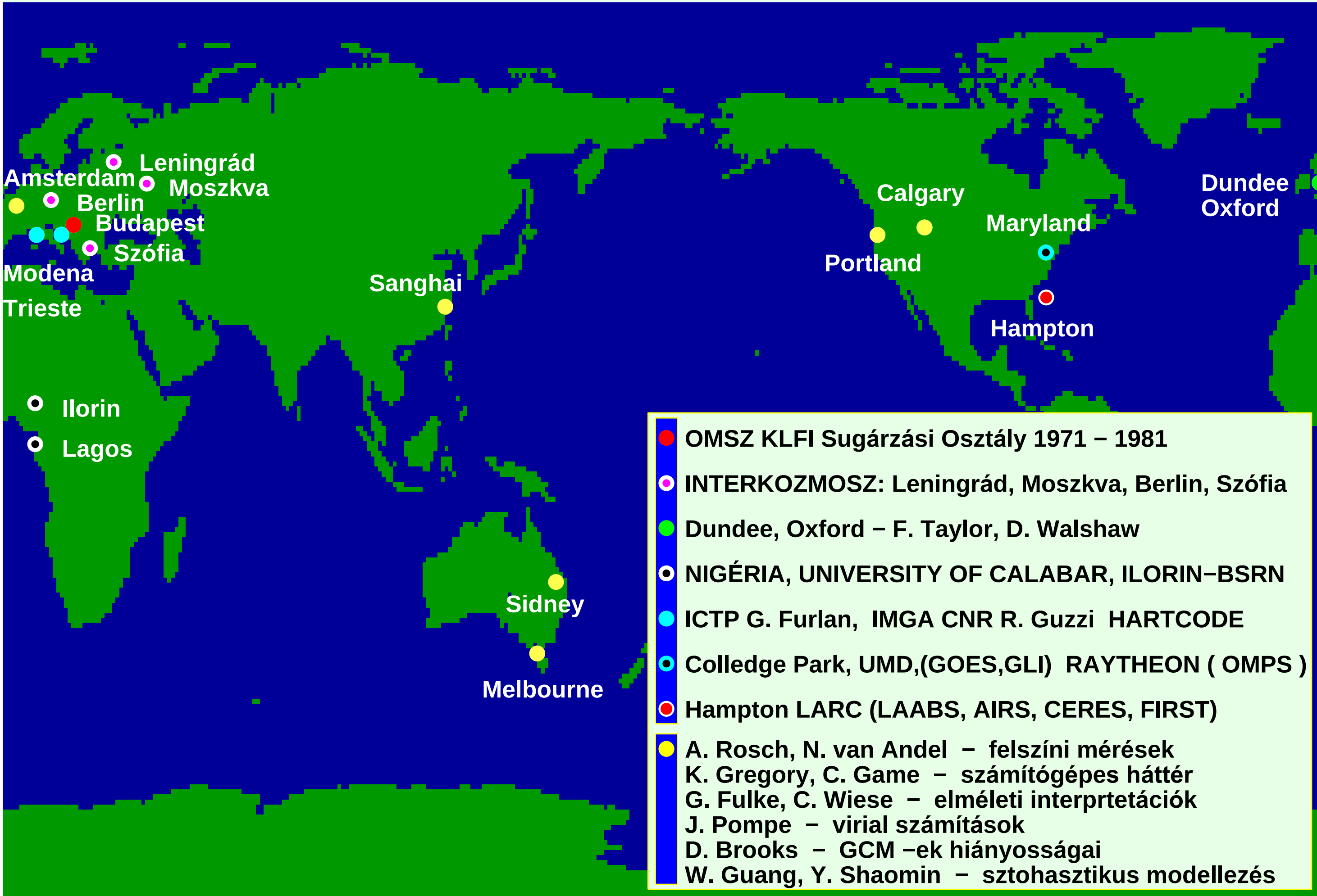
1971 − ELTE TTK ATOMFIZIKA TANSZÉK	Fizikus diploma	Neutron aktivációs analízis
1974 − SZÁMOK	Programozói diploma	PL1 − Fortran
1976 − ELTE TTK CSILLAGÁSZATI TANSZÉK	Doktori diploma	A légköri CO_2 abszorpciójának számítása
1981 − MTA FÖLDTUDOMÁNYI OSZTÁLY	Kandidátusi oklevel	Műholdas ózonszondázás



Far-Infrared Properties of the Earth Radiation Budget
A Proposal Submitted to NRA 03-OES-02
Submitted April 15 2003

Martin G. Mlynczak, **Bill Collins**, **Dave Kratz**, **Ping Yang**,
Christopher J. Mertens, **Ferenc Mislkolczi**, **Robert G. Ellingson**,
Bill Smith, Sr., **Bryan Baum**, **Paul Stackhouse**, **Larry Gordley**

8.1 Science Team Member Responsibilities

- Mlynczak, **Miskolczi**, Mertens,and Smith : **CERES and AIRS window radiance verification**
- Kratz, Mertens, **Miskolczi**, Gordley : **Far-IR flux derivations**
- Ellingson, Mertens : **Radiative cooling rates**
- **Miskolczi**, Kratz, and Mlynczak : **Spectral Greenhouse Effect**
- Yang, Baum, and Stackhouse : **Far-IR Cirrus Properties**
- Collins, Mertens, Kratz, **Miskolczi** : **Climate Model Comparisons**
- All : **Error Analysis**

http:/science.larc.nasa.gov/ceres/STM/2005-11_miskolczi_airs.pdf

Letter of Resignation

This letter is to inform you that I wish to terminate my employment with the AS&M Inc., effective from 1st of January, 2006.

Unfortunately my working relationship with my NASA supervisors eroded to a level that I am not able to tolerate. My idea of the freedom of science can not coexist with the recent NASA practice of handling new climate change related scientific results. More than three years ago, I presented to NASA a new view of greenhouse theory and pointed out serious errors in the classical approach of assessment of climate sensitivity to greenhouse gas perturbations. Since then my results were not released for publication. Since my new results have far reaching consequences in the general atmospheric radiative transfer, I wish to be no part in withholding the above scientific information from the wider community of scientists and policymakers.

I am very grateful to the AS&M Inc. for the friendly and honest working environment that I enjoyed for many years. I wish to thank for all the help and encouragement that I received from my colleagues and supervisors at AS&M.

Sincerely,

Dr. F. Miskolczi

ÜVEGHÁZHATÁS ÉS ENERGETIKA

A CO_2 ÜVEGHÁZHATÁSON ALAPULÓ GLOBÁLIS FELMELEGEDÉS

A KLÍMAVÁLTOZÁS MEGFIGYELT EMPIRIKUS TÉNYEI ÉS A KAPCSOLATOS ELMÉLETI MEGFONTOLÁSOK ENERGIAPOLITIKAI VONZATA

Dr. Ferenc M. Miskolczi

3 Holston Lane, Hampton, VA 23664, USA

e-mail: fmiskolczi@cox.net

Adv. Space Res. Vol.1, pp.5-18. 0273-1177/81/0401-0005$05.00/0

THE CO_2 GREENHOUSE EFFECT AND THE THERMAL HISTORY OF THE ATMOSPHERE

G. Marx[1] **and F. Miskolci**[2]

[1] ***Department of Atomic Physics, Eötvös University, Budapest, Hungary***
[2] ***Institute for Atmospheric Physics, Budapest, Hungary***

Development in Earth Science Volume 2, 2014 http://www.seipub.org/des

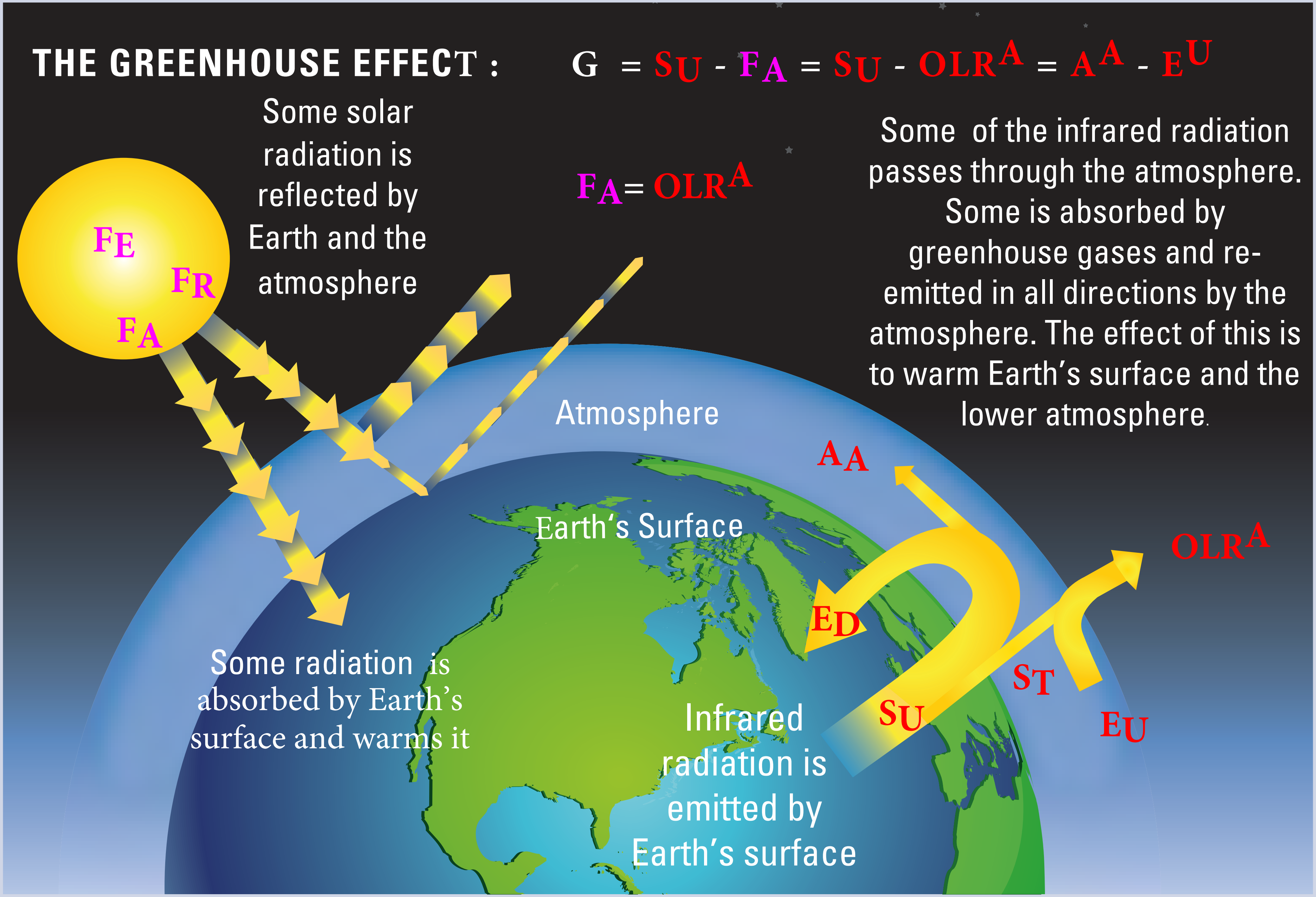
The Greenhouse Effect and the Infrared Radiative Structure of the Earth's Atmosphere

Ferenc Mark Miskolczi

Geodetic and Geophysical Institute, Hungarian Academy of Sciences, Csatkai Endre u. 6-8, 9400 Sopron, Hungary
fmiskolczi@cox.net

RS & NAS Feb. 27th 2014

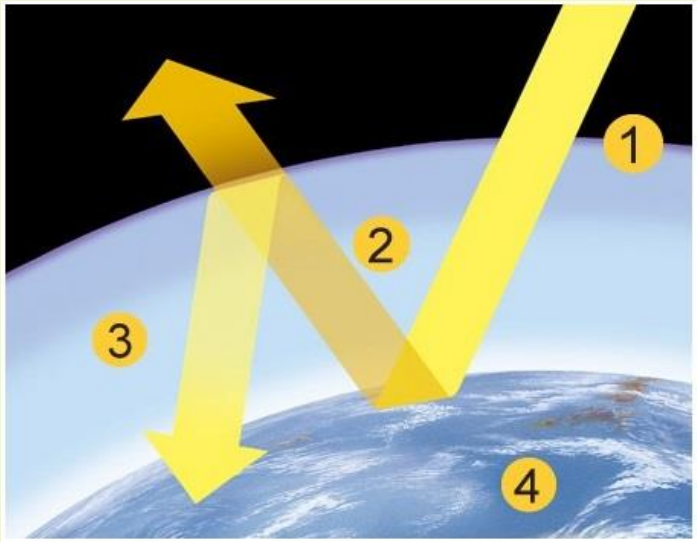
An overview from the Royal Society and the US National Academy of Sciences



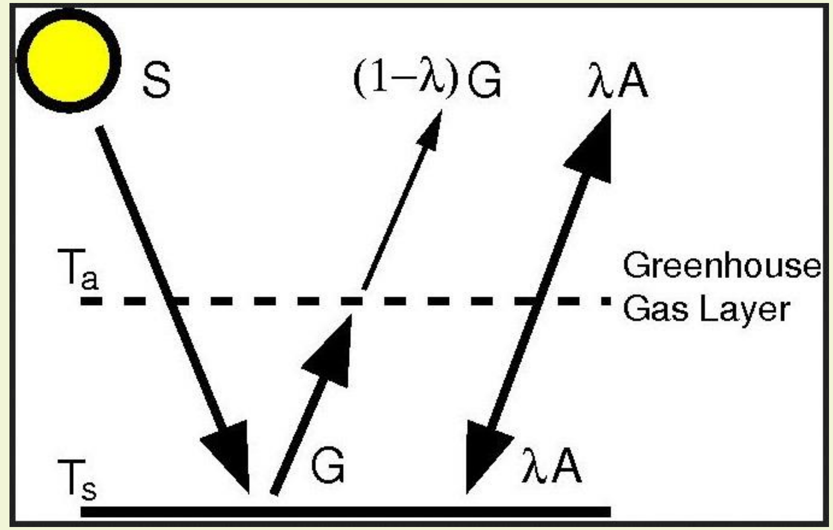
RS - SIR PAUL NURSE President

NAS - Dr. RALPH J. CICERONE President

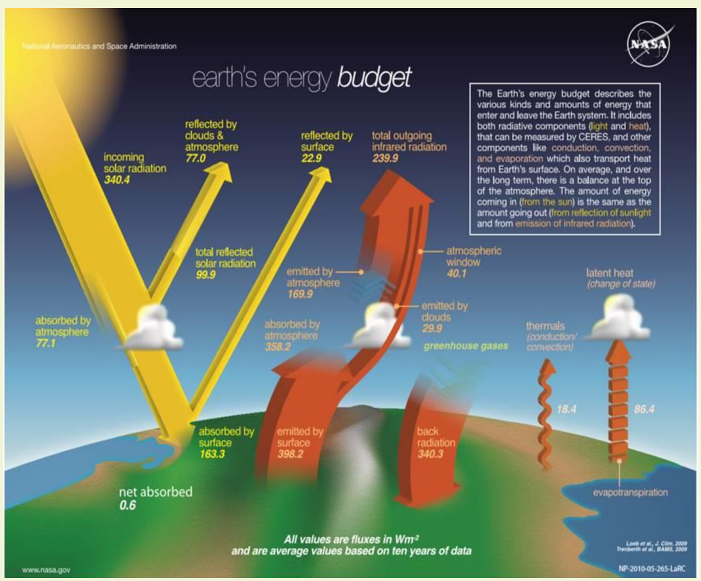
[http://www.bbc.co.uk/schools/....
global_warmingrev1.shtml](http://www.bbc.co.uk/schools/....global_warmingrev1.shtml)



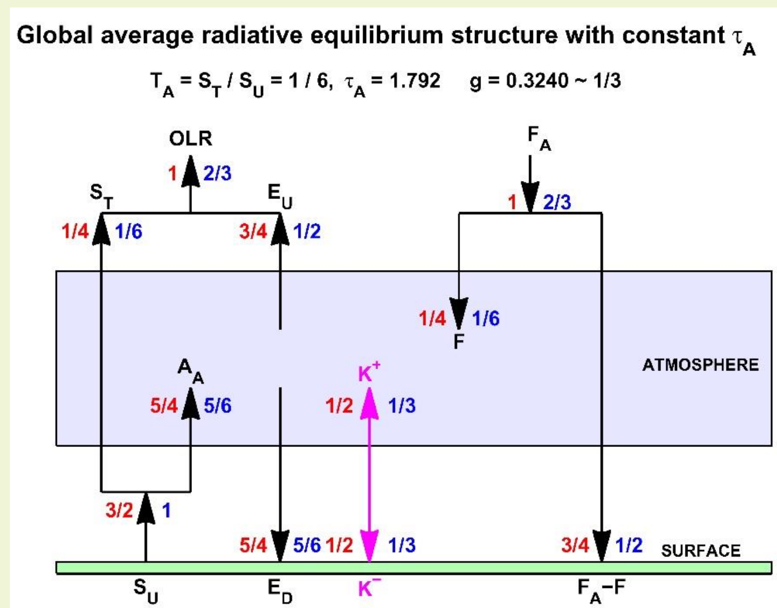
[http://www.realclimate.org/....2007/04/
learning-from-a-simple-model](http://www.realclimate.org/....2007/04/learning-from-a-simple-model)



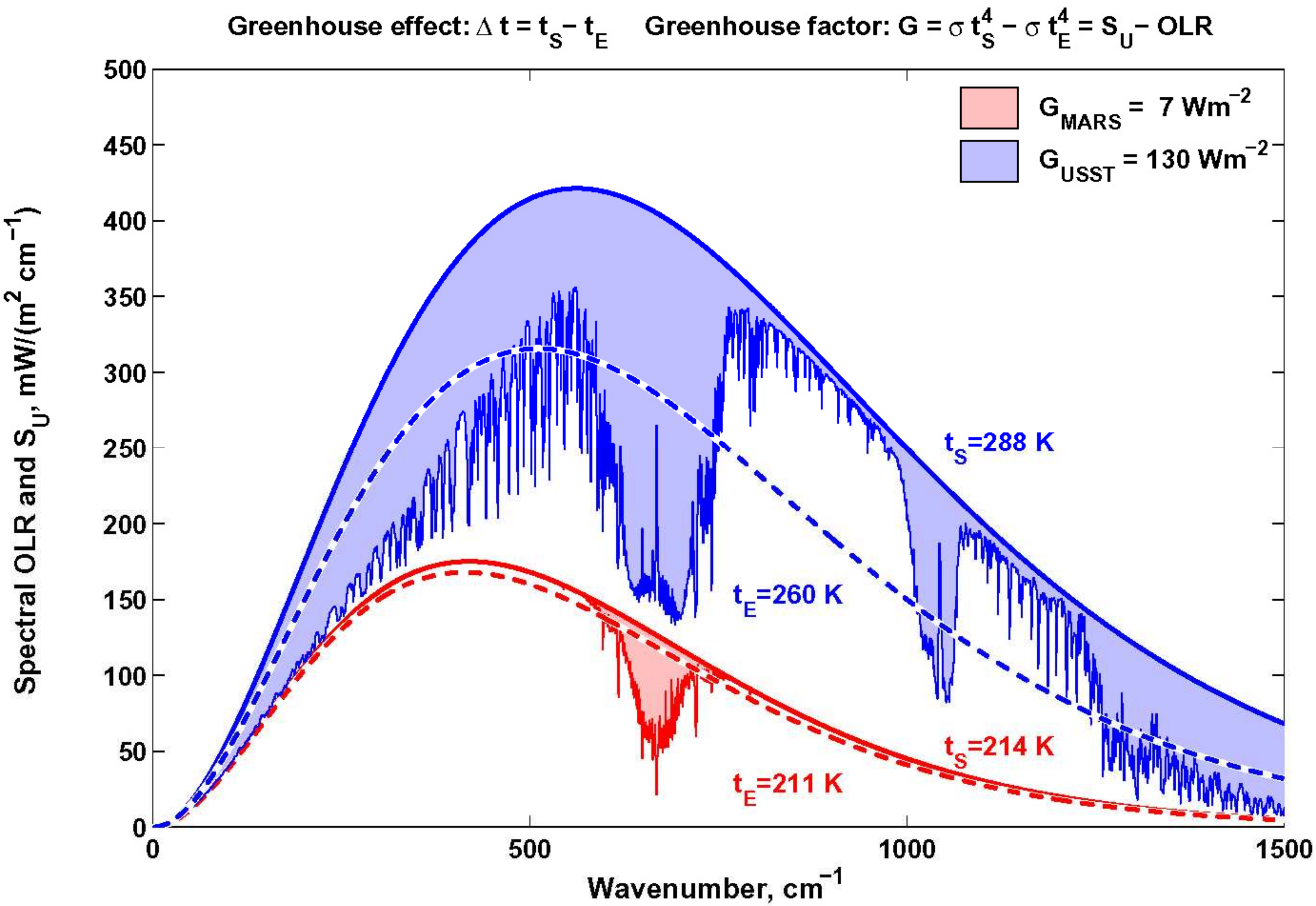
http://science-edu.larc.nasa.gov/energy_budget

