Amazônia

Philip M. Fearnside

Instituto Nacional de Pesquisas da Amazônia – INPA

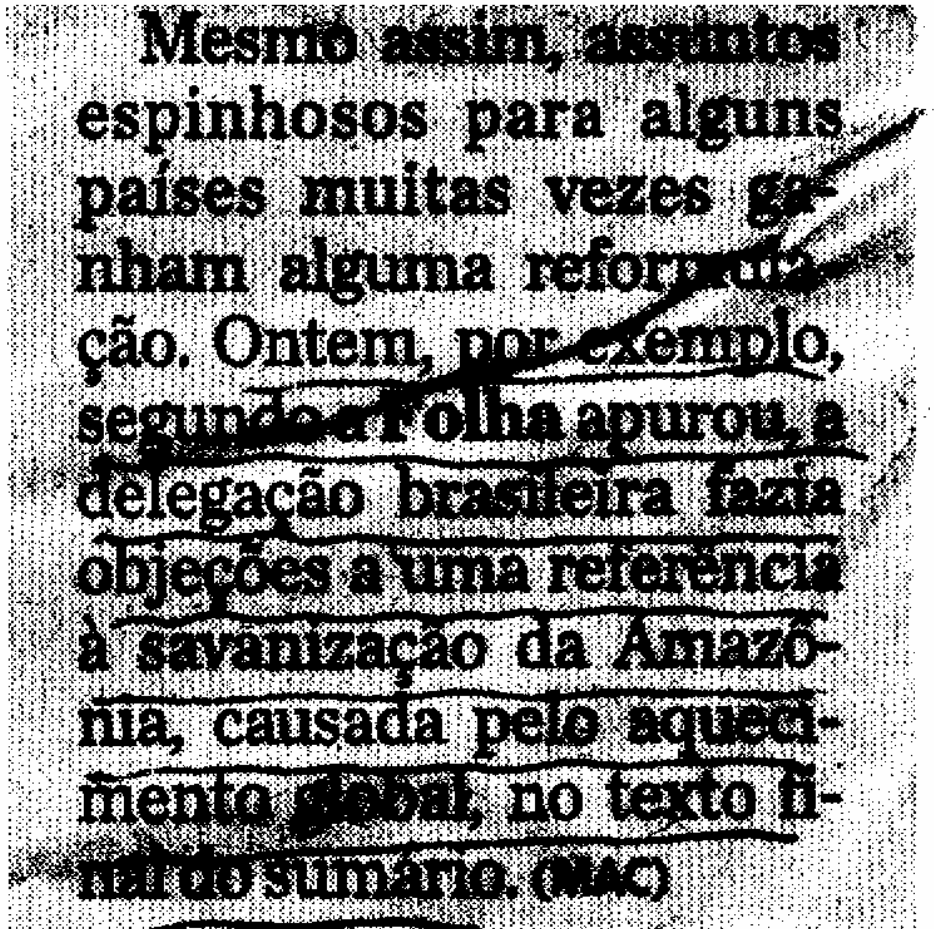
http://philip.inpa.gov.br

Painel de Debates:
"***Impactos, Vulnerabilidades e Adaptação às Mudanças Climáticas no Brasil***",
50ª Reunião Extraordinária do CONAMA, Rio de Janeiro, 30 de maio de 2007

ciência
FOLHA DE S.PAULO
SEXTA-FEIRA, 6 DE ABRIL DE 2007 ★ A14

Conclusão de texto envolve debate intenso

DO ENVIADO A BRUXELAS

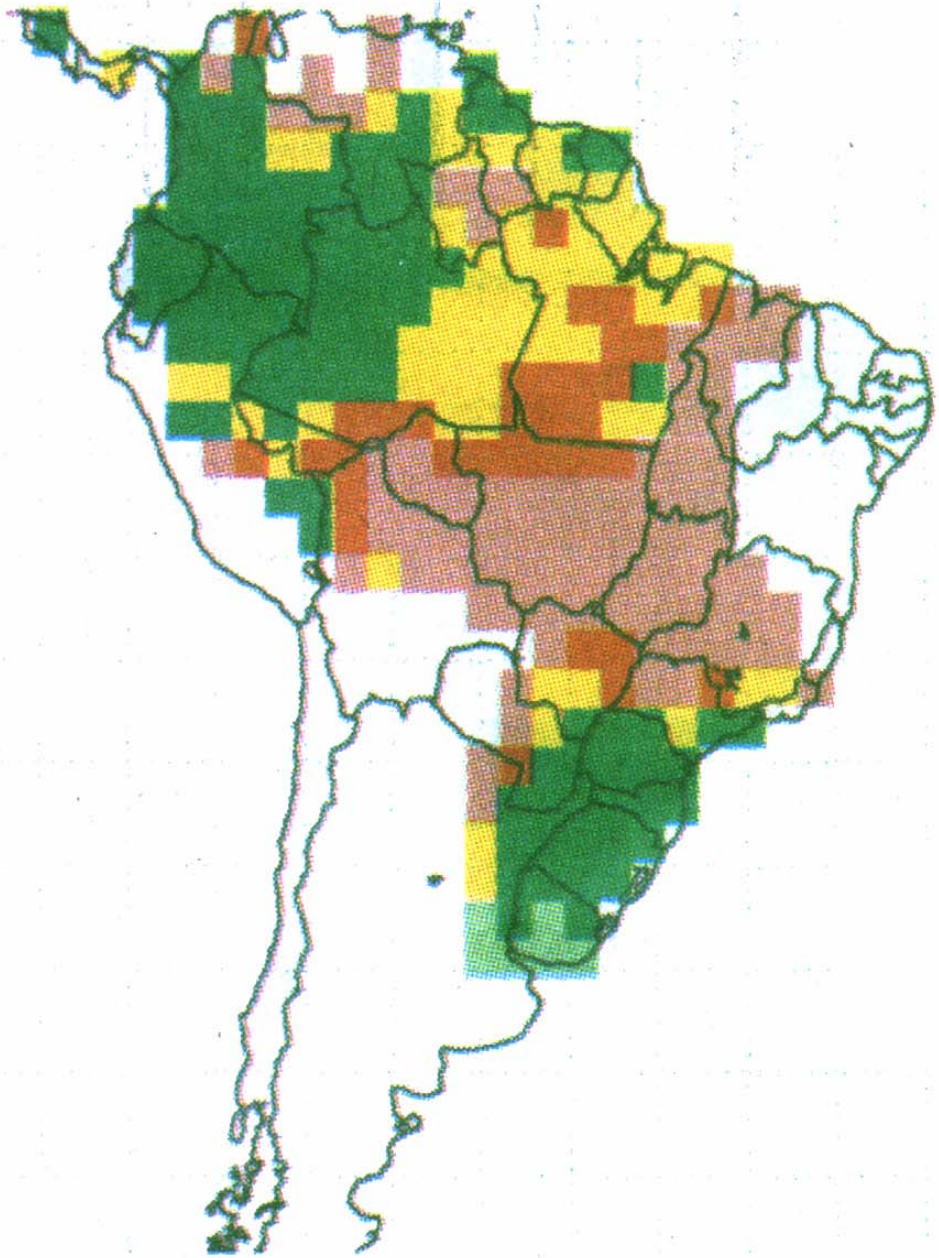


Mesmo assim, assuntos espinhosos para alguns países muitas vezes ganham alguma reformulação. Ontem, por exemplo, segundo a Folha apurou, a delegação brasileira fazia objeções à uma referência à savanização da Amazônia, causada pelo aquecimento global, no texto final do sumário. (MAC)

Latin America

By mid-century, increases in temperature and associated decreases in soil water are projected to lead to gradual replacement of tropical forest by savanna in eastern Amazonia. Semi-arid vegetation will tend to be replaced by arid-land vegetation. There is a risk of significant biodiversity loss through species extinction in many areas of tropical Latin America. ** D [13.4]

IPCC AR4 WG2 2007. SPM



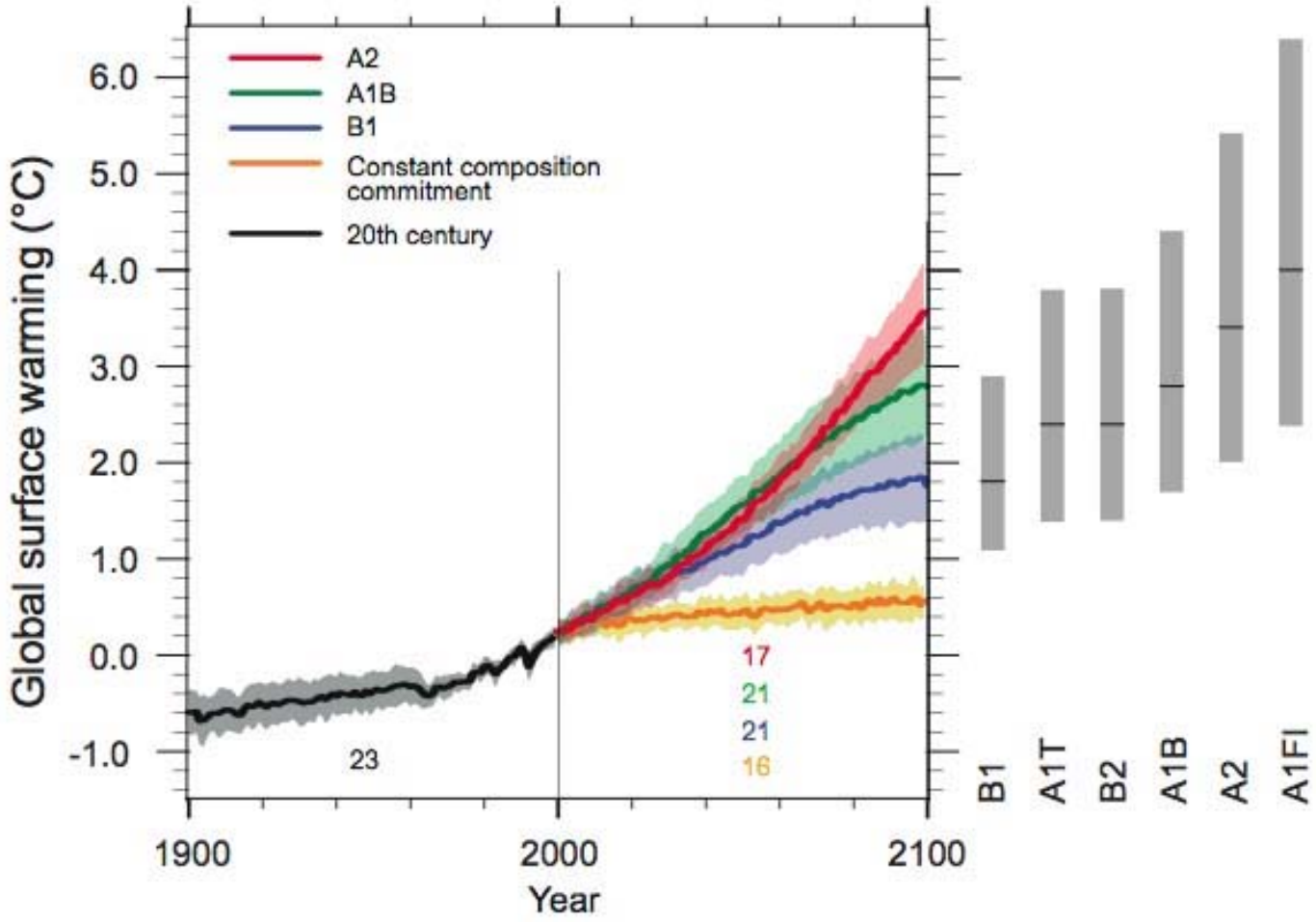
Área onde a floresta permanecerá

Área de incerteza do estudo (não é possível prever o que vai ocorrer)

