Földi atmoszféra IR-aktív gáz (H2O, CO2), tf-%

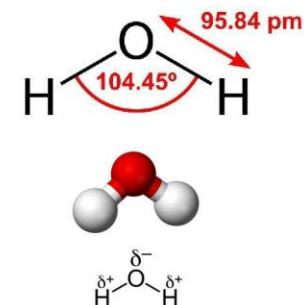
Földi atmoszféra páratartalom trópusok: 3,5-4 tf-%

H2O(tf%)

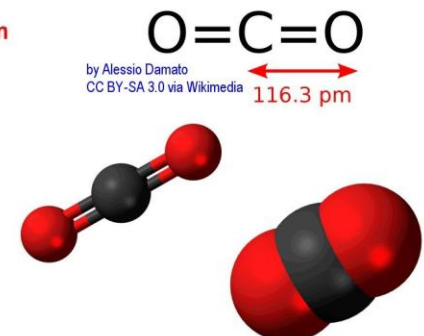


Király József ábrája,
enpol2000.hu,
2022.01.10.

The Water Molecule

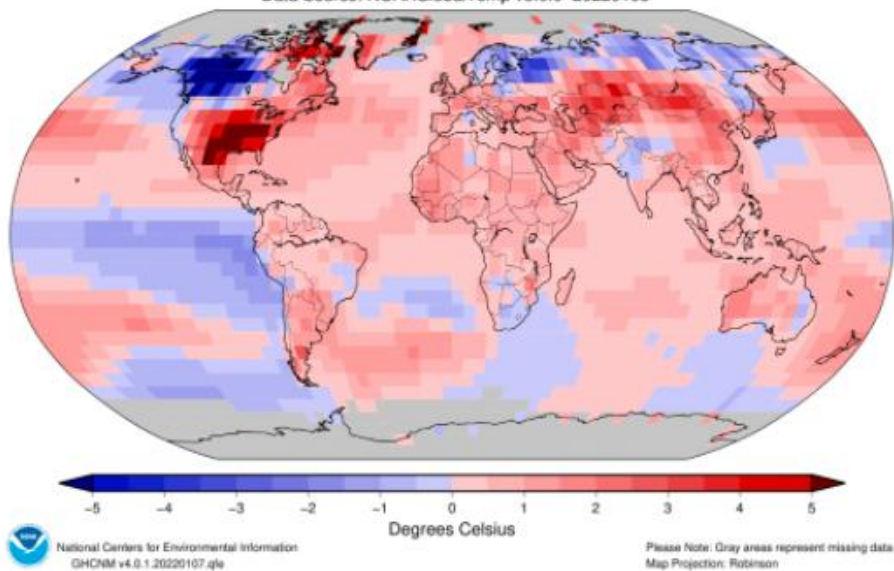


The Carbon Dioxide Molecule



Land & Ocean Temperature Departure from Average Dec 2021 (with respect to a 1981–2010 base period)

Data Source: NOAAGlobalTemp v5.0.0–20220108

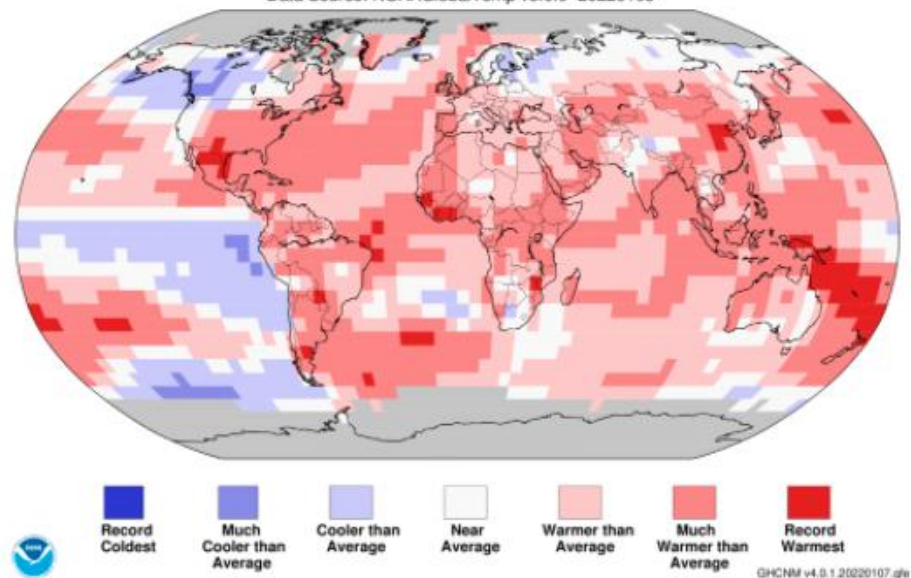


[December 2021 Blended Land and Sea Surface Temperature Anomalies in degrees Celsius](#)

Land & Ocean Temperature Percentiles Dec 2021

NOAA's National Centers for Environmental Information

Data Source: NOAAGlobalTemp v5.0.0–20220108

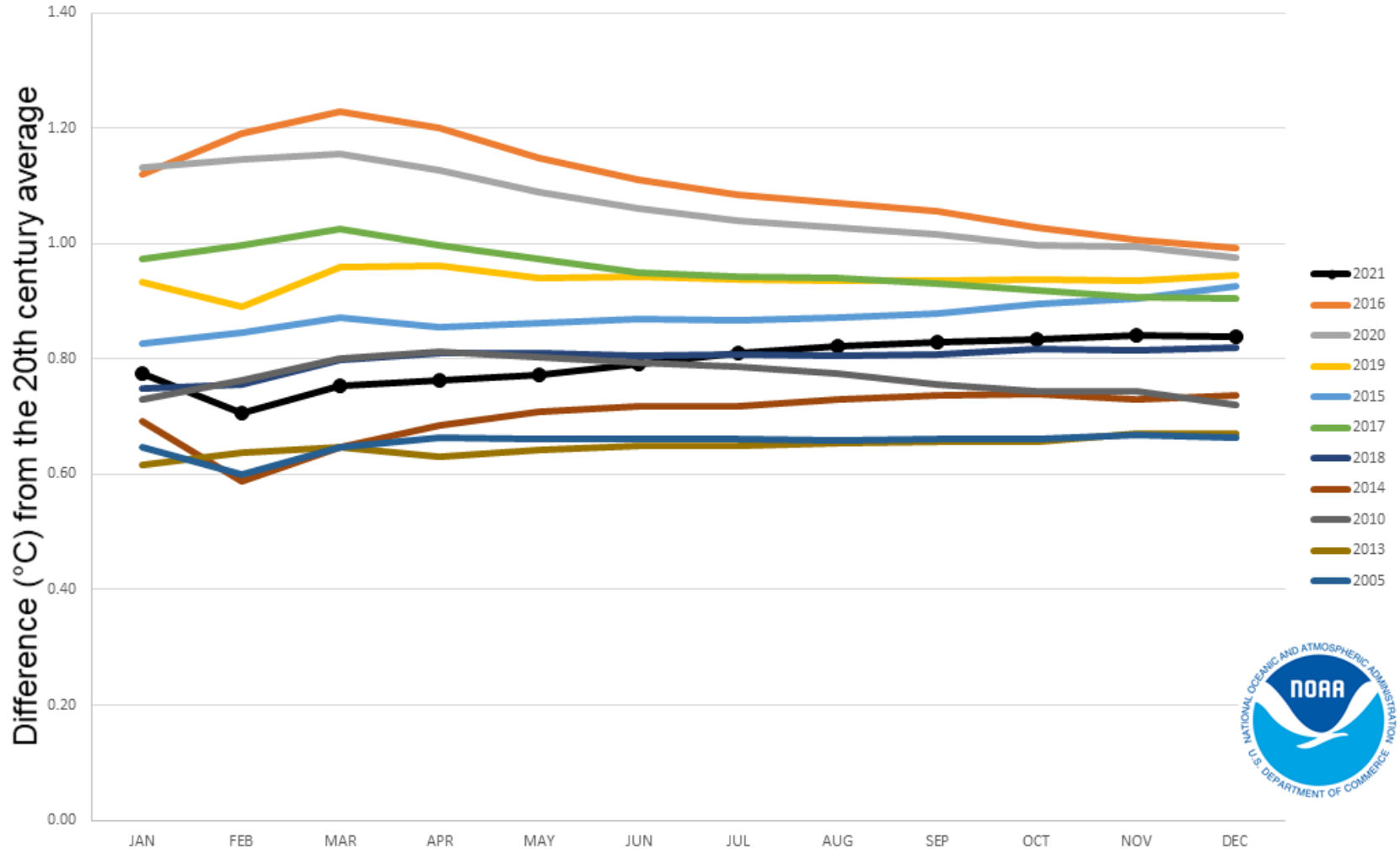


[December 2021 Blended Land and Sea Surface Temperature Percentiles](#)

Forrás: <https://www.ncdc.noaa.gov/sotc/global/202112>

Year-to-Date Global Temperatures

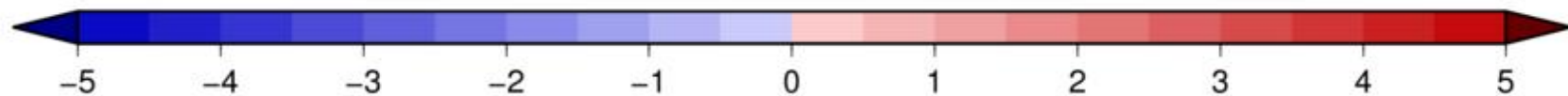
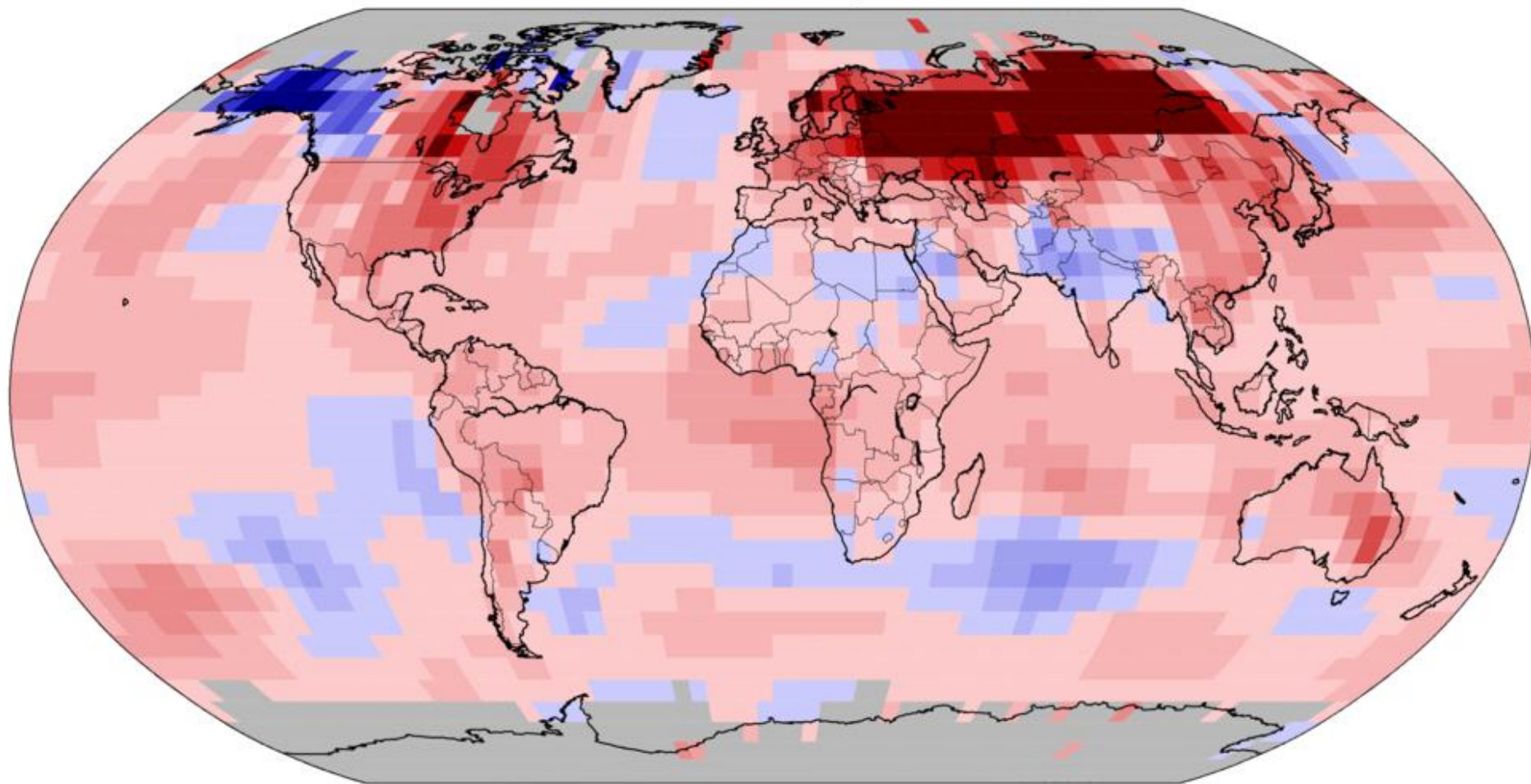
for 2021 and the ten warmest years on record



Az 2021-es év csak a 6. legmelegebb esztendő (2016, 2020, 2019, 2015 és 2017 után)

Land & Ocean Temperature Departure from Average Jan 2020 (with respect to a 1981–2010 base period)

Data Source: NOAA GlobalTemp v5.0.0–20200206



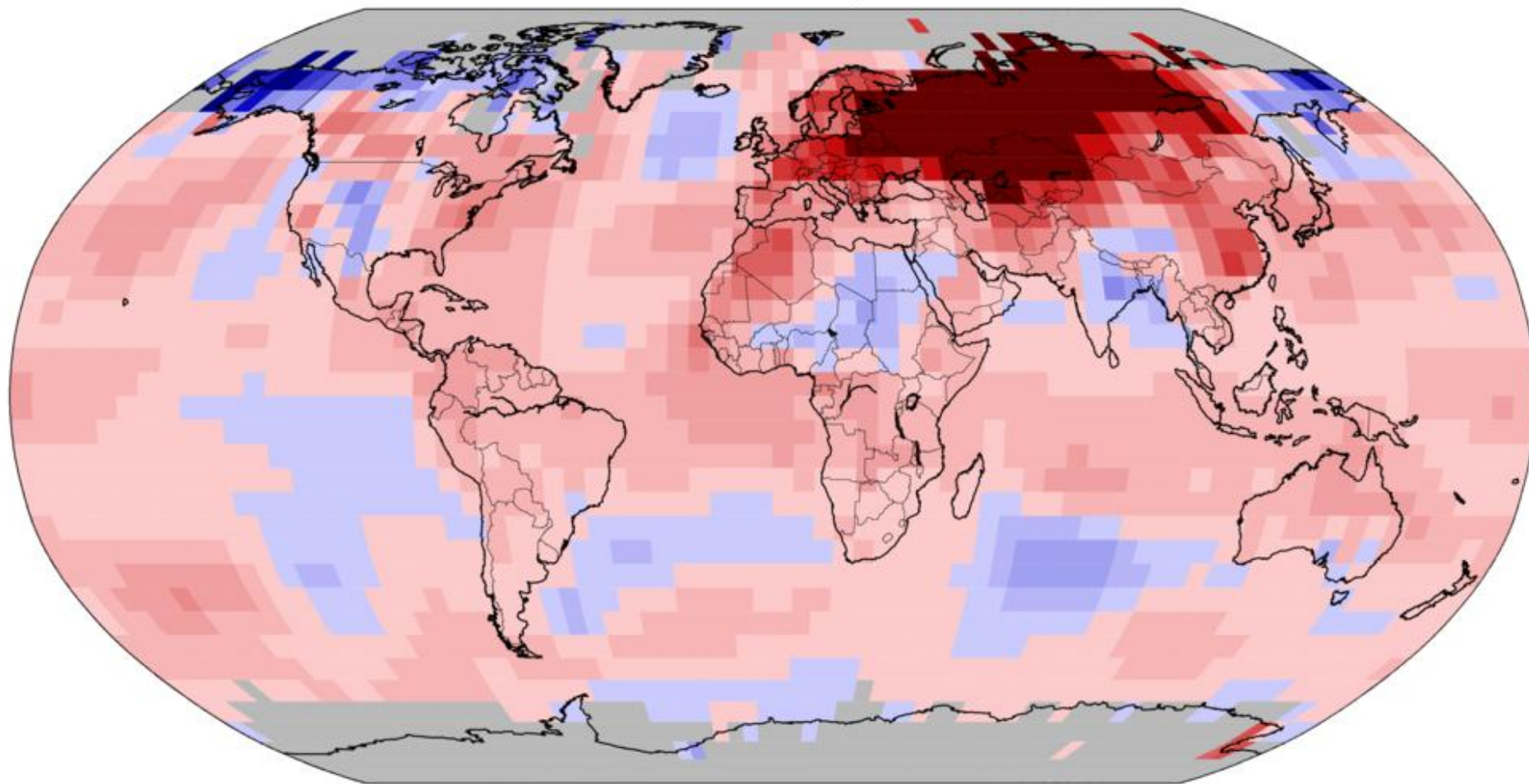
National Centers for Environmental Information
GHCM v4.0.1 20200205 gfo

Degrees Celsius

Please Note: Gray areas represent missing data
Map Projection: Robinson

Land & Ocean Temperature Departure from Average Feb 2020 (with respect to a 1981–2010 base period)

Data Source: NOAA GlobalTemp v5.0.0–20200308



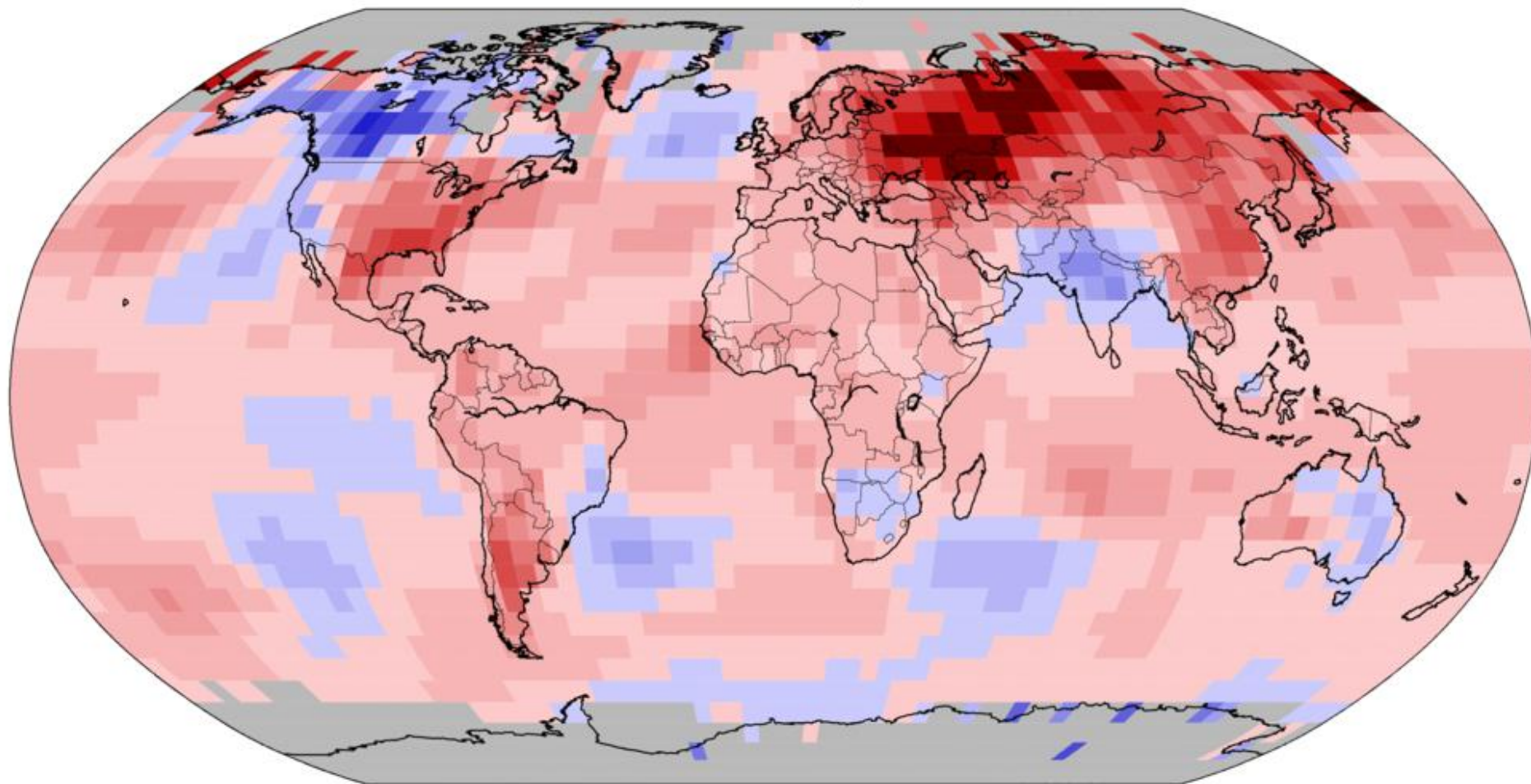
National Centers for Environmental Information
GHCM v4.0.1 20200307.gfs

Degrees Celsius

Please Note: Gray areas represent missing data
Map Projection: Robinson

Land & Ocean Temperature Departure from Average Mar 2020 (with respect to a 1981–2010 base period)

Data Source: NOAA GlobalTemp v5.0.0–20200408



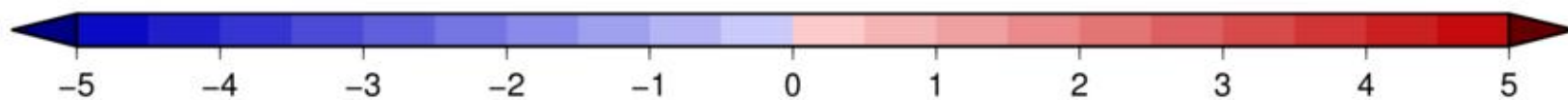
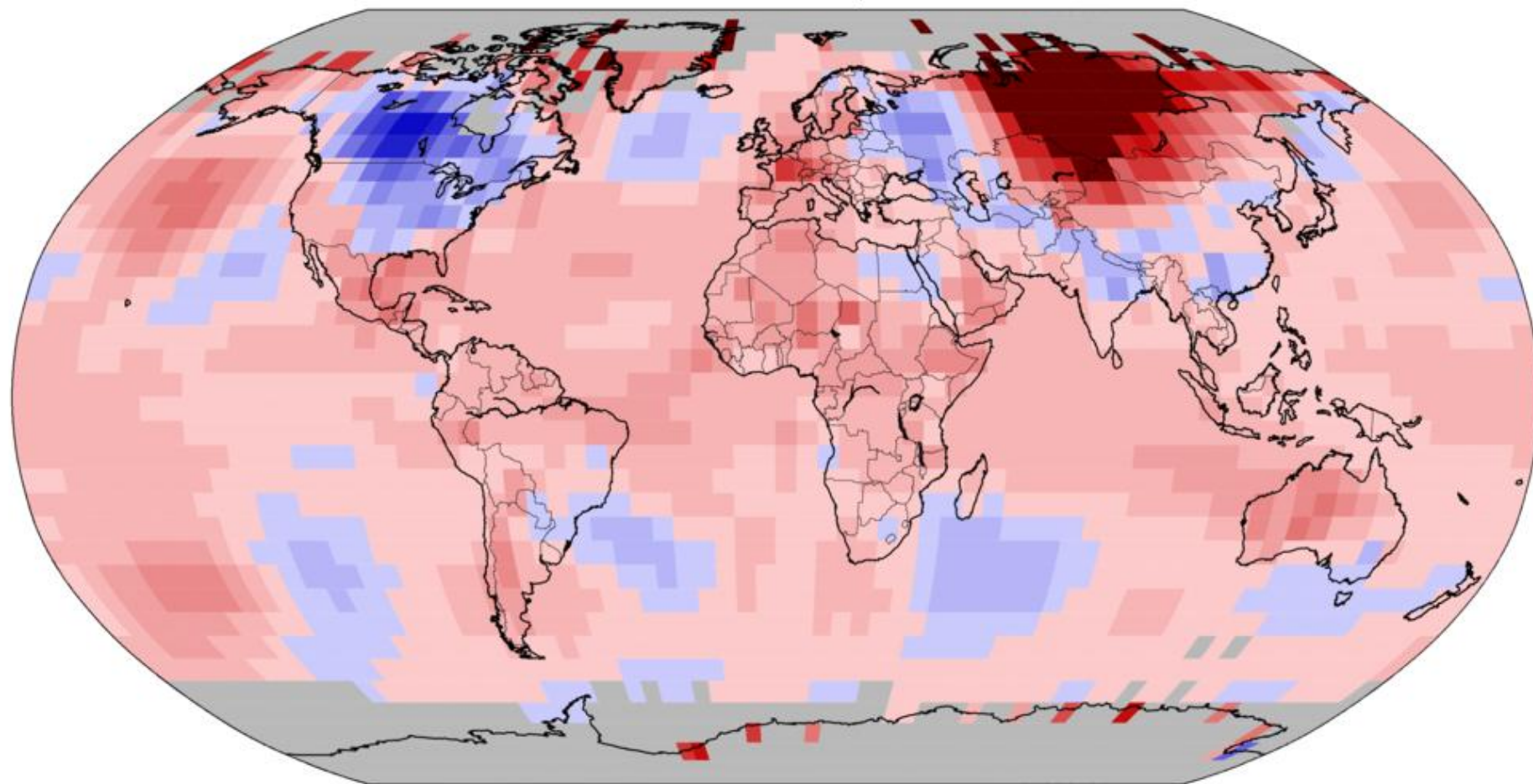
National Centers for Environmental Information
GHCM v4.0.1.20200408.gfs