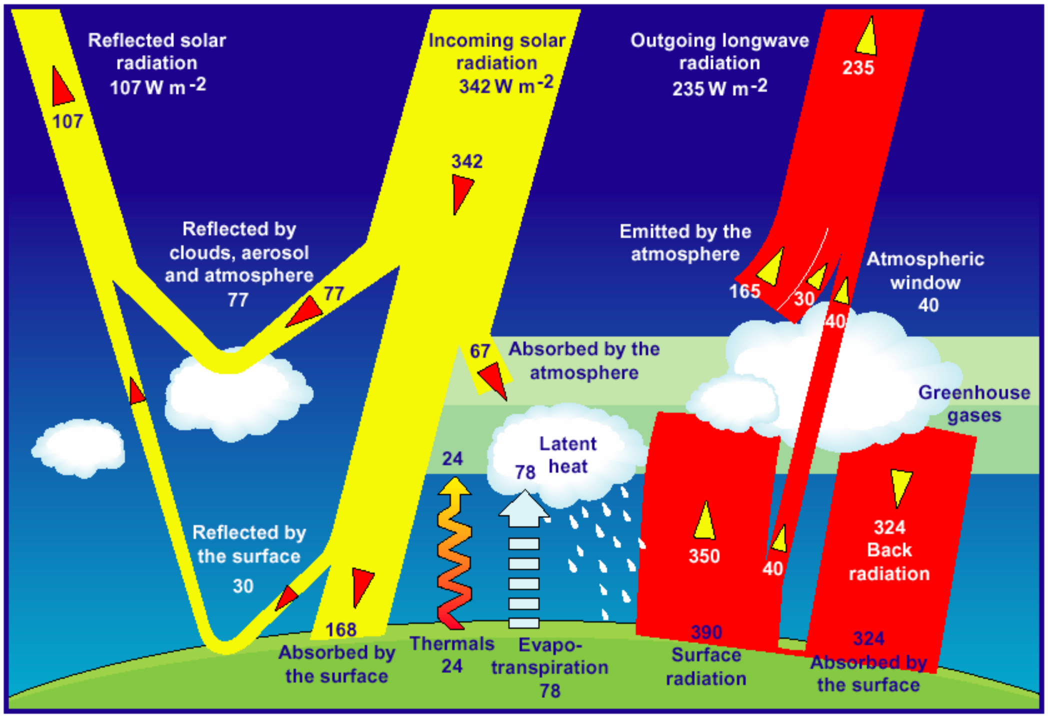


http://www.seipub.org/des/Download.aspxID=21810

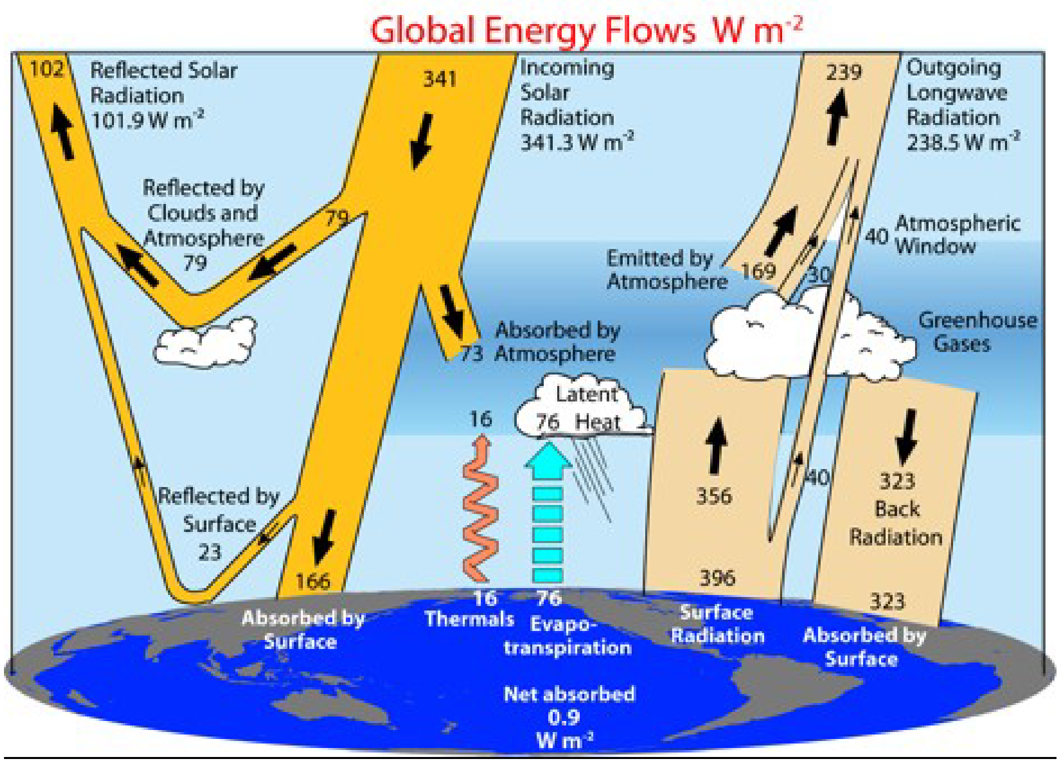


PLANETARY GREENHOUSE EFFECT LINKED TO ATMOSPHERIC IR ABSORPTION

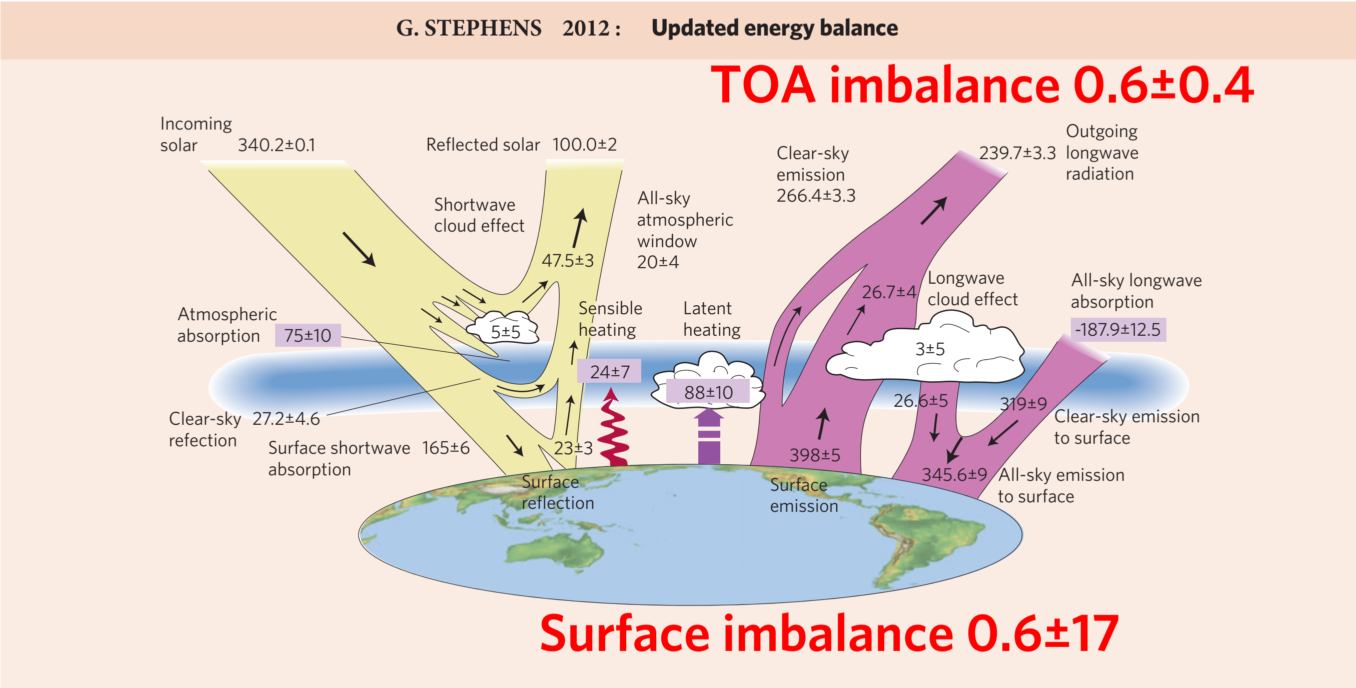



Reflected solar radiation 107 W m-2
107
Incoming solar radiation 342 W m-2
342
Outgoing longwave radiation 235 W m-2
235
Reflected by clouds, aerosol and atmosphere 77
77
Emitted by the atmosphere
165
30
Atmospheric window 40
40
67 Absorbed by the atmosphere
Greenhouse gases
Latent heat
78
24
Reflected by the surface
30
350
40
324 Back radiation
168
Absorbed by the surface
Thermals 24
Evapo-transpiration 78
390 Surface radiation
324 Absorbed by the surface

KT97

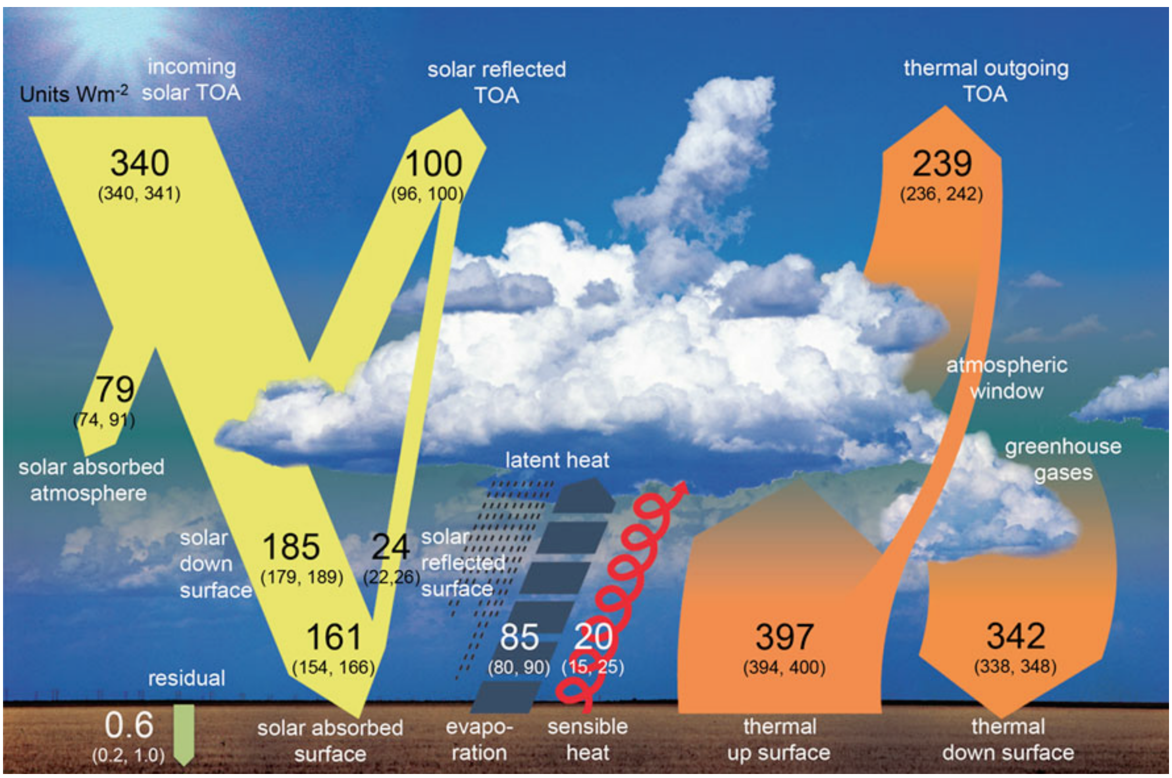

Global Energy Flows W m-2
102
Reflected Solar Radiation 101.9 W m-2
341
Incoming Solar Radiation 341.3 W m-2
239
Outgoing Longwave Radiation 238.5 W m-2
Reflected by Clouds and Atmosphere 79
79
Emitted by Atmosphere
169
30
40 Atmospheric Window
73 Absorbed by Atmosphere
Greenhouse Gases
Latent 76 Heat
16
Reflected by Surface 23
356
40
323 Back Radiation
166
396
323
Absorbed by Surface
16 Thermals
76 Evapo-transpiration
Surface Radiation
Absorbed by Surface
Net absorbed 0.9 W m-2

KT08



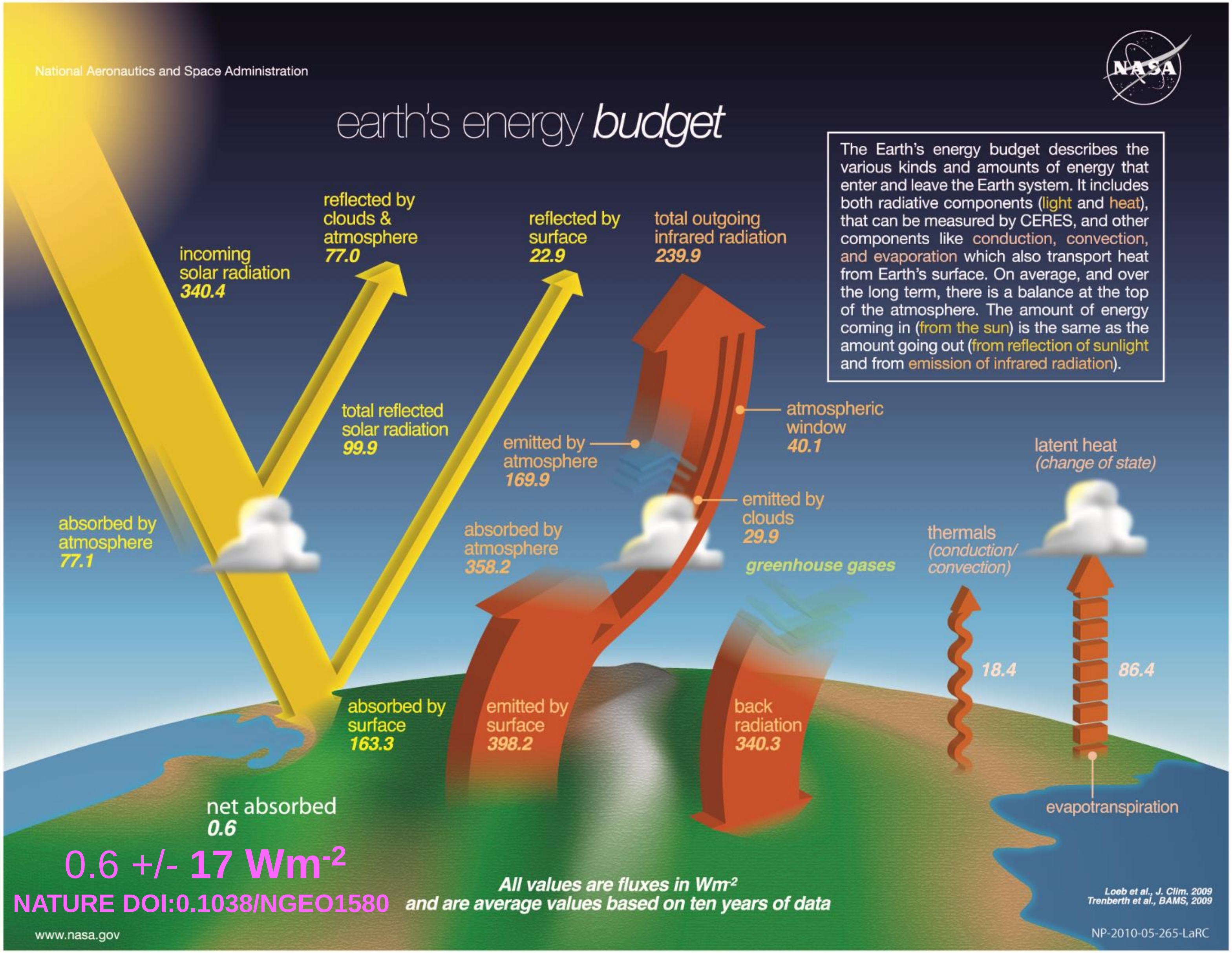
Martin Wild • Doris Folini • Christoph Schar • Norman Loeb • Ellsworth G. Dutton • Gert Konig-Langlo

Clim Dyn (2013) 40:3107–3134 DOI 10.1007/s00382-012-1569-8



340.4
-99.9
<u>-239.9</u>
+0.6 Wm^{-2}

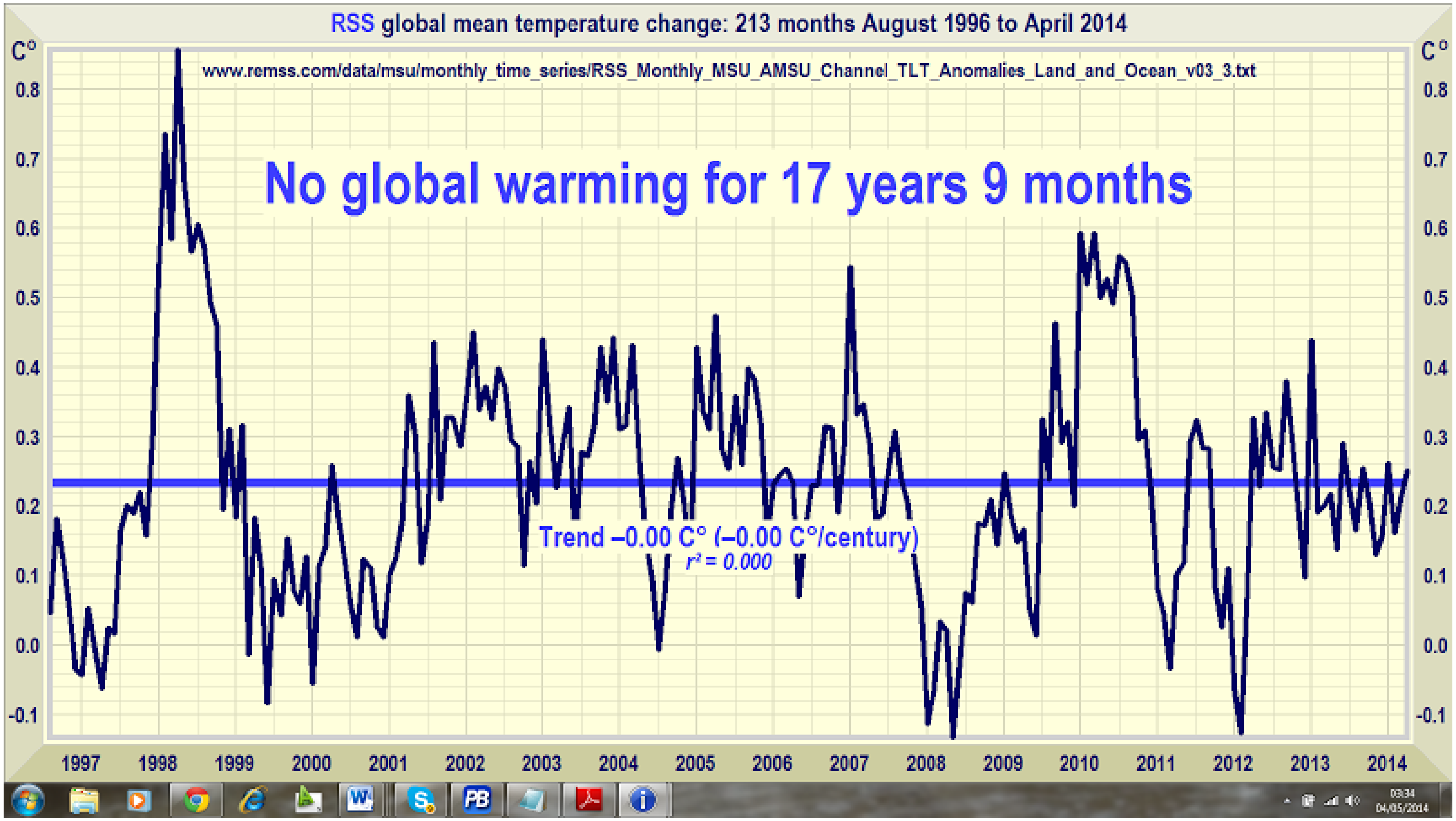
+0.6 Wm^{-2}



0.6 +/- **17 Wm^{-2}**

NATURE DOI:0.1038/NGEO1580

G. L. Stephens, J. Li, M. Wild, C. A. Clayson, N. Loeb4, S. Kato, T. L'Ecuyer, P. W. Stackhouse Jr, M.Lebsock and T. Andrews