Região onde a floresta dará lugar à savana

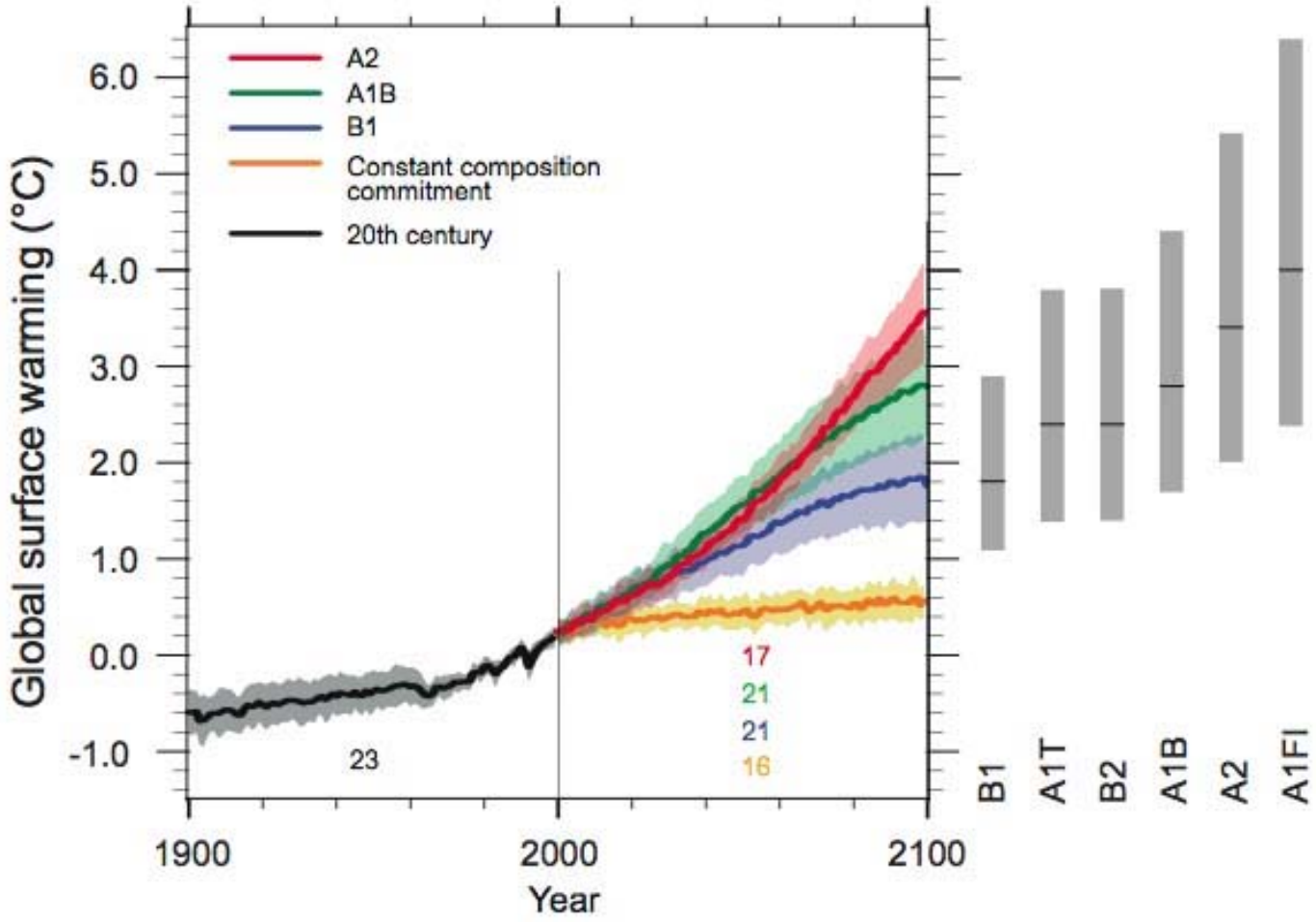
Área onde a savana permanecerá

Área onde haverá expansão da floresta (ao sul do Brasil)



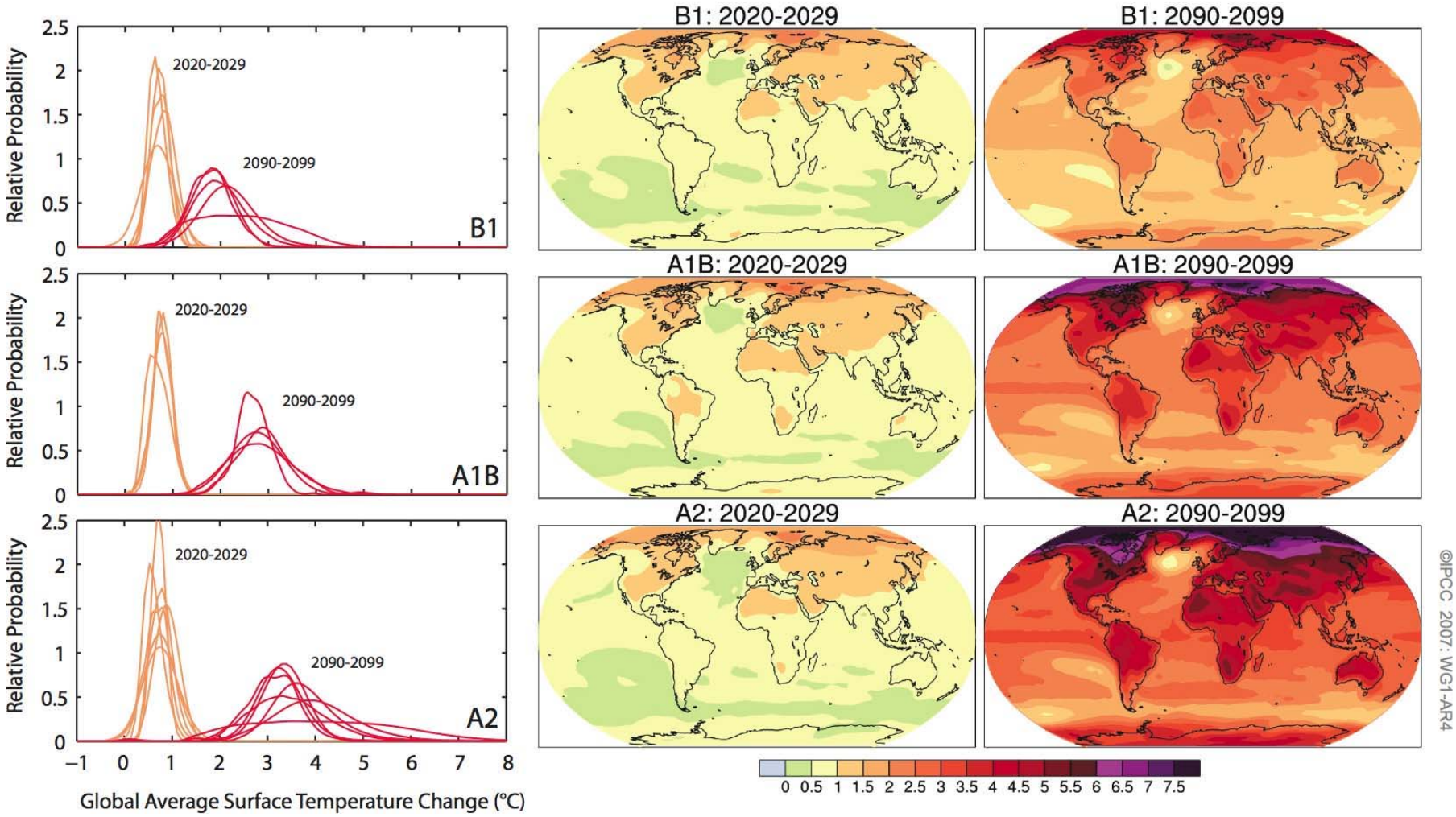
IPCC, 2007 (AR-4 WG1 SPM)

Goldilocks and the three bears



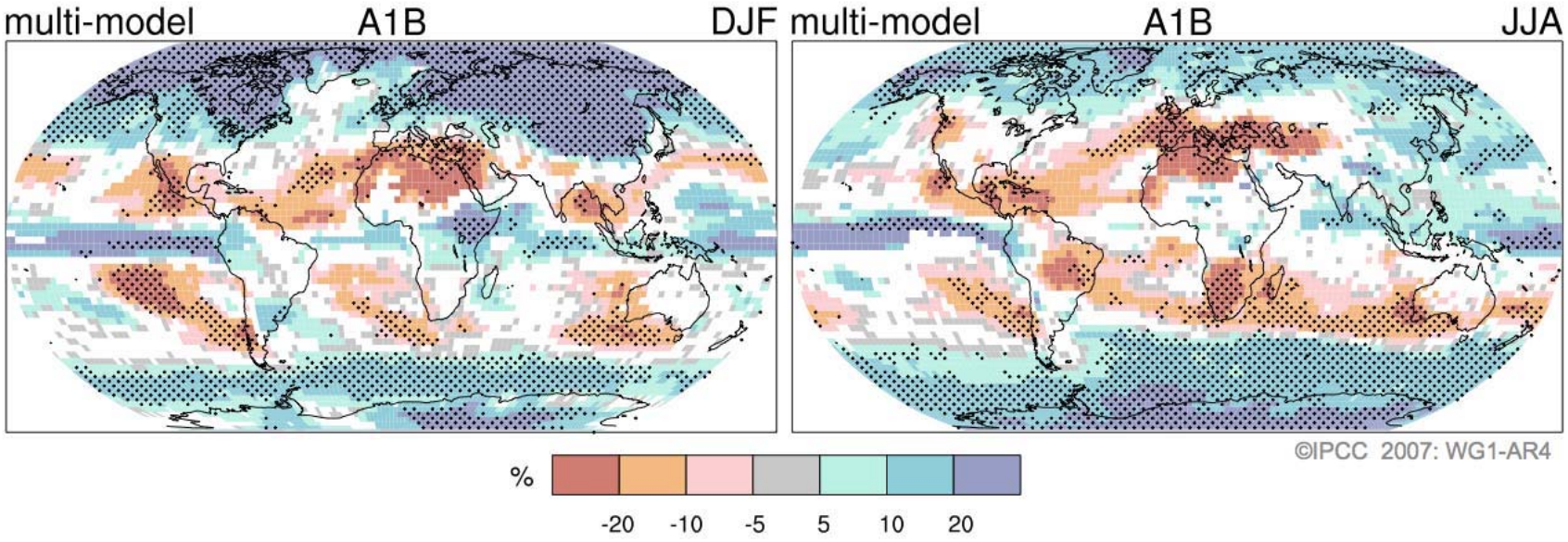
IPCC, 2007 (AR-4 WG1 SPM)

AOGCM Projections of Surface Temperatures



IPCC, 2007 (AR-4 WG1 SPM)

Projected Patterns of Precipitation Changes



IPCC, 2007 (AR-4 WG1 SPM)