Degrees Celsius

Please Note: Gray areas represent missing data
Map Projection: Robinson

Land & Ocean Temperature Departure from Average Apr 2020 (with respect to a 1981–2010 base period)

Data Source: NOAA GlobalTemp v5.0.0–20200508



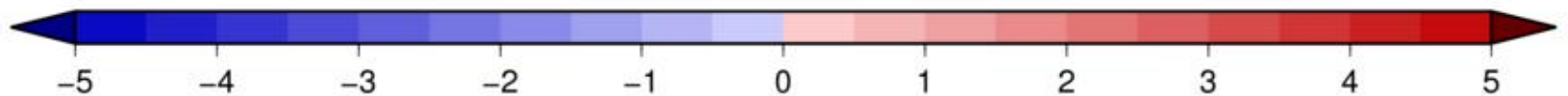
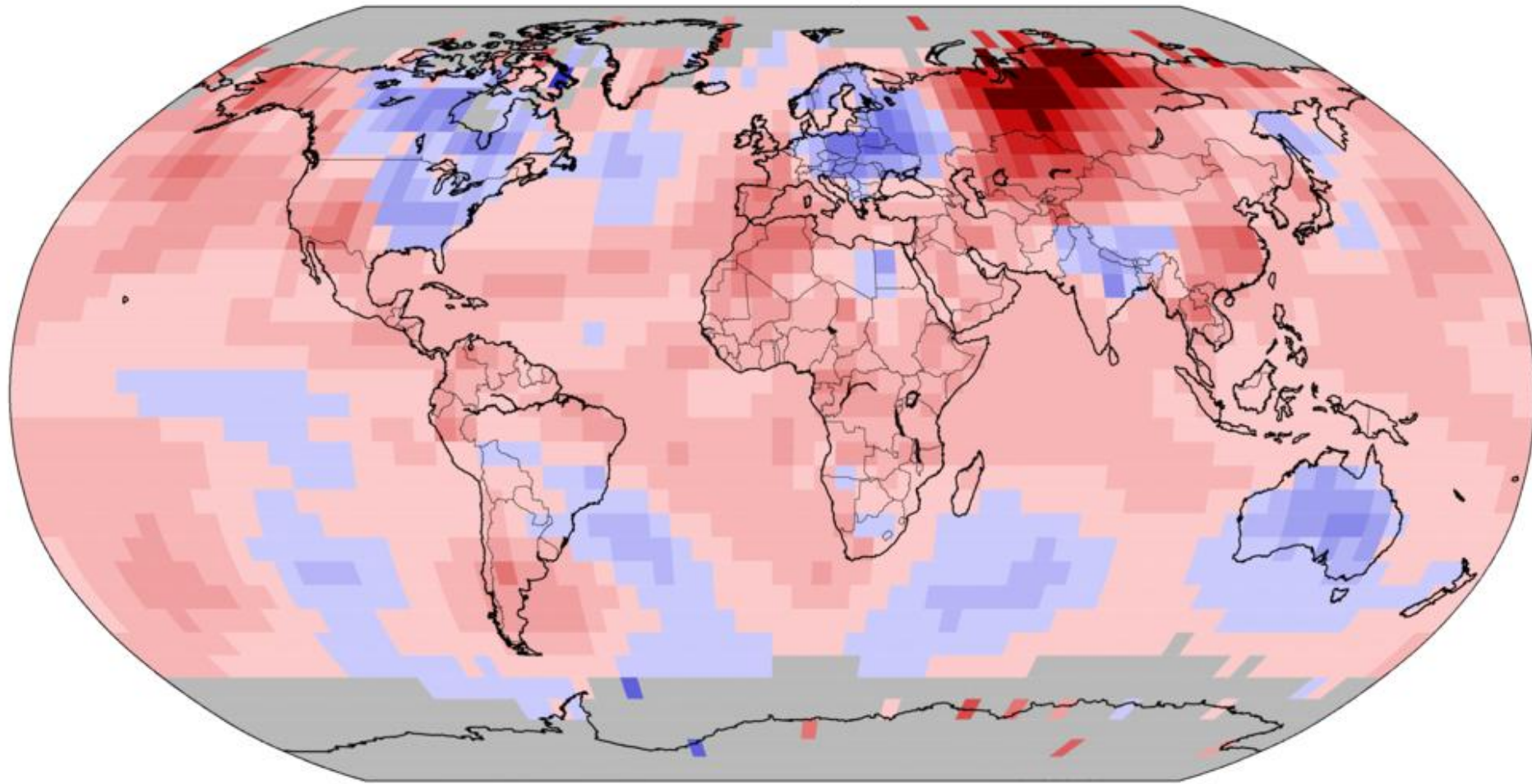
National Centers for Environmental Information
GHCNM v4.0.1.20200507.qfe

Degrees Celsius

Please Note: Gray areas represent missing data
Map Projection: Robinson

Land & Ocean Temperature Departure from Average May 2020 (with respect to a 1981–2010 base period)

Data Source: NOAA GlobalTemp v5.0.0–20200608



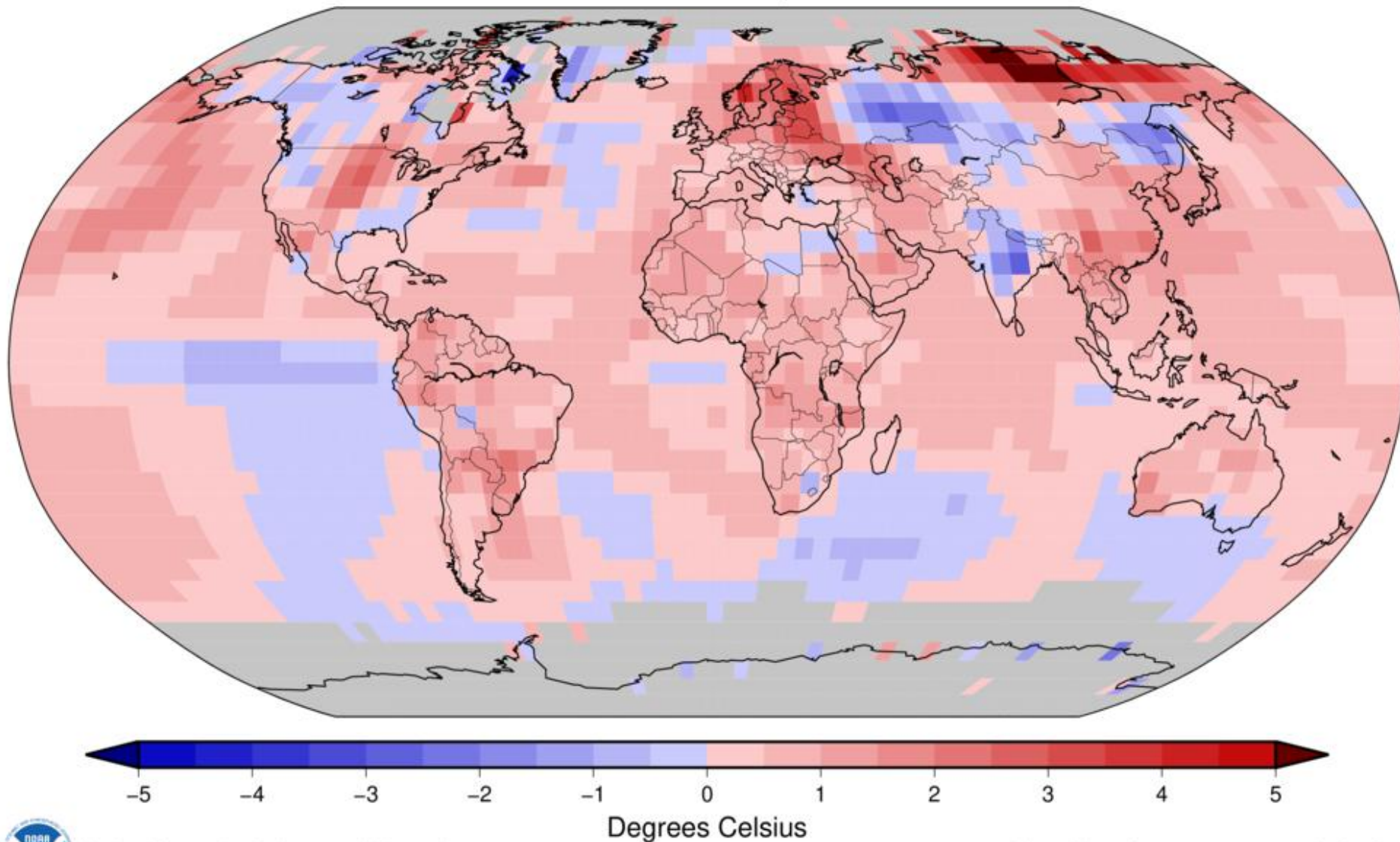
National Centers for Environmental Information
GHCM v4.0.1.20200607.gfs

Degrees Celsius

Please Note: Gray areas represent missing data
Map Projection: Robinson

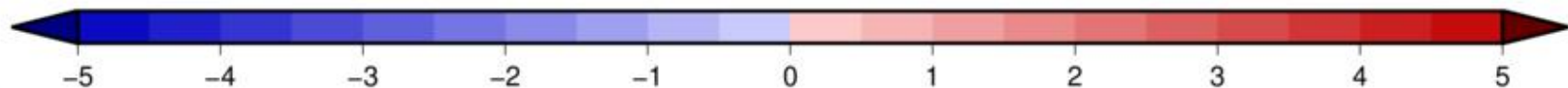
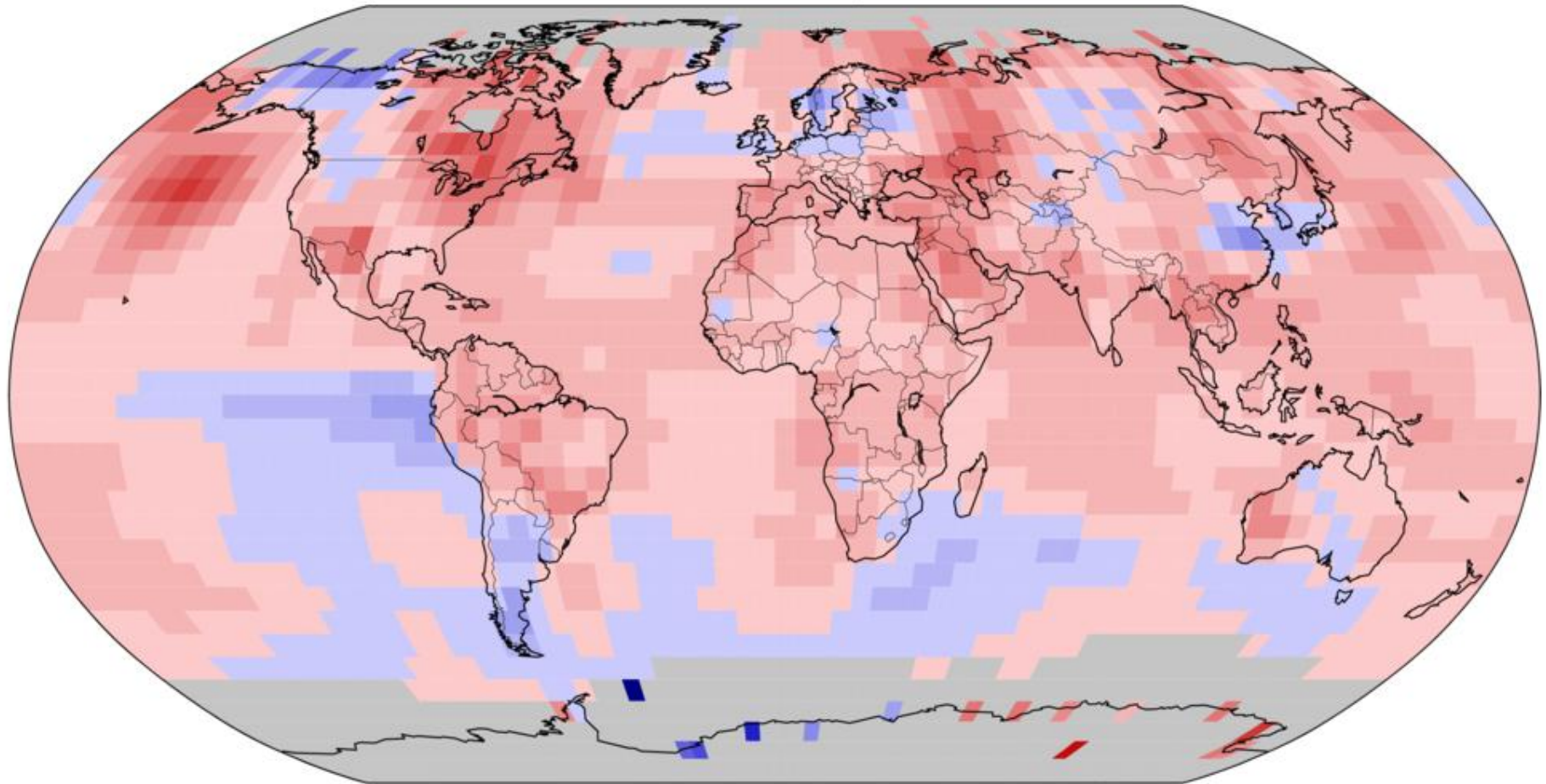
Land & Ocean Temperature Departure from Average Jun 2020 (with respect to a 1981–2010 base period)

Data Source: NOAA GlobalTemp v5.0.0–20200707



Land & Ocean Temperature Departure from Average Jul 2020 (with respect to a 1981–2010 base period)

Data Source: NOAA GlobalTemp v5.0.0–20200808



Degrees Celsius

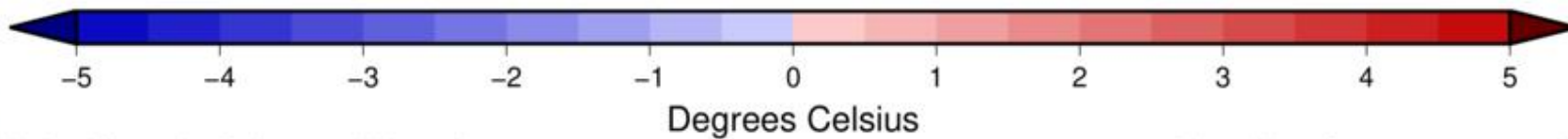
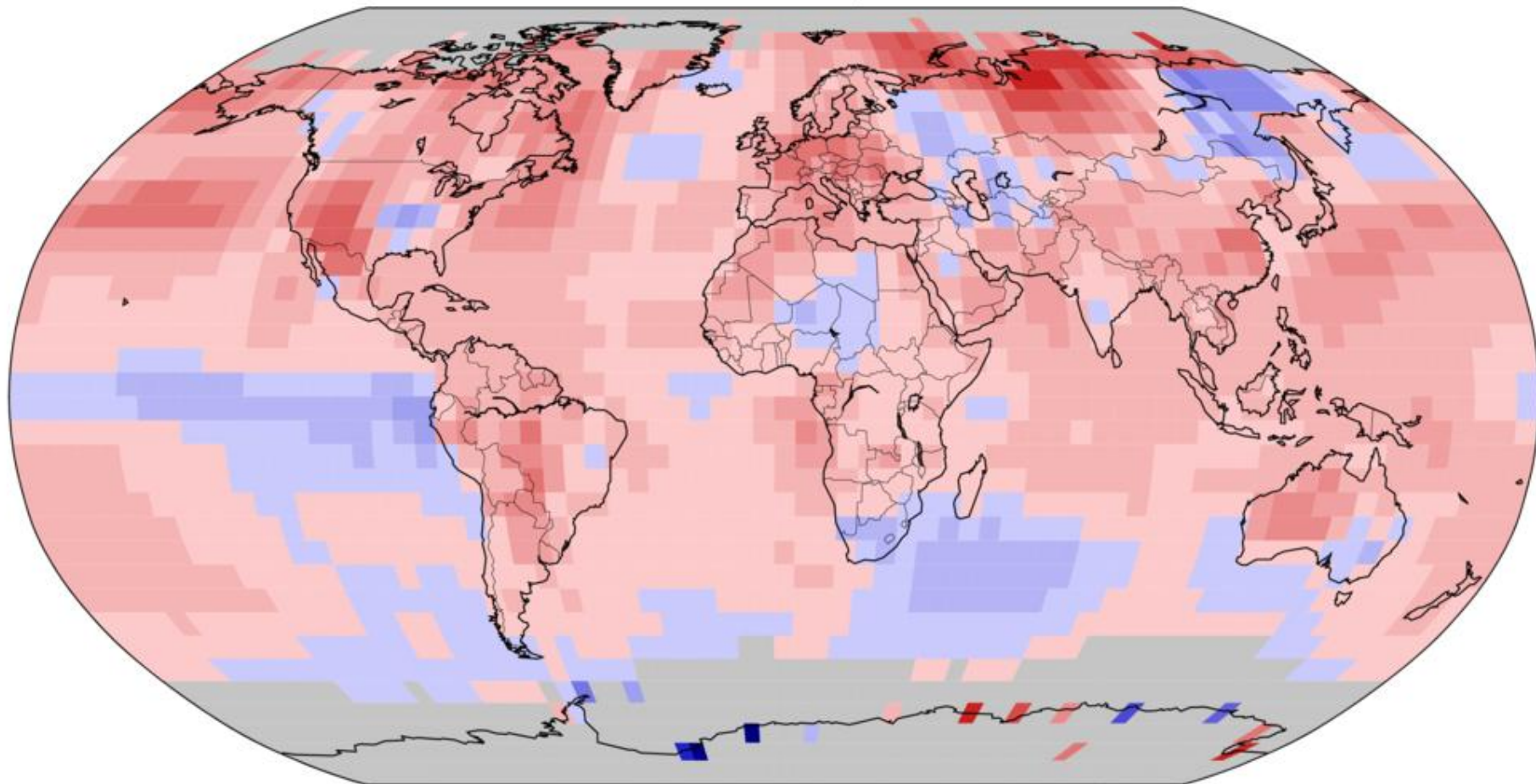


National Centers for Environmental Information
GHCNM v4.0.1.20200807.qfe

Please Note: Gray areas represent missing data
Map Projection: Robinson

Land & Ocean Temperature Departure from Average Aug 2020 (with respect to a 1981–2010 base period)

Data Source: NOAA GlobalTemp v5.0.0–20200908

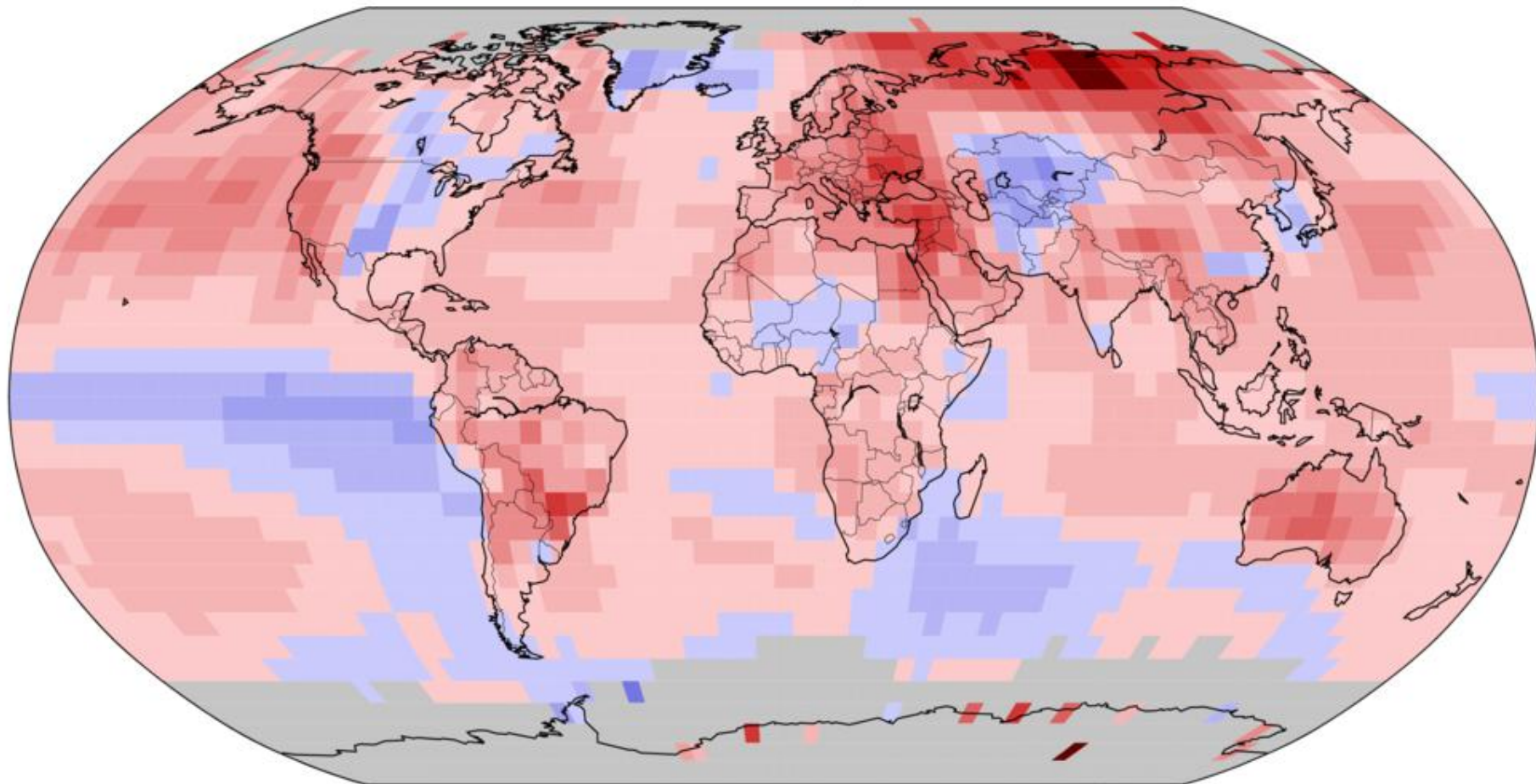


National Centers for Environmental Information
GHCNM v4.0.1.20200907.qfe

Please Note: Gray areas represent missing data
Map Projection: Robinson

Land & Ocean Temperature Departure from Average Sep 2020 (with respect to a 1981–2010 base period)