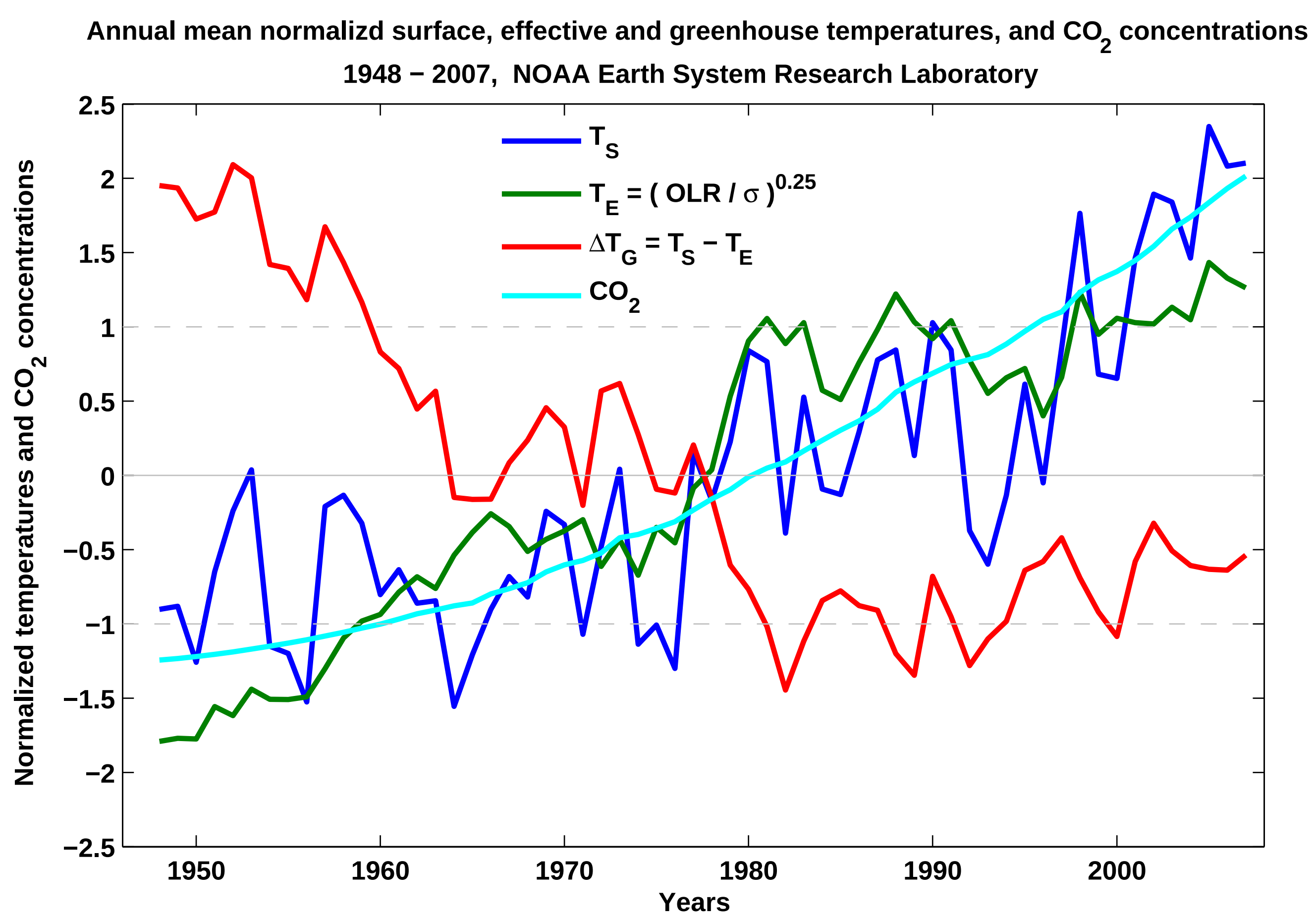
Szünetel a klímaváltozás ÖSSZEFÜGGÉS : Kétségtelen az emberi tevékenység következménye

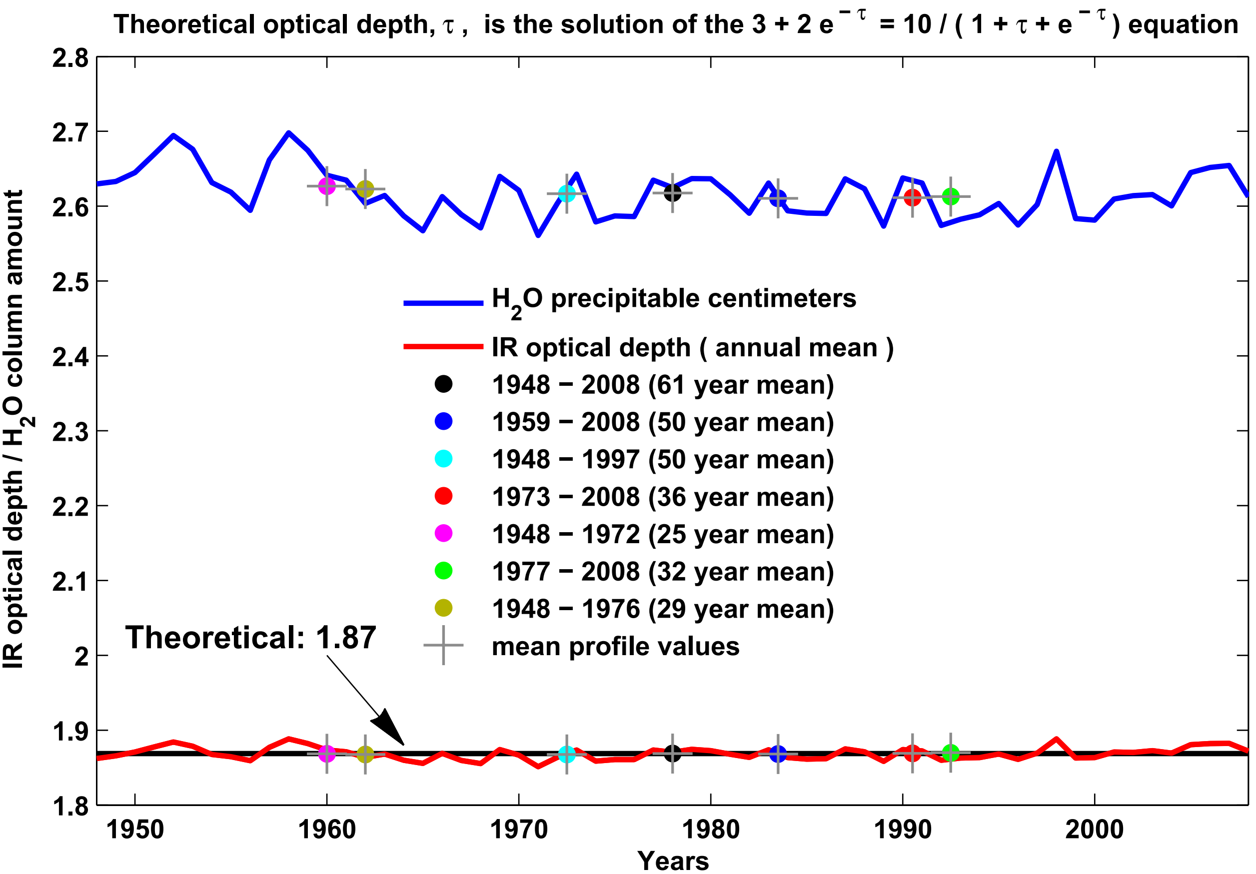
Mika János : **KLÍMAVÁLTOZÁS 13, 2014. ÁPRILIS 25., PÉNTEK**

"A melegedés megtorpanását minden bizonnyal a déli félteke óceánjainak váratlanul felerősödött hőelnyelő képessége okozza..."

"Az éghajlati modellek nem tudják szimulálni a tapasztalt stagnálást."

"Amíg tehát az óceáni cirkuláció számítását a kutatók fel nem javítják annyira a klímamodellekben, hogy megjelenjen bennük a hőmérséklet megtorpanása, addig azt sem leszünk képesek előre jelezni, hogy mikortól folyatódik a felmelegedés, és hogy ugyanolyan ütemű lesz-e, mint korábban."


Annual mean normalizd surface, effective and greenhouse temperatures, and CO2 concentrations
1948 − 2007, NOAA Earth System Research Laboratory
Normalized temperatures and CO2 concentrations
Years
T_S
T_E = (OLR / σ)^0.25
ΔT_G = T_S − T_E
CO2
2.5
2
1.5
1
0.5
0
−0.5
−1
−1.5
−2
−2.5
1950
1960
1970
1980
1990
2000

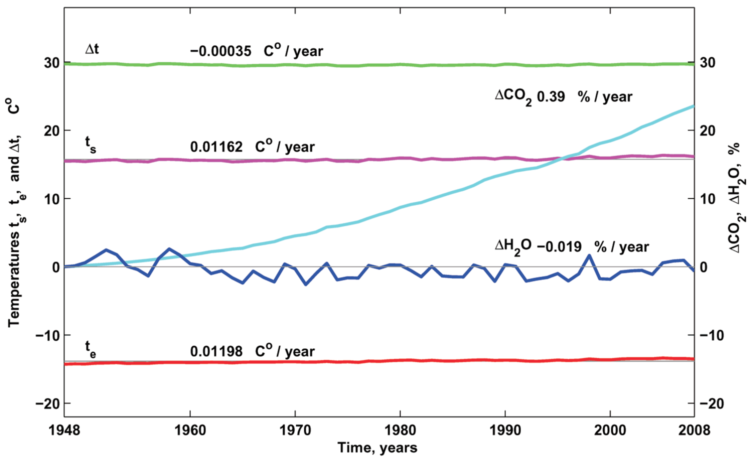


Theoretical optical depth, τ, is the solution of the 3 + 2 e^{−τ} = 10 / (1 + τ + e^{−τ}) equation
IR optical depth / H2O column amount
Years
2.8
2.7
2.6
2.5
2.4
2.3
2.2
2.1
2
1.9
1.8
1950
1960
1970
1980
1990
2000
H2O precipitable centimeters
IR optical depth (annual mean)
1948 − 2008 (61 year mean)
1959 − 2008 (50 year mean)
1948 − 1997 (50 year mean)
1973 − 2008 (36 year mean)
1948 − 1972 (25 year mean)
1977 − 2008 (32 year mean)
1948 − 1976 (29 year mean)
mean profile values
Theoretical: 1.87

Observed greenhouse effect from the NOAA NCEP/NCAR R1 database (1948 − 2008)

The greenhouse effect, Δt, is the difference of the global average surface temperature, t_s, and the planetary effective temperature, t_e : $\Delta t = t_s - t_e$

ΔCO_2 and ΔH_2O relative column amounts are referenced to 1948



The greenhouse effect is effectively constant, with a negligible cooling trend since 1948 .
Surface temperature increase must be related to the increased absorption of solar radiation.

MAGYAR TUDOMÁNY : ***Vélemény Miskolczi Ferenc: Értekezés az üvegházhatásról c. kéziratáról***

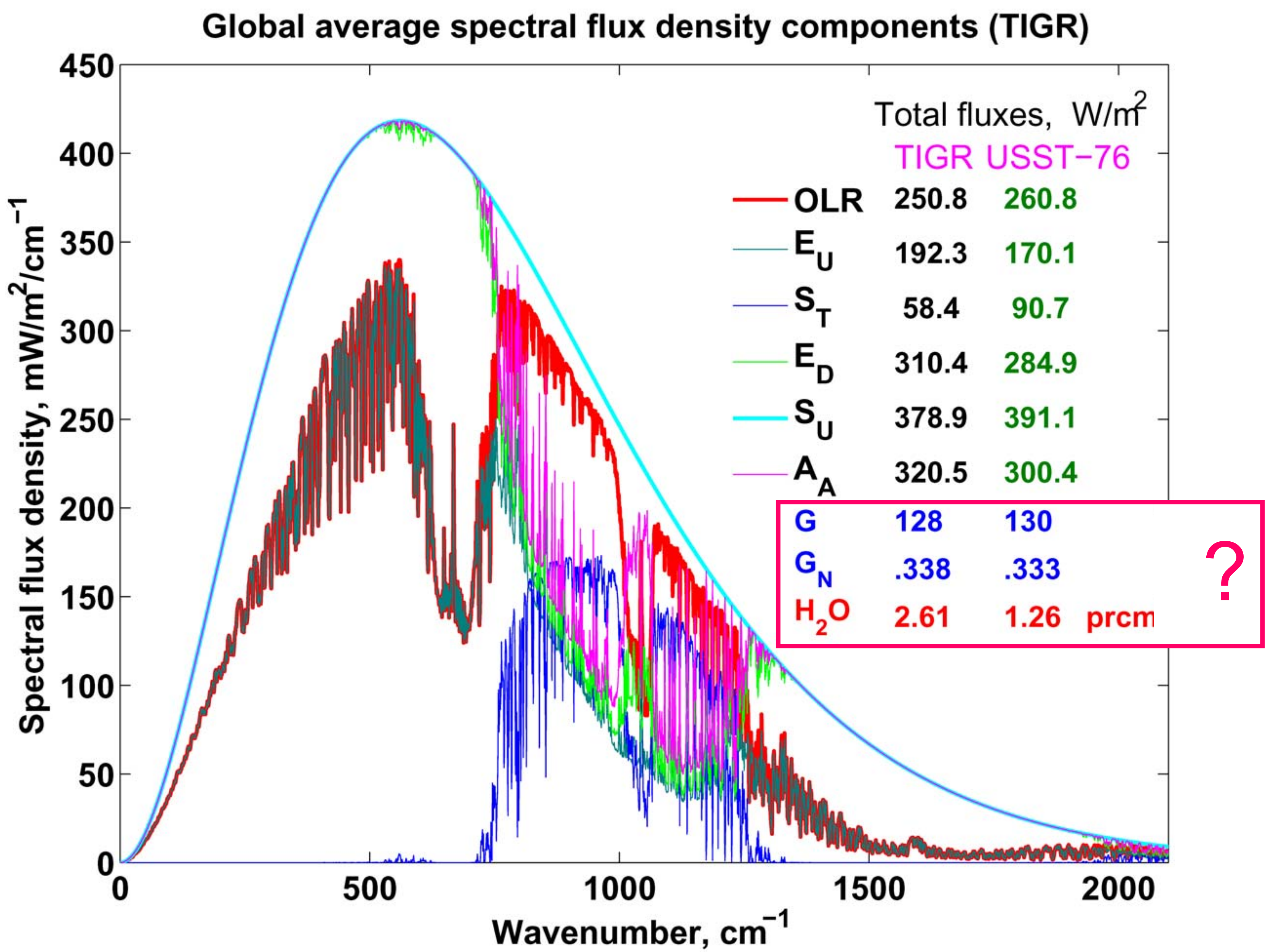
" Miskolczi Ferenc kéziratában bemutatott kiindulási feltevése szakmailag téves, elfogadhatatlan.Abból indul ugyanis ki, hogy a Föld-légkör rendszerbe beérkező és onnan távozó energia egyenlő....."

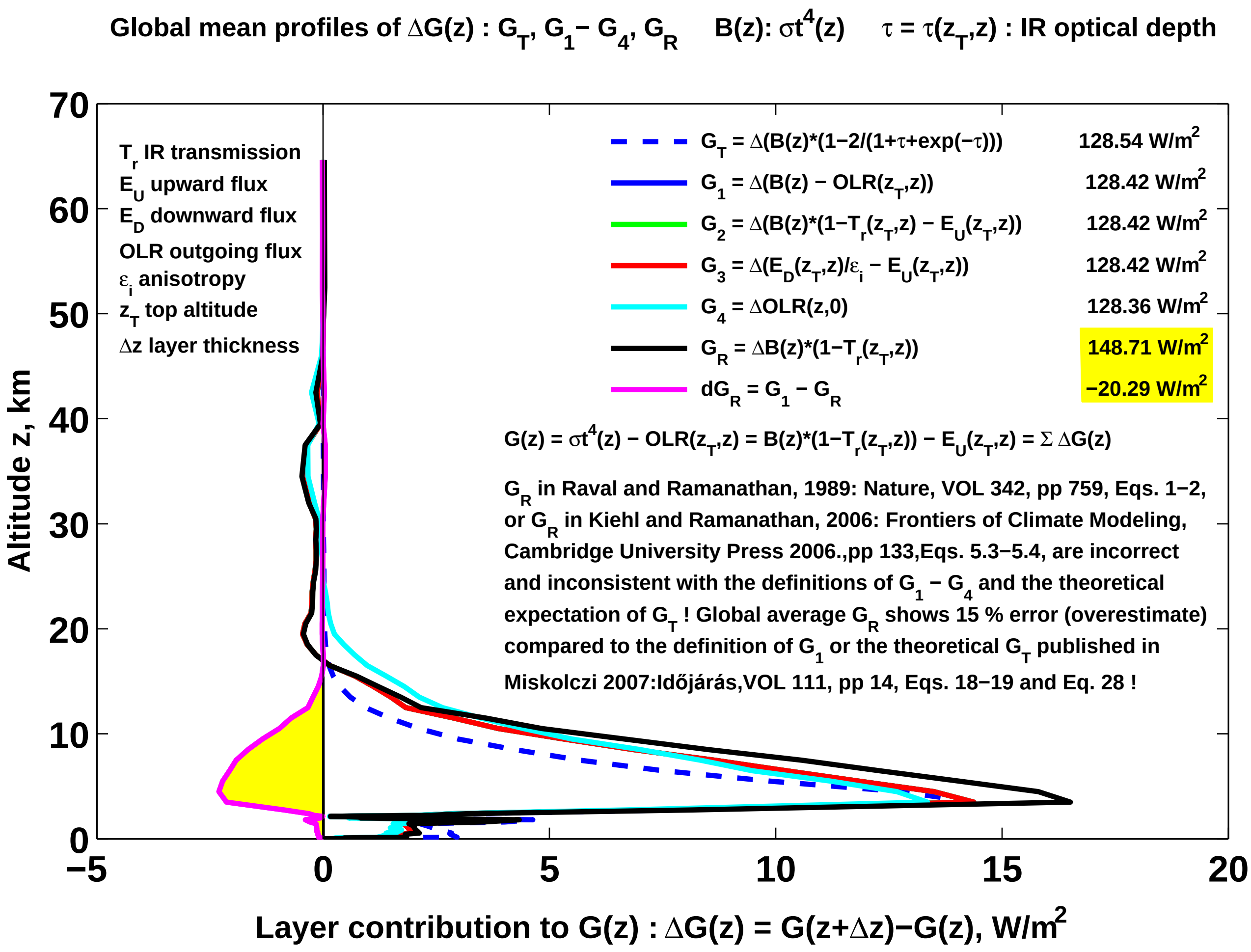
" Miskolczi a természeti folyamatokon tesz erőszakot akkor, amikor energia-egyensúlyt feltételez egy olyan rendszerben, amelyik gyakorlatilag soha nincs egyensúlyban...."