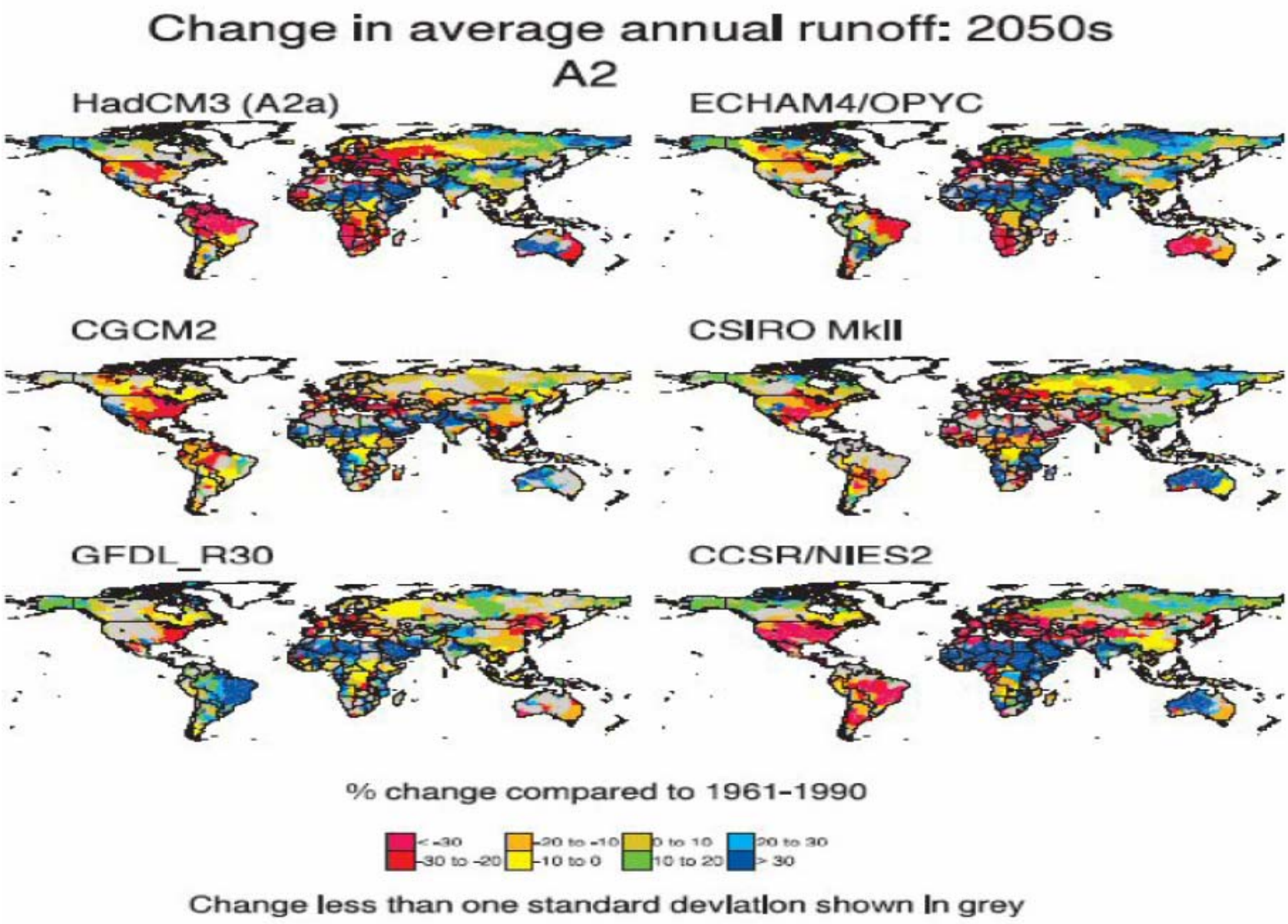


Figure 3.3: *Change in average annual runoff by the 2050s under the SRES A2 emissions scenario and different climate models (Arnell, 2003a).*

IPCC AR4 WG2 2007. Chapter 3

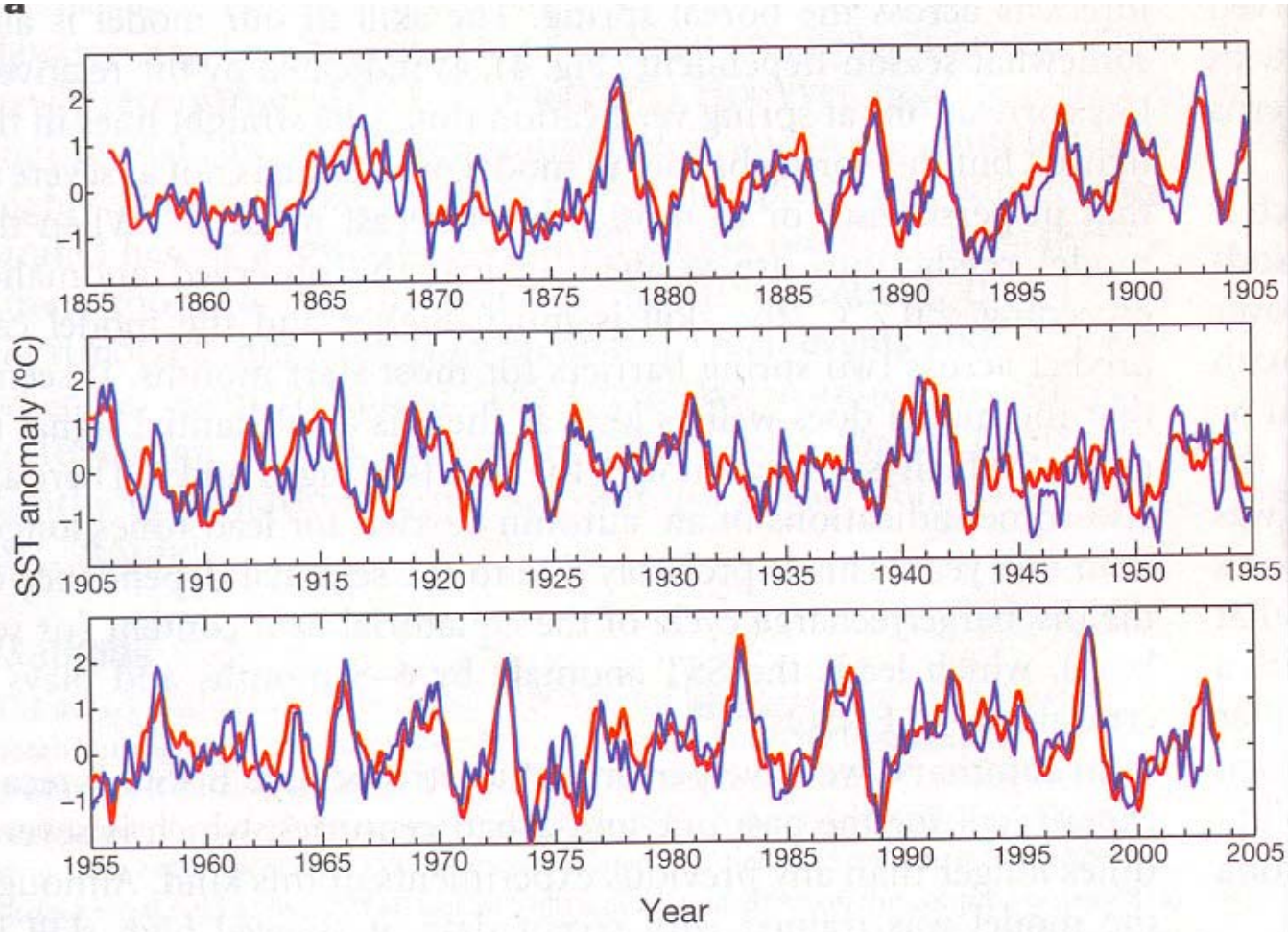


Figure 1 Retrospective predictions of El Niño and La Niña in the past 148 yr. **a,** Time series of SST anomalies averaged in the NINO3.4 region (5° S–5° N, 120–170° W). The red curve is monthly analysis of ref. 12 and the blue curve is the LDEO5 prediction at