Data Source: NOAA GlobalTemp v5.0.0–20201007



Degrees Celsius

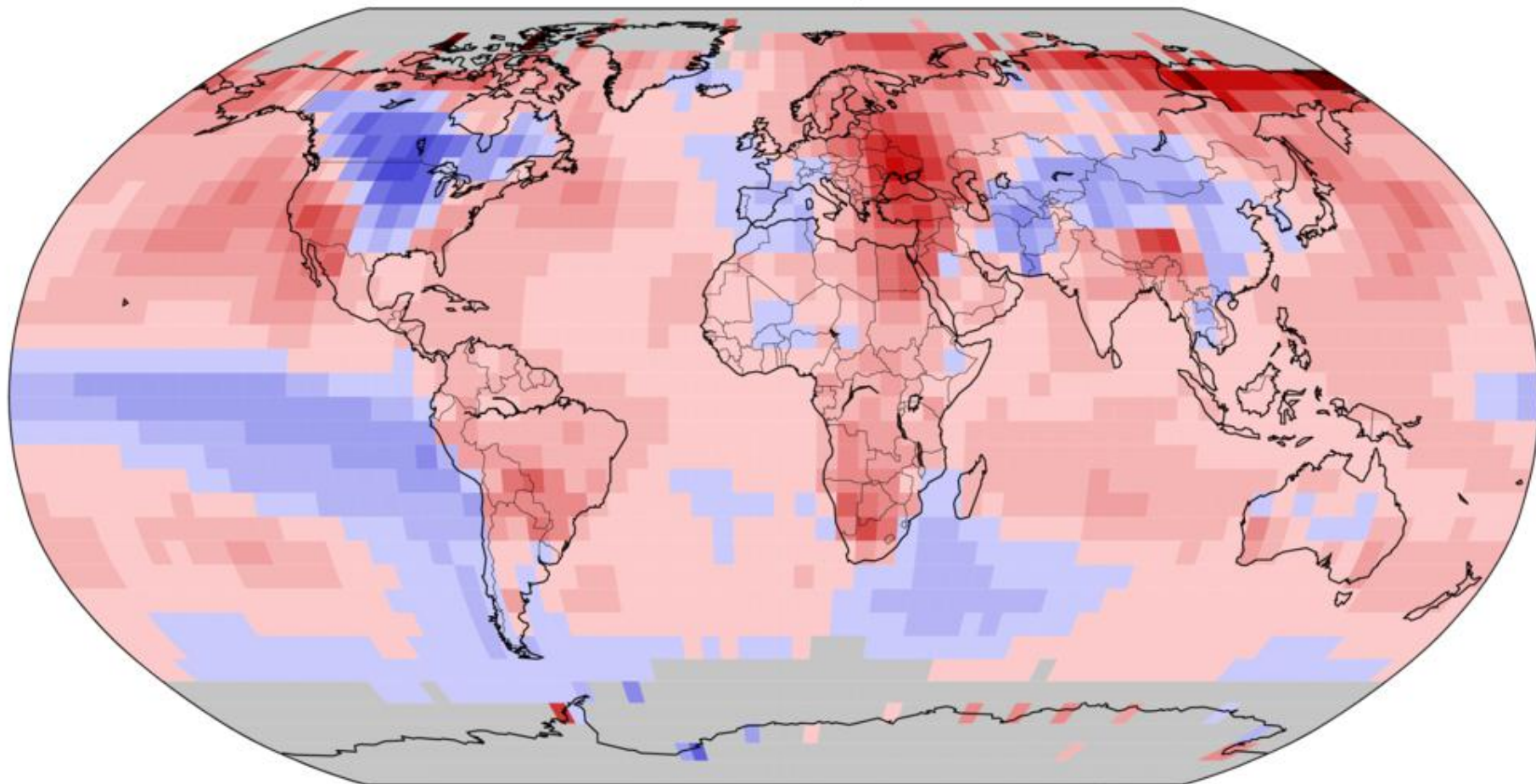


National Centers for Environmental Information
GHCNM v4.0.1.20201006.qfe

Please Note: Gray areas represent missing data
Map Projection: Robinson

Land & Ocean Temperature Departure from Average Oct 2020 (with respect to a 1981–2010 base period)

Data Source: NOAA GlobalTemp v5.0.0–20201108



Degrees Celsius

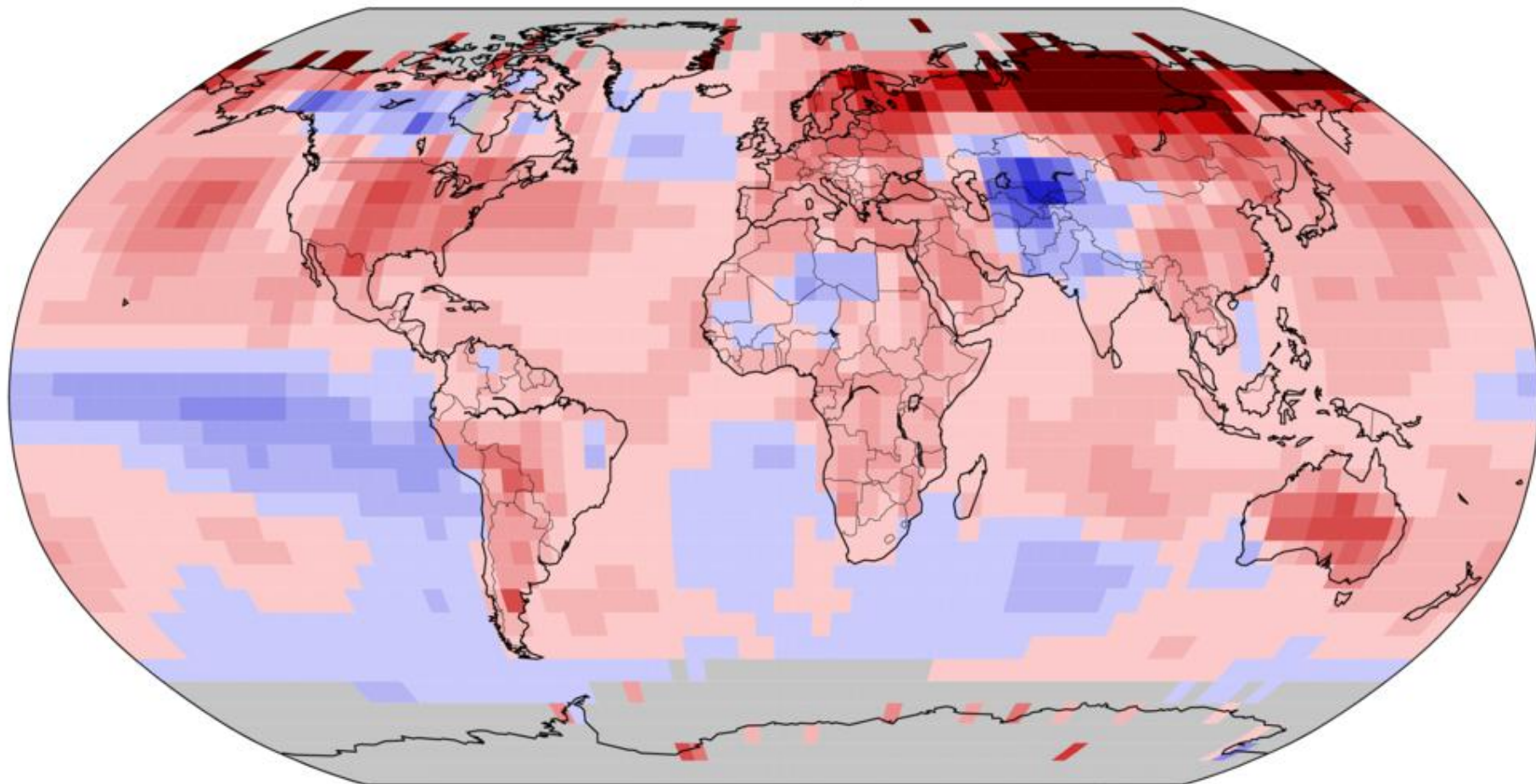


National Centers for Environmental Information
GHCNM v4.0.1.20201107.qfe

Please Note: Gray areas represent missing data
Map Projection: Robinson

Land & Ocean Temperature Departure from Average Nov 2020 (with respect to a 1981–2010 base period)

Data Source: NOAA GlobalTemp v5.0.0–20201208



Degrees Celsius

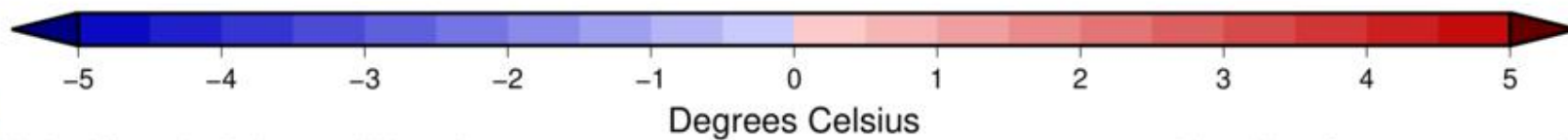
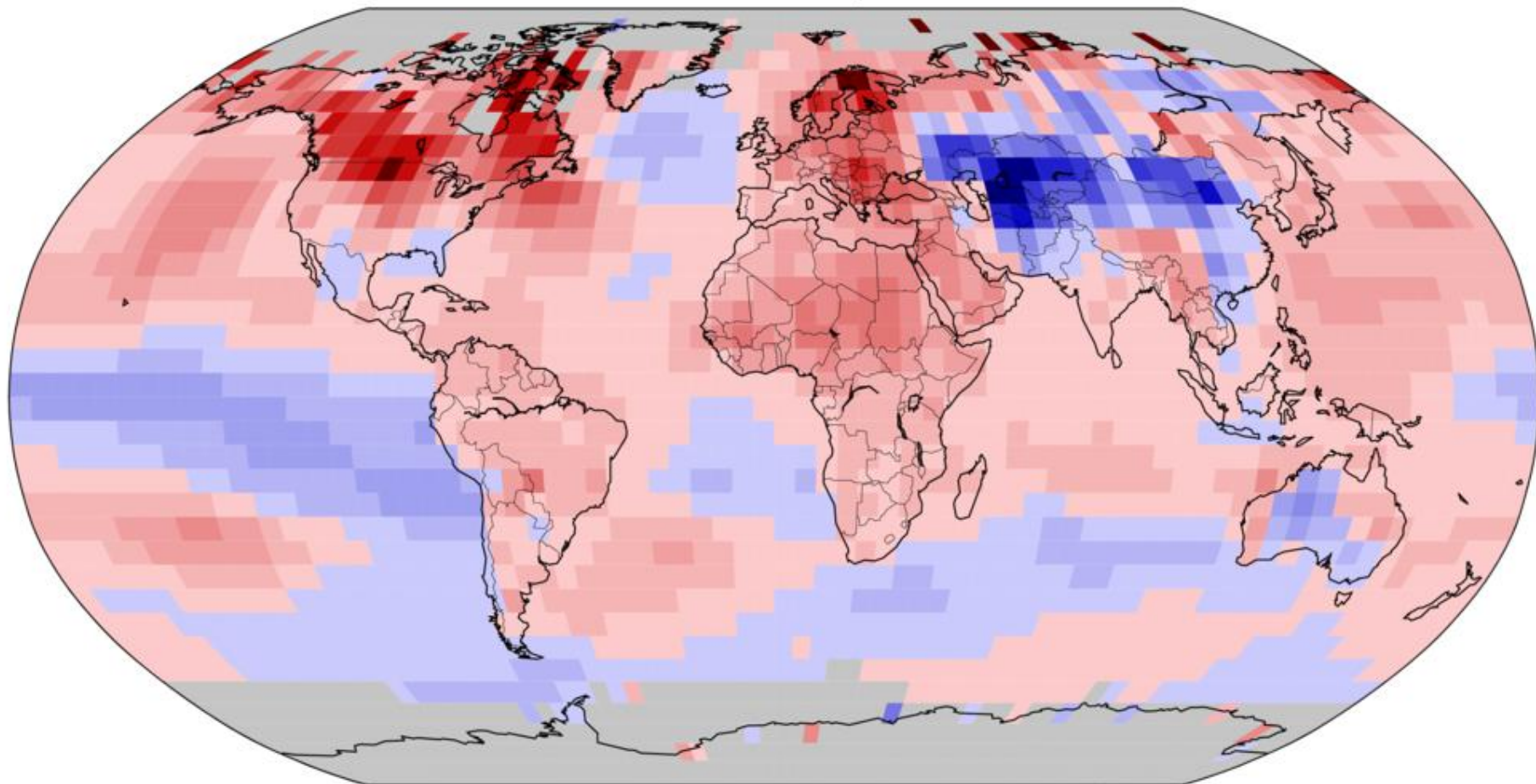


National Centers for Environmental Information
GHCNM v4.0.1.20201207.qfe

Please Note: Gray areas represent missing data
Map Projection: Robinson

Land & Ocean Temperature Departure from Average Dec 2020 (with respect to a 1981–2010 base period)

Data Source: NOAA GlobalTemp v5.0.0–20210106

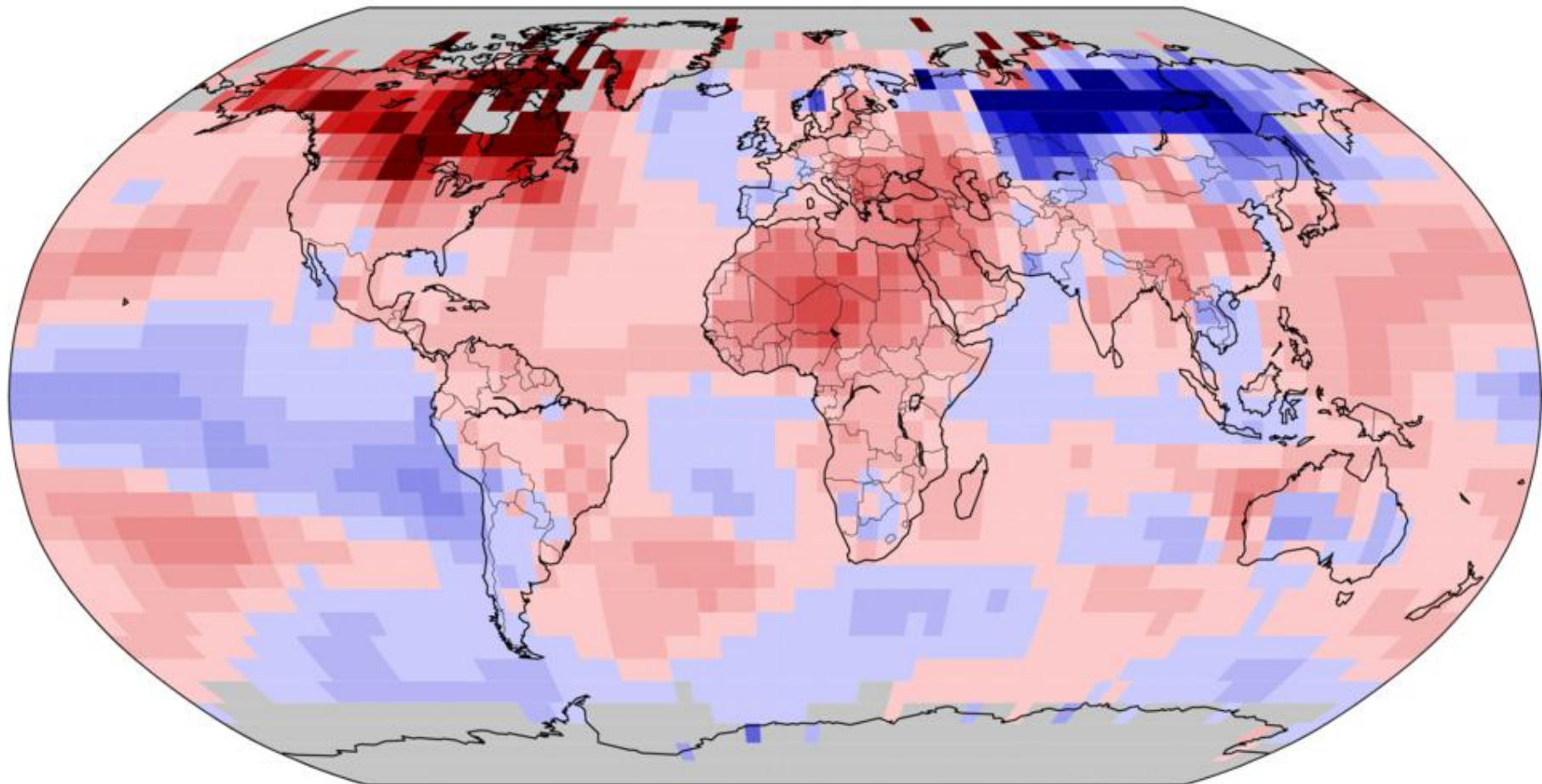


National Centers for Environmental Information
GHCNM v4.0.1.20210105.qfe

Please Note: Gray areas represent missing data
Map Projection: Robinson

Land & Ocean Temperature Departure from Average Jan 2021 (with respect to a 1981–2010 base period)

Data Source: NOAA GlobalTemp v5.0.0–20210208



Degrees Celsius

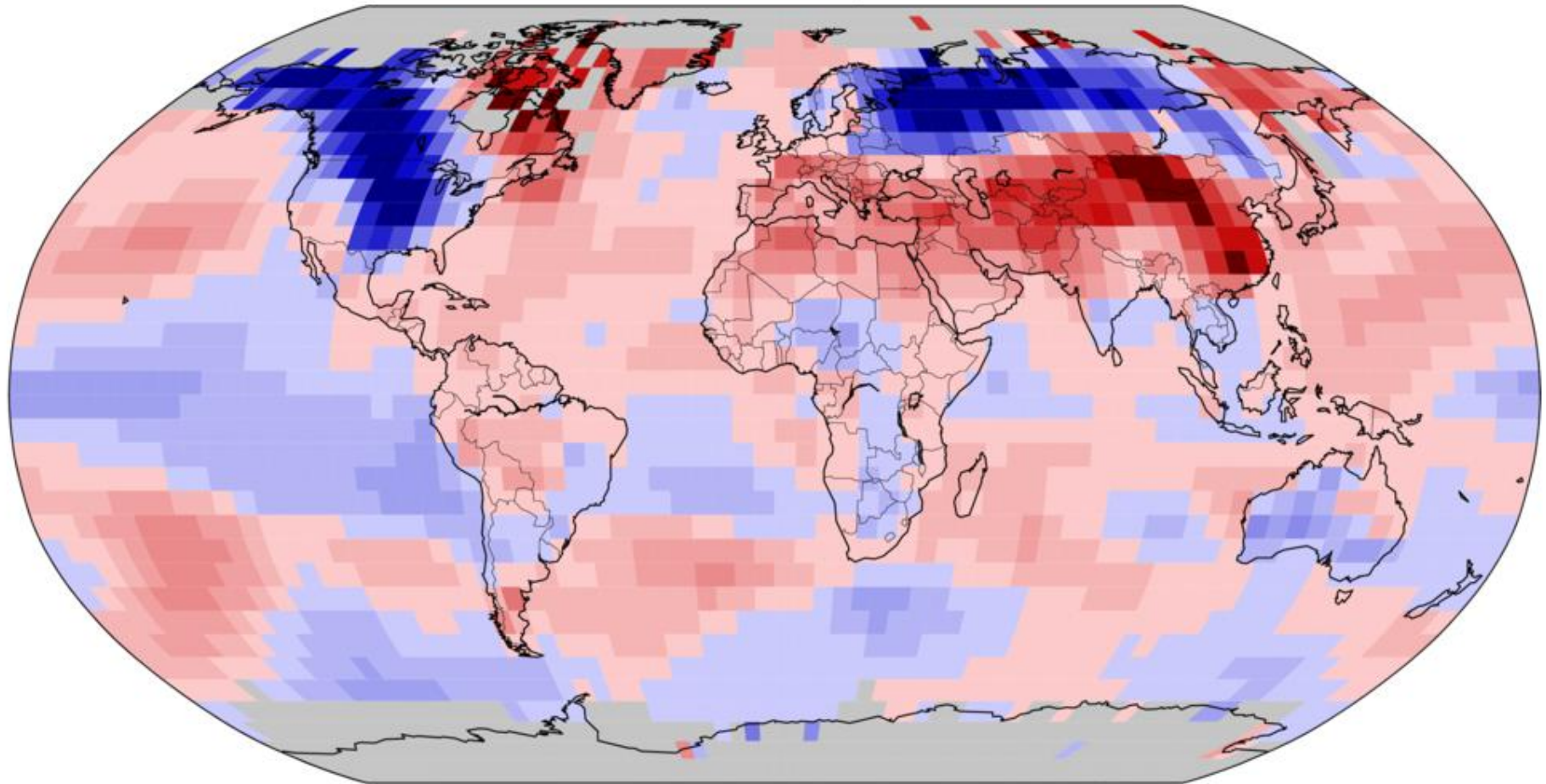


National Centers for Environmental Information
GHCNM v4.0.1.20210207.qfe

Please Note: Gray areas represent missing data
Map Projection: Robinson

Land & Ocean Temperature Departure from Average Feb 2021 (with respect to a 1981–2010 base period)

Data Source: NOAA GlobalTemp v5.0.0–20210308



Degrees Celsius

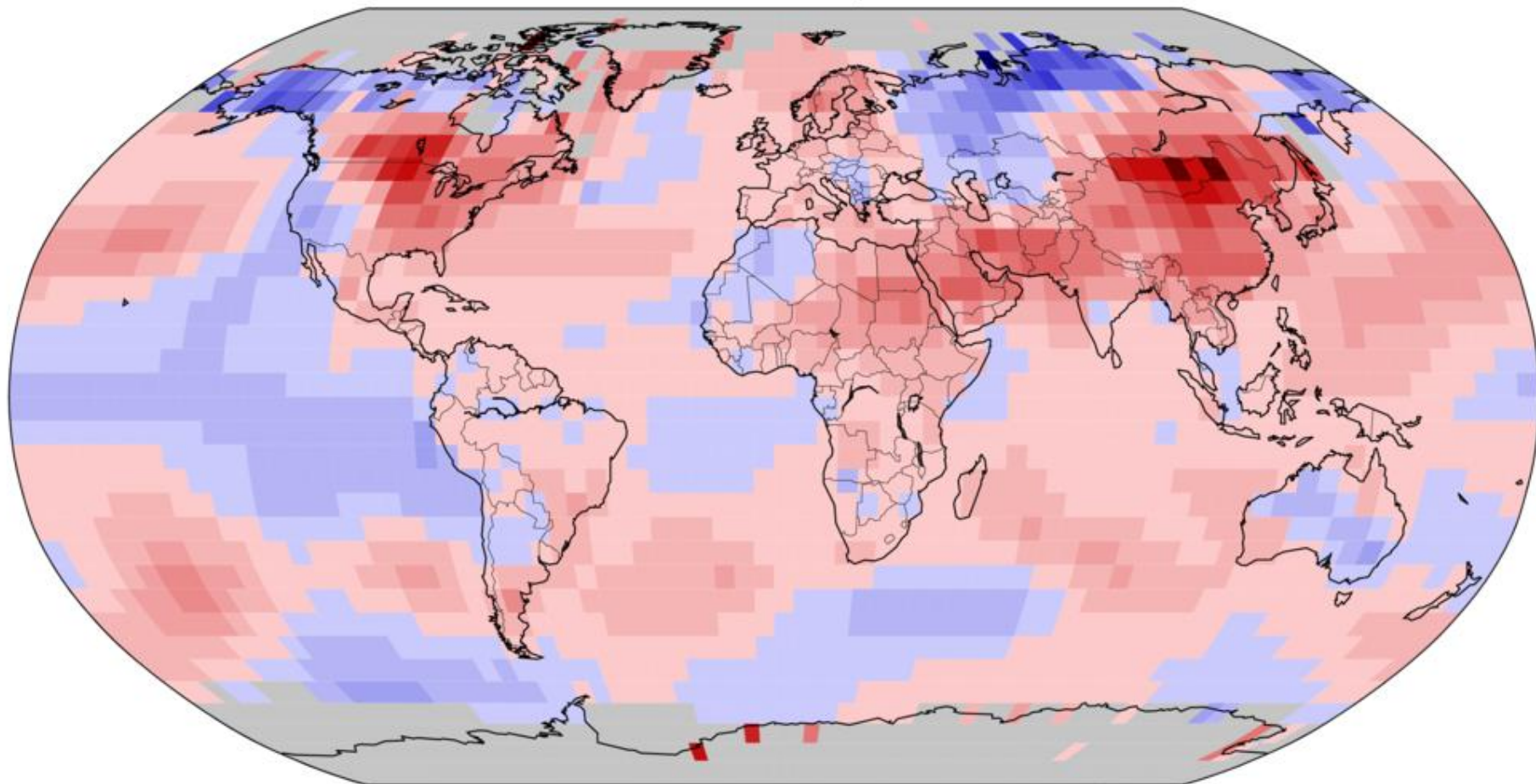


National Centers for Environmental Information
GHCNM v4.0.1.20210307.qfe

Please Note: Gray areas represent missing data
Map Projection: Robinson

Land & Ocean Temperature Departure from Average Mar 2021 (with respect to a 1981–2010 base period)