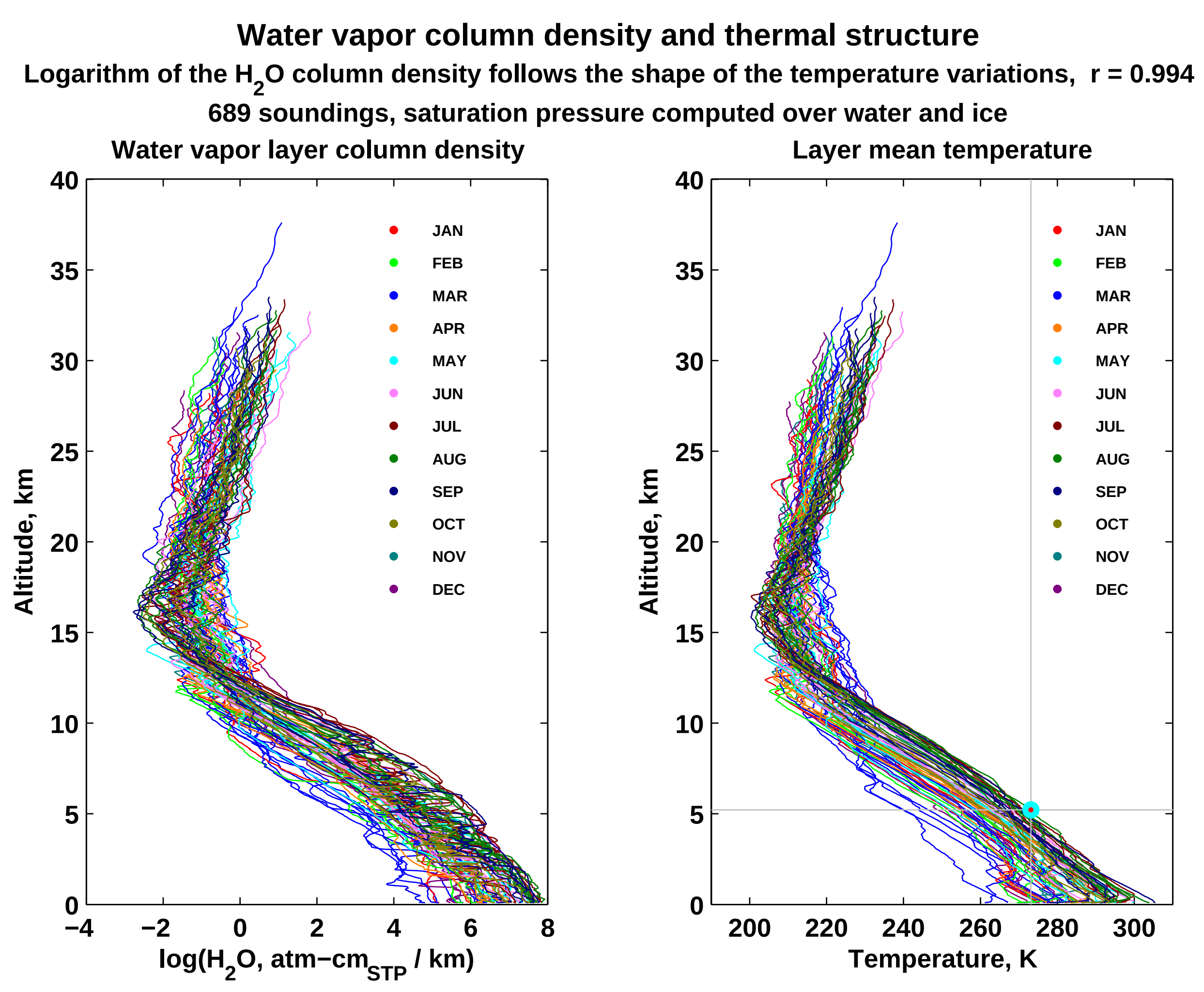
" Összefoglalva: megítélésem szerint a kézirat a súlyos szakmai tévedések, és az olvasókat félrevezető hivatkozási csúsztatás miatt nem alkalmas az MT-ben történő közlésre....."

Budapest, 2013. 02.23.

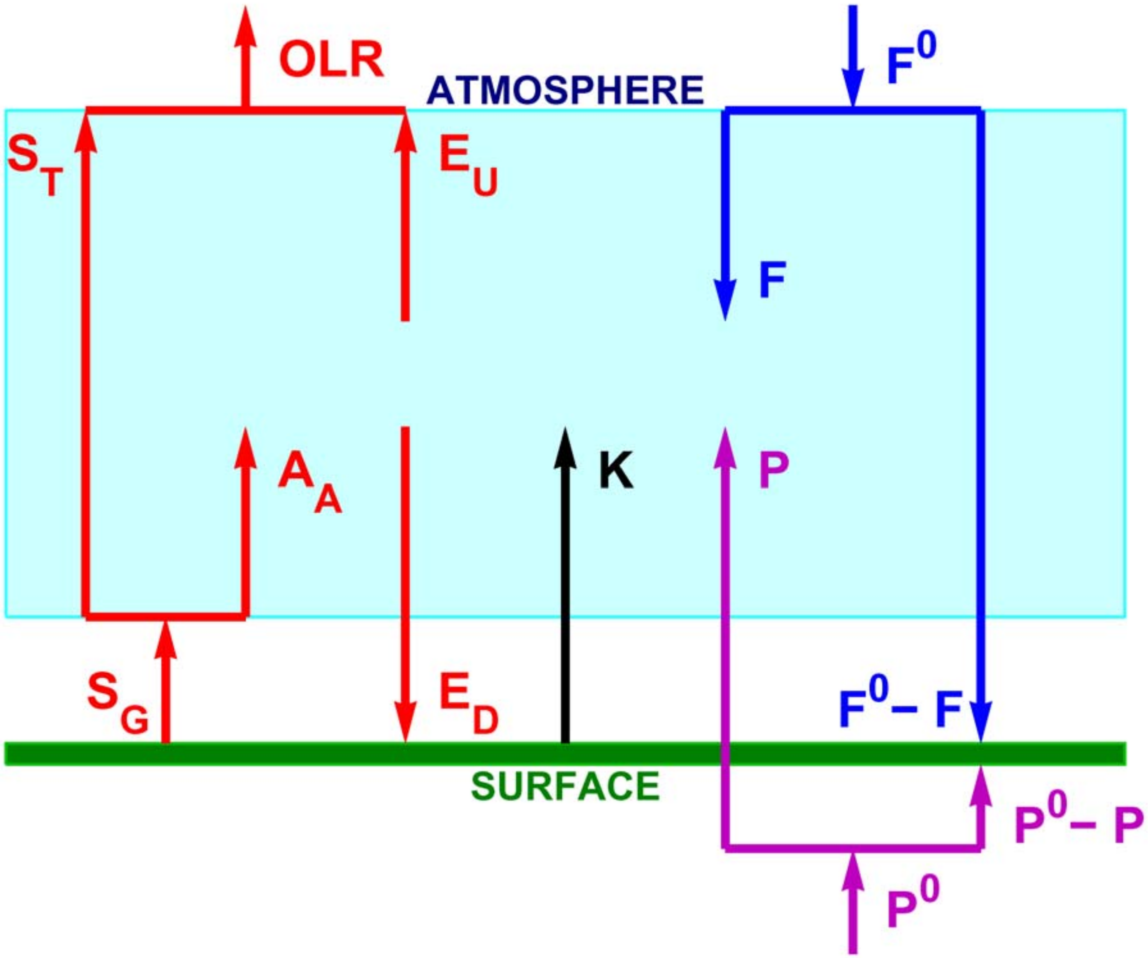
CLEAR-SKY GREENHOUSE FACTORS




Global mean profiles of ΔG(z) : G_T, G_1 − G_4, G_R   B(z): σt^4(z)   τ = τ(z_T,z) : IR optical depth
T_r IR transmission
E_U upward flux
E_D downward flux
OLR outgoing flux
ε_i anisotropy
z_T top altitude
Δz layer thickness
G_T = Δ(B(z)*(1−2/(1+τ+exp(−τ)))   128.54 W/m^2
G_1 = Δ(B(z) − OLR(z_T,z))   128.42 W/m^2
G_2 = Δ(B(z)*(1−T_r(z_T,z) − E_U(z_T,z))   128.42 W/m^2
G_3 = Δ(E_D(z_T,z)/ε_i − E_U(z_T,z))   128.42 W/m^2
G_4 = ΔOLR(z,0)   128.36 W/m^2
G_R = ΔB(z)*(1−T_r(z_T,z))   148.71 W/m^2
dG_R = G_1 − G_R   −20.29 W/m^2
G(z) = σt^4(z) − OLR(z_T,z) = B(z)*(1−T_r(z_T,z)) − E_U(z_T,z) = Σ ΔG(z)
G_R in Raval and Ramanathan, 1989: Nature, VOL 342, pp 759, Eqs. 1−2,
or G_R in Kiehl and Ramanathan, 2006: Frontiers of Climate Modeling,
Cambridge University Press 2006.,pp 133,Eqs. 5.3−5.4, are incorrect
and inconsistent with the definitions of G_1 − G_4 and the theoretical
expectation of G_T ! Global average G_R shows 15 % error (overestimate)
compared to the definition of G_1 or the theoretical G_T published in
Miskolczi 2007:Időjárás,VOL 111, pp 14, Eqs. 18−19 and Eq. 28 !
Altitude z, km
70
60
50
40
30
20
10
0
−5
0
5
10
15
20
Layer contribution to G(z) : ΔG(z) = G(z+Δz)−G(z), W/m^2


Water vapor column density and thermal structure
Logarithm of the H2O column density follows the shape of the temperature variations, r = 0.994
689 soundings, saturation pressure computed over water and ice
Water vapor layer column density
Layer mean temperature
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
Altitude, km
log(H2O, atm−cmSTP / km)
Temperature, K
0
5
10
15
20
25
30
35
40
−4
−2
0
2
4
6
8
200
220
240
260
280
300

RADIATIVE TRANSFER MODEL - $G = S_G - OLR = A_A - E_U$



Greenhouse effect:
$G = S_G - OLR$
$G_N = G / S_G$

All-sky measurements:
$S_G = 391\ Wm^{-2}$
$OLR = 235\ Wm^{-2}$
$G_N \sim 0.4$

QUESTIONS:

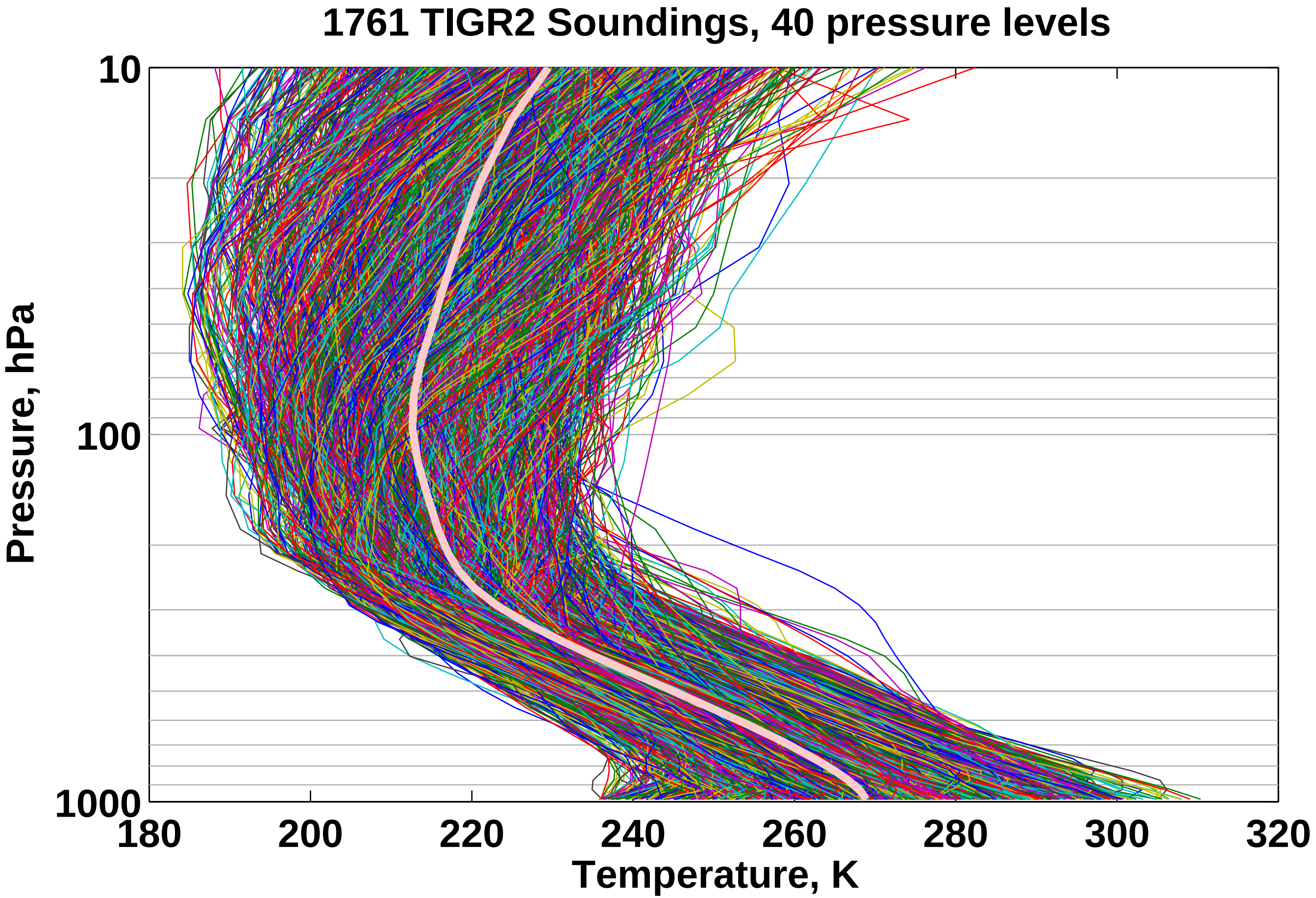
What can we learn from global scale simulations of IR fluxes ?

What are the theoretical relationships among the global average IR flux density terms ?

NET ATMOSPHERE: (1) $F + P + K + A_A - E_D - E_U = 0$

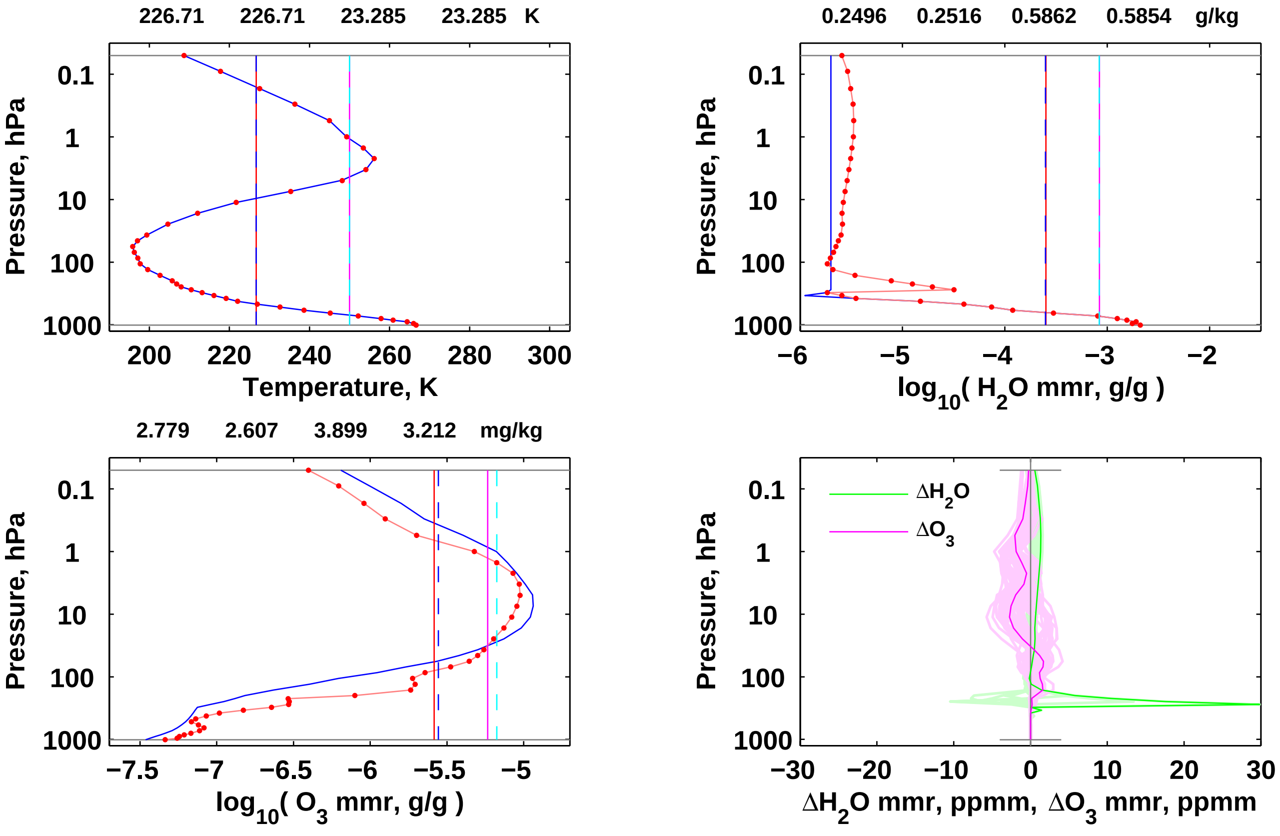
NET SURFACE : (2) $F^0 + P^0 + E_D - F - P - K - A_A - S_T = 0$