6-mo
Top p
colou

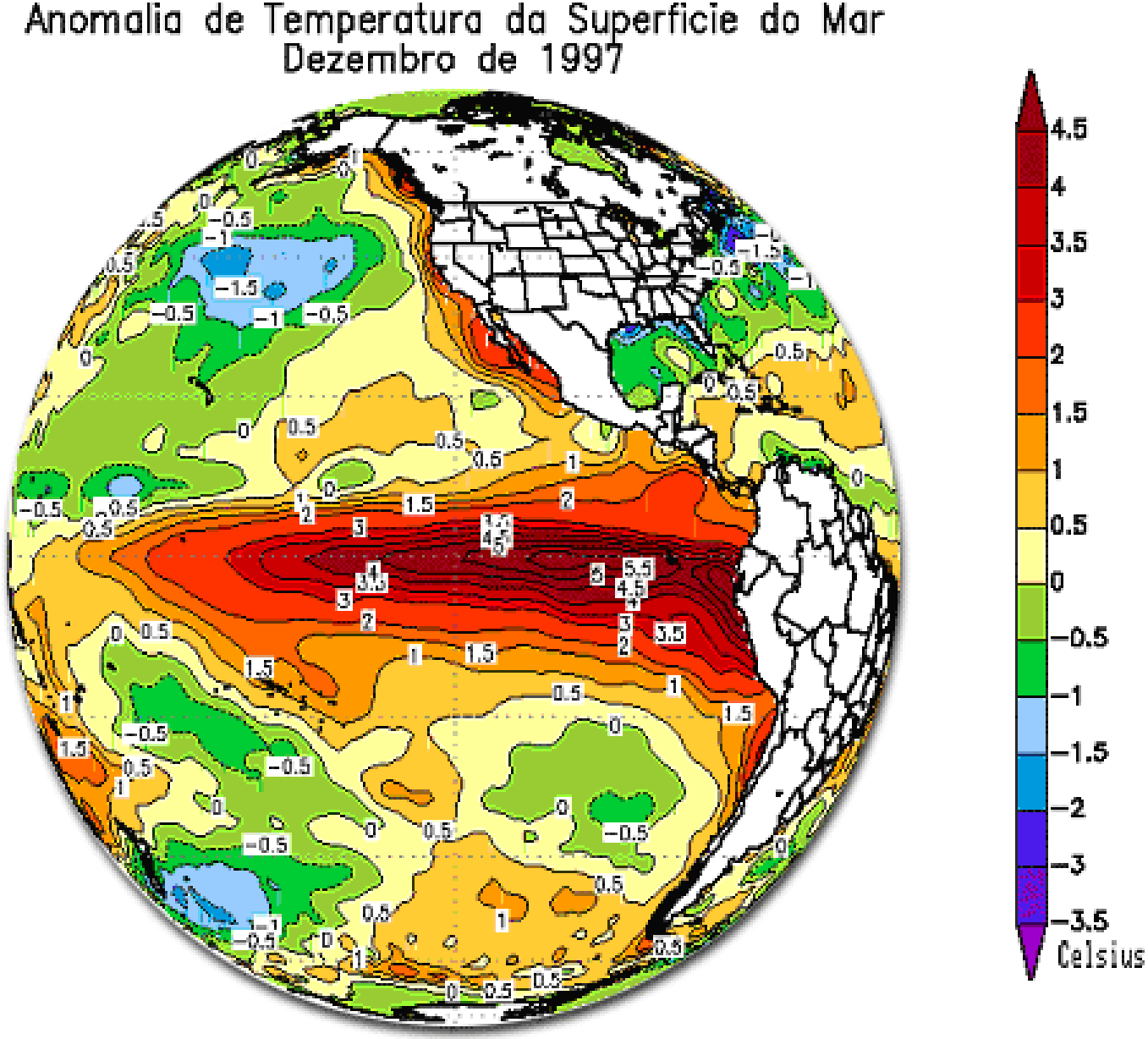
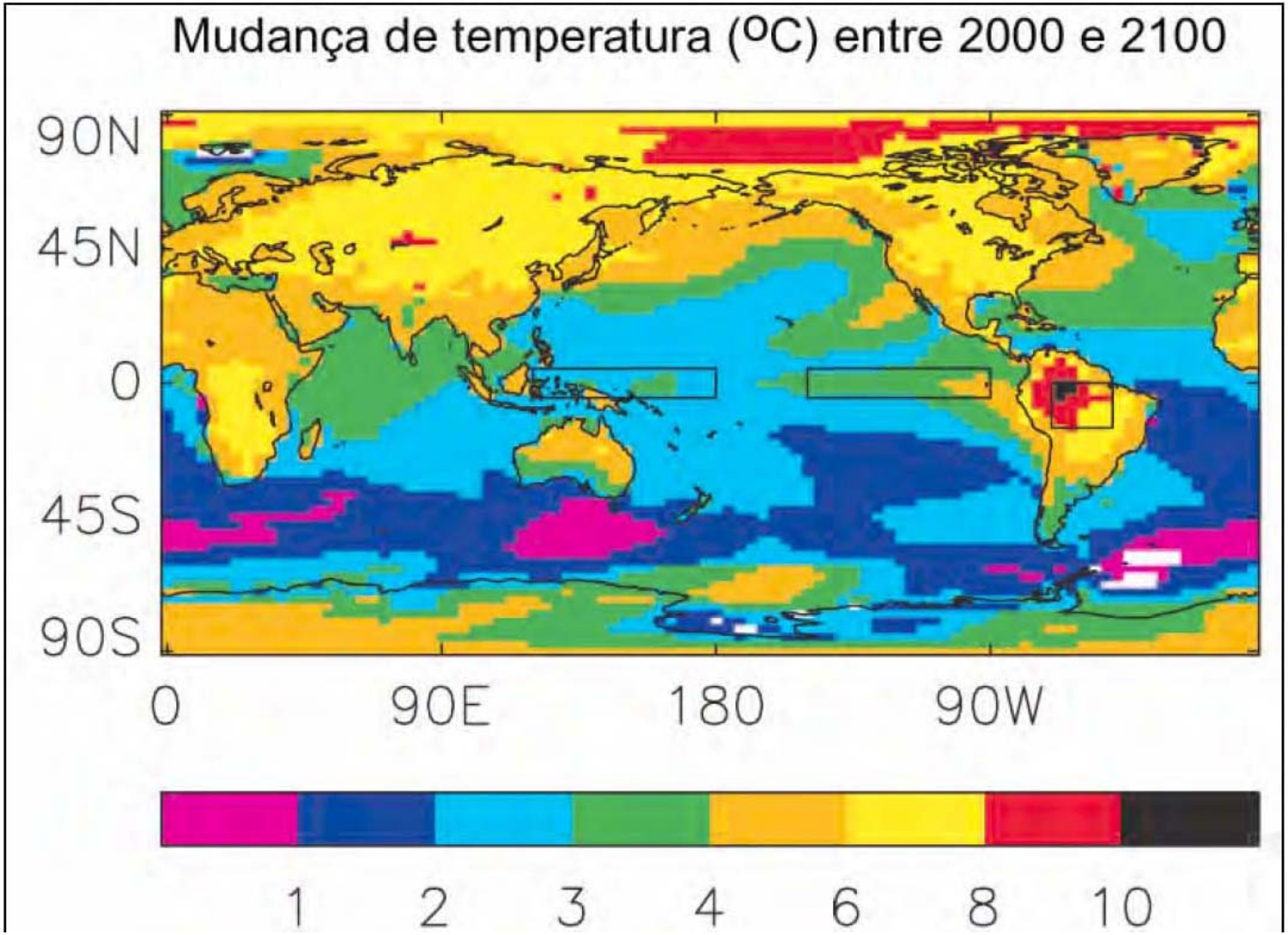
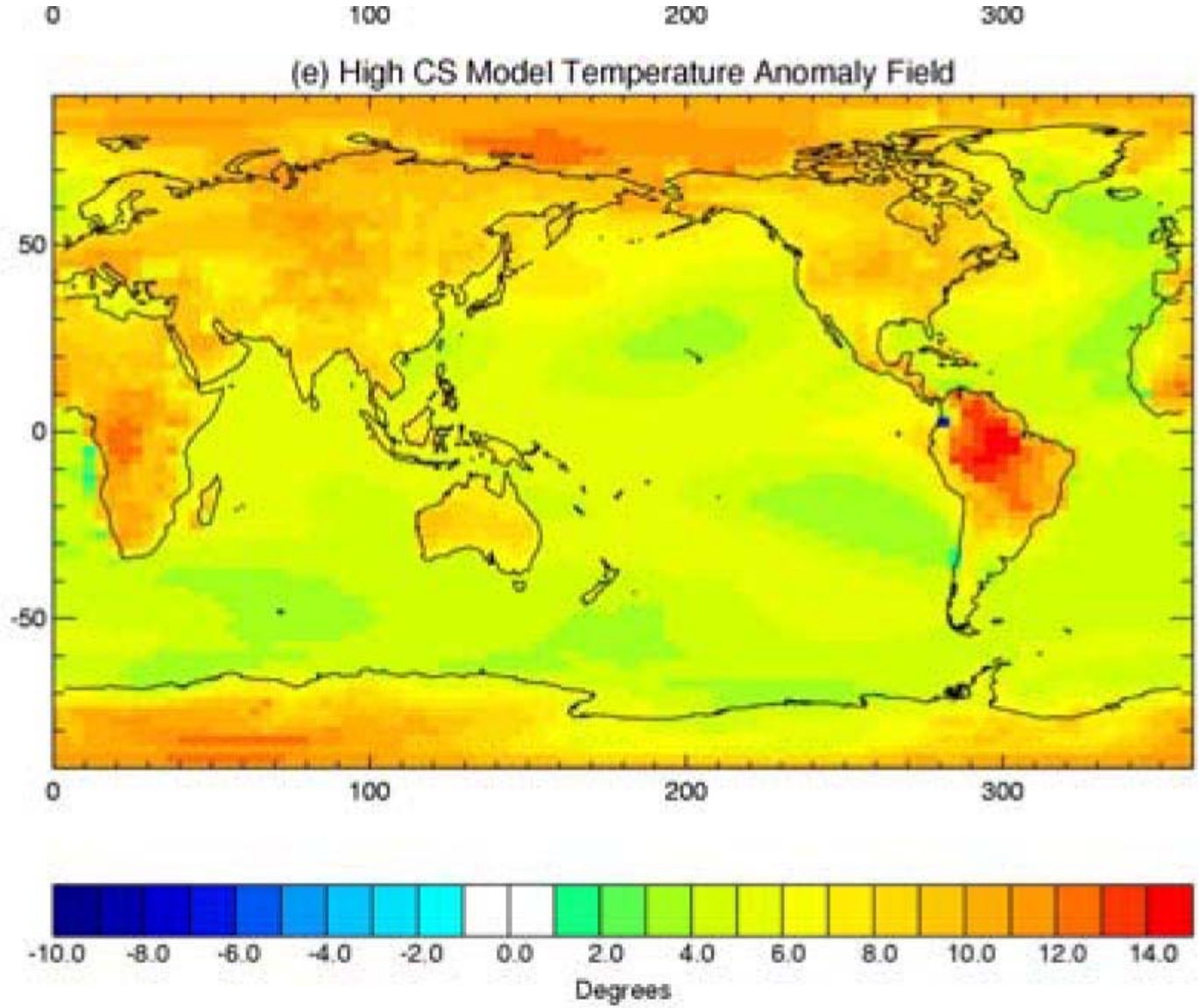

Anomalia de Temperatura da Superficie do Mar
Dezembro de 1997
4.5
4
3.5
3
2
1.5
1
0.5
0
−0.5
−1
−1.5
−2
−3
−3.5
Celsius

Photo by R.I. Barbosa

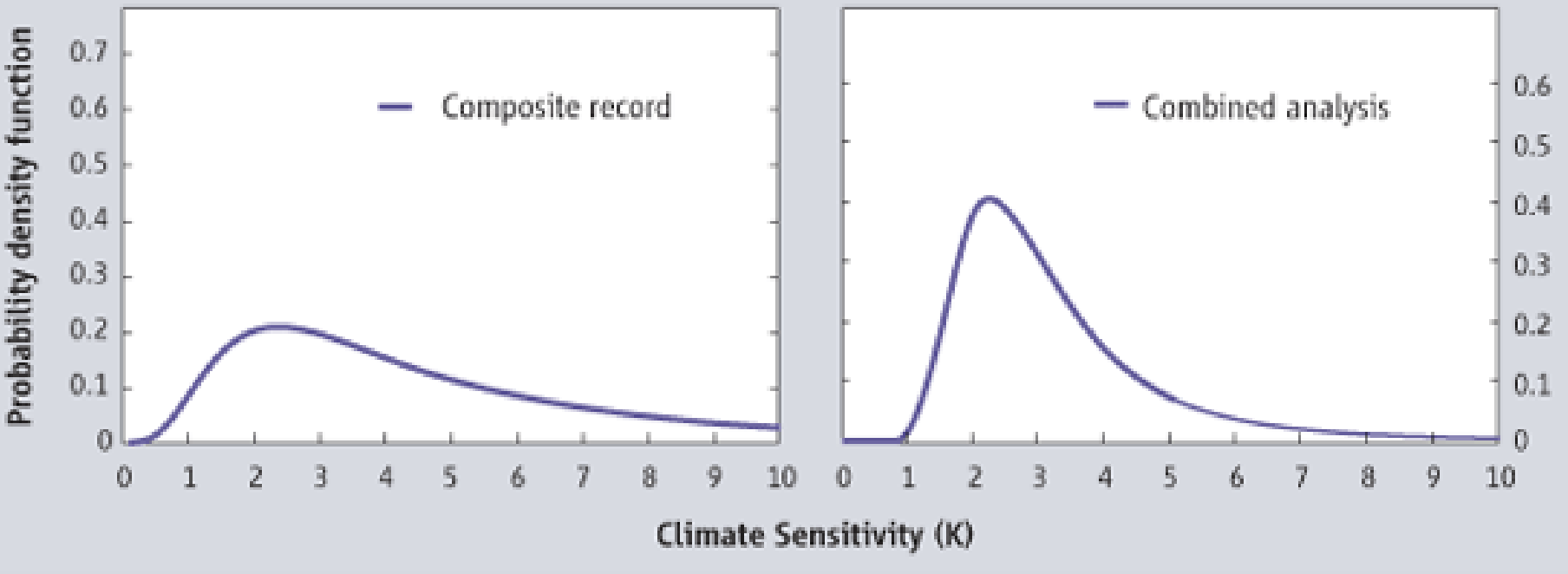


Cox et al. 2004



Stainforth,2005

Constraining Climate Sensitivity



ADAPTED FROM HEGERL *ET AL.*, *NATURE* (2006)