Data Source: NOAA GlobalTemp v5.0.0–20210408



Degrees Celsius

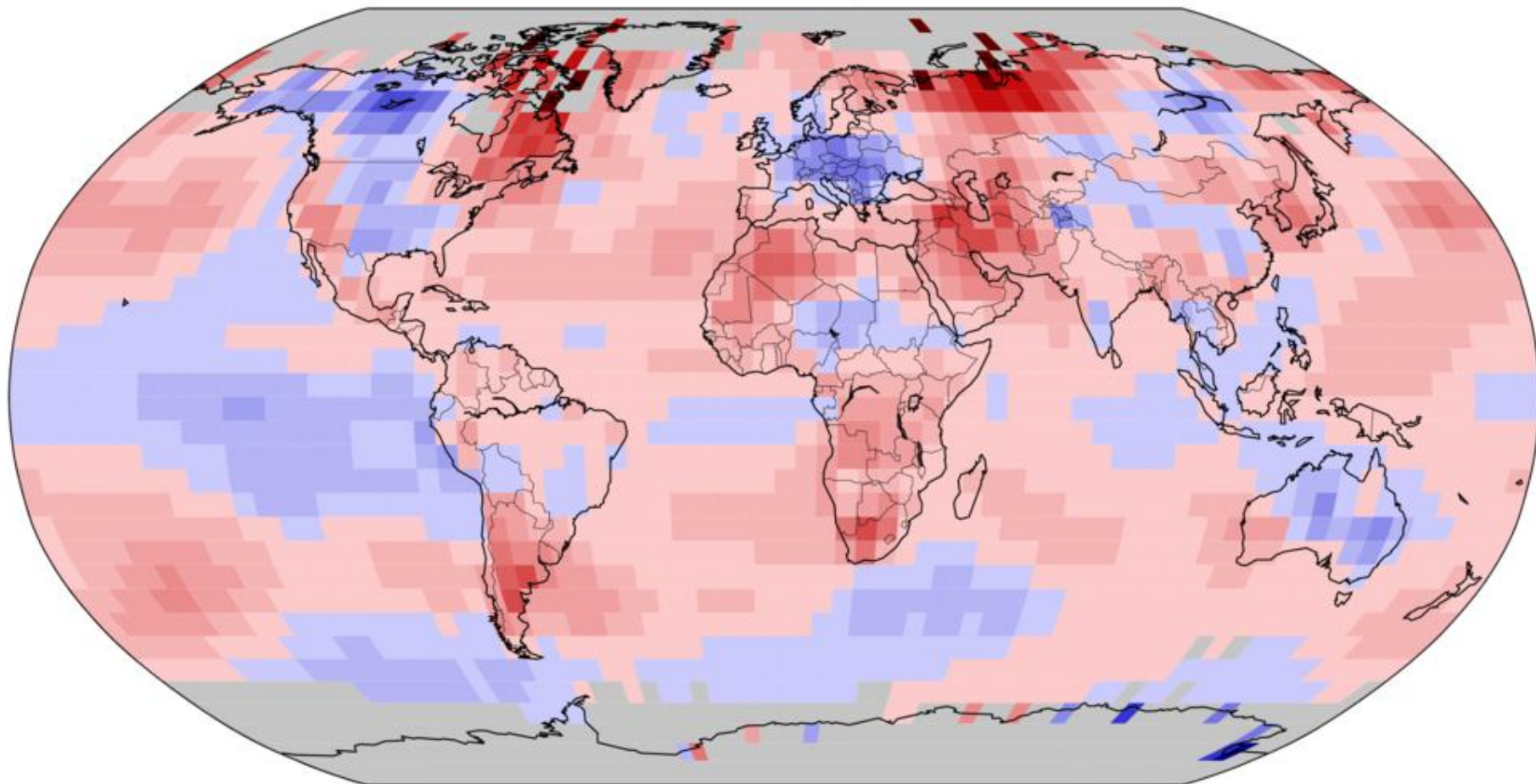


National Centers for Environmental Information
GHCNM v4.0.1.20210407.qfe

Please Note: Gray areas represent missing data
Map Projection: Robinson

Land & Ocean Temperature Departure from Average Apr 2021 (with respect to a 1981–2010 base period)

Data Source: NOAA GlobalTemp v5.0.0–20210509



Degrees Celsius

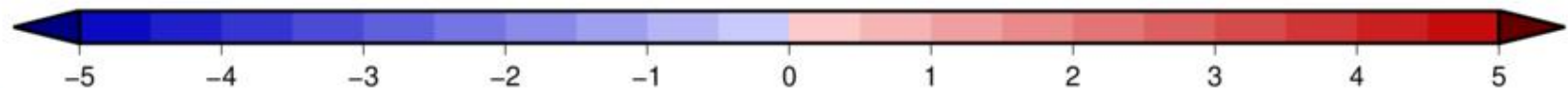
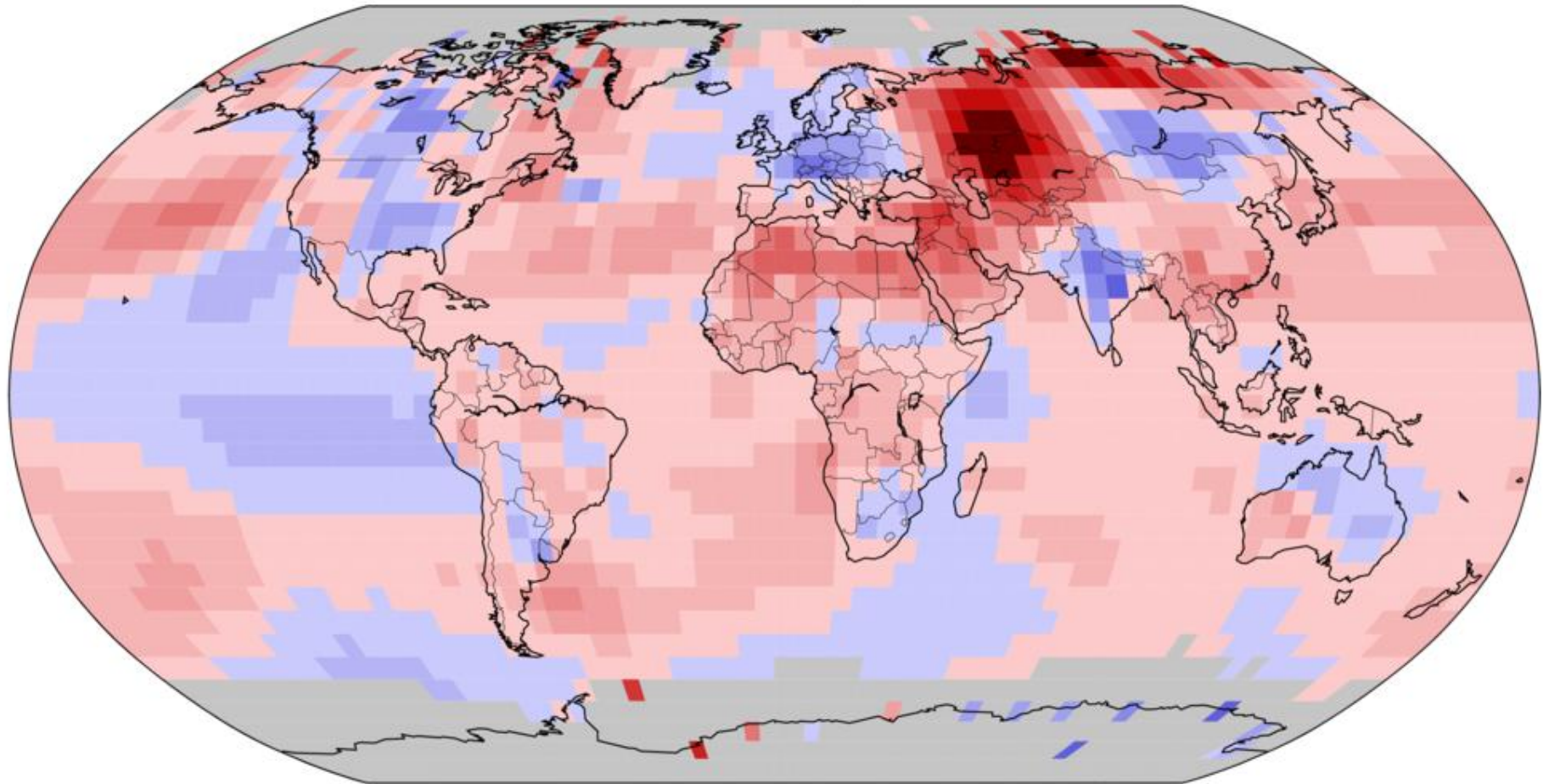


National Centers for Environmental Information
GHCNM v4.0.1.20210507.qfe

Please Note: Gray areas represent missing data
Map Projection: Robinson

Land & Ocean Temperature Departure from Average May 2021 (with respect to a 1981–2010 base period)

Data Source: NOAA GlobalTemp v5.0.0–20210608



Degrees Celsius

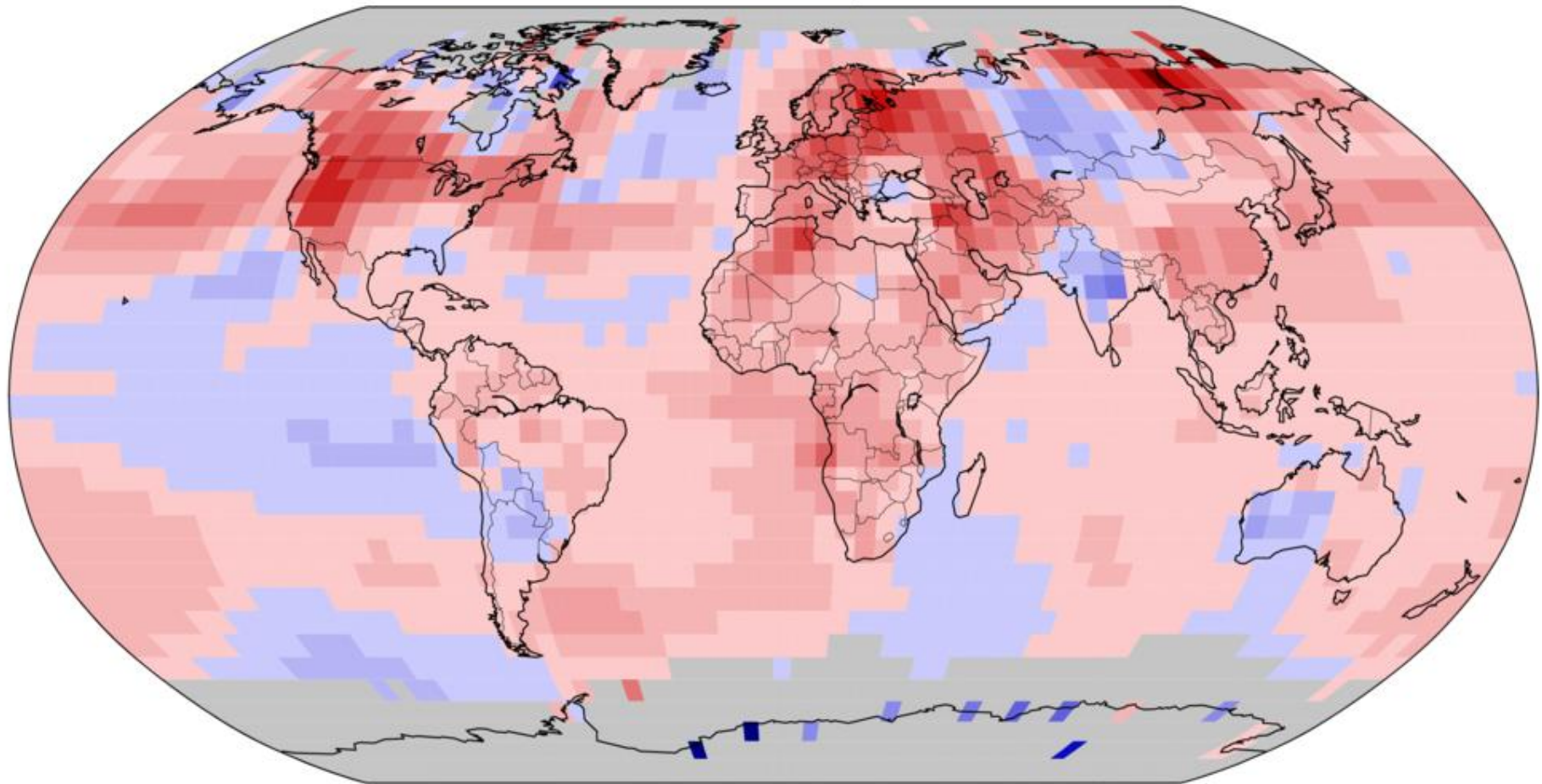


National Centers for Environmental Information
GHCNM v4.0.1.20210607.qfe

Please Note: Gray areas represent missing data
Map Projection: Robinson

Land & Ocean Temperature Departure from Average Jun 2021 (with respect to a 1981–2010 base period)

Data Source: NOAA GlobalTemp v5.0.0–20210707



Degrees Celsius

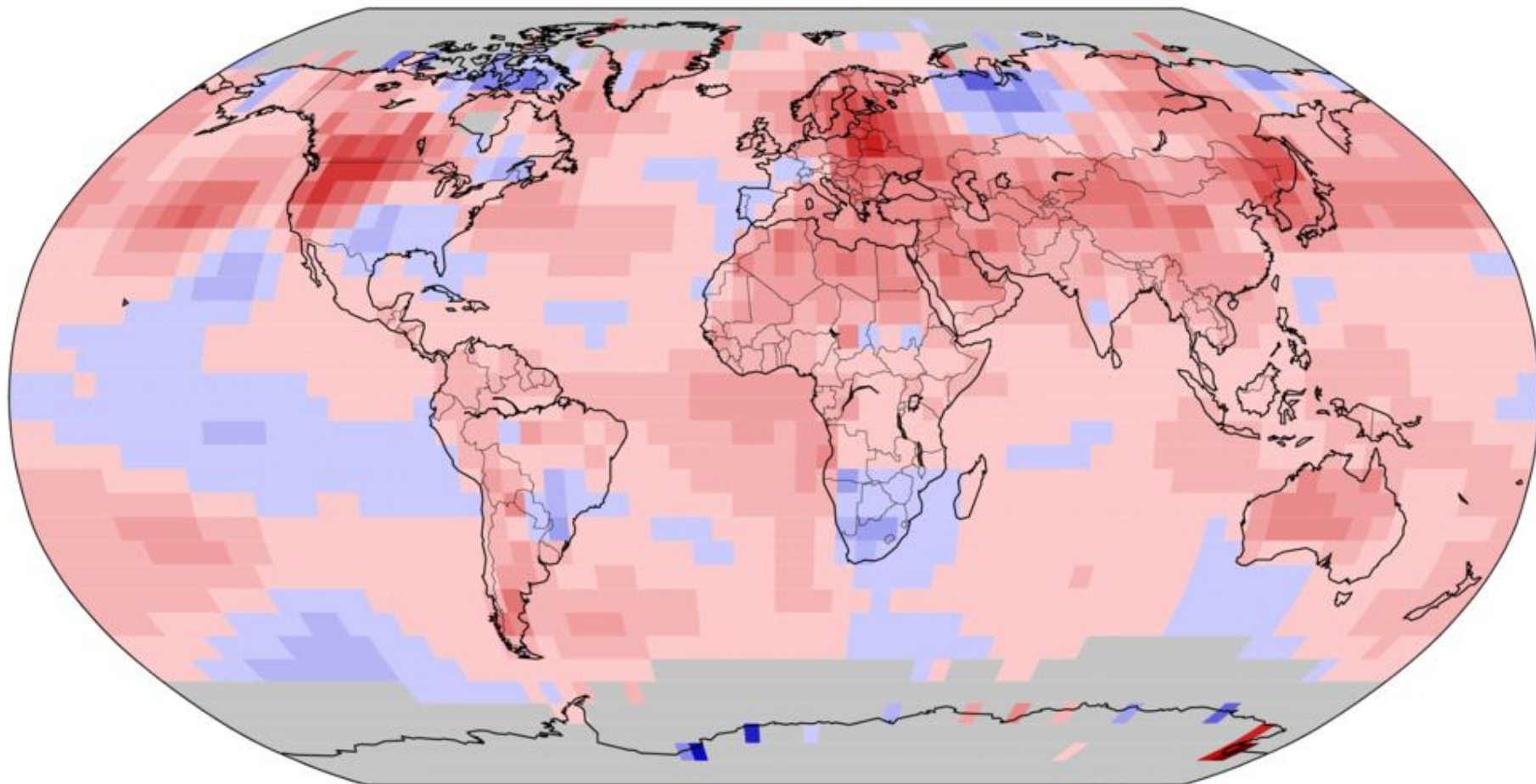


National Centers for Environmental Information
GHCNM v4.0.1.20210706.qfe

Please Note: Gray areas represent missing data
Map Projection: Robinson

Land & Ocean Temperature Departure from Average Jul 2021 (with respect to a 1981–2010 base period)

Data Source: NOAA GlobalTemp v5.0.0–20210808



Degrees Celsius

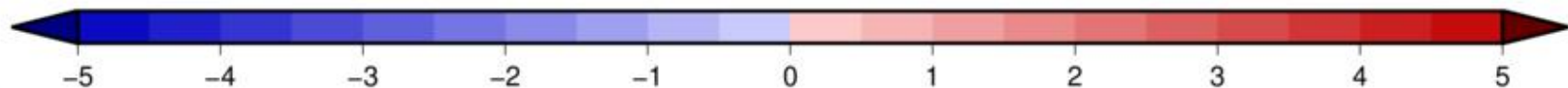
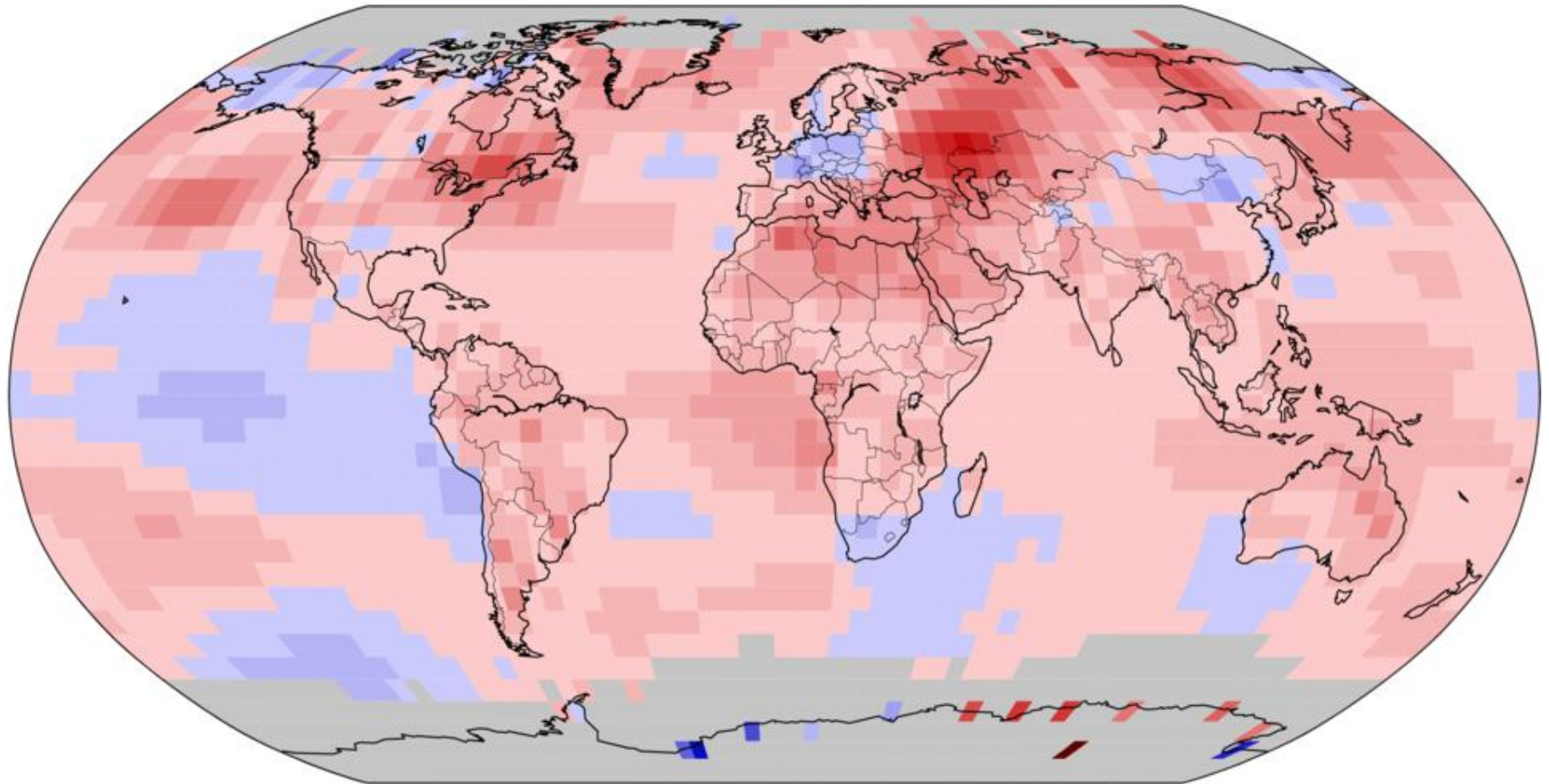


National Centers for Environmental Information
GHCNM v4.0.1.20210807.qfe

Please Note: Gray areas represent missing data
Map Projection: Robinson

Land & Ocean Temperature Departure from Average Aug 2021 (with respect to a 1981–2010 base period)

Data Source: NOAA GlobalTemp v5.0.0–20210908



Degrees Celsius

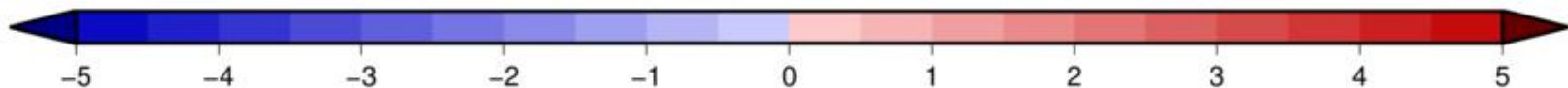
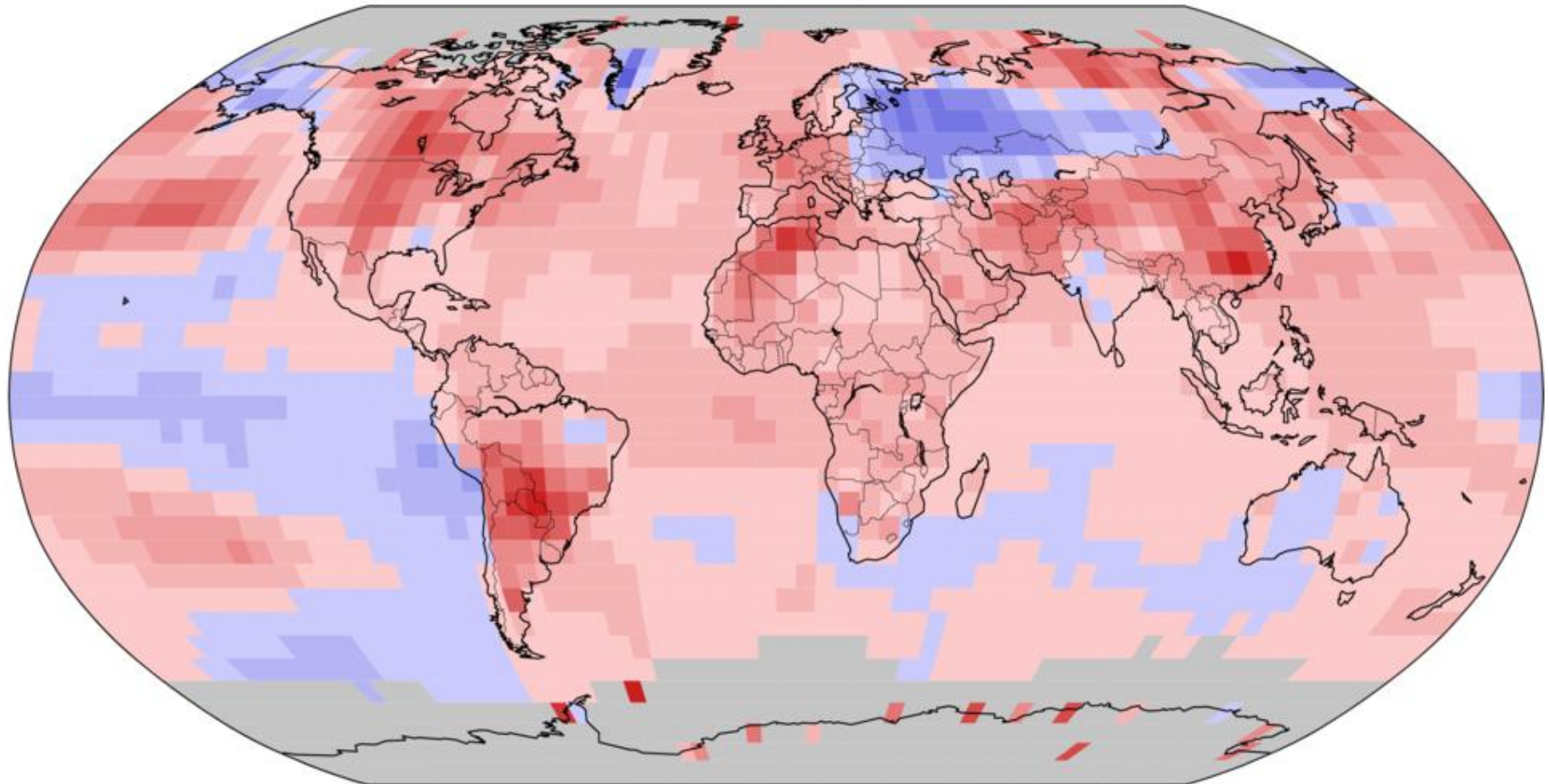