(3) $F^0 + P^0 = OLR$

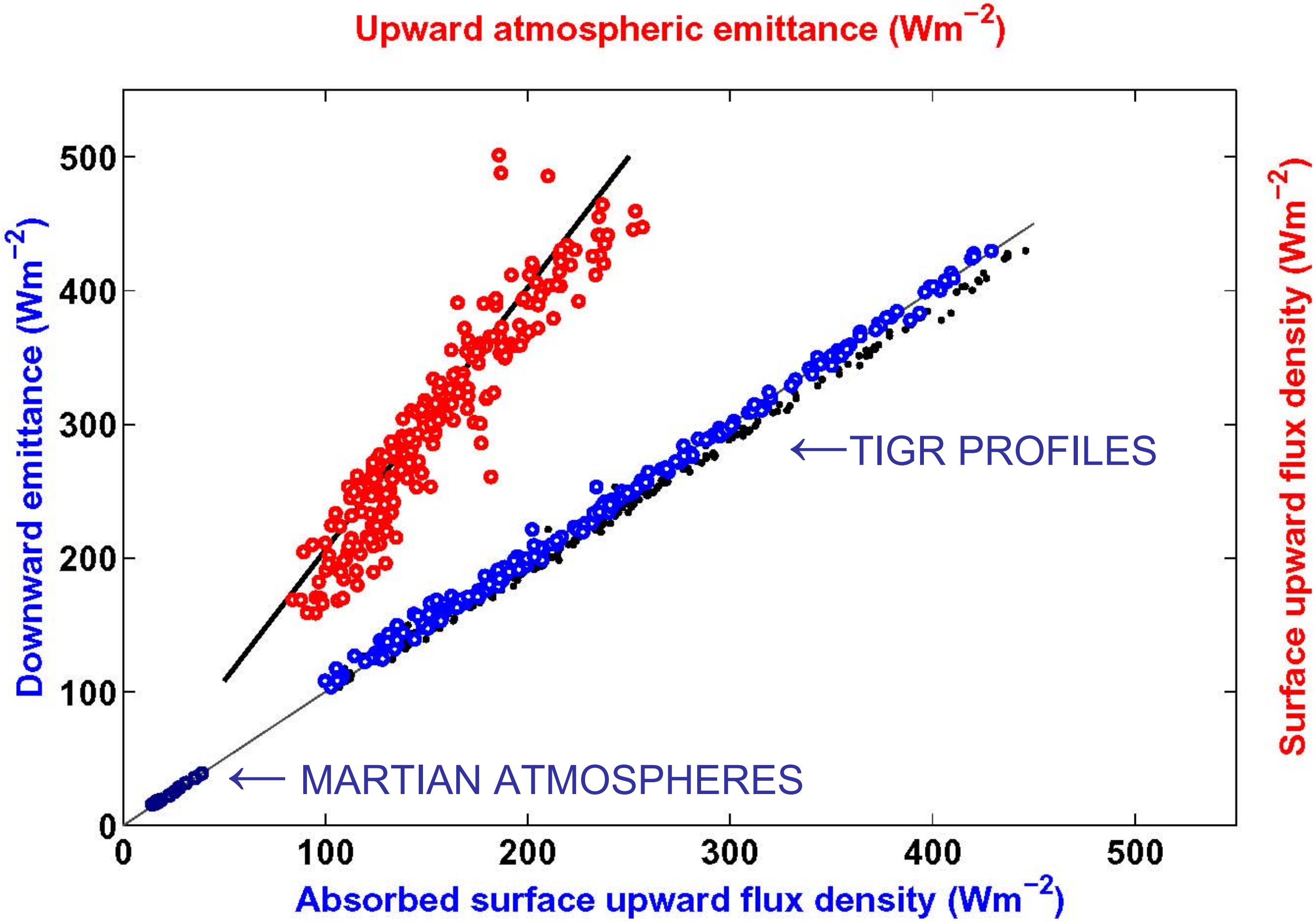

1761 TIGR2 Soundings, 40 pressure levels
Pressure, hPa
10
100
1000
180
200
220
240
260
280
300
320
Temperature, K

Cross−referenced profile # 60 TIGR2 # 1621 TIGR2000 # 2171

S/N	ts	h2o	o3	Su	Ed	OLR	St	Eu	tau
1621	266.6	0.5262	0.2546	286.7	200	213.8	78.48	135.3	1.295
2171	266.6	0.5274	0.3548	286.7	200.4	210.4	76.95	133.4	1.315
Δ	0	0.0012	0.1002	0.00043	0.4968	−3.403	−1.535	−1.868	0.01976
Δ%	0	0.2281	39.36	0.00015	0.2485	−1.592	−1.956	−1.381	1.525

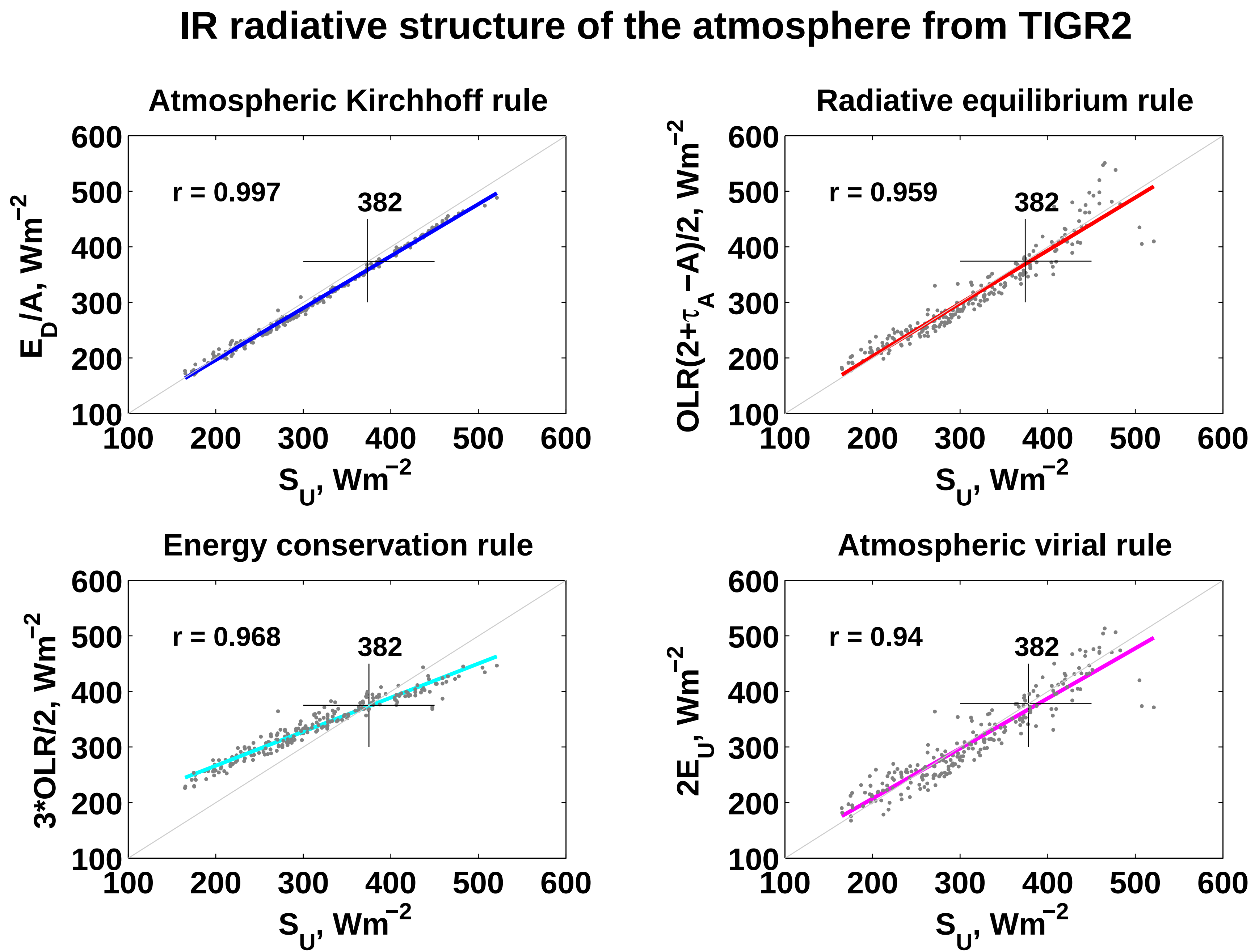


ABSORBED SURFACE RADIATION, A_A, DOWNWARD EMITTANCE, E_D, SURFACE UPWARD FLUX, S_U, AND UPWARD EMITTANCE, E_U



$E_D = A_A$ independent of the thermal structure and greenhouse gas content of the atmosphere (Kirchhoff law).

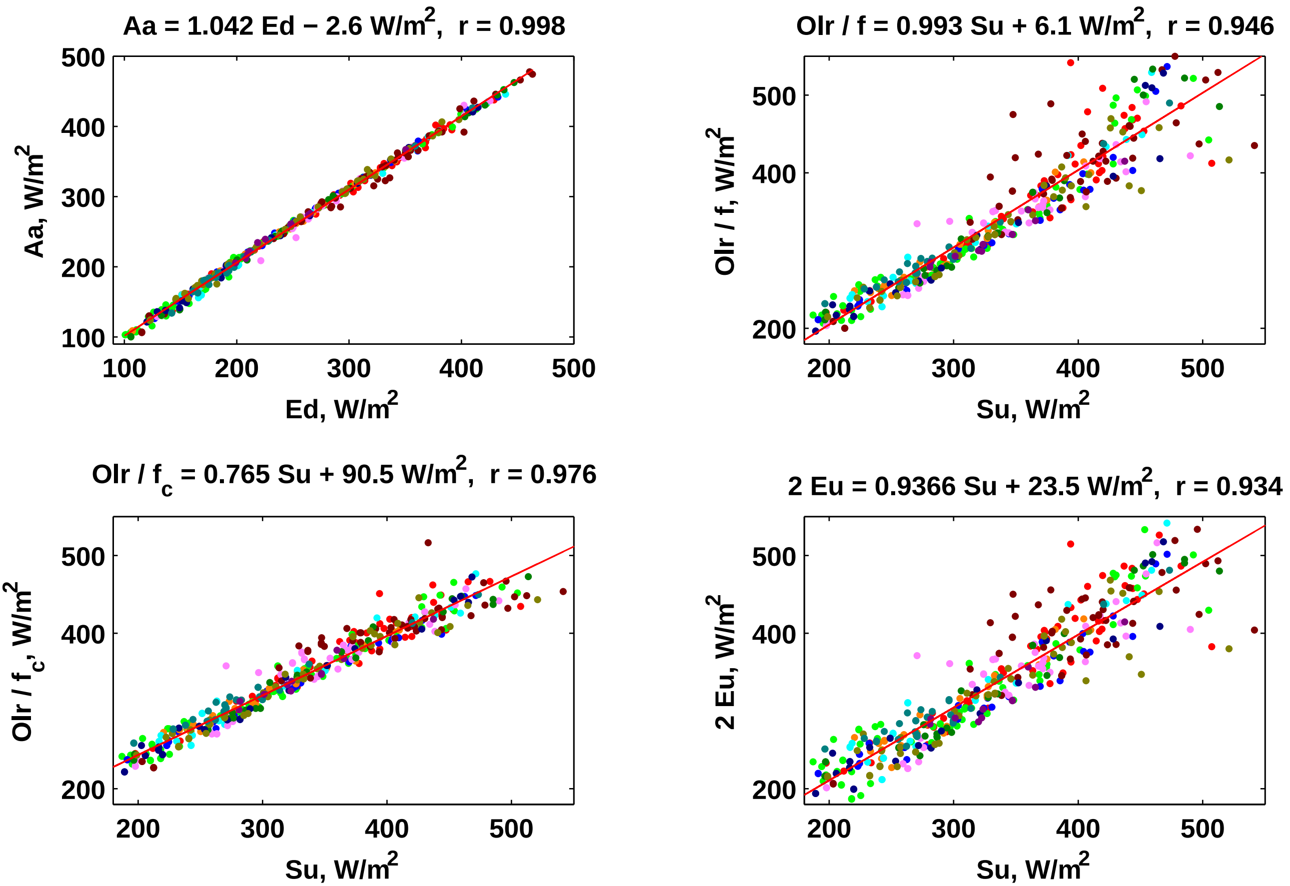
$S_U=2E_U$ Total gravitational potential energy is equal to two times of the internal kinetic energy (Virial theorem).



IR radiative structure of the atmosphere from TIGR2
Atmospheric Kirchhoff rule
r = 0.997
382
E_D/A, Wm^-2
S_U, Wm^-2
Radiative equilibrium rule
r = 0.959
382
OLR(2+τ_A−A)/2, Wm^-2
S_U, Wm^-2
Energy conservation rule
r = 0.968
382
3*OLR/2, Wm^-2
S_U, Wm^-2
Atmospheric virial rule
r = 0.94
382
2E_U, Wm^-2
S_U, Wm^-2
100
200
300
400
500
600

Observed empirical facts, TIGR archives, 475 global soundings

$Ed = Aa$, $Su = Olr / f$, $Su = Olr / f_c = Olr / (0.6 + 0.4\, Ta)$, $Su = 2\, Eu$



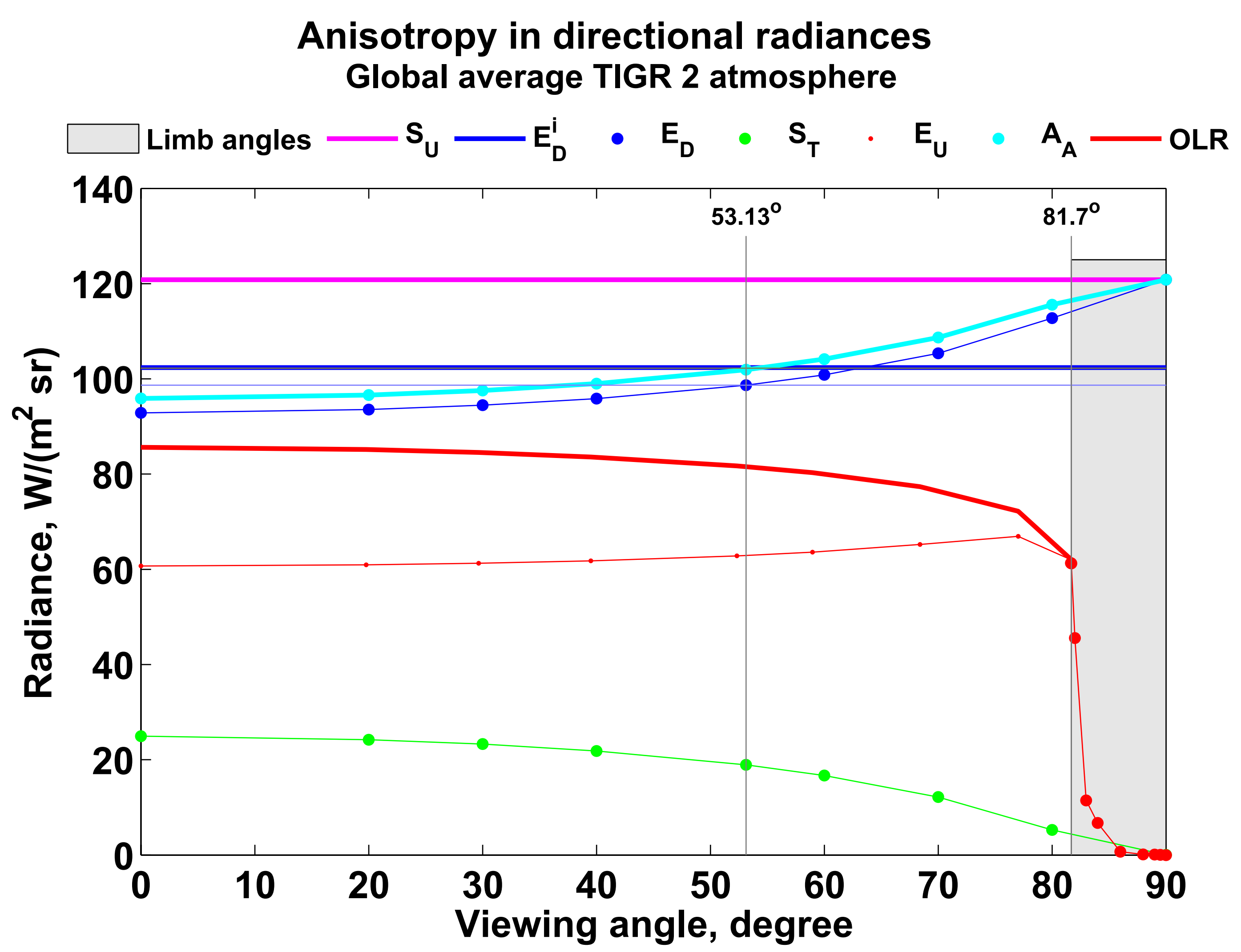
$$A_A = E_D \qquad S_U = 2E_U$$

$$S_U = \frac{3}{2}OLR \qquad S_U = \frac{OLR}{f}$$

$$f = 2/(2 + \tau - A) \qquad OLR = E_U + S_T$$

$$A_A = S_U(1 - \exp(-\tau_A))$$

$$\tau_A = 1.867$$

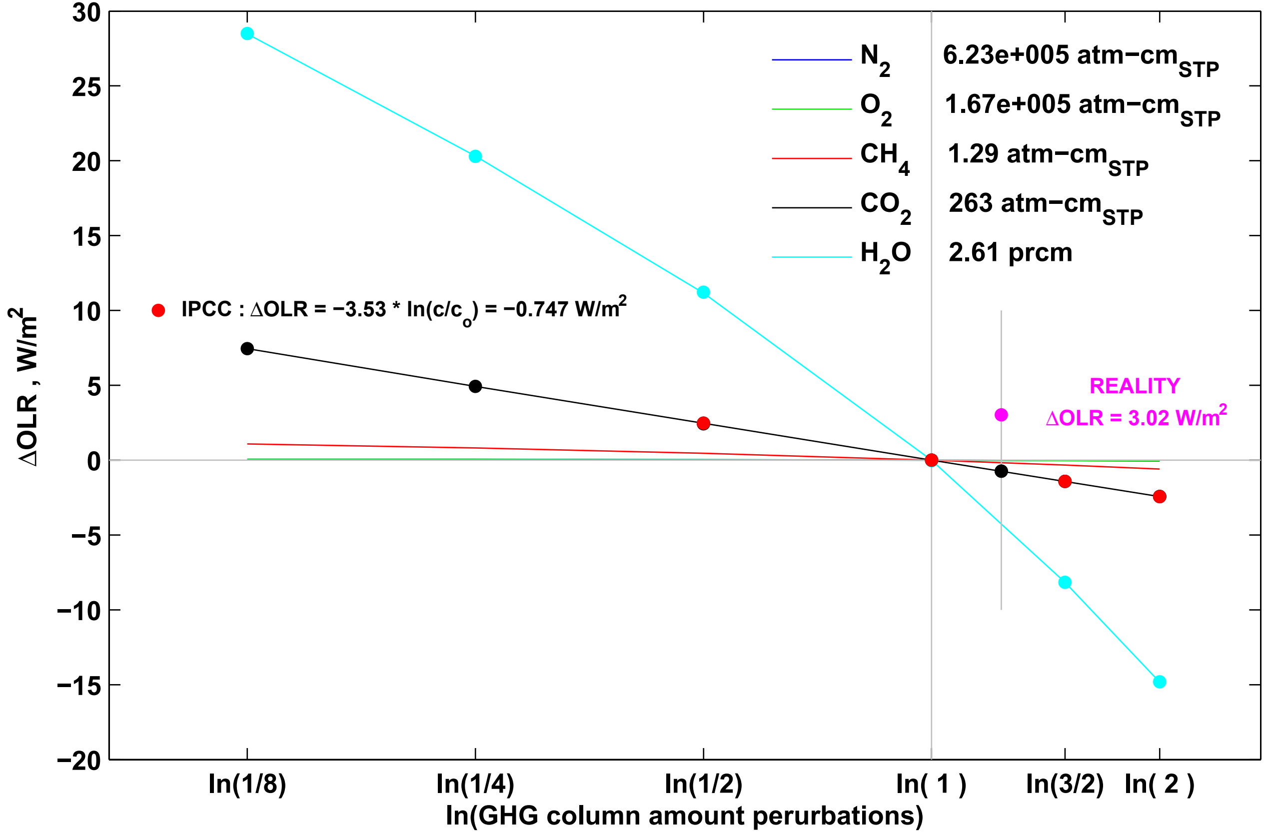


Anisotropy in directional radiances
Global average TIGR 2 atmosphere
Limb angles
S_U
E_D^i
E_D
S_T
E_U
A_A
OLR
53.13°
81.7°
Radiance, W/(m² sr)
140
120
100
80
60
40
20
0
0
10
20
30
40
50
60
70
80
90
Viewing angle, degree