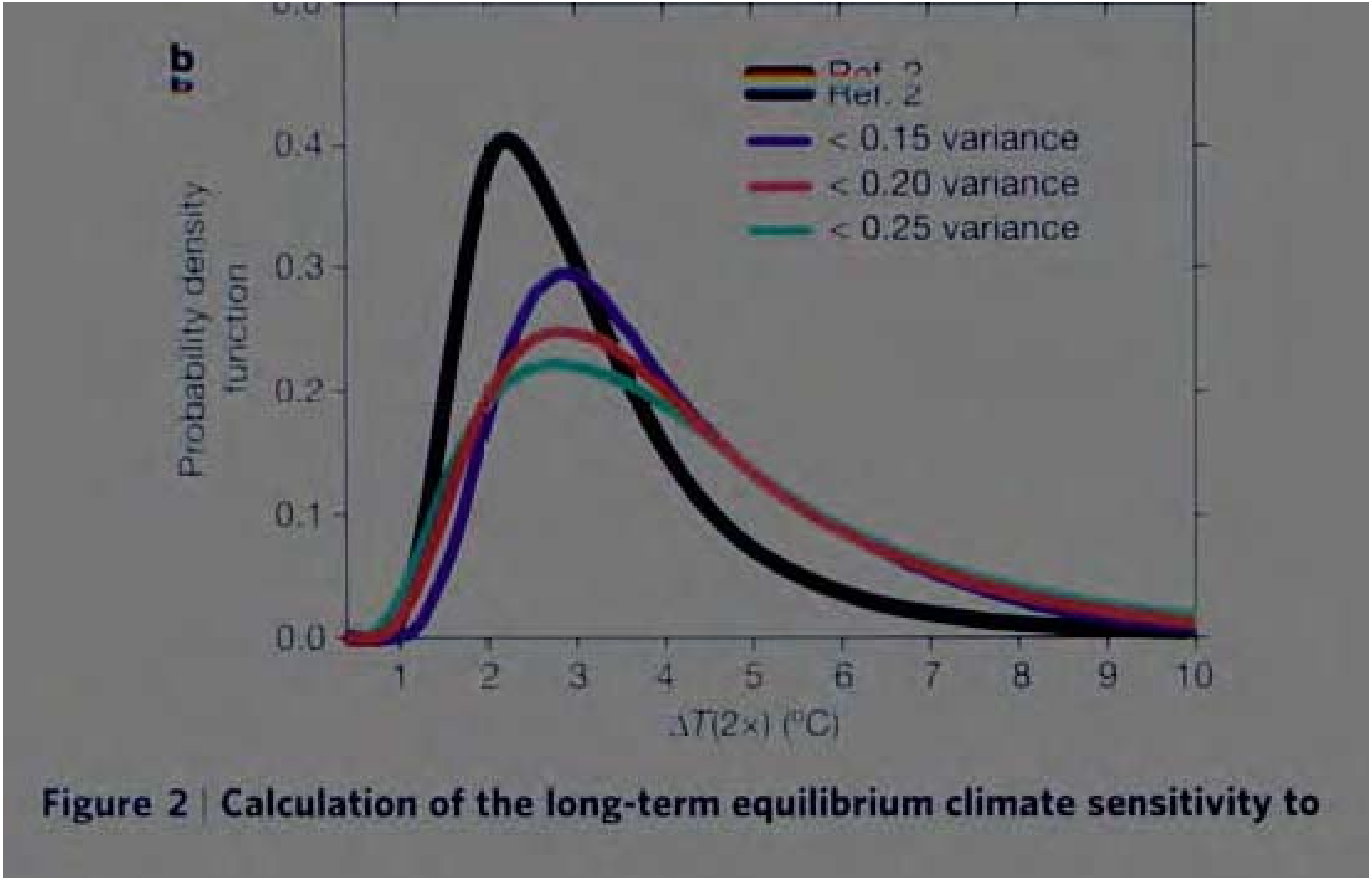


Figure 2 | Calculation of the long-term equilibrium climate sensitivity to

Royer et al. 2007. Nature 446: 530-532.

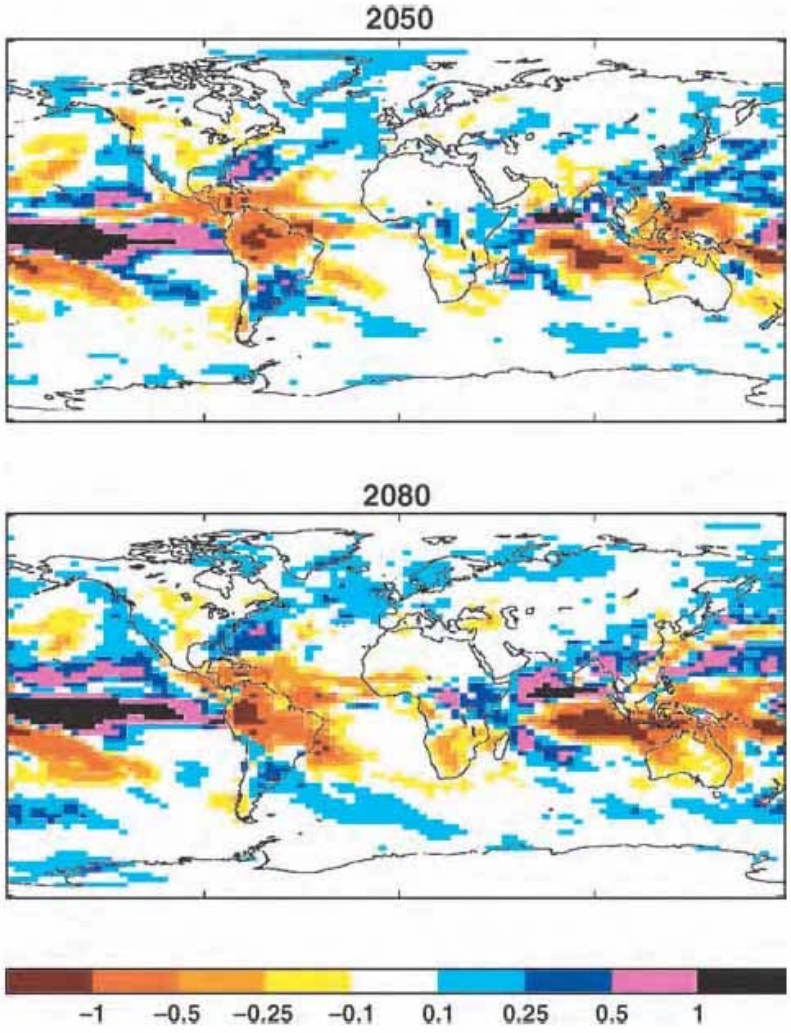
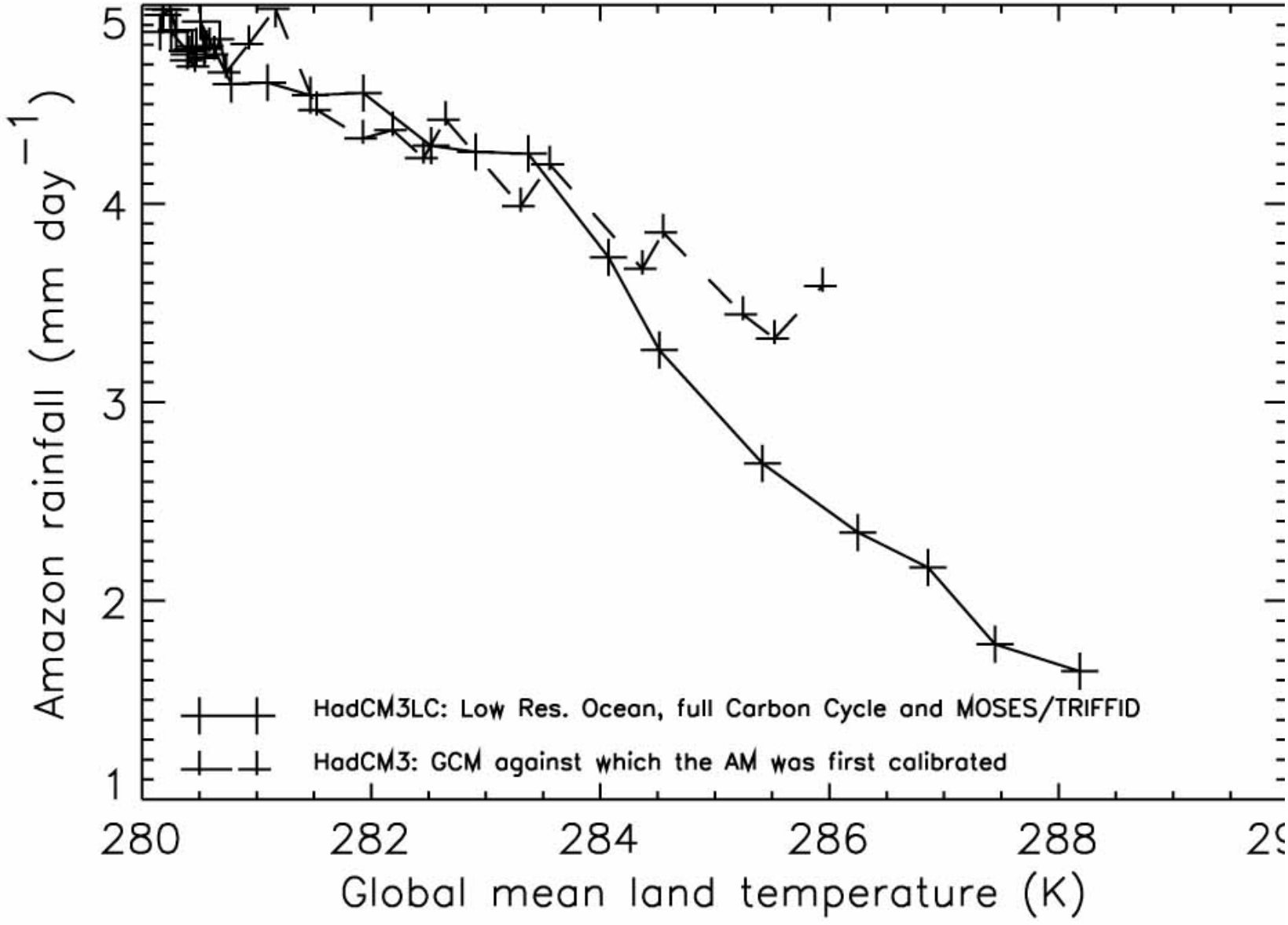


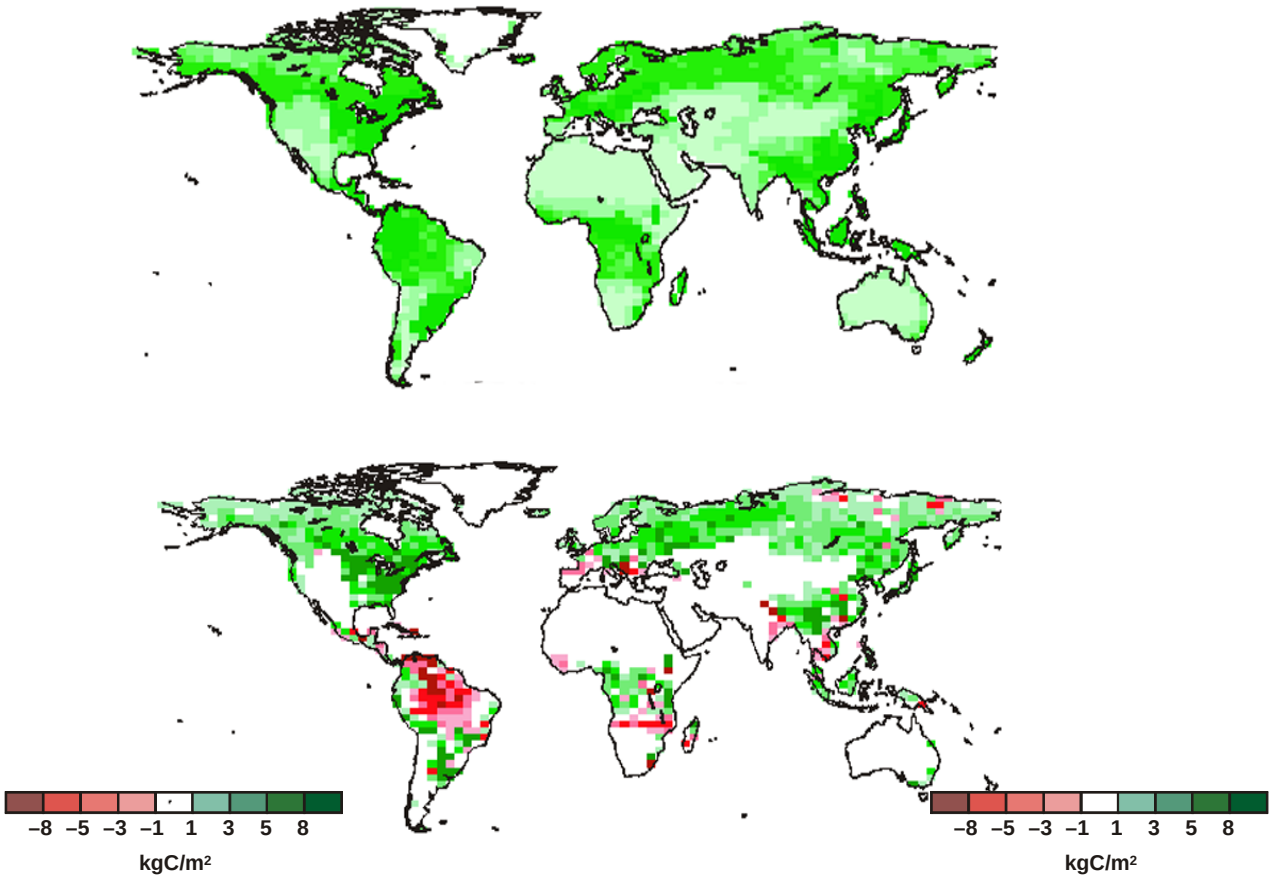
Fig. 8. Effect of including carbon cycle feedbacks on global precipitation patterns. Difference in precipitation (mm day^{-1}), CCYCLE – DYNVEG. 30-year mean centred around 2080