National Centers for Environmental Information
GHCNM v4.0.1.20210907.qfe

Please Note: Gray areas represent missing data
Map Projection: Robinson

Land & Ocean Temperature Departure from Average Sep 2021 (with respect to a 1981–2010 base period)

Data Source: NOAA GlobalTemp v5.0.0–20211008



Degrees Celsius

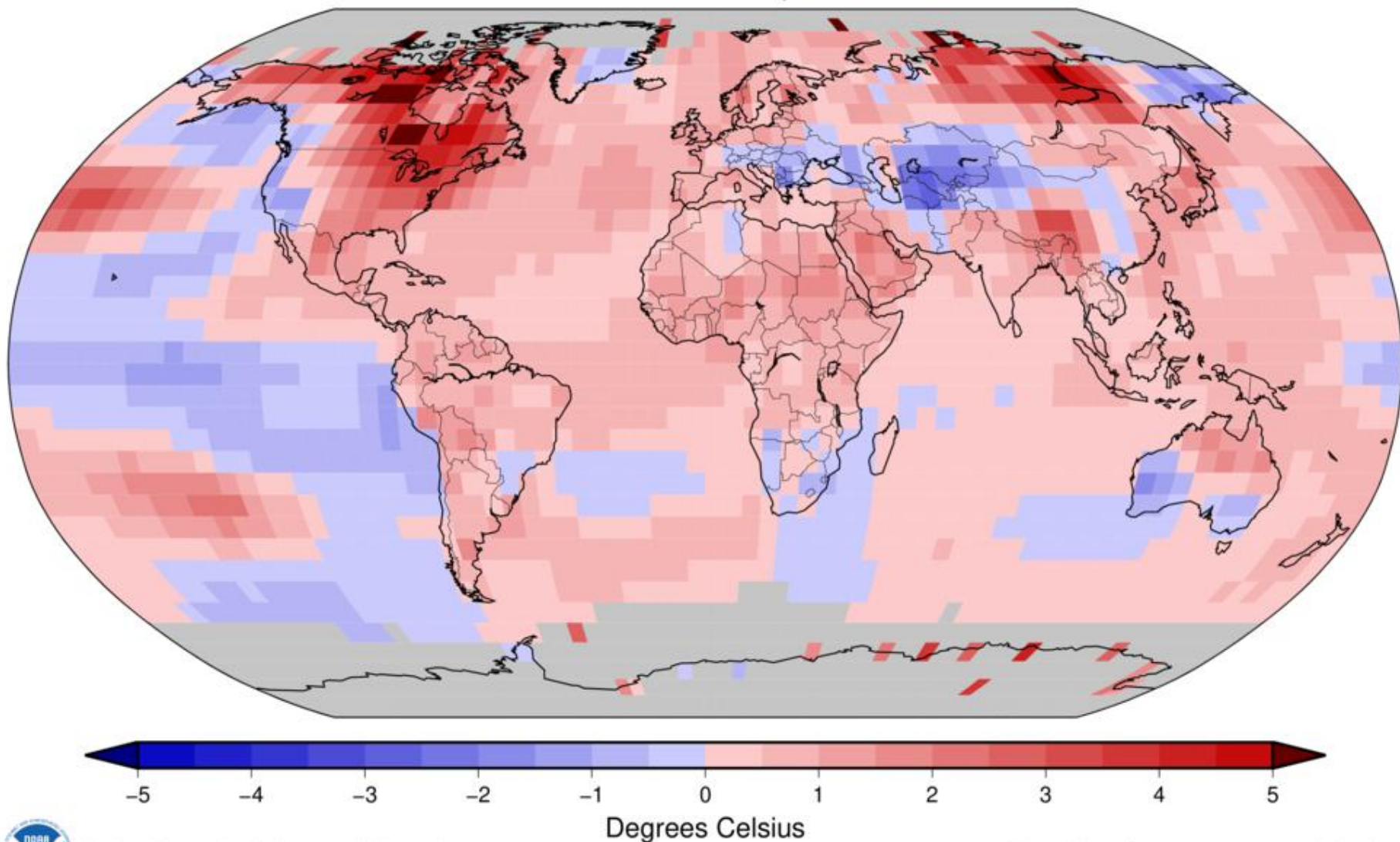


National Centers for Environmental Information
GHCNM v4.0.1.20211007.qfe

Please Note: Gray areas represent missing data
Map Projection: Robinson

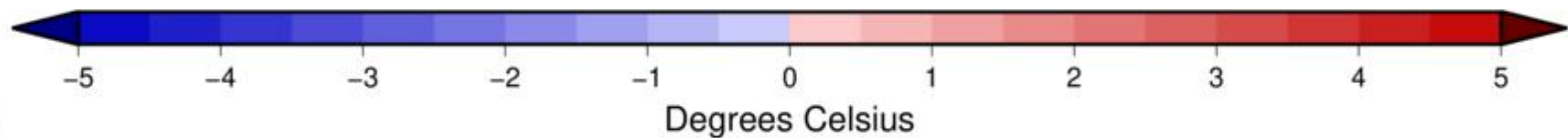
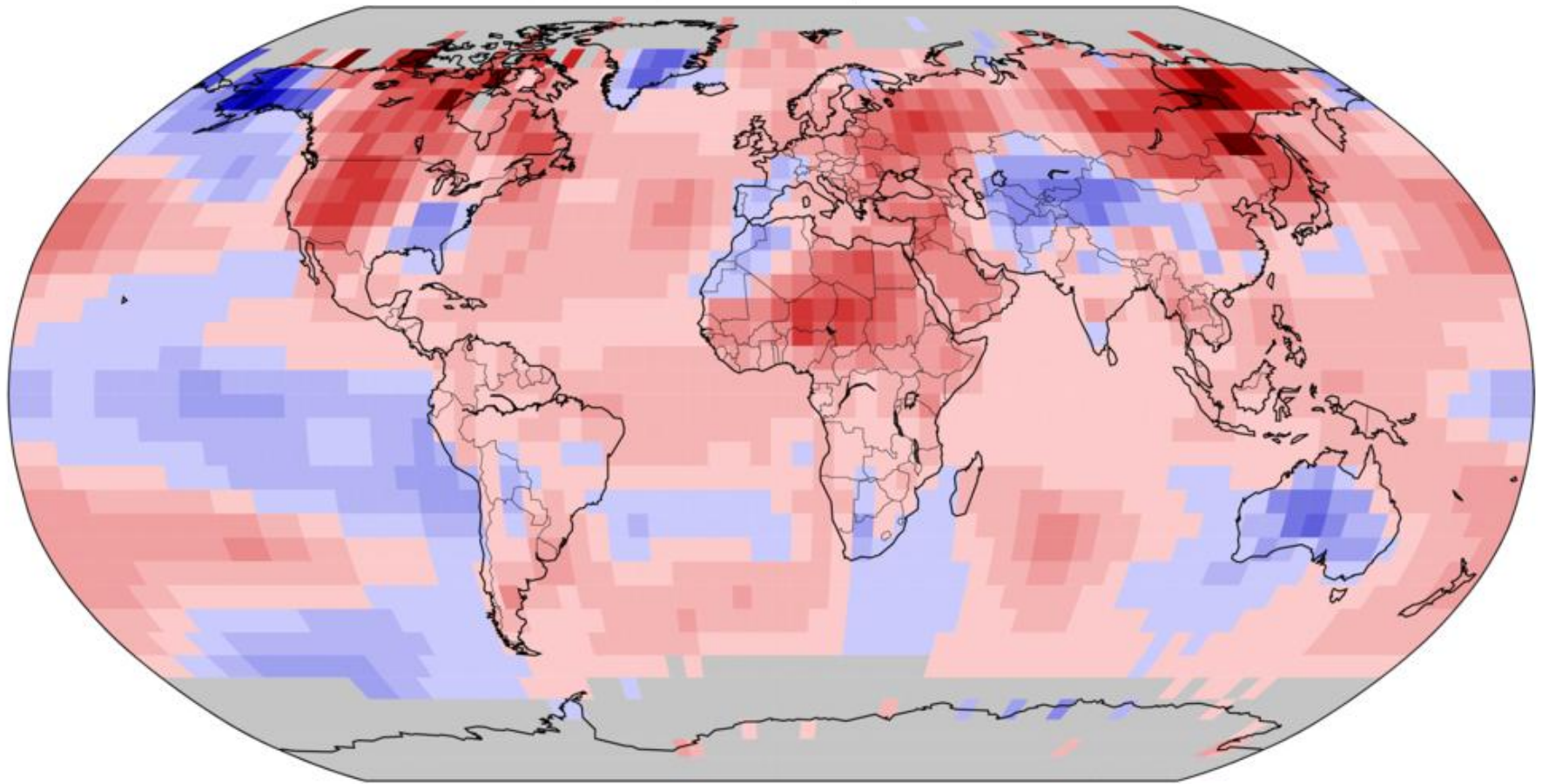
Land & Ocean Temperature Departure from Average Oct 2021 (with respect to a 1981–2010 base period)

Data Source: NOAA GlobalTemp v5.0.0–20211108



Land & Ocean Temperature Departure from Average Nov 2021 (with respect to a 1981–2010 base period)

Data Source: NOAA GlobalTemp v5.0.0–20211210

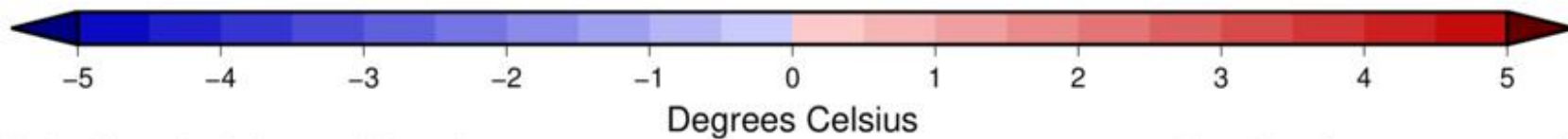
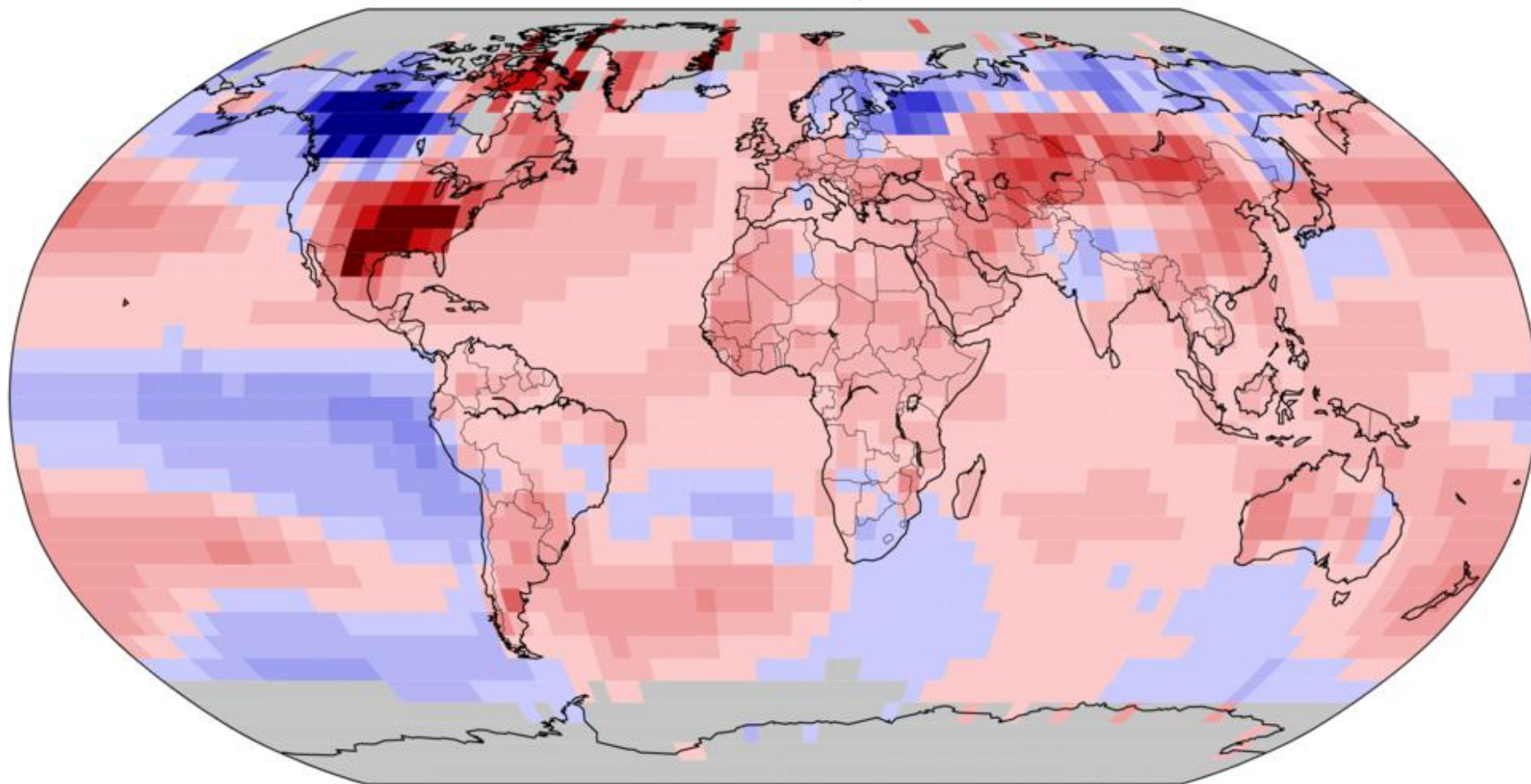


National Centers for Environmental Information
GHCNM v4.0.1.20211207.qfe

Please Note: Gray areas represent missing data
Map Projection: Robinson

Land & Ocean Temperature Departure from Average Dec 2021 (with respect to a 1981–2010 base period)

Data Source: NOAA GlobalTemp v5.0.0–20220108



National Centers for Environmental Information
GHCNM v4.0.1.20220107.qfe

Please Note: Gray areas represent missing data
Map Projection: Robinson

2. Bizonytalanságok (alapvető klímaadatokban)

Total Solar Irradiance (TSI)
Temperature (ΔT)



Connolly R, Soon W, Connolly M et al. (2021):
How much has the Sun influenced
Northern Hemisphere temperature trends?
An ongoing debate. RAA 21, 131

Albedo (A, fényvisszaverőkéesség)

Napsugárzás az energiamérlegben = **$TSI (1-A) \text{ W/m}^2$**

CO₂

Fodor (1881), Barcza Sz (2016)

INVITED REVIEWS

How much has the Sun influenced Northern Hemisphere temperature trends? An ongoing debate

Ronan Connolly^{1,2}, Willie Soon¹, Michael Connolly², Sallie Baliunas³, Johan Berglund⁴, C. John Butler⁵, Rodolfo Gustavo Cionco^{6,7}, Ana G. Elias^{8,9}, Valery M. Fedorov¹⁰, Hermann Harde¹¹, Gregory W. Henry¹², Douglas V. Hoyt¹³, Ole Humlum¹⁴, David R. Legates¹⁵, Sebastian Lüning¹⁶, Nicola Scafetta¹⁷, Jan-Erik Solheim¹⁸, László Szarka¹⁹, Harry van Loon²⁰, Víctor M. Velasco Herrera²¹, Richard C. Willson²², Hong Yan (晏宏)²³ and Weijia Zhang^{24,25}

A publikáció eddigi története:

- Máj. 13: Publikálás a RAA-ban
- Aug. 6: Késleltetett kiadói közzététel (IOP)
- Aug. 7: Az IPCC AR6 megjelenése
- Aug. 13: „The Epoch Times” cikk (Alex Newman)
- Aug. 30: „Climate Feedback” cenzúra
- Szep. 10: Nyílt levél a „Climate Feedback”-nek
- Okt. 11: A teljes dolgozat megjelent magyar nyelven
- Nov.-Jan.: Vita az MTA X. Osztályán

Benyújtva: 2021.06.22

Közlésre elfogadva: 2021.08.09

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Ronan Connolly et al., 2021, Res. Astron. Astrophys. 21, 131,
DOI: 10.1088/16744527/21/6/131, <https://iopscience.iop.org/article/10.1088/16744527/21/6/131>

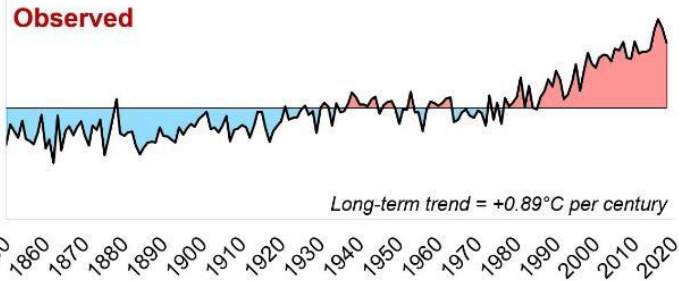
**MENNYIRE BEFOLYÁSOLJA A NAP
AZ ÉSZAKI FÉLTEKE HŐMÉRSÉKLETÉNEK
ALAKULÁSÁT?
A JELENLEG ZAJLÓ VITA**

Ronan Connolly^{1,2}, Willie Soon¹, Michael Connolly², Sallie Baliunas³,
Johan Berglund⁴, CJ Butler⁵, Rodolfo G Cionco^{6,7}, Ana G Elias^{8,9},
Valery M Fedorov¹⁰, Hermann Harde¹¹, Gregory W Henry¹², Douglas V
Hoyt¹³, Ole Humlum¹⁴, David R Legates¹⁵, Sebastian Lüning¹⁶, Nicola
Scafetta¹⁷, Jan-Erik Solheim¹⁸, László Szarka¹⁹, Harry van Loon²⁰,
Victor M Velasco Herrera²¹, Richard C Willson²², Hong Yan²³, Weijia
Zhang^{24,25}

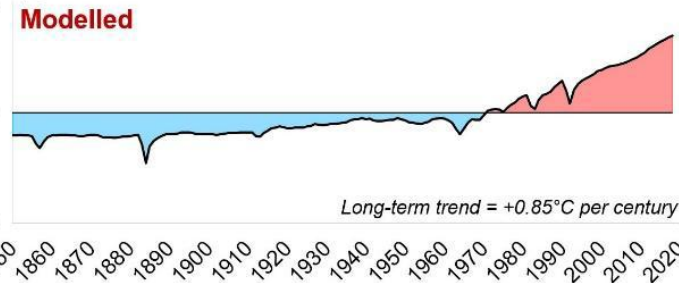
IPCC

Theory 1: Climate change is mostly human-caused

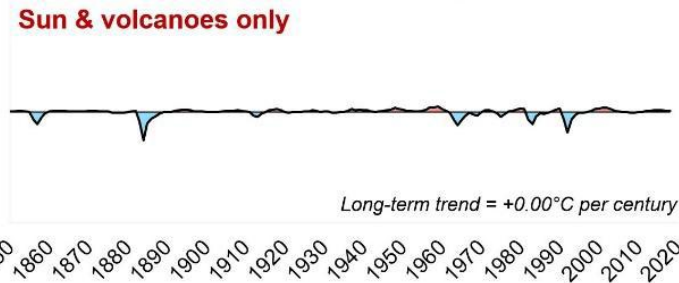
(a) **Observed** temperatures (using **both** urban and rural data)



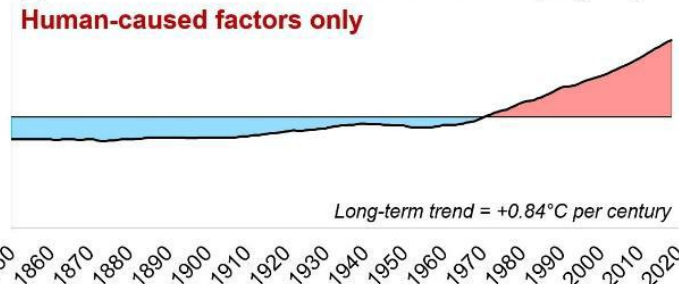
(b) **Modelled** contribution from human-caused and natural factors



(c) **Modelled** contribution from natural factors (Sun & volcanoes)



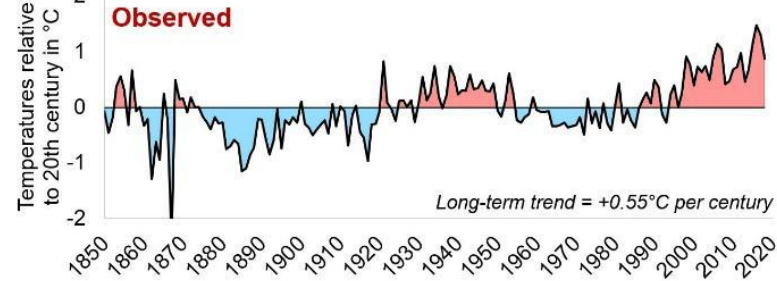
(d) **Modelled** contribution from human-caused factors (CO_2 , etc.)