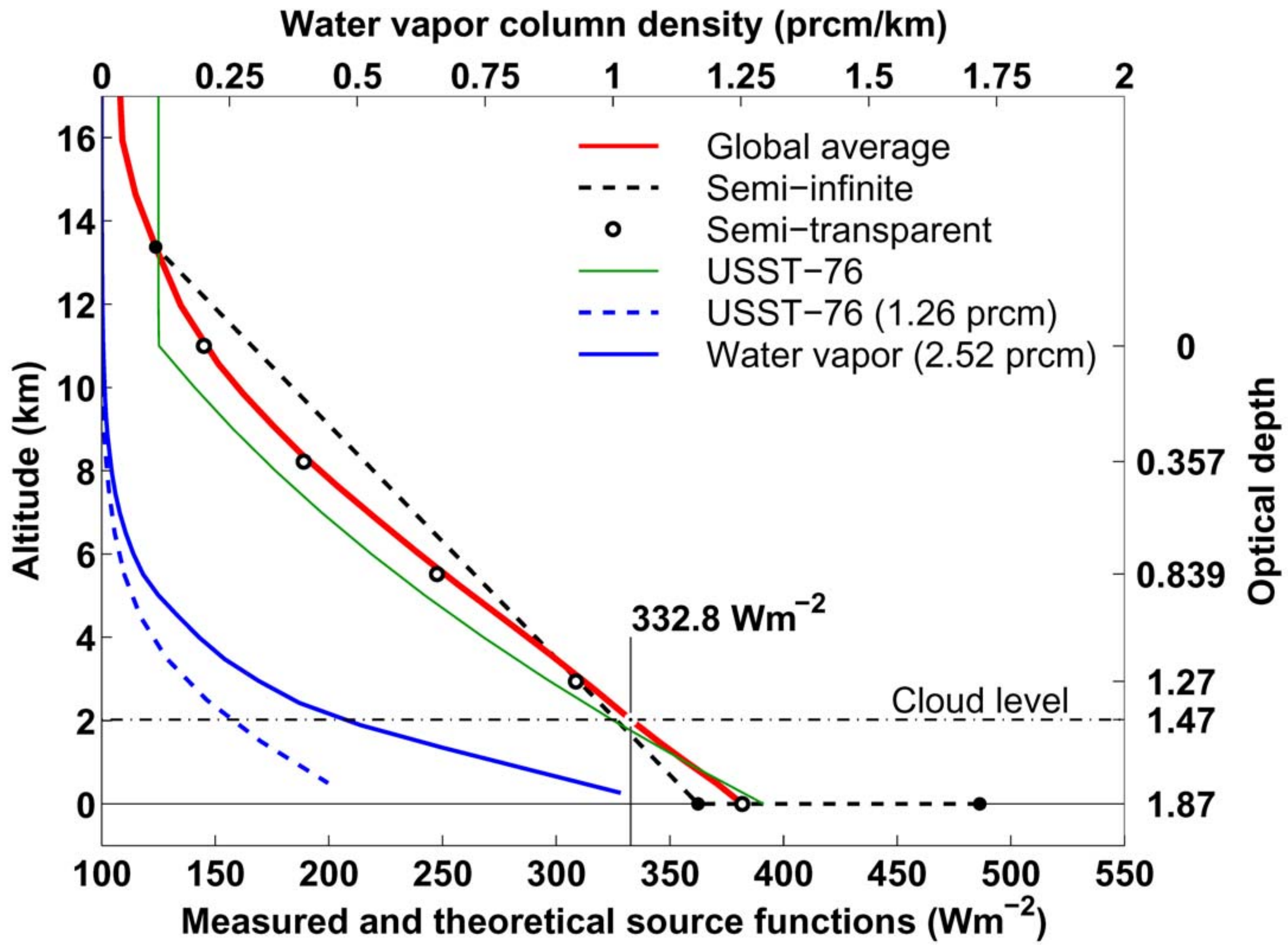
IPCC type no−feedback radiative forcing to N_2, O_2, CH_4, CO_2, and H_2O perturbations

Reference global average clear−sky OLR : TIGR2 (1976) : 251.8 W/m^2, NOAA R1 (1948) : 256.4 W/m^2

Recent GCMs do not observe the true radiative constraints from known physical principles



GLOBAL AVERAGE ATMOSPHERES

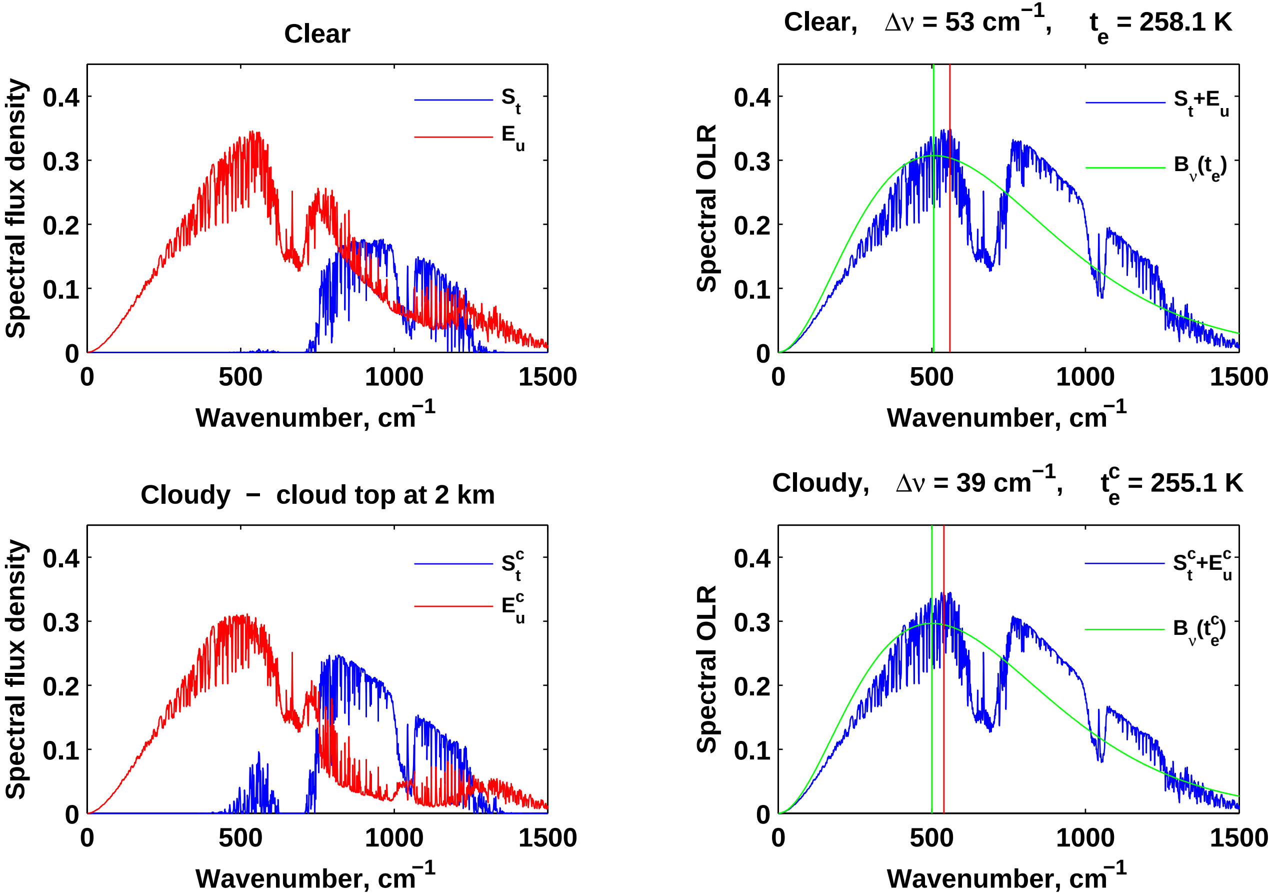


The USST-76 atmosphere is not adequate for global radiative budget studies. (Not in radiative equilibrium, not in energy balance, H_2O amount is small)

Interpretation of the effective temperature

The global average spectral clear and cloudy OLR and the effective temperature violate the Wien displacement law

Spectral flux densities are in $W/m^2/cm^{-1}$



Planetary radiative equilibrium cloud cover at h^C altitude

$$F_A = (1-\beta^A)\, OLR + \beta^A\, OLR^C$$

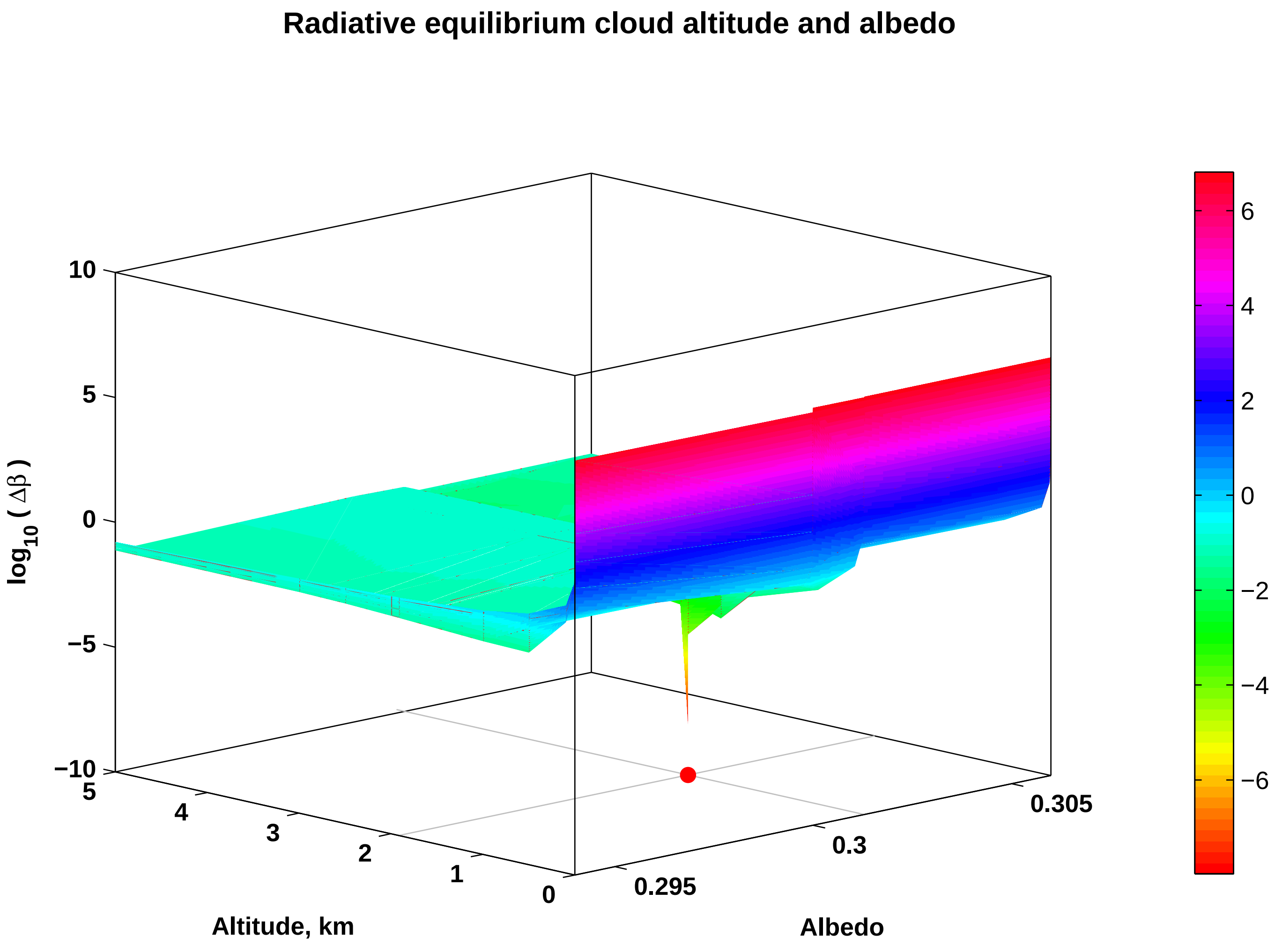
$$F_E = (1-\beta^E)\, S_U + \beta^E S_U^C$$

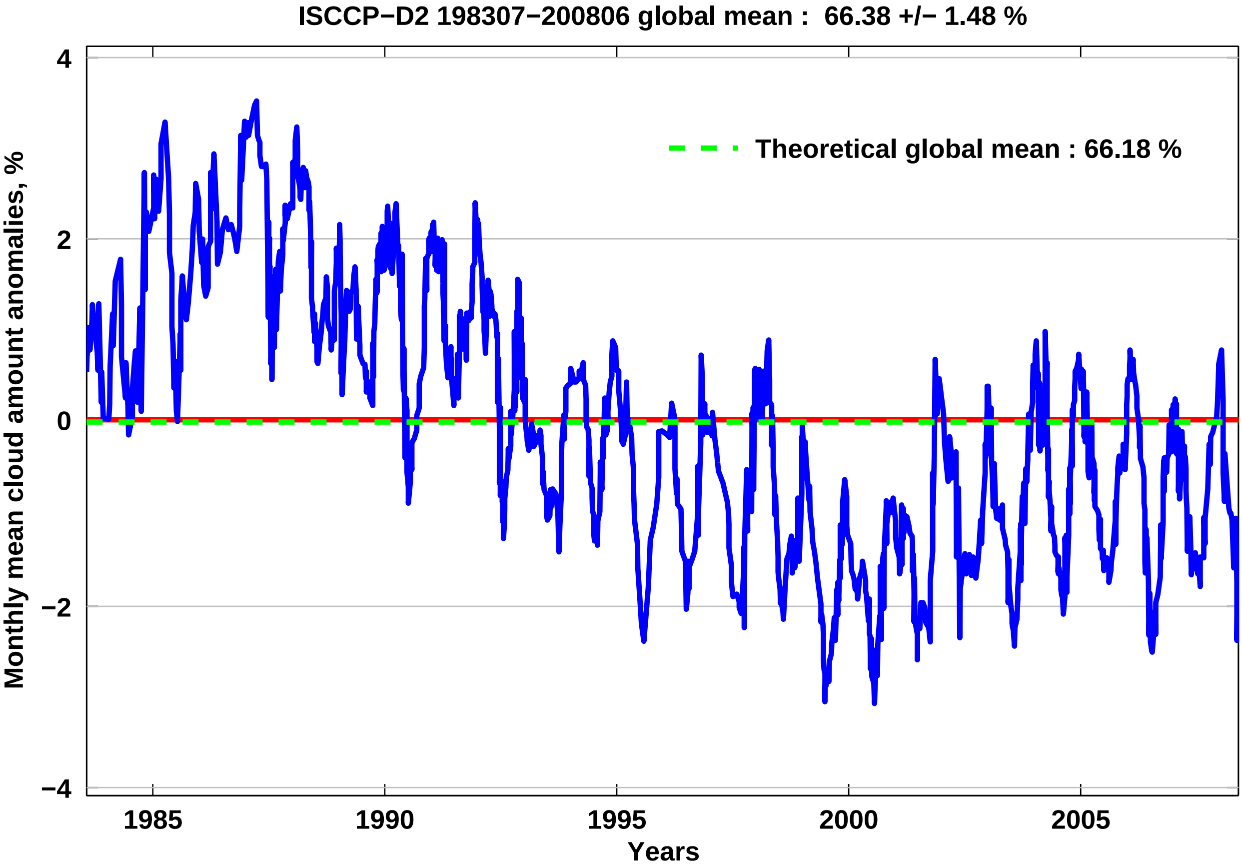
$$\beta^A (F_A, h^C) = (F_A - OLR) / (OLR^C(h^C) - OLR)$$

$$\beta^E (F_E, h^C) = (F_E - S_U) / (S_U^C(h^C) - S_U)$$

$$F_A = (1 - \alpha_B) F_E$$

$$\min \left(\| \beta_A (h^C, \alpha_B) - \beta_E (h^C, \alpha_B) \|^2 \right)$$


Radiative equilibrium cloud altitude and albedo
10
5
0
−5
−10
log10 (Δβ)
5
4
3
2
1
0
Altitude, km
0.295
0.3
0.305
Albedo
6
4
2
0
−2
−4
−6



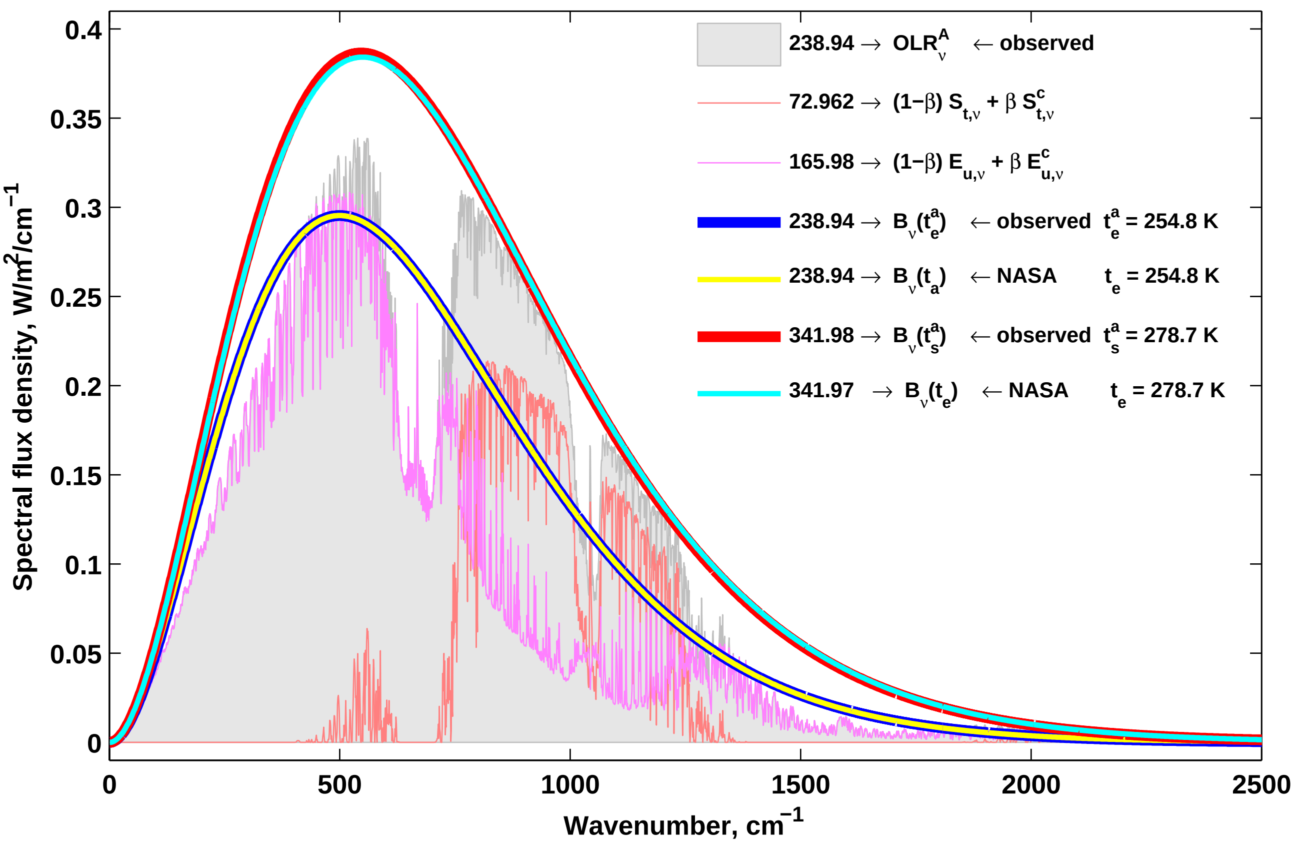
ISCCP−D2 198307−200806 global mean : 66.38 +/− 1.48 %
Theoretical global mean : 66.18 %
Monthly mean cloud amount anomalies, %
4
2
0
−2
−4
1985
1990
1995
2000
2005
Years