Betts et al. 2004 Theoretical and Applied Climatology



Huntingford et al. 2004 Theoretical and Applied Climatology

Changes in vegetation biomass
between the present day and the 2080s



[Hadley Centre, 2000]

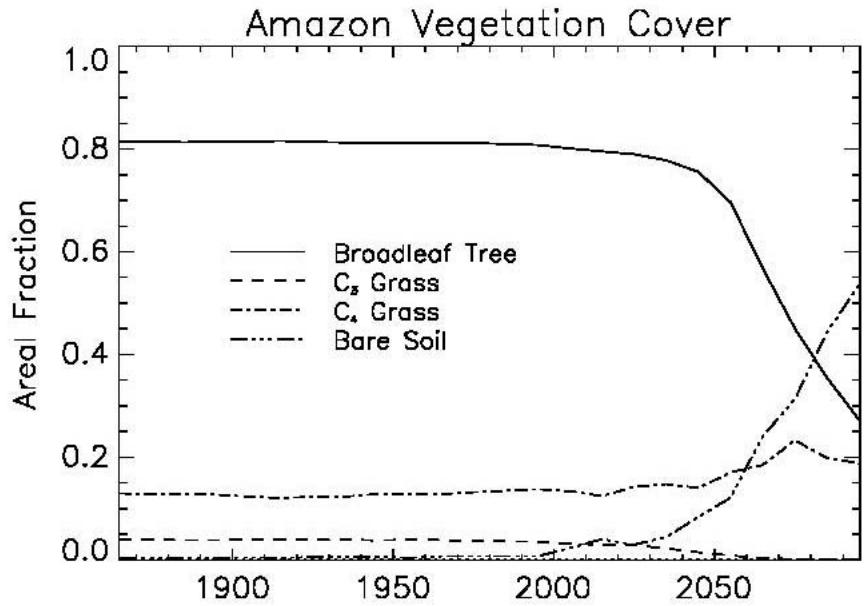
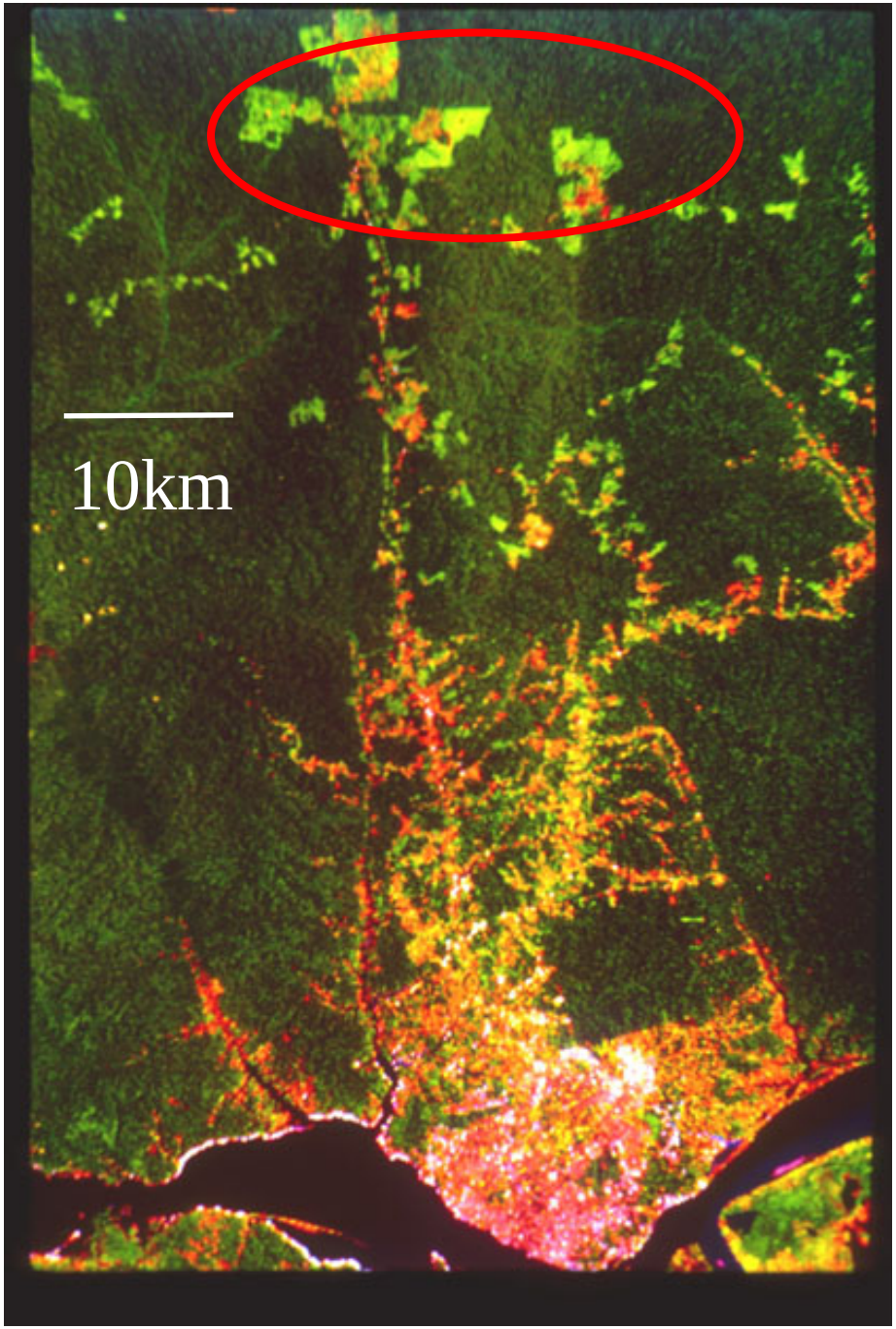


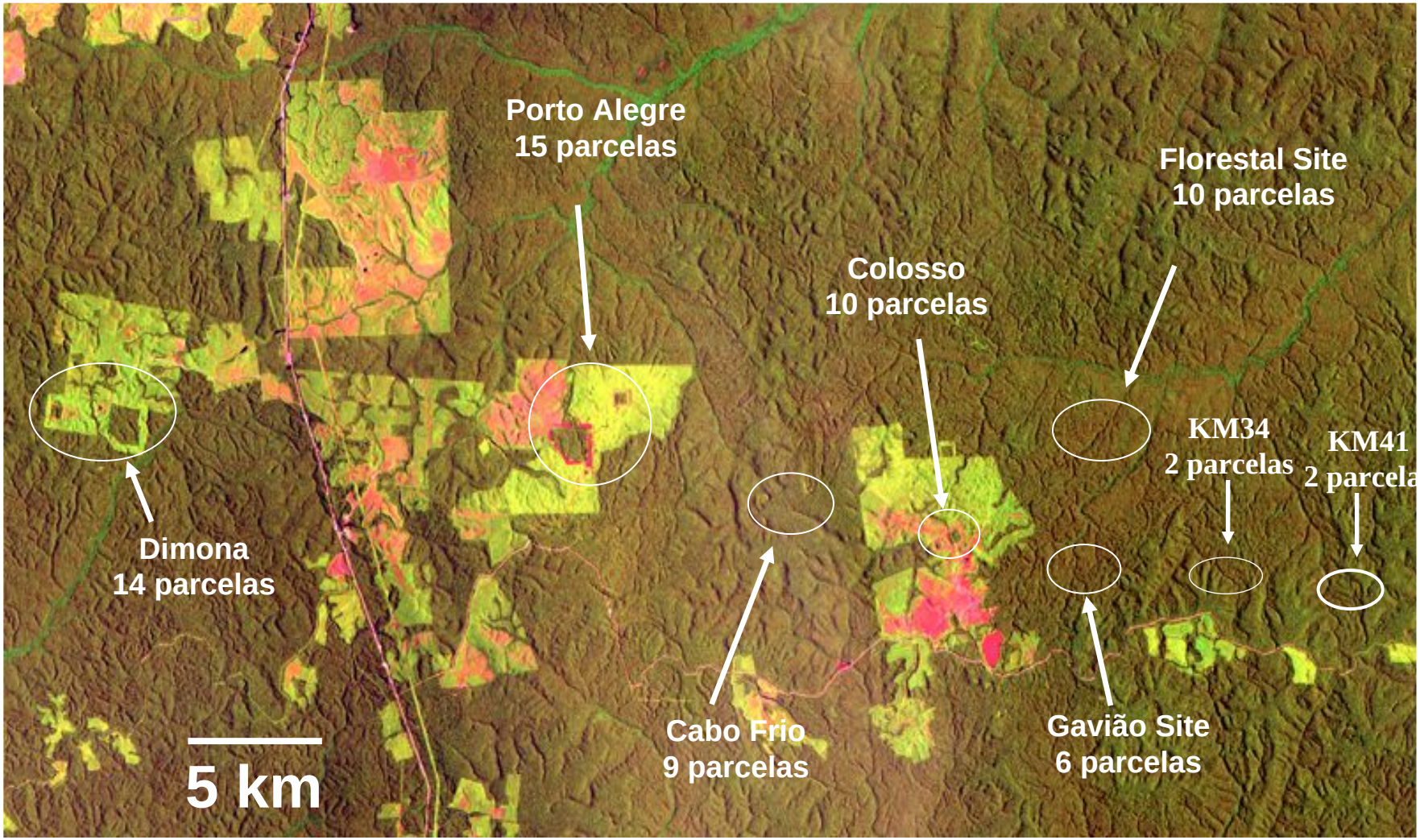
Figure 6: Evolution of the vegetation cover in the Amazon box from the coupled climate-carbon cycle simulation