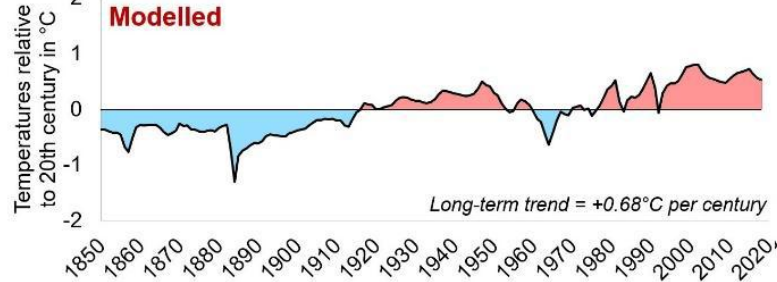
Connolly et al. (2021)

Theory 2: Climate change is mostly natural

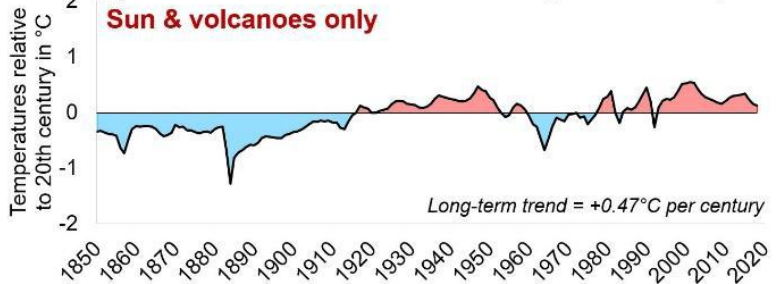
(e) **Observed** temperatures (using **only** rural data)



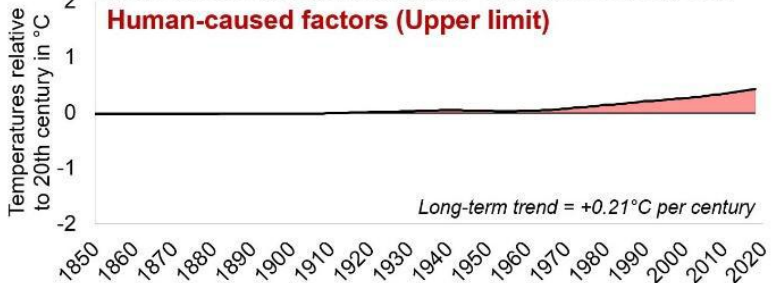
(f) **Modelled** contribution from human-caused and natural factors



(g) **Modelled** contribution from natural factors (Sun & volcanoes)



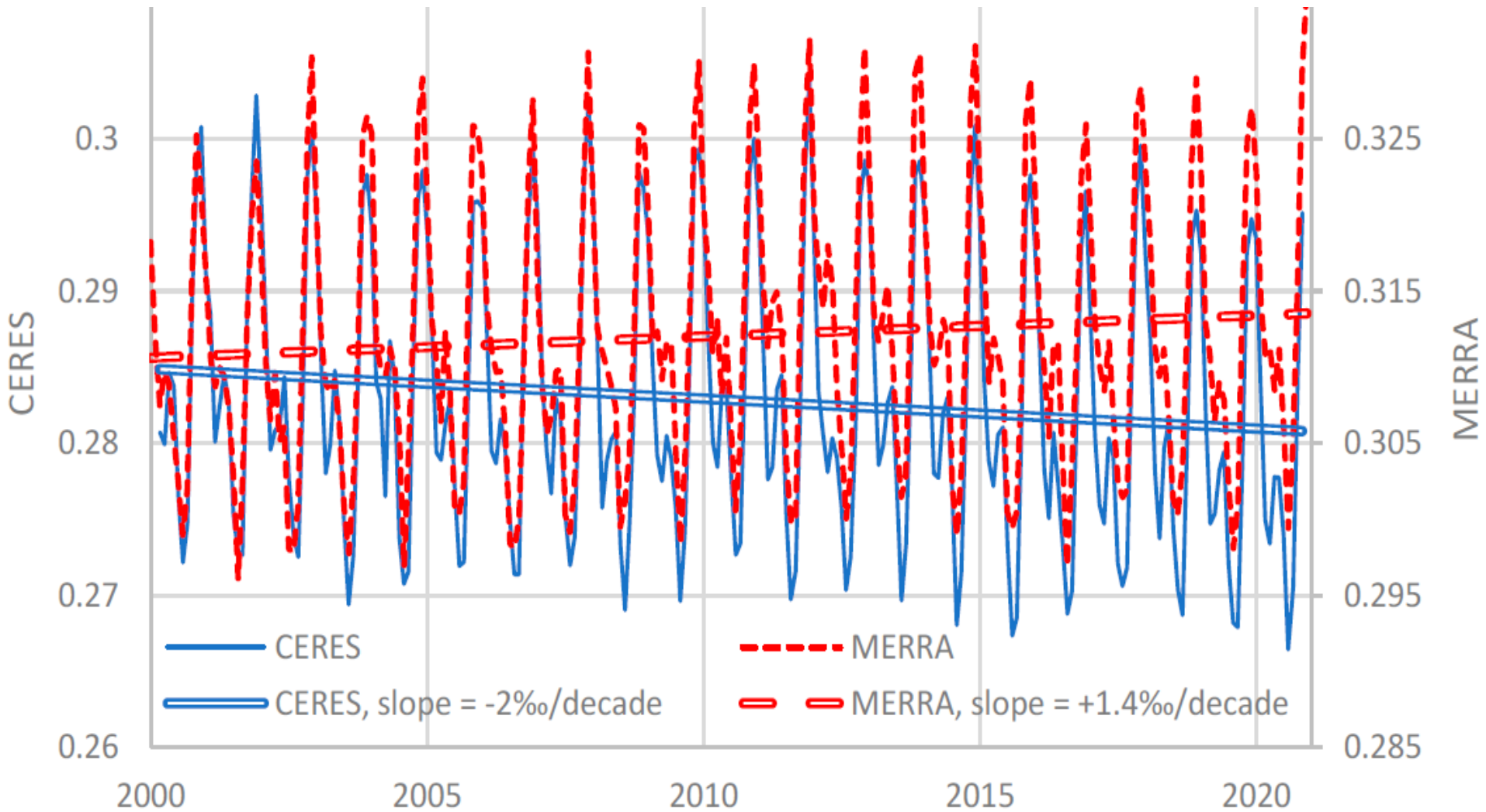
(h) **Modelled** contribution from human-caused factors (CO_2 , etc.)



A következtetés attól függ, hogy milyen adatokat veszünk figyelembe:

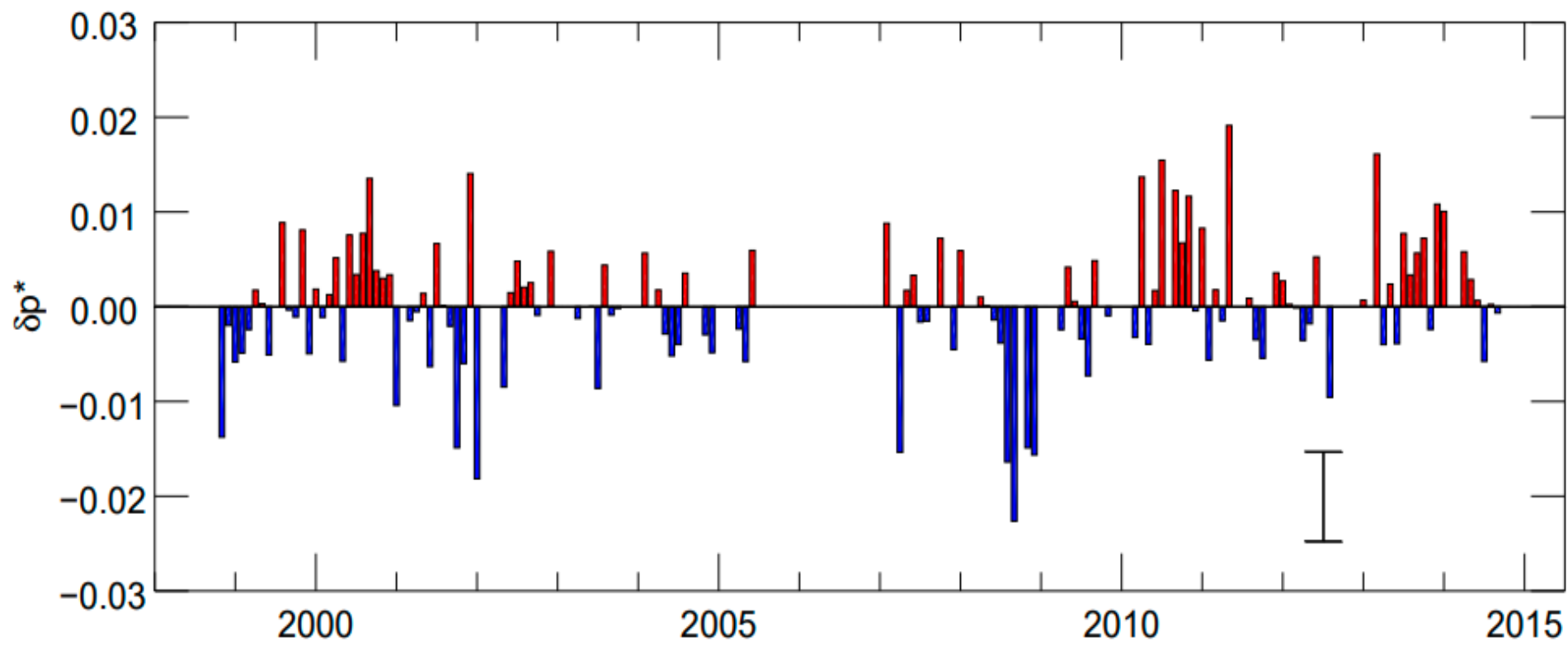
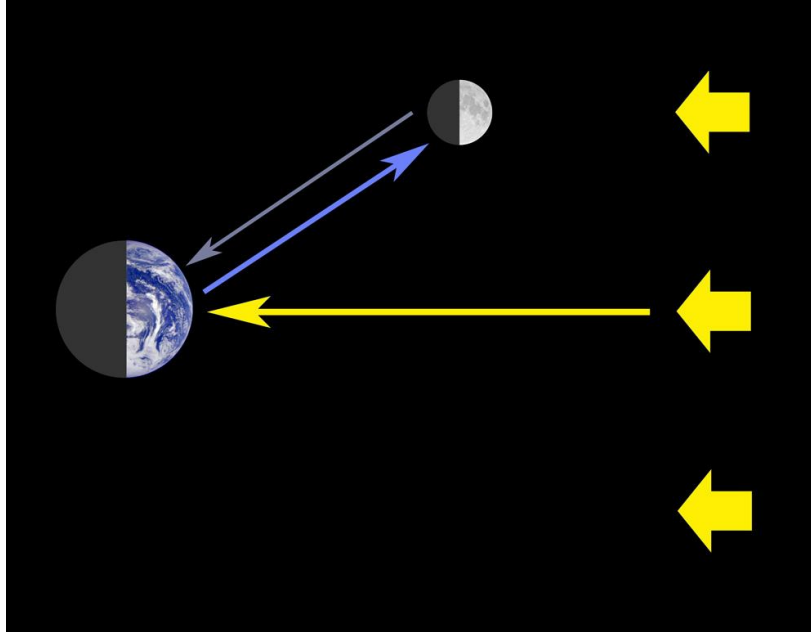
0-100% közötti naphatás hozható ki...

ALBEDO:
Ellentmondó (CERES és MERRA)
műholdas albedo trendek
(Koutsoyiannis 2021)



Földfény
(Earthshine)

Albedováltozás
Steve Koonin et al.
földfénymérési alapján



8 Nicht so gleichwerthig ist die Kohlensäure an von einander entfernten Orten. Zur leichteren Uebersicht stelle ich hier die an verschiedenen Orten und zu verschiedenen Zeiten ausgeführten Analysen zusammen:

	CO₂	%
Thenard (Paris)		0,391
Th. Saussure (Genf etc.)		0,415
Boussingault (Paris)		0,400
Léwy (Süd-Amerika)		0,300 bis 0,400
Gilm (Innsbruck)		0,380 bis 0,460
Smith (Manchester)		0,369
„ (London)		0,349
De Luna (Madrid)	505 ppm	0,505
Schultze (Rostock)	292 ppm	0,292
Truchot (Clermont-Ferrand)		0,378
Fodor (Klausenburg)	380 ppm	0,380
Fittbogen und Hasselbarth (Dahne)		0,334
Claesson (Lund)		0,297
Farsky (Tabor)		0,343
Lévy (Paris, Montsouris) 1877 bis 1879		0,340
Reiset (Dieppe)		0,294
? (Glasgow)		0,366
Wolffhügel (München)	376 ppm	0,376
Macagno (Palermo)		0,360
Fodor (Budapest)	389 ppm	0,389

CO₂ koncentráció a légkörben (FODOR József 1881)

Ld. Természet Világa
2021 szeptember

Elfeledett tanulmány.
Még Beck (2007)
nem-IPCC cikke
sem említi

HYGIENISCHE UNTERSUCHUNGEN

ÜBER

LUFT, BODEN UND WASSER.

INSBESONDERE

AUF IHRE BEZIEHUNGEN

ZU DEN

EPIDEMISCHEN KRANKHEITEN.

IM AUFTRAGE

DER

UNGARISCHEN AKADEMIE DER WISSENSCHAFTEN

AUSGEFÜHRT UND VERFASST

VON

Dr. JOSEF FODOR,

Professor der Hygiene an der Universität Budapest.

AUS DEM UNGARISCHEN ÜBERSETZT.

MIT TAFELN UND ABBILDUNGEN.

ERSTE ABTHEILUNG: DIE LUFT.


BRAUNSCHWEIG,

DRUCK UND VERLAG VON FRIEDRICH VIEWEG UND SOHN.

1881.

ORIGINAL STUDY

Greenhouse effect from the point of view of radiative transfer

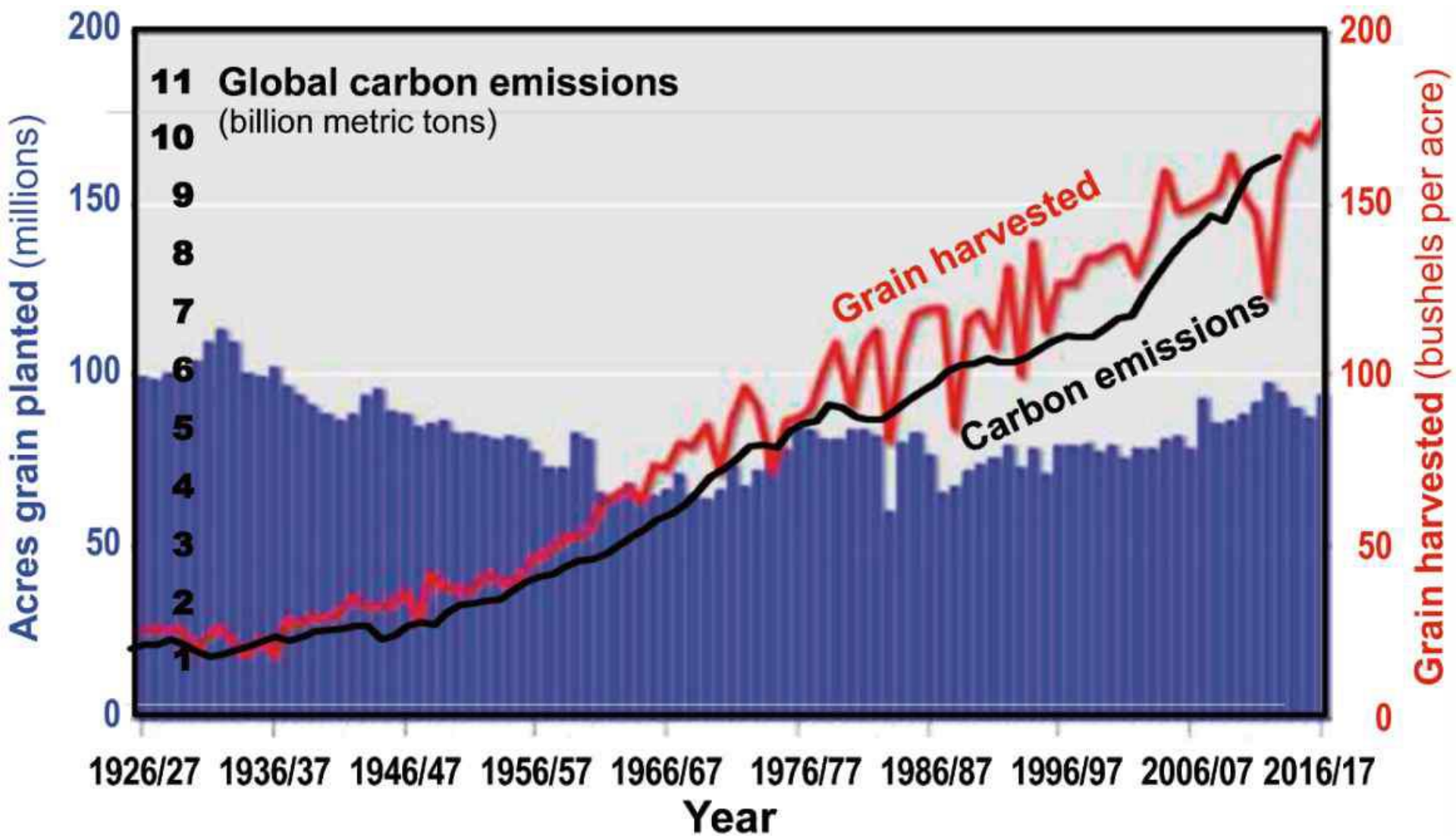
S. Barcza¹ 

BARCZA Szabolcs (1944-2021)

A CO₂ hatása nem lehet több, mint 21±7%

Received: 25 February 2016 / Accepted: 19 September 2016 / Published online: 28 September 2016
© Akadémiai Kiadó 2016

Abstract Radiative power balance of a planet in the solar system is delineated. The terrestrial powers are transformed to average global flux in an effective atmospheric column approximation, its components are delineated. The estimated and measured secular changes of the average global flux are compared to the fluxes derived from the Stefan–Boltzmann law using the observed global annual temperatures in the decades between 1880 and 2010. The conclusion of this procedure is that the radiative contribution of the greenhouse gas CO₂ is some 21 ± 7 % to the observed global warming from the end of the nineteenth century



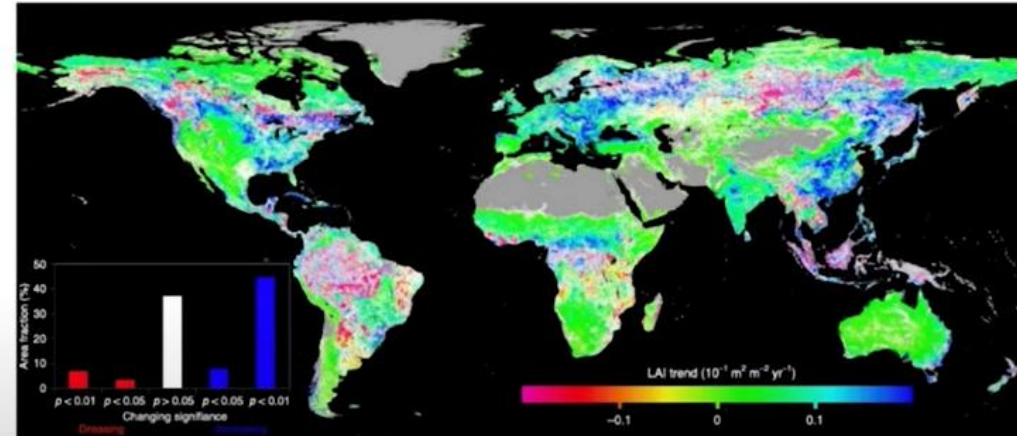
트럼프 대통령은 왜 지구온난화를 사기라고 했나?

기후 위기와 탄소 중립의 문제점

3. 이산화탄소의 과학적 이해

이산화탄소 증가로 지구는 더욱 푸르게

Roughly 40 percent of the planet has seen "greening"
between 1981 and 2016



ENVIRONMENTAL
PROGRESS

Source: Jing M. Chen, Weimin Ju, Philippe Ciais et al., "Vegetation Structural Change Since 1981 Significantly Enhanced the Terrestrial Carbon Sink," *Nature Communications* 10, no. 4259 (October 2019): 1–7, <https://www.nature.com/articles/s41467-019-12257-8.pdf>.

Seon Park előadása , 2021. december 23.



385 ppm CO₂



535 ppm CO₂



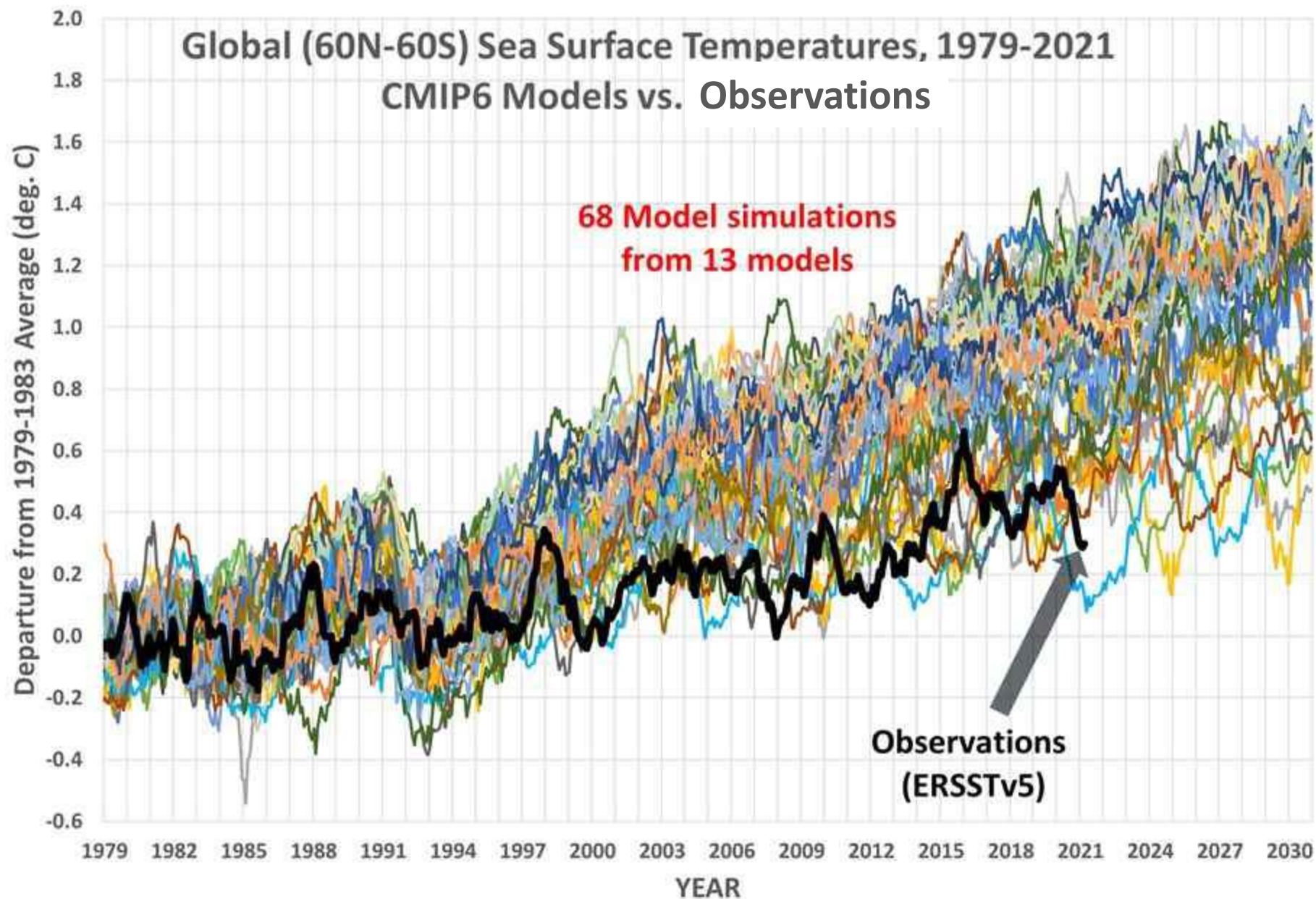
685 ppm CO₂



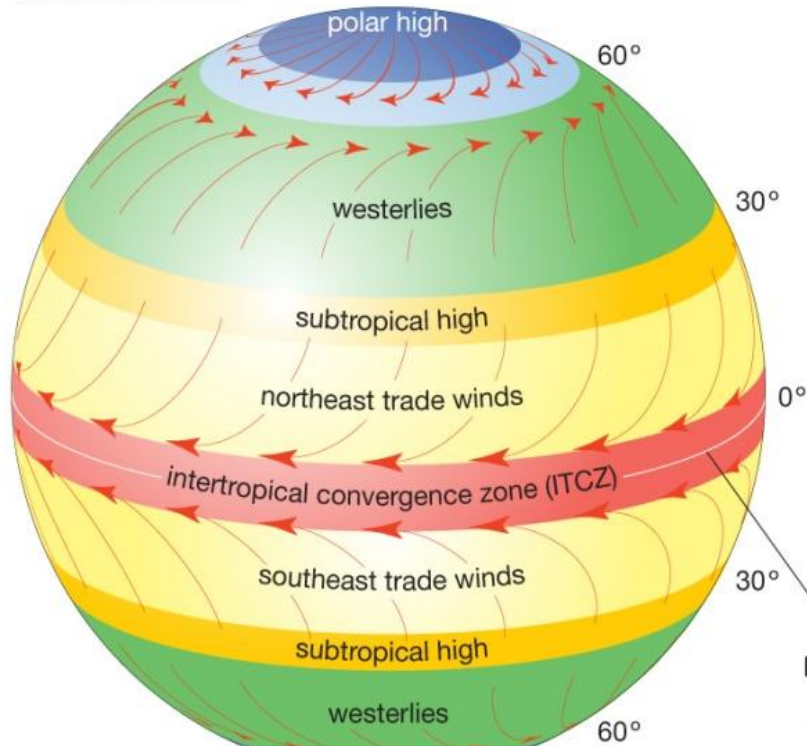
835 ppm CO₂

**3. A CO₂-üvegházhatás alapú klímamodellezés
által lebecsült, de a valóságban erőteljesen
működő kozmikus és földfizikai jelenségek**