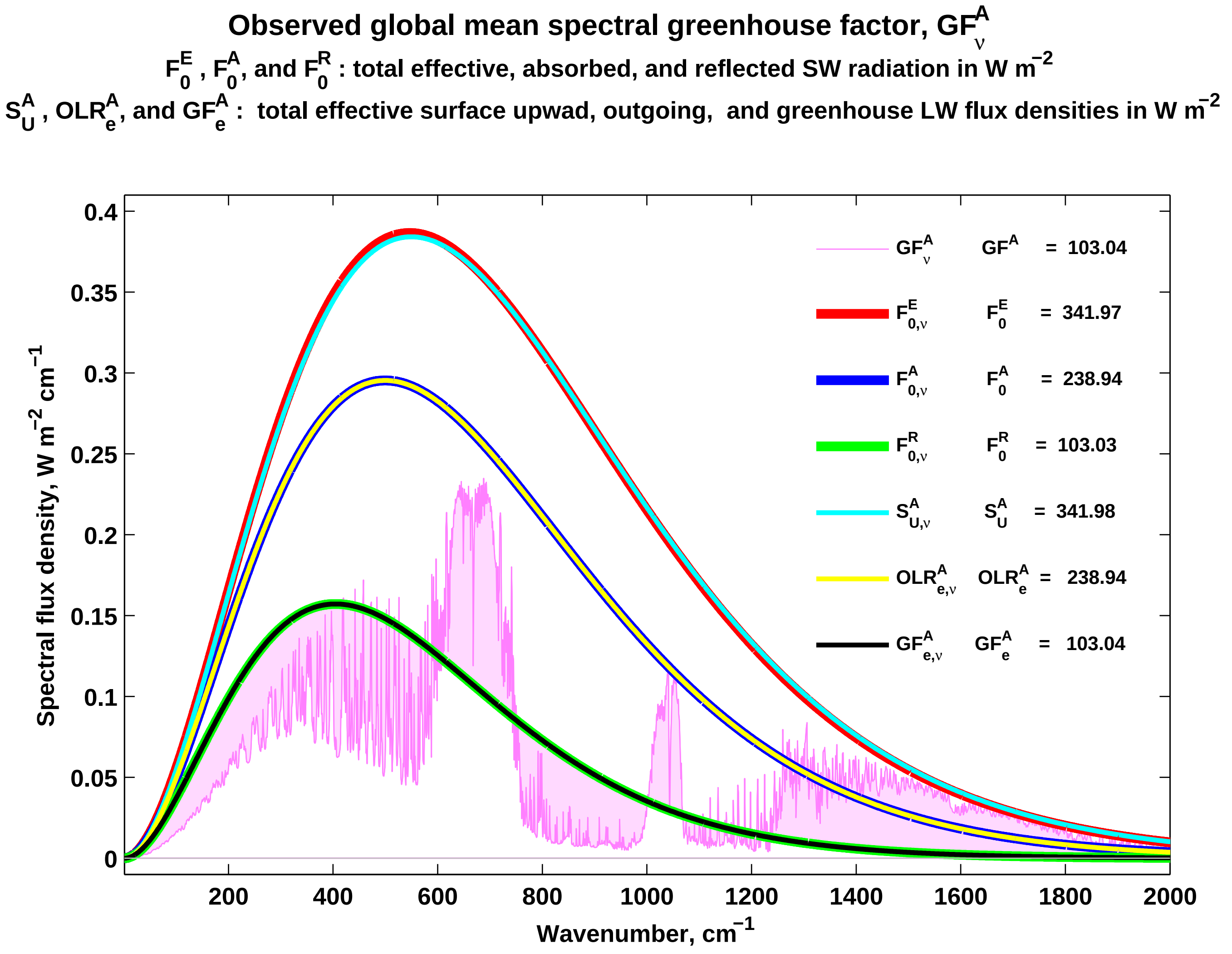
Planetary effective temperatures

$E_{u,\nu}$, $E^{c}_{u,\nu}$: atmospheric upward LW spectral emission from clear and cloudy areas

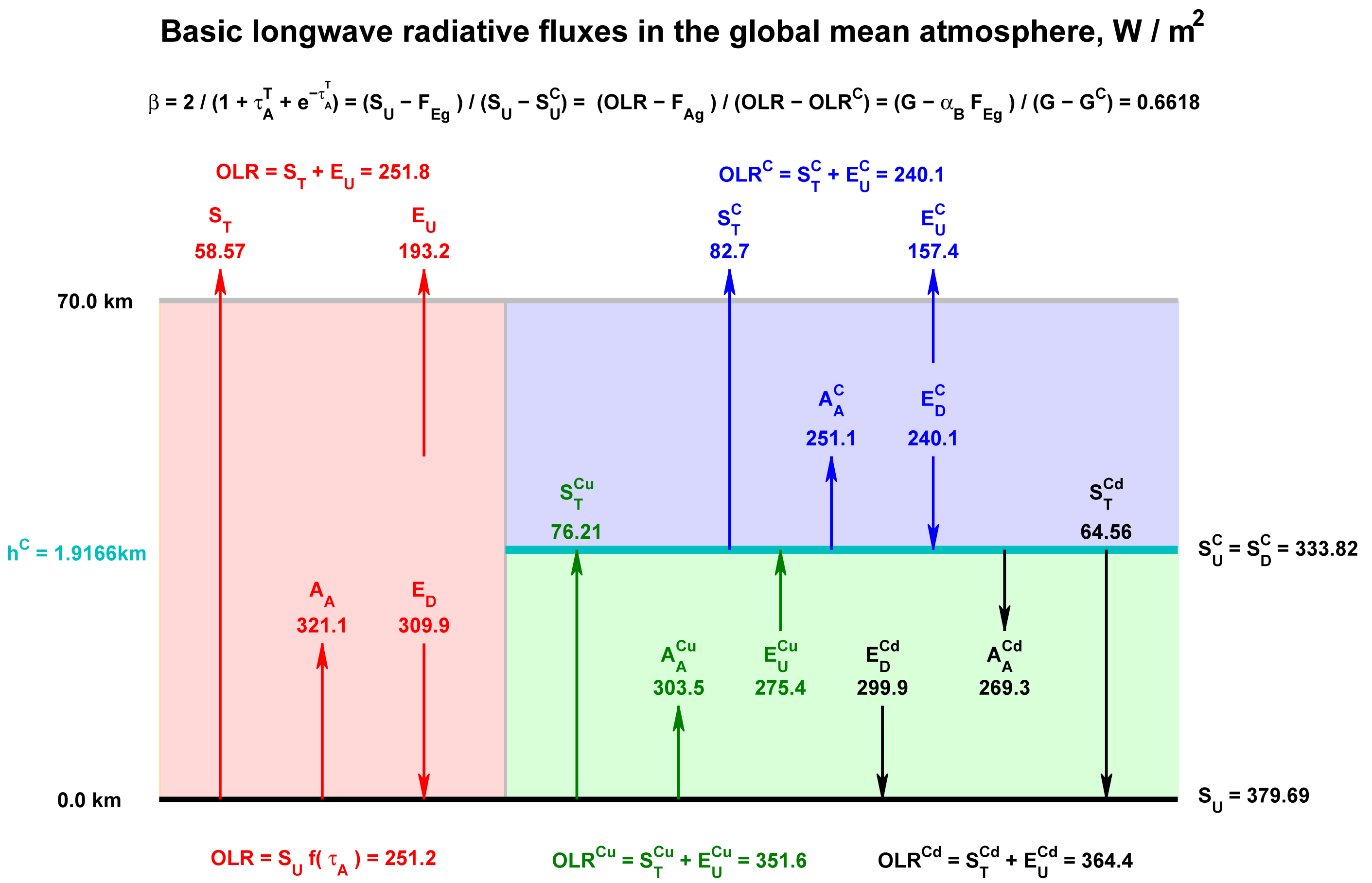
$S_{t,\nu}$, $S^{c}_{t,\nu}$: transmitted spectral flux density from the ground surface and cloud top

$OLR^{A} = (1 - \beta)(S_t + E_u) + \beta\,(S^{c}_{t} + E^{c}_{u}) = 238.9\ W/m^2$ cloud cover $\beta = 0.66$ $t^{a}_{e} = (OLR^{A}/\sigma)^{0.25} = 254.78\ K$

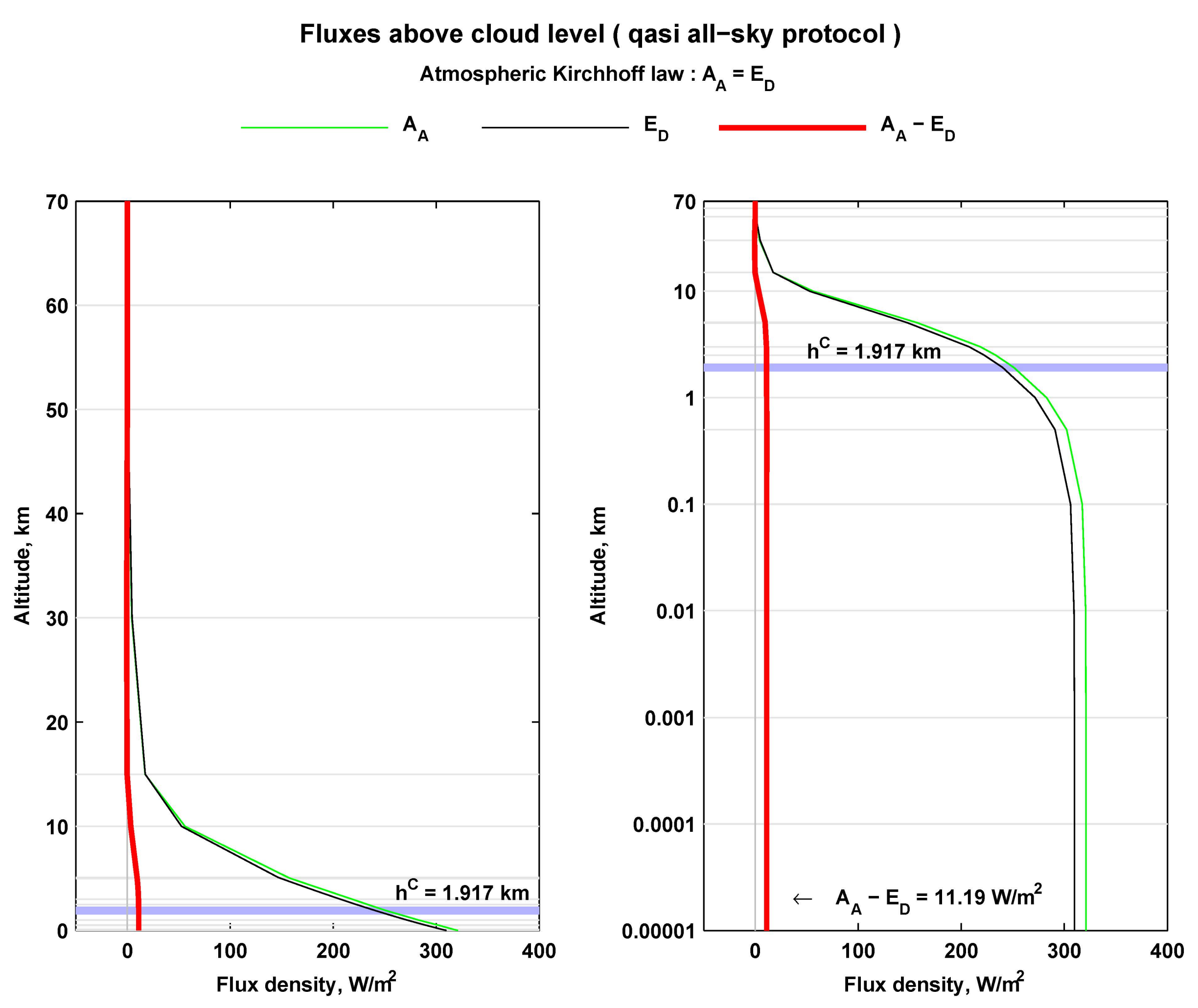




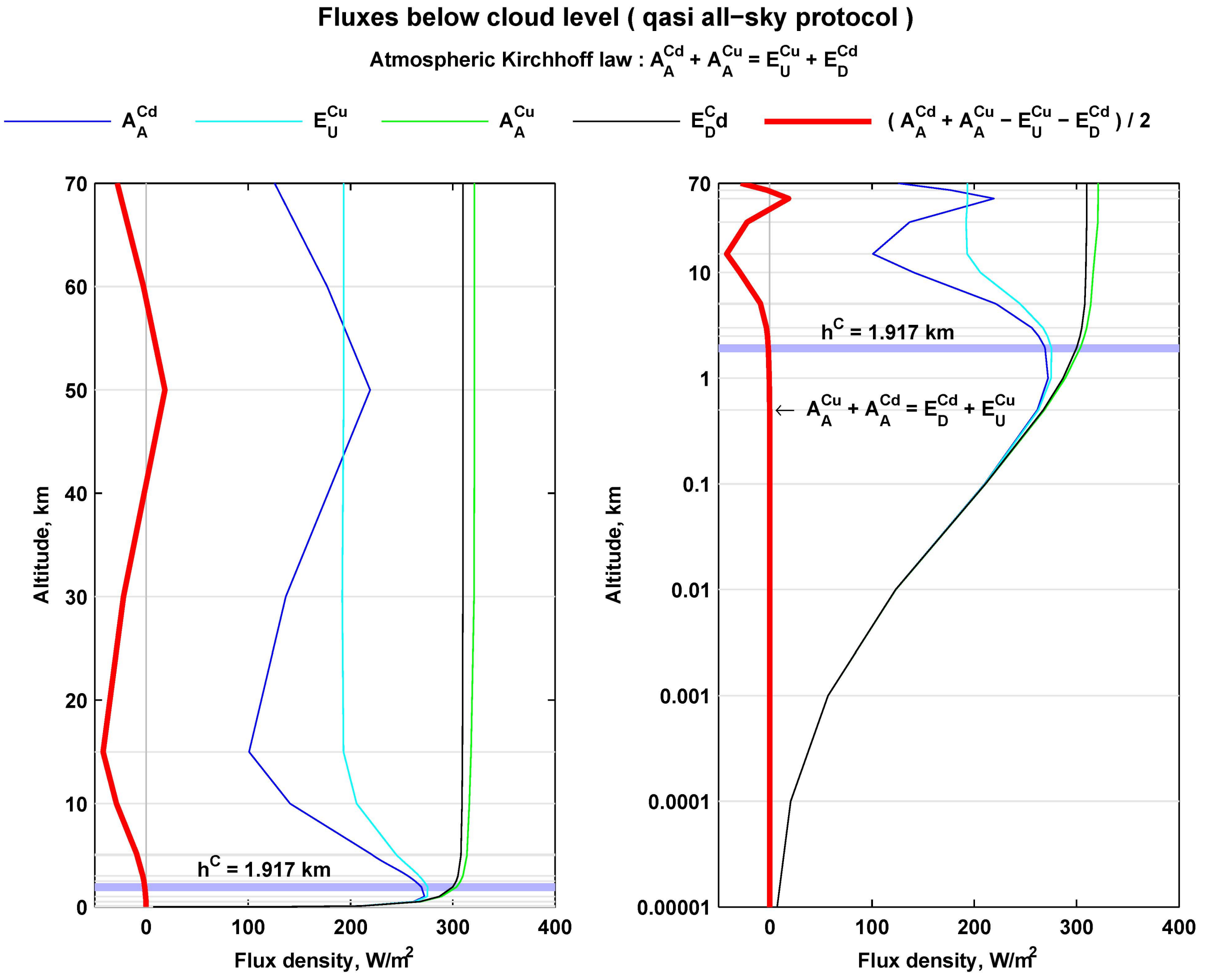
Observed global mean spectral greenhouse factor, GF_ν^A
F_0^E, F_0^A, and F_0^R : total effective, absorbed, and reflected SW radiation in W m^{-2}
S_U^A, OLR_e^A, and GF_e^A : total effective surface upwad, outgoing, and greenhouse LW flux densities in W m^{-2}
Spectral flux density, W m^{-2} cm^{-1}
Wavenumber, cm^{-1}
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
200
400
600
800
1000
1200
1400
1600
1800
2000
GF_ν^A GF^A = 103.04
$F_{0,\nu}^E$ F_0^E = 341.97
$F_{0,\nu}^A$ F_0^A = 238.94
$F_{0,\nu}^R$ F_0^R = 103.03
$S_{U,\nu}^A$ S_U^A = 341.98
$OLR_{e,\nu}^A$ OLR_e^A = 238.94
$GF_{e,\nu}^A$ GF_e^A = 103.04



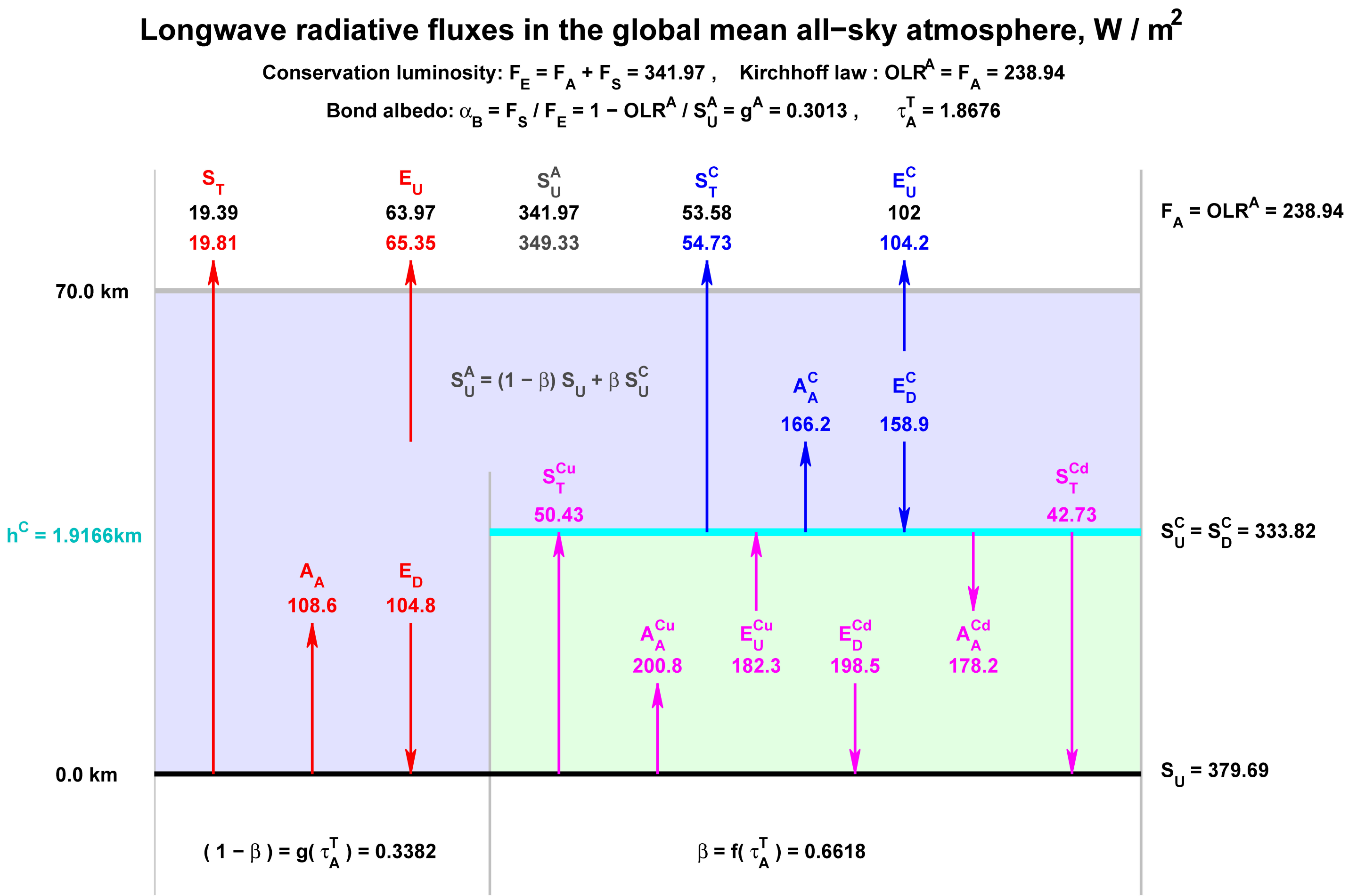
Basic longwave radiative fluxes in the global mean atmosphere, W / m^2
$\beta = 2 / (1 + \tau_A^T + e^{-\tau_A^T}) = (S_U - F_{Eg}) / (S_U - S_U^C) = (OLR - F_{Ag}) / (OLR - OLR^C) = (G - \alpha_B F_{Eg}) / (G - G^C) = 0.6618$
$OLR = S_T + E_U = 251.8$
$OLR^C = S_T^C + E_U^C = 240.1$
S_T
58.57
E_U
193.2
S_T^C
82.7
E_U^C
157.4
70.0 km
A_A^C
251.1
E_D^C
240.1
S_T^{Cu}
76.21
S_T^{Cd}
64.56
$h^C = 1.9166km$
$S_U^C = S_D^C = 333.82$
A_A
321.1
E_D
309.9
A_A^{Cu}
303.5
E_U^{Cu}
275.4
E_D^{Cd}
299.9
A_A^{Cd}
269.3
0.0 km
$S_U = 379.69$
$OLR = S_U f(\tau_A) = 251.2$
$OLR^{Cu} = S_T^{Cu} + E_U^{Cu} = 351.6$
$OLR^{Cd} = S_T^{Cd} + E_U^{Cd} = 364.4$