Cox et al. 2004 Theoretical and Applied Climatology

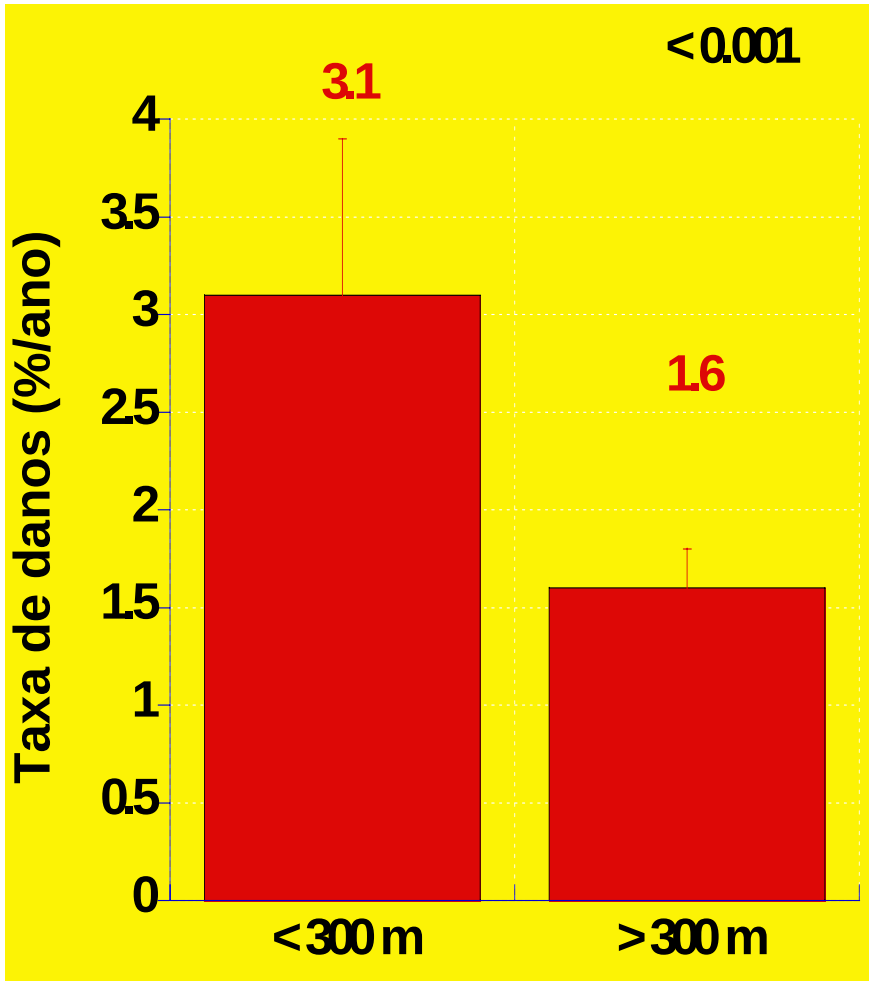

10km

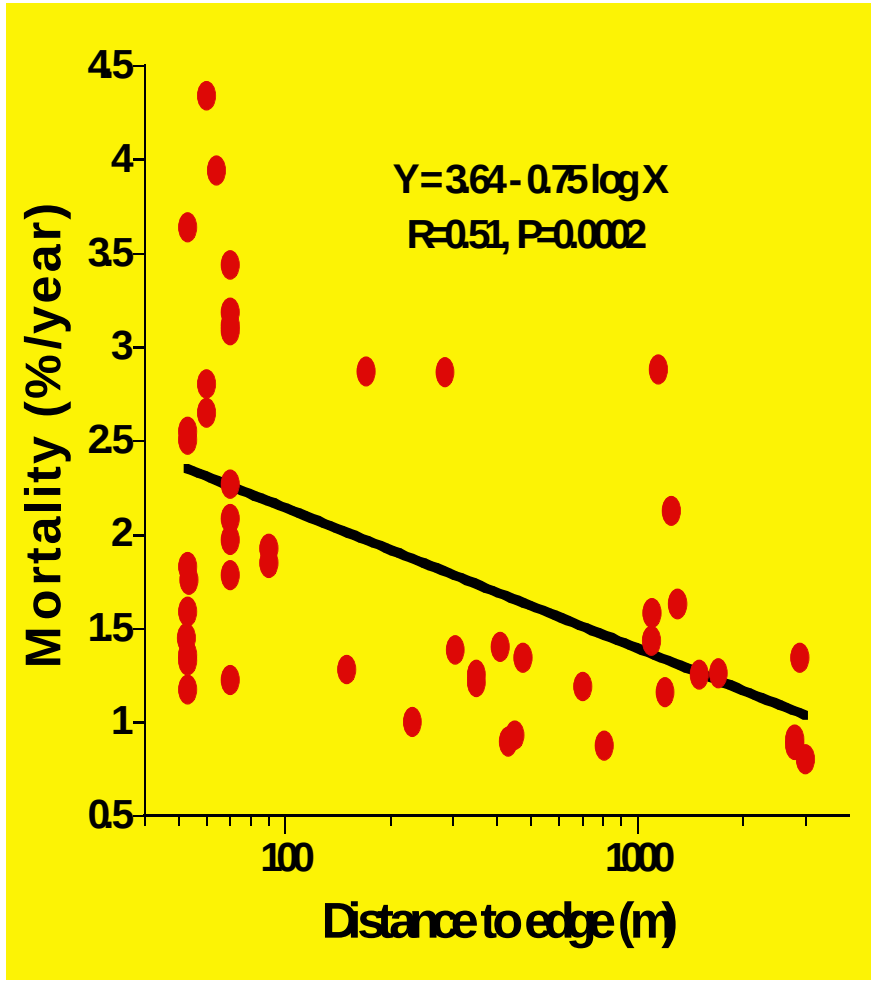

Fotos: Richard Bierregaard

Localização das Parcelas na área do PDBFF



Damage and mortality of trees (%/yr)





Nascimento and Laurance, 2004 Ecol. Appl.;

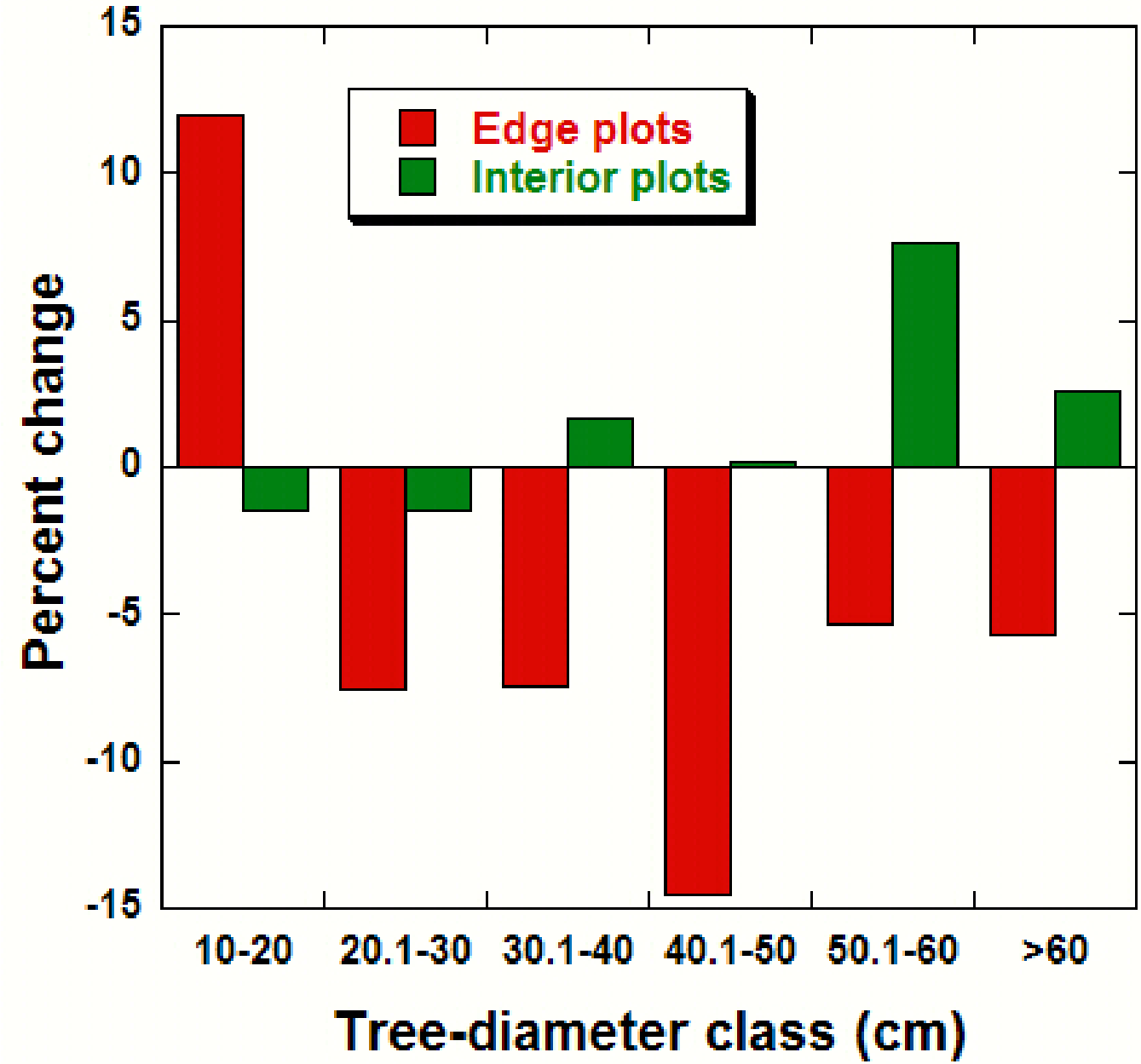
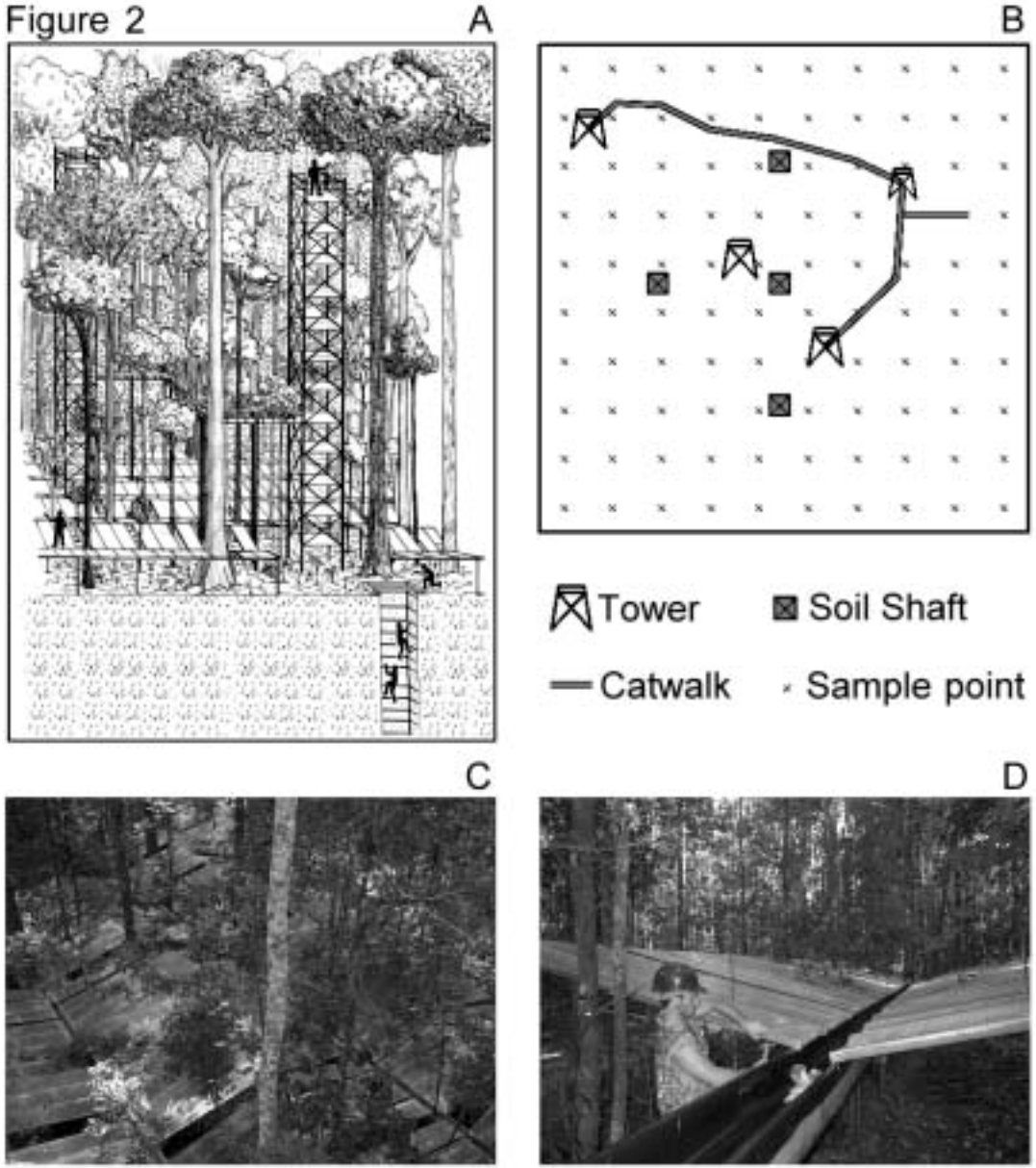
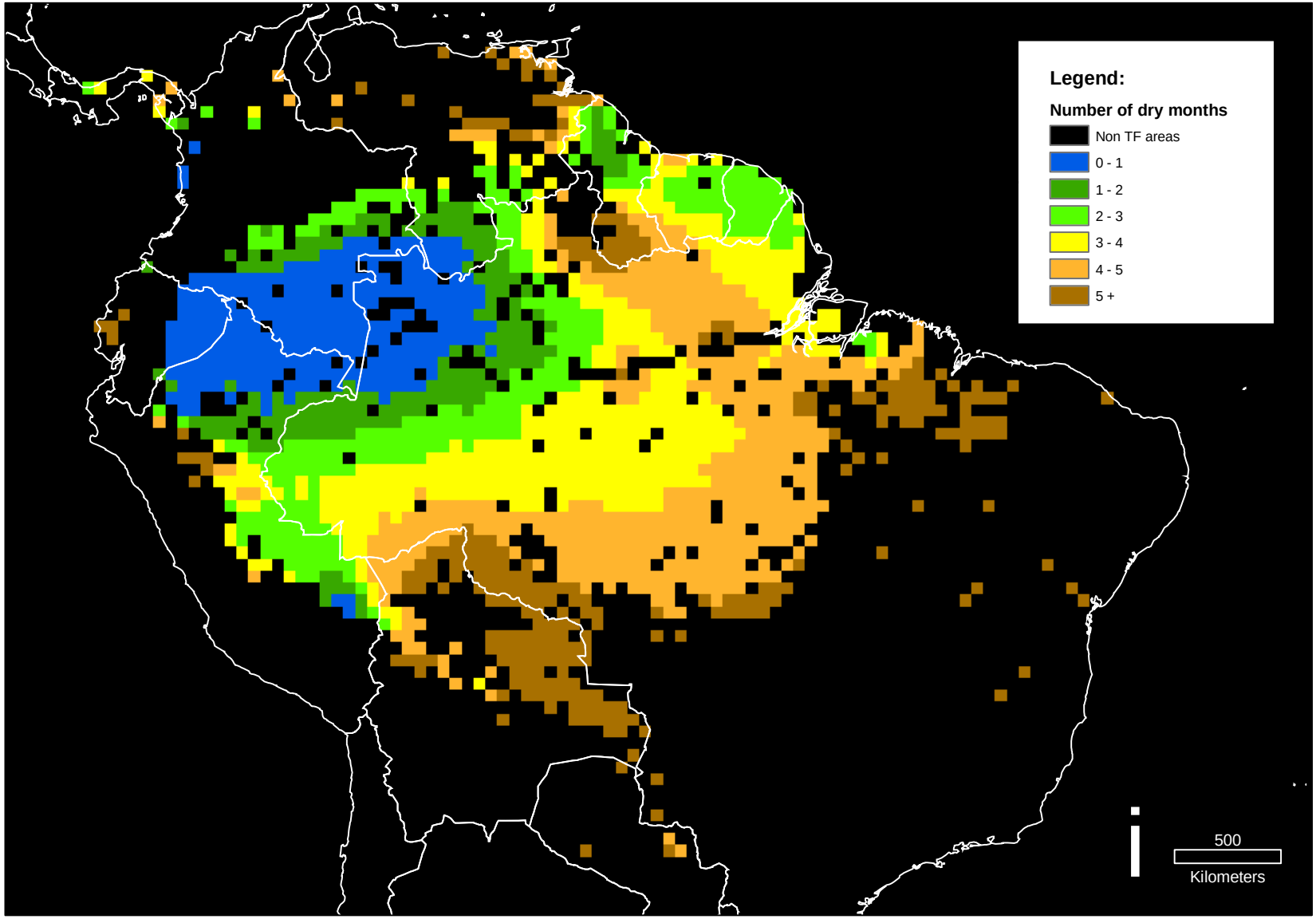