Modell és valóság

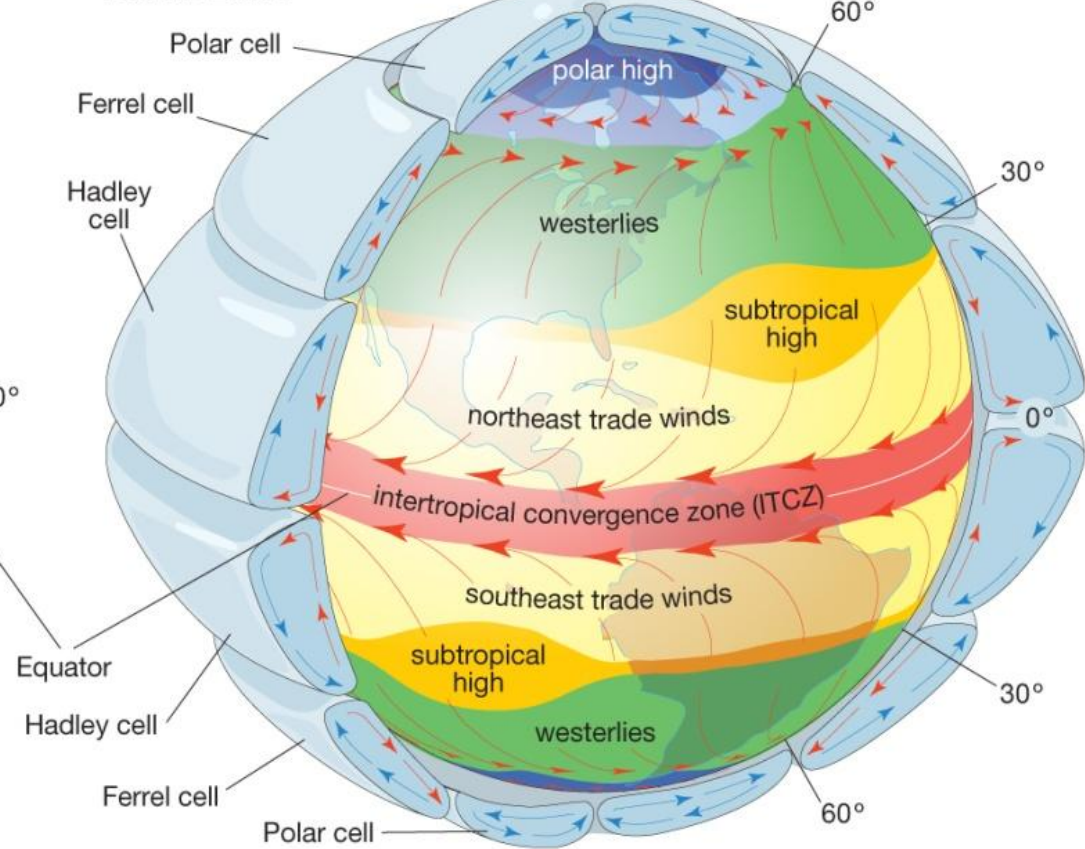


Idealized Earth

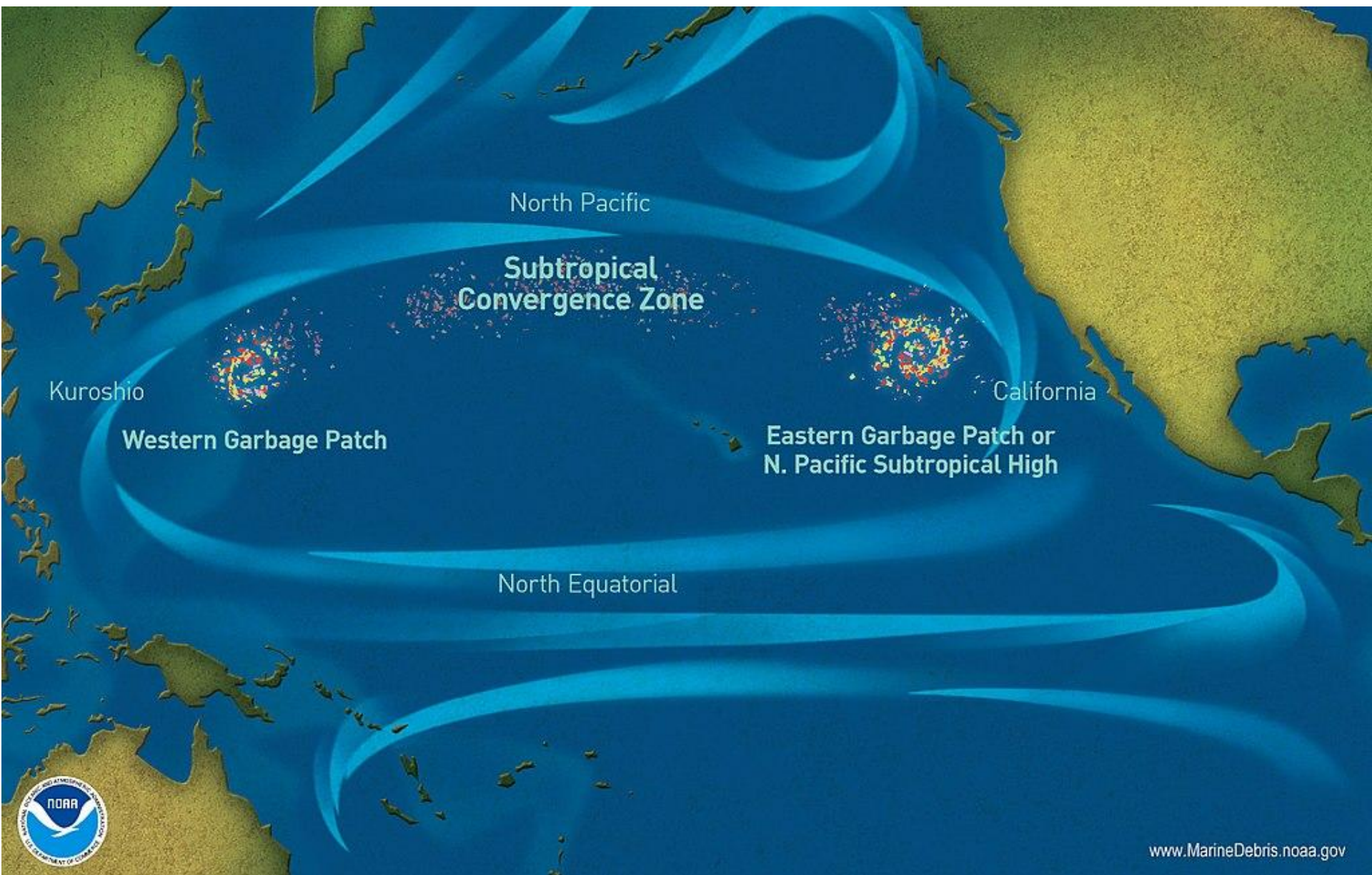


© 2010 Encyclopædia Britannica, Inc.

Actual Earth



Hőterjedés az egyenlítőtől a sarkok felé + földforgás



Óceáni áramlások: „szemétszigetek”

**OKOK
(RÉSZBEN ISMERT,
RÉSZBEN FELTÉTELEZETT CIKLUSOK):**

STOF-s (Cionco et al. 2021)

Schwabe: ~11 év

Hale: ~22 év

Gleissberg: 80-100 év

José: 155-185 év

Suess (de Vries): 200-250 (~210) év

„Grand”: 300-400 év

Eddy: 800-1200 év

Bray-Hallstatt: 2100-2500 év
(Charvatová ciklus: 2402 év)

Milankovitch ciklusok

Geomágneses *ki-rándulások*: 12 ezer év

OKOZATOK:

KLÍMAVÁLTOZÁSI BIZONYÍTÉKOK:

Az egész geológia erről szól.

Néhány ezer évente globálisan egyidejű,
hirtelen klímaváltozások fordulnak elő:

Bond (B) események:

~1000-1500 ezer év (1470 ky?)

Dansgaard–Oeschger (DO) események

~3 ezer év? (-12 ky and -120 ky között)

Heinrich (H) események:

~6 ezer év?

:

AMIRE TÁMASZKODHATUNK:

Paleoklíma-proxik (bio, geo, cryo)

Korábbi mérési adatok (astro-, hydro etc.)

Jelen megfigyelések (asztro, geo-, atmo-
hidro)

„Szférák”, végtelen számú kölcsönhatással

Atmoszféra

Bioszféra (benne az Ember)

„Outer Space”

NAP

Krioszféra

(Helioszféra)

Naprendszer
(Bolygók, Hold)

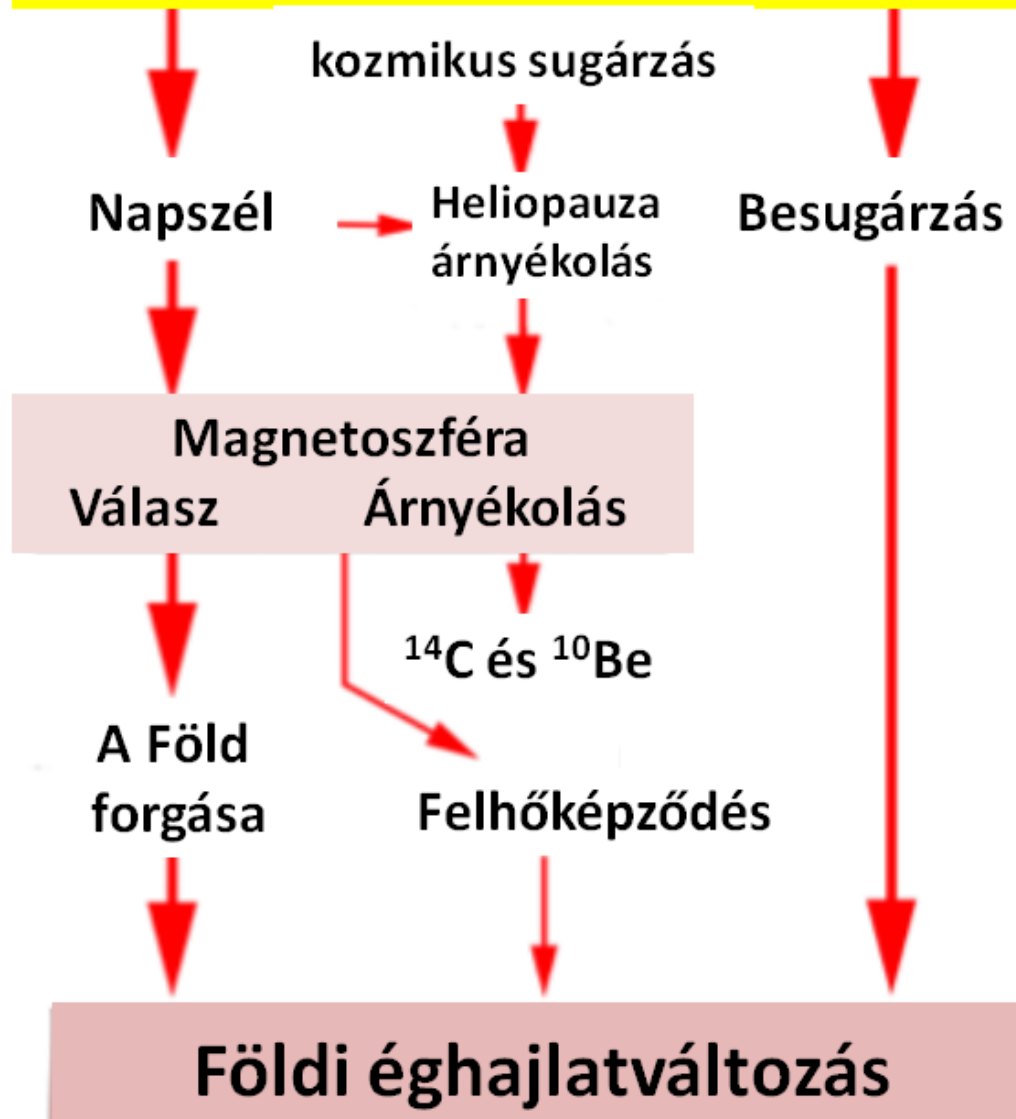
Hidroszféra (Óceán, kontinentális vizek)

Geoszféra: a Föld belsejétől a magnetoszféráig (benne: atmoszféra)
(+bioszféra, krioszféra, hidroszféra) = **földrendszer**

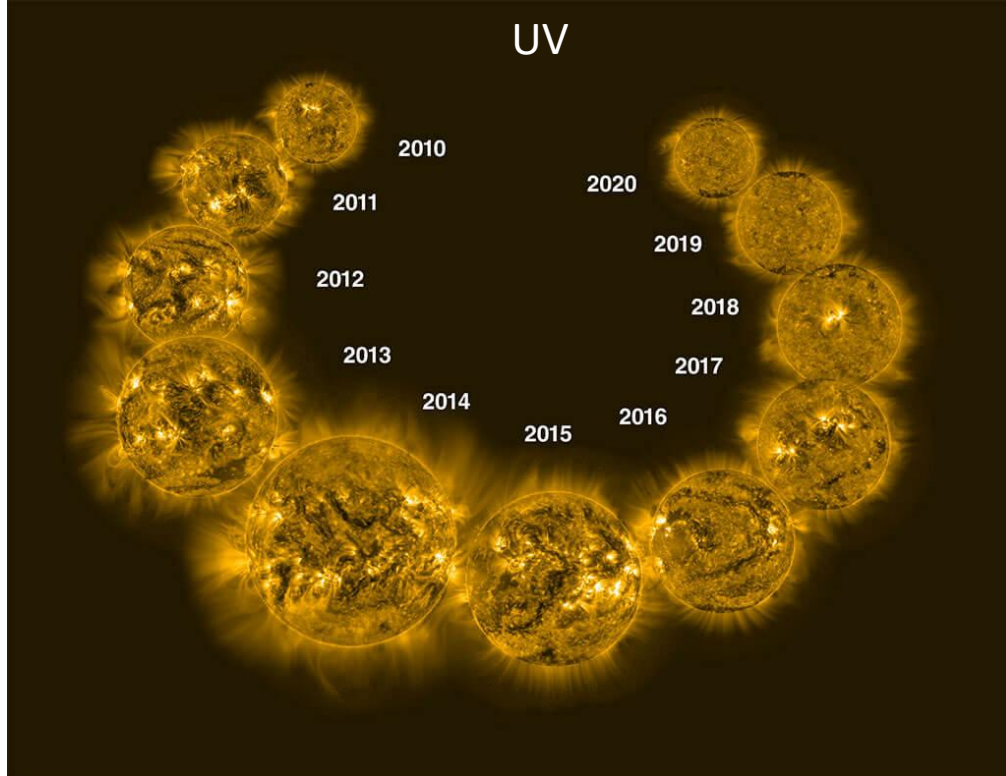
Teendő: Észlelés és leképezés. (Imaging=mapping+transformation +visualization)

Let the data speak! (Berkhout, 2021 clintel.org/clintel-proposes-a-new-way-to-analyze-climate-data/)

Naptevékenység-változások



UV



<https://spaceplace.nasa.gov/solar-cycles/en/>

www.ggki.hu, www.epss.hu

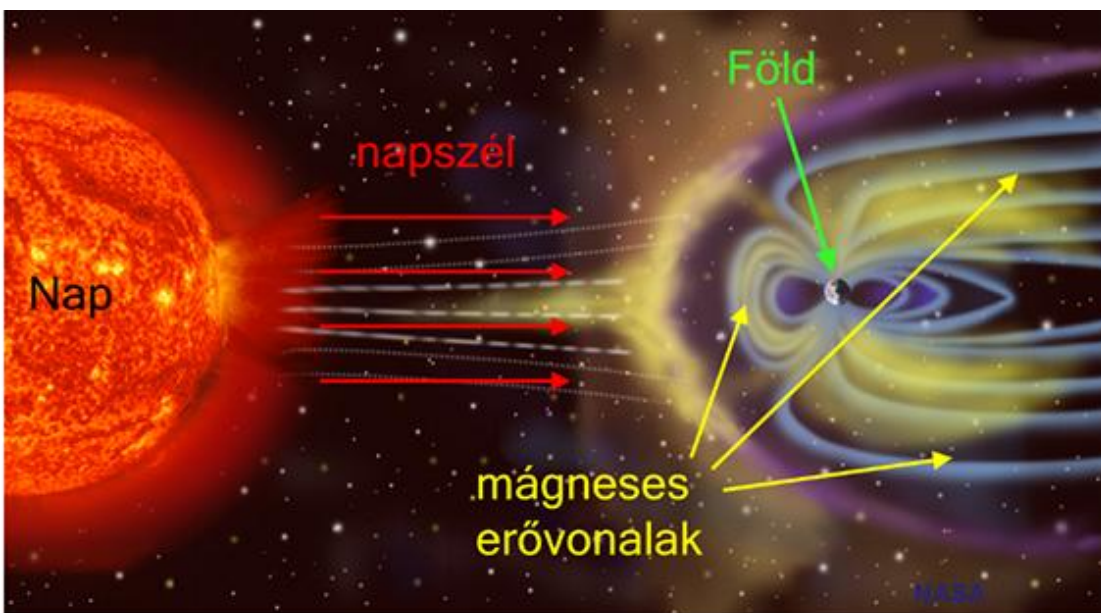
CME (koronakitörés)
2020. november 29-én (SOHO)



2020/11/29 12:06

<https://spaceweatherarchive.com/2020/11/29/major-solar-flare-and-cme/>

http://www.zam.fme.vutbr.cz/~druck/eclipse/Ecl2017u/Mi/Mitchell_800mm/0-info.htm

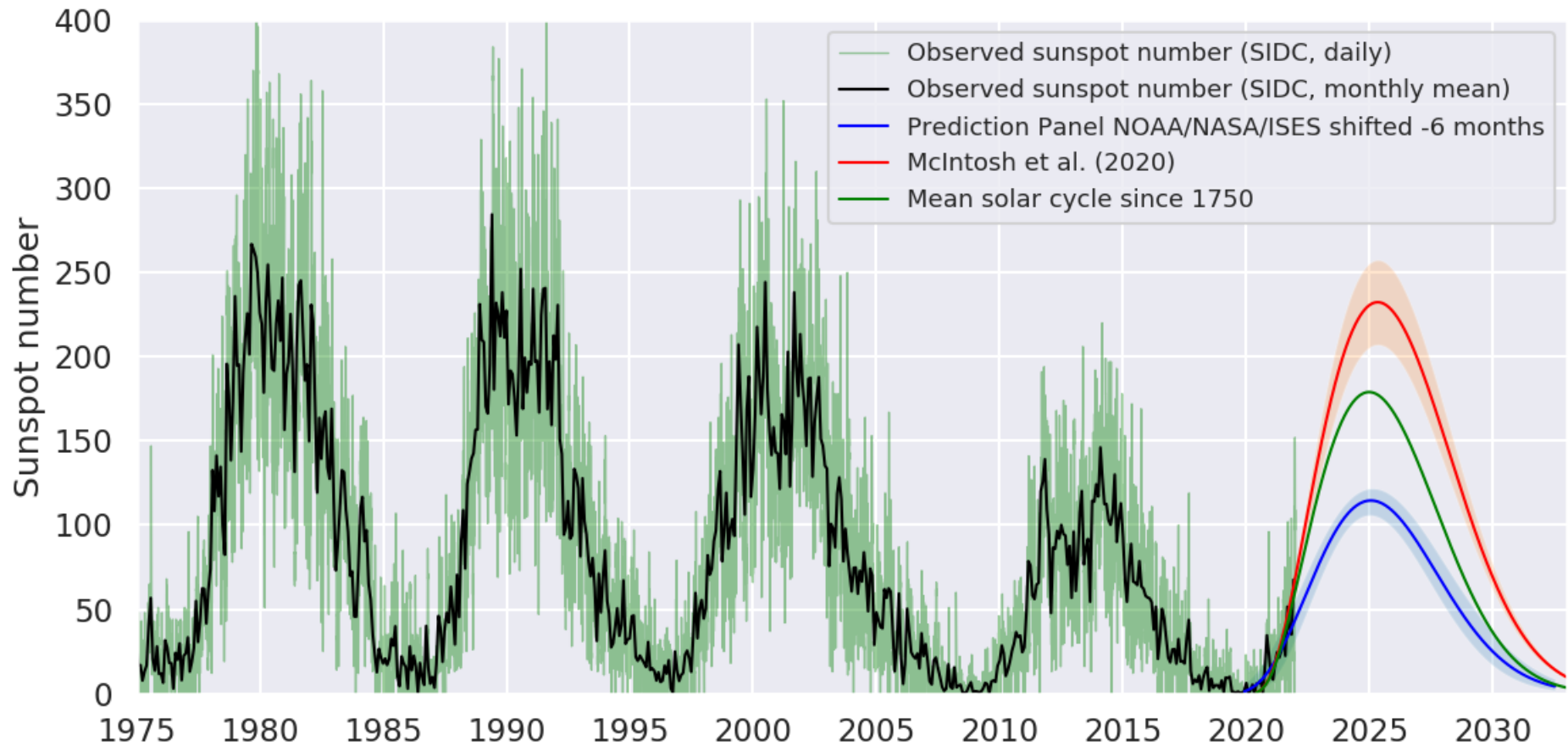


Fehér fény, 2017. aug. 21-ei napfogyatkozás

Total Solar Eclipse 2017

© 2017 Miloslav Druckmüller, Peter Aniol, Shadia Habbal

A jelenlegi (25.) napciklusra vonatkozó előrejelzések

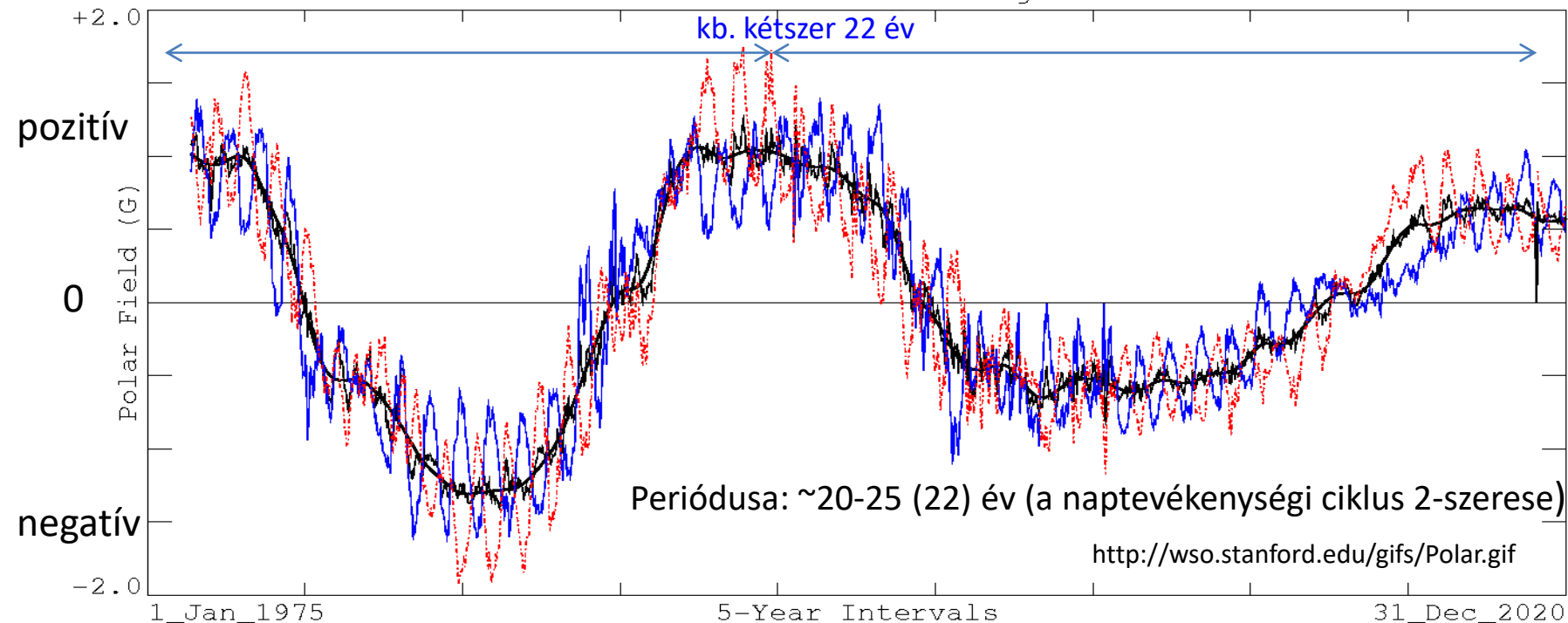


[Helio4Cast \(helioforecast.space\)](https://helioforecast.space)