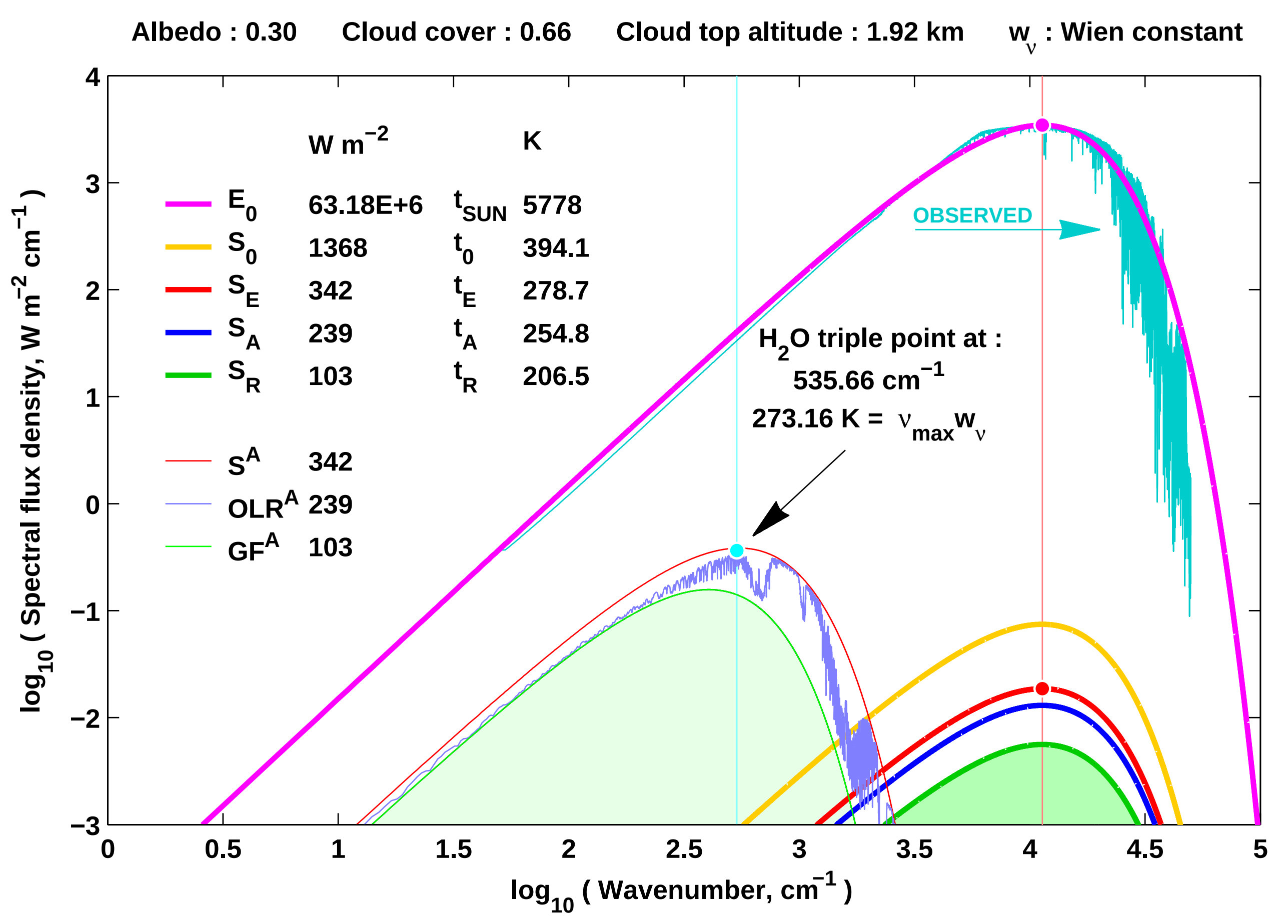
Fluxes above cloud level (qasi all−sky protocol)
Atmospheric Kirchhoff law : A_A = E_D
A_A
E_D
A_A − E_D
h^C = 1.917 km
A_A − E_D = 11.19 W/m^2
Altitude, km
Flux density, W/m^2



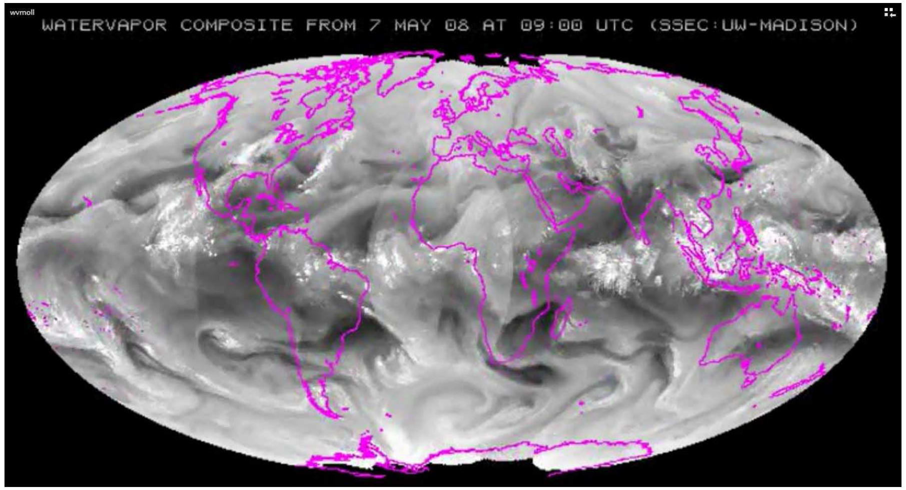
Fluxes below cloud level (qasi all−sky protocol)
Atmospheric Kirchhoff law : $A_A^{Cd} + A_A^{Cu} = E_U^{Cu} + E_D^{Cd}$
A_A^{Cd}
E_U^{Cu}
A_A^{Cu}
$E_D^{C}d$
$(A_A^{Cd} + A_A^{Cu} - E_U^{Cu} - E_D^{Cd}) / 2$
h^C = 1.917 km
$A_A^{Cu} + A_A^{Cd} = E_D^{Cd} + E_U^{Cu}$
Altitude, km
Flux density, W/m^2



Longwave radiative fluxes in the global mean all−sky atmosphere, W / m²
Conservation luminosity: $F_E = F_A + F_S = 341.97$, Kirchhoff law : $OLR^A = F_A = 238.94$
Bond albedo: $\alpha_B = F_S / F_E = 1 - OLR^A / S_U^A = g^A = 0.3013$, $\tau_A^T = 1.8676$
S_T 19.39 19.81
E_U 63.97 65.35
S_U^A 341.97 349.33
S_T^C 53.58 54.73
E_U^C 102 104.2
$F_A = OLR^A = 238.94$
70.0 km
$S_U^A = (1 - \beta) S_U + \beta S_U^C$
A_A^C 166.2
E_D^C 158.9
S_T^{Cu} 50.43
S_T^{Cd} 42.73
$h^C = 1.9166$km
$S_U^C = S_D^C = 333.82$
A_A 108.6
E_D 104.8
A_A^{Cu} 200.8
E_U^{Cu} 182.3
E_D^{Cd} 198.5
A_A^{Cd} 178.2
0.0 km
$S_U = 379.69$
$(1 - \beta) = g(\tau_A^T) = 0.3382$
$\beta = f(\tau_A^T) = 0.6618$



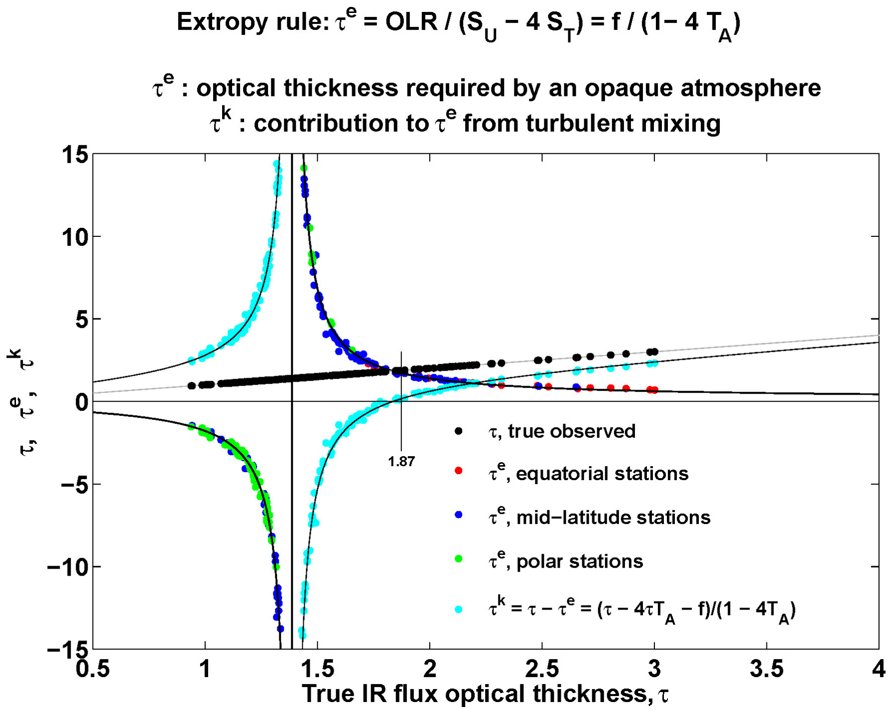
Albedo : 0.30
Cloud cover : 0.66
Cloud top altitude : 1.92 km
w_ν : Wien constant
W m^{-2}
K
E_0 63.18E+6 t_{SUN} 5778
S_0 1368 t_0 394.1
S_E 342 t_E 278.7
S_A 239 t_A 254.8
S_R 103 t_R 206.5
S^A 342
OLR^A 239
GF^A 103
OBSERVED
H_2O triple point at :
535.66 cm^{-1}
273.16 K = $\nu_{max} w_\nu$
$\log_{10}$ (Spectral flux density, W m^{-2} cm^{-1})
$\log_{10}$ (Wavenumber, cm^{-1})



The dynamics of the greenhouse effect depend on the dynamics of the absorbed solar radiation and the space-time distribution of the atmospheric humidity. The global distribution of the IR optical thickness is fundamentally stochastic. The instantaneous effective values are governed by the turbulent mixing of H_2O in the air and the global (meridional) redistribution of the thermal energy resulted from the general (atmospheric and oceanic) circulation.

According to the simple-minded or 'classic' view of the greenhouse effect the global average greenhouse temperature change may be estimated by the direct application of the Beer-Lambert law moderated by local or regional scale weather phenomena (R. Pierrehumbert, A. Lacis, R. Spencer, R. Lindzen, A. P. Smith, H. deBruin, J. Abraham et al., J. Hansen et al.,and many others)*. This is not true.

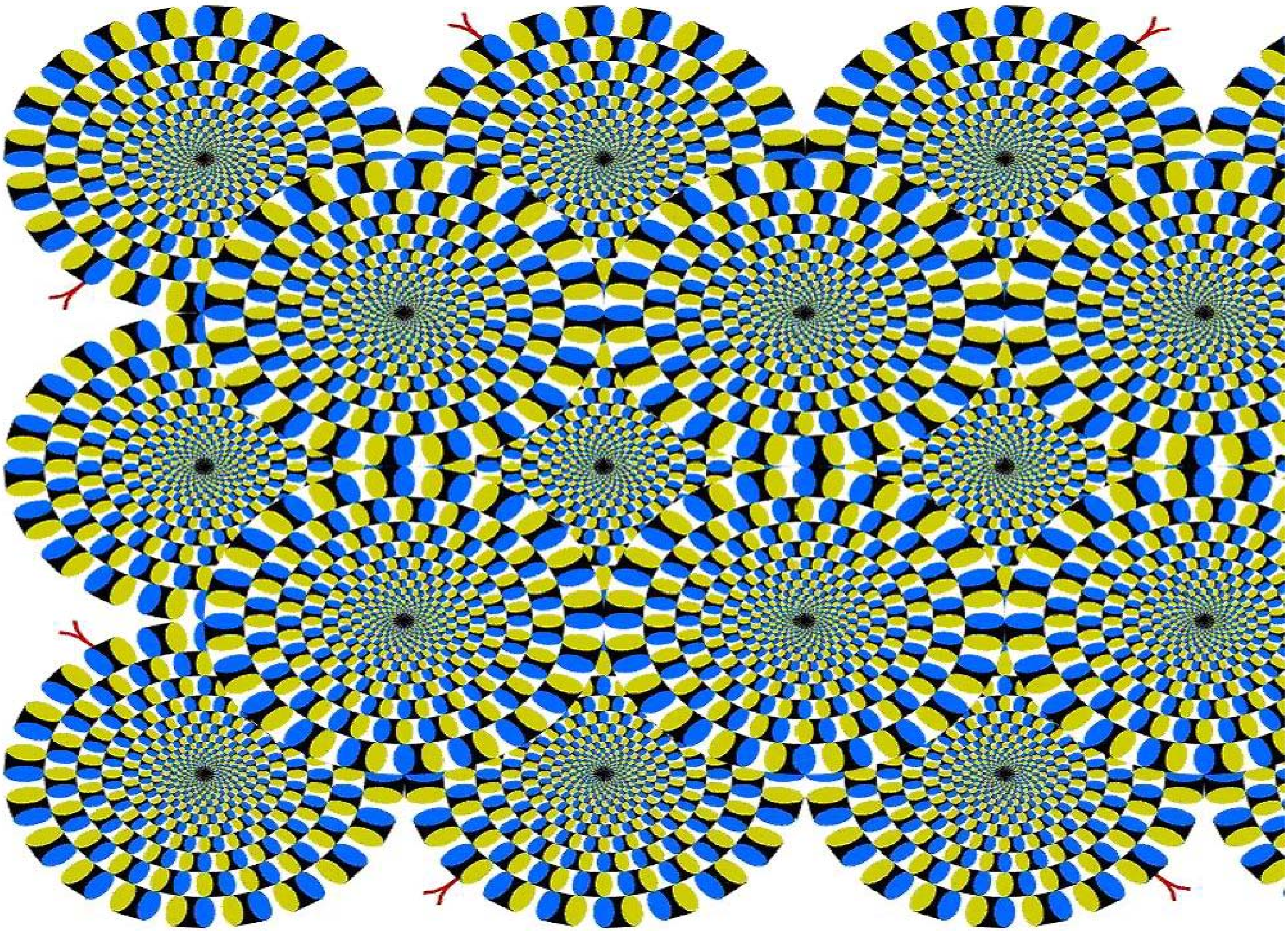
The greenhouse effect is a global scale radiative phenomenon and can not be discussed without the explicit quantitative understanding of the global characteristics of the IR atmospheric absorption and its governing physical principles.

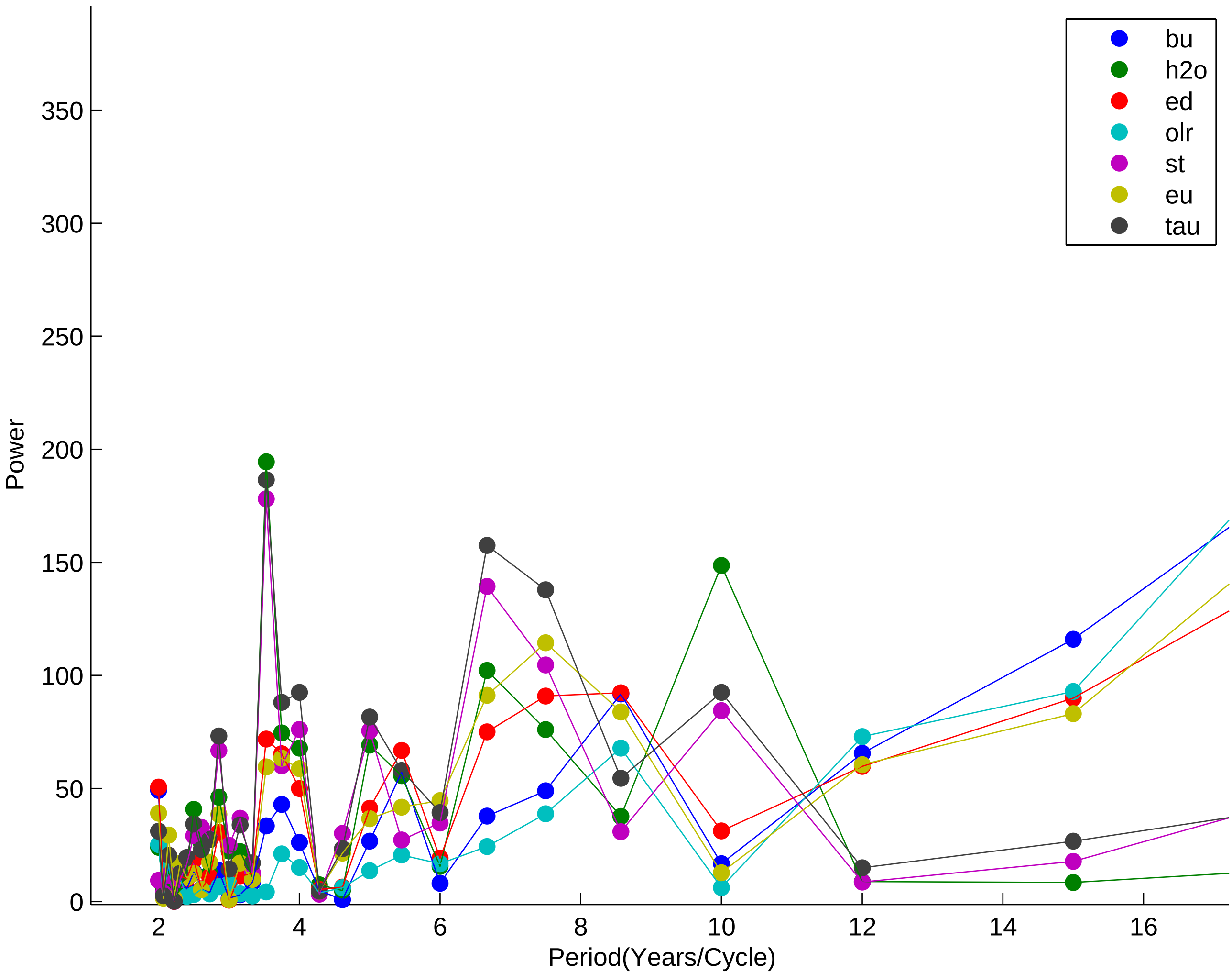


*R. Pierrehumbert, Physics Today, Jan. 2011; A. Lacis et al., Science, 330,2010; R. Lindzen, BAMS, March 2001; Spencer et al., GRL, 34, August 2007;A. P. Smith, AOPhysics, February, 2008; H. deBruin, Idojaras, 114,4,2010; J. Abraham et al., Letter: To the Members of the U.S. House of Represen-tatives and the U.S. Senate , January, 2011; J. Hansen et al., Science, 213, 1981

A CO_2 ÜVEGHÁZHATÁSÁN ALAPULÓ GLOBÁLIS FELMELEGEDÉS HIPOTÉZISE TUDOMÁNYTALAN SZEMFÉNYVESZTÉS

JÓZAN ENERGIAPOLITIKÁNAK A VÁRHATÓ ENERGIAIGÉNYEK ÉS A RENDELKEZÉSRE ÁLLÓ ENERGIAFORRÁSOK KORREKT FELMÉRÉSÉN KELL ALAPULNIA





bu
h2o
ed
olr
st
eu
tau
Power
0
50
100
150
200
250
300
350
2
4
6
8
10
12
14
16
Period(Years/Cycle)