Edge plots
Interior plots
Percent change
15
10
5
0
-5
-10
-15
10-20
20.1-30
30.1-40
40.1-50
50.1-60
>60
Tree-diameter class (cm)

Figure 2



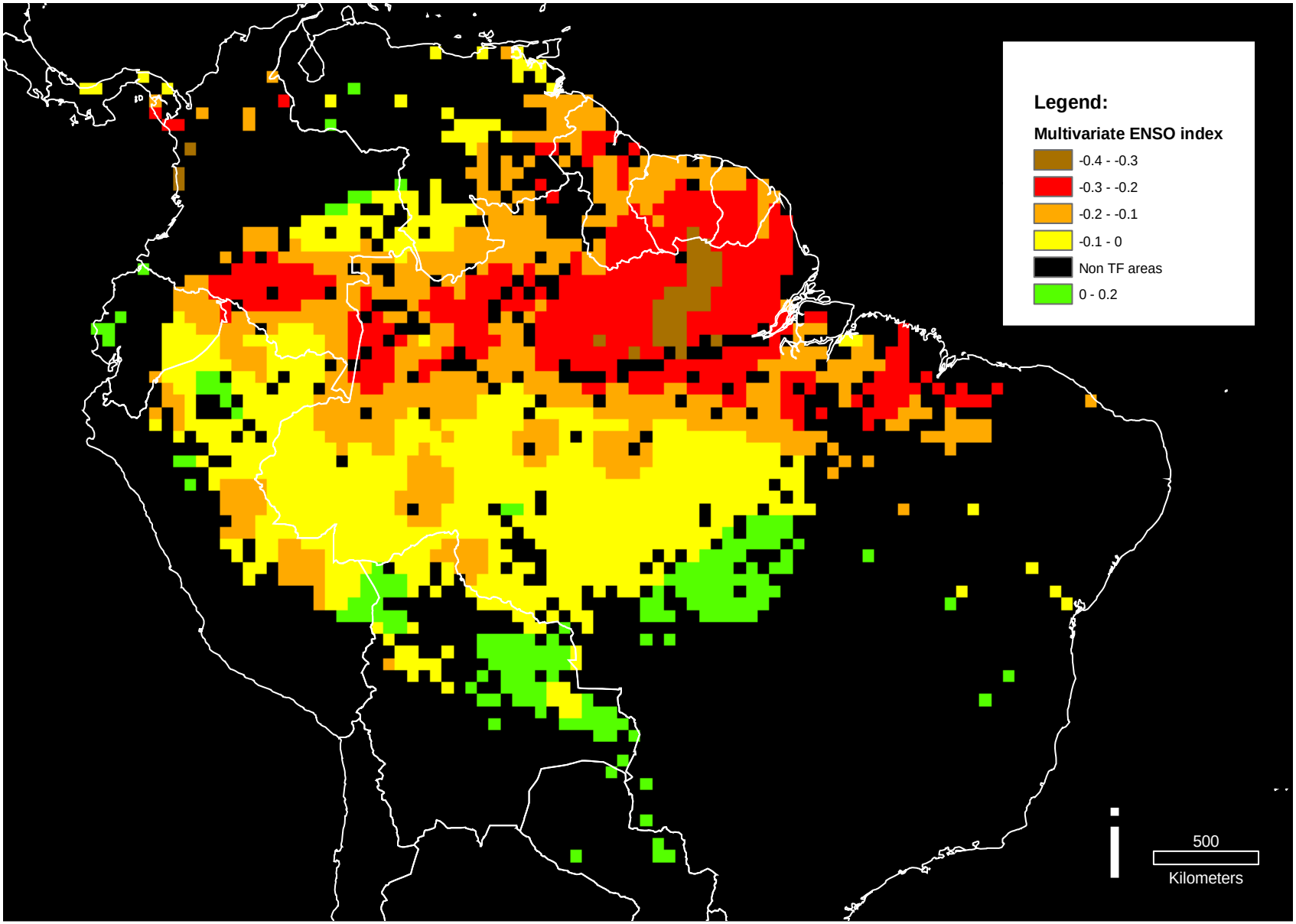
Nepstad et al. 2002

Length of dry season



Derived from the New et al 2001 dataset

Impact of El Nino



Malhi and Wright 2004 *Spatial patterns and recent trends in the climate of tropical forest regions.* Philosophical Transactions of the Royal Society

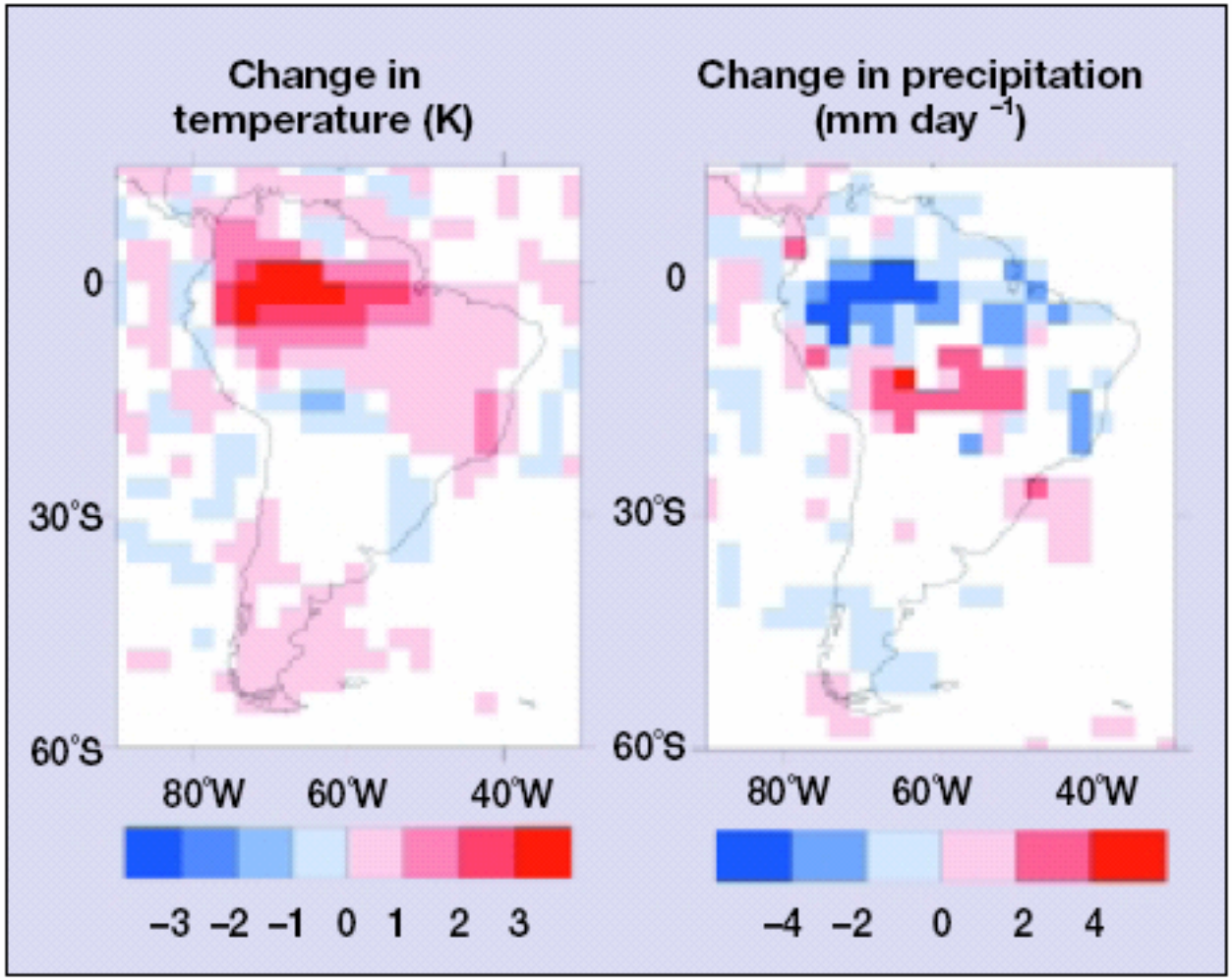


Figure 5. Changes in climate over Amazonia from complete deforestation. Snyder et al. (unpublished) used the coupled CCM3-IBIS climate–biosphere model to determine the effects of large-scale deforestation on Amazonian climate. The results suggest that the Amazon climate may be highly sensitive to large-scale deforestation (adapted from Snyder et al. unpublished).

Foley et al. 2007 Frontiers in Ecology and the Environment