A Nap poláris mágneses terének időbeli változása

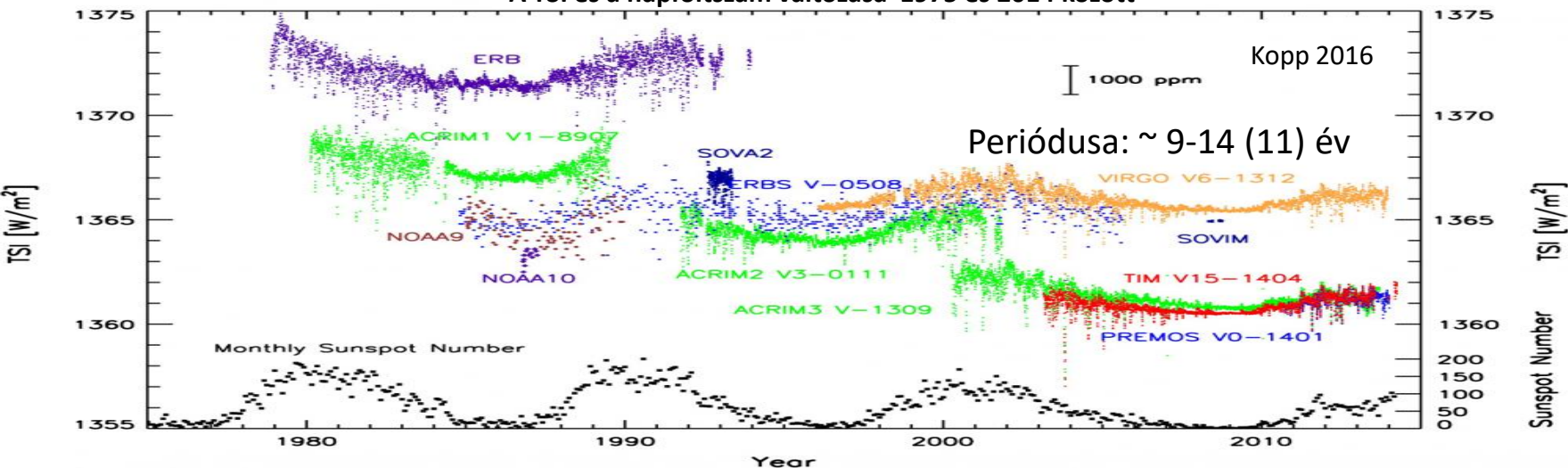
WSO Solar Polar Field Strength vs. Time

2021:01:19

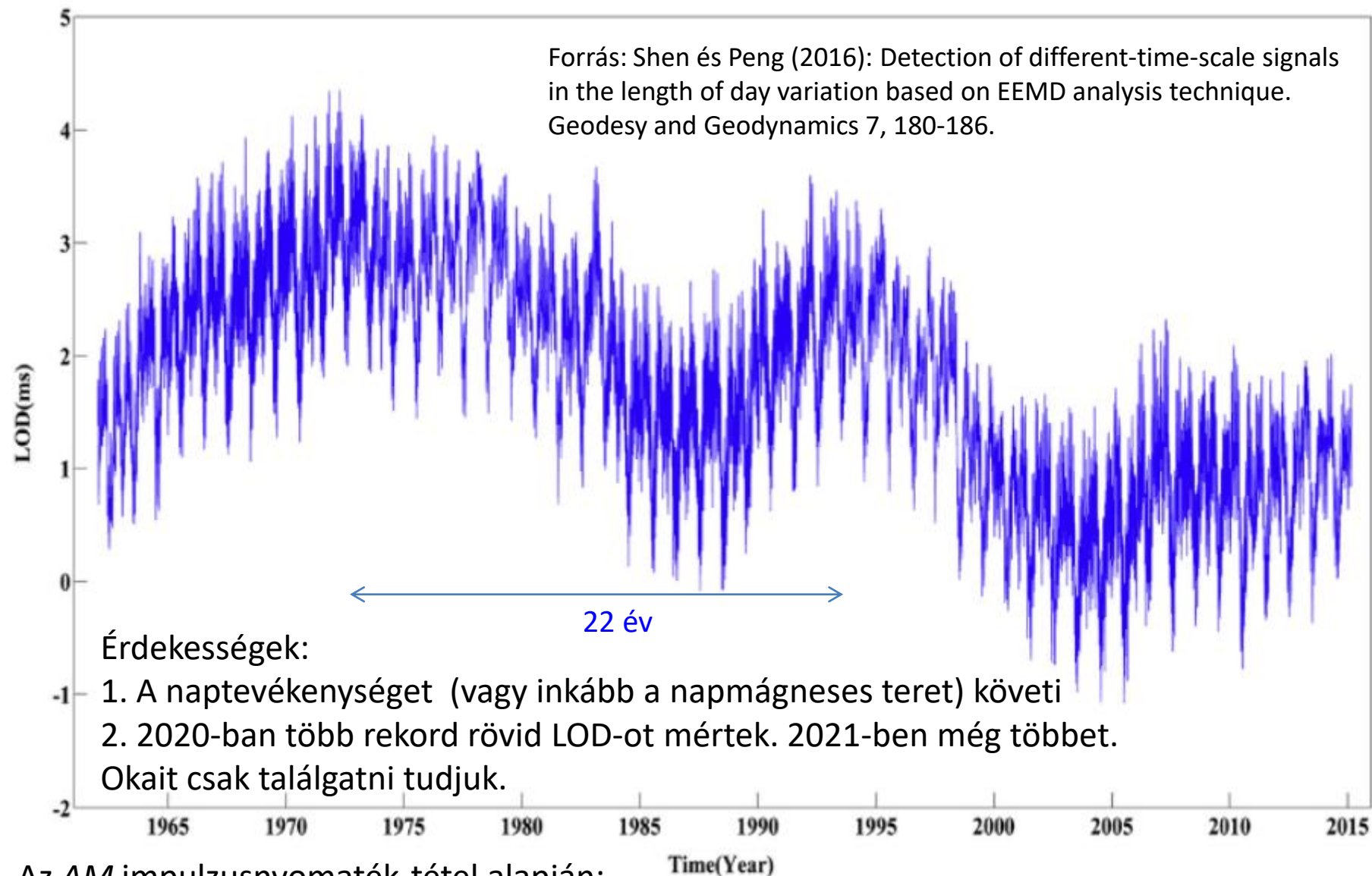


Key: Lt.Solid = North; Dashed = -South; Med.Solid = Average: (N-S)/2; Hvy.Solid = Smoothed Average

A TSI és a napfoltszám változása 1975 és 2014 között



LOD (Length Of Day), a Föld tengely körüli forgási ideje, a naphossz (~86400 s) változása

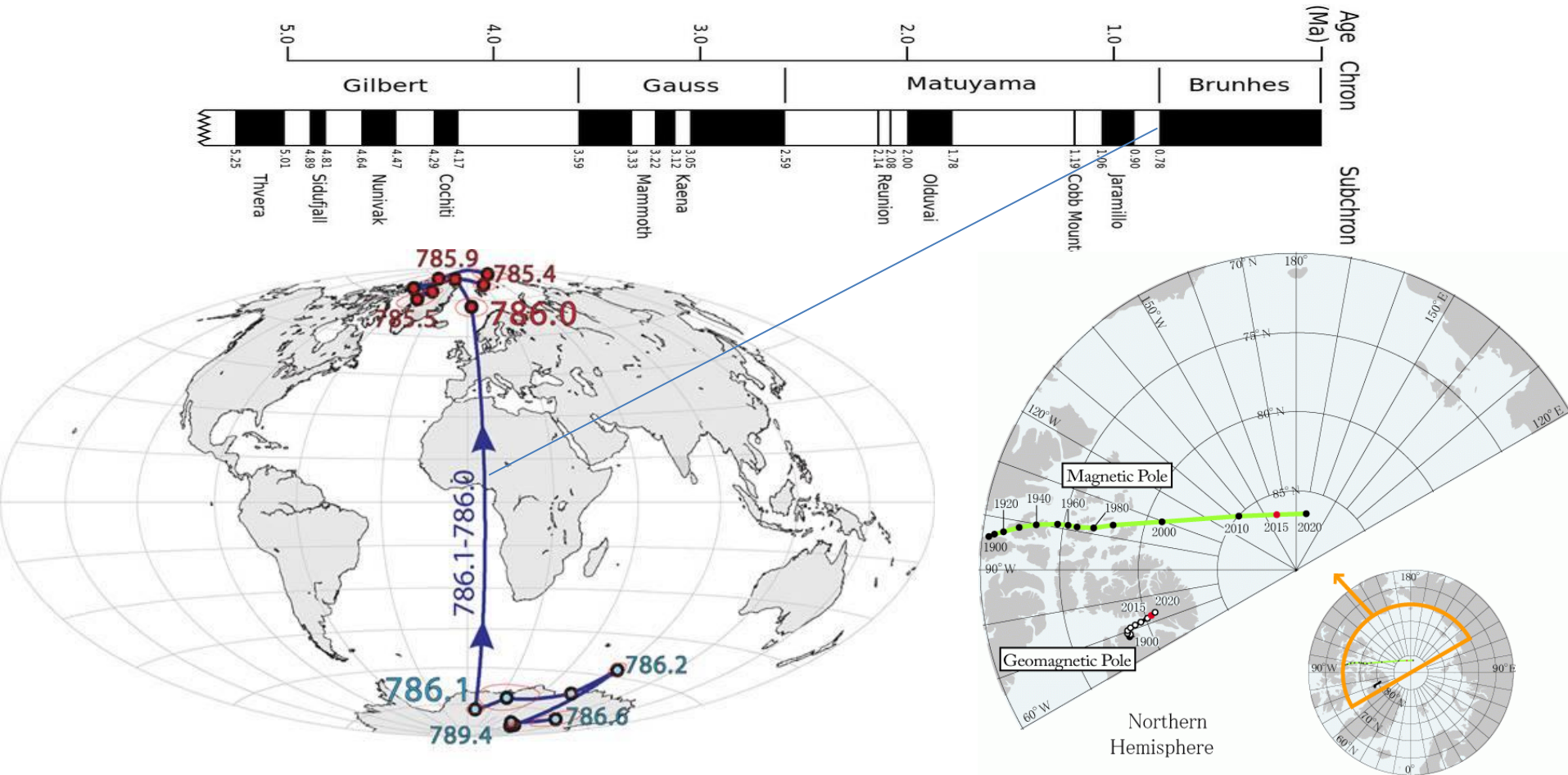


Az AM impulzusnyomaték-tétel alapján:

$$AM_{\text{légkör}} \approx AM_{\text{külső}} - AM_{\text{Föld}}$$

Polaritásváltás: átlagosan 250 ezer évenként. A jelenlegi normál polaritás 750 ezer éve tart.

https://en.wikipedia.org/wiki/Geomagnetic_reversal#/media/File:Geomagnetic_polarity_late_Cenozoic.svg



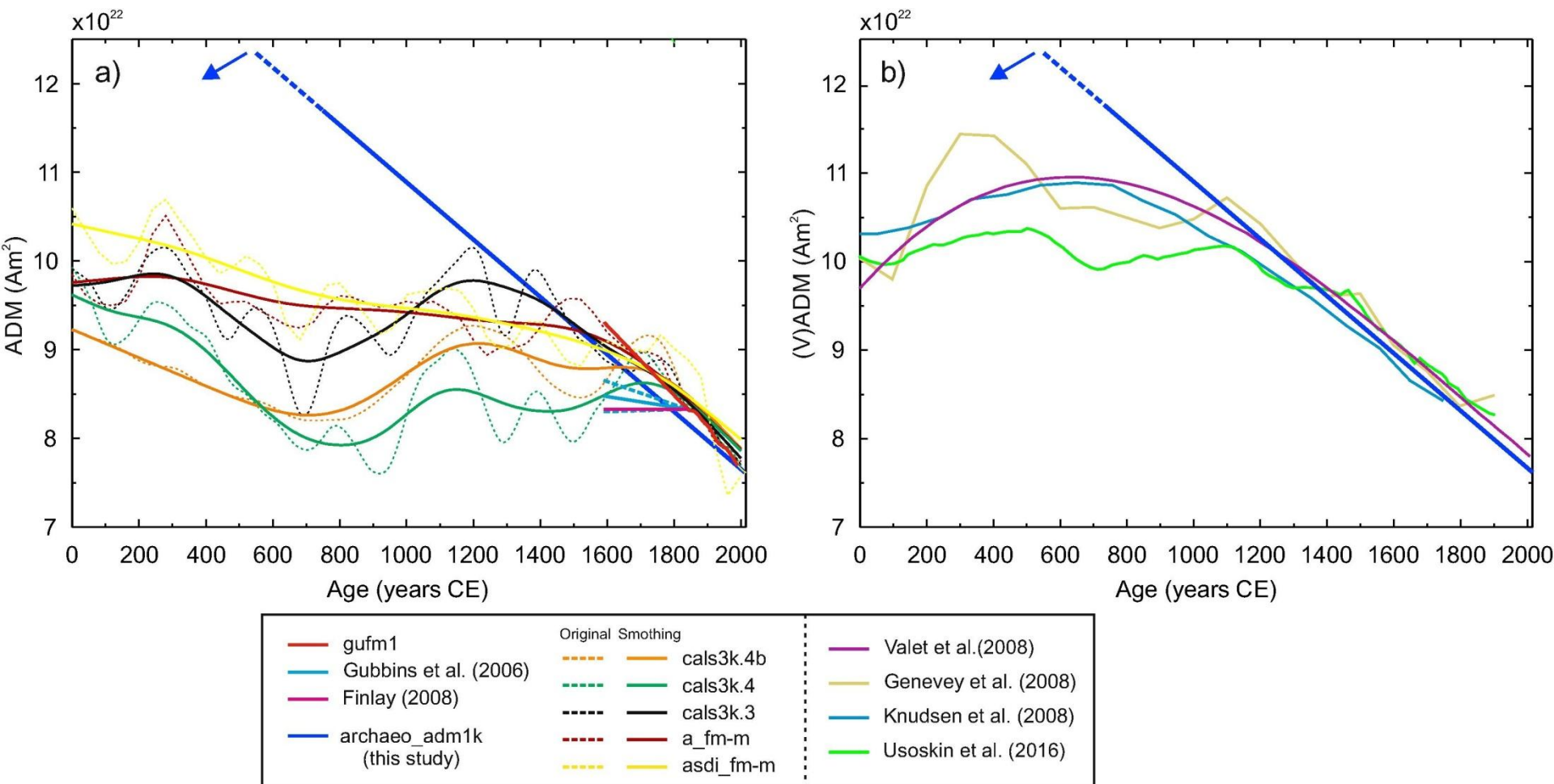
Átmenet: <100 év

Leonardo Sagnotti, Giancarlo Scardia, Biagio Giaccio, Joseph C. Liddicoat, Sebastien Nomade, Paul R. Renne, Courtney J. Sprain, Extremely rapid directional change during Matuyama-Brunhes geomagnetic polarity reversal, *Geophysical Journal International*, Volume 199, Issue 2, 1 November 2014, Pages 1110–1124, <https://doi.org/10.1093/gji/ggu287>

Az északi mágneses pólus helyzetének változása, 1900-2020

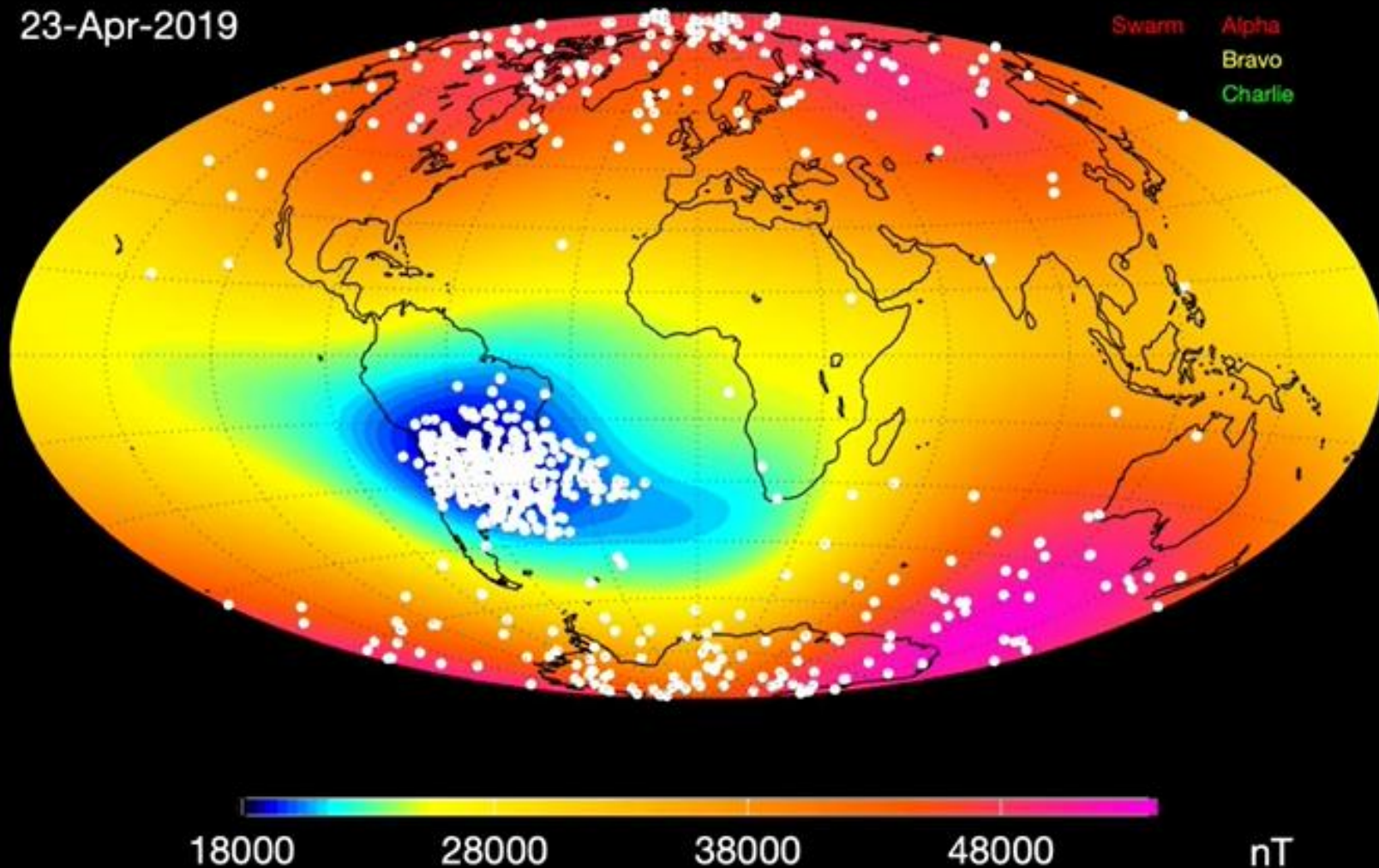
(<http://wdc.kugi.kyoto-u.ac.jp/poles/polesexp.html>)

A geomágneses tér axiális dipólmomentumának (ADM) lehetséges változásai a legutóbbi 2000 év során



Wilbor Poletti, Andrew J. Biggin, Ricardo I.F. Trindade, Gelvam A. Hartmann, Filipe Terra-Nova, 2018: Continuous millennial decrease of the Earth's magnetic axial dipole. *Physics of the Earth and Planetary Interiors* 274, 72-86

23-Apr-2019



A geomágneses tér csökken, és leginkább Dél-Amerika alatt.
 Fehér pontok: észlelt részecskesugárzás 450 km magasságban (ESA Swarm)
 A geomágneses térváltozás önmagában is oka lehet az éghajlatváltozásnak.



time.news/study-the-earths-interior-is-probably-cooling-faster-than-expected/

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Time.News

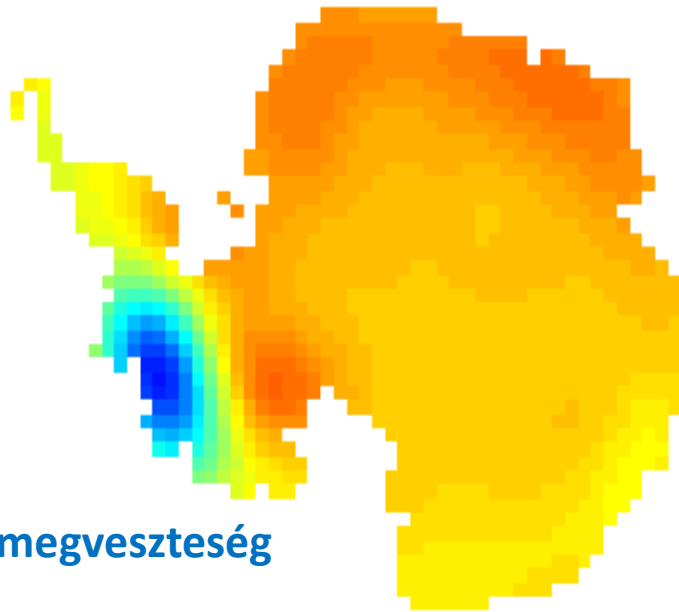
News

Study: The Earth's interior is probably cooling faster than expected

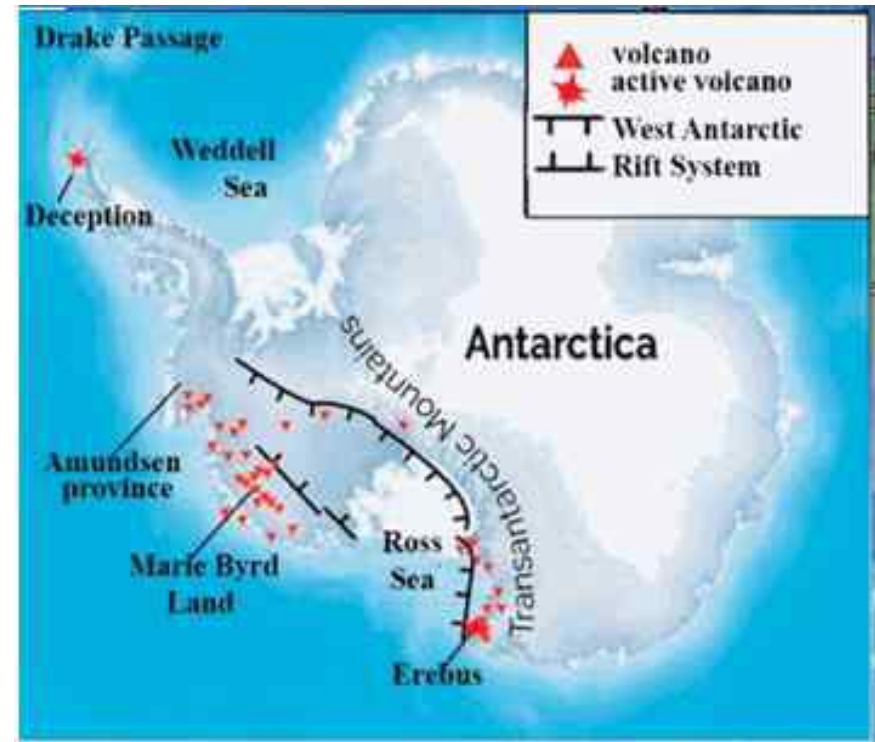
January 14, 2022

Vulkanizmus és magmatizmus (Nyugat-Antarktisz)

Sárga: tömegnövekedés



Kék: tömegvesztés



Az antarktisi jégtömeg-változás
(GRACE gravitációs műholdmérés)
(Kiss, Földváry: Acta Geod. Geoph., 2016)



„Összegezve: a stratégiáknak tudomásul kell venniük, hogy mi lehetséges és mi nem. A klímakutatásban és -modellezésben fel kell ismernünk, hogy ún. kapcsolt nemlineáris kaotikus rendszerről van szó, ezért a jövőbeli éghajlati állapotok hosszú távú előrejelzése nem lehetséges.”

Forrás: IPCC TAR, Chapter 14, Section 14.2.2.2 (a Summary Report-ból kimaradt)

and the need for

models at finer spatial processes and more lead to better simulation (Chapter 8, tions, and improved atmosphere, fine-scale resolving small-scale (8.9.1). In the ocean, the various boundary use of higher oceanic of internal variability (1). However, in spite climatic processes are initiating the continued

in the ocean sub-

radiative forcings. This allows ensembles of model results to be constructed (see Chapter 9, Section 9.3; see also the end of Chapter 7, Section 7.1.3 for an interesting question about ensemble formation).

In sum, a strategy must recognise what is possible. In climate research and modelling, we should recognise that we are dealing with a coupled non-linear chaotic system, and therefore that the long-term prediction of future climate states is not possible. The most we can expect to achieve is the prediction of the probability distribution of the system's future possible states by the generation of ensembles of model solutions. This reduces climate change to the discernment of significant differences in the statistics of such ensembles. The generation of such model ensembles will require the dedication of greatly increased computer resources and the application of new methods of model diagnosis. Addressing adequately the statistical nature of climate is computationally intensive, but such statistical information is essential.

Konklúzió: a tudomány szabadsága a tét.

Freedom of scientific research is related to freedom of expression, freedom of association, the freedom of movement and the right to education, among other rights. It encompasses the right to freely define research questions, choose and develop theories, gather empirical material and employ sound academic research methods, to question accepted wisdom and bring forward new ideas. It entails the right to share, disseminate and publish the results

Bonn Declaration on Freedom of Scientific Research, 2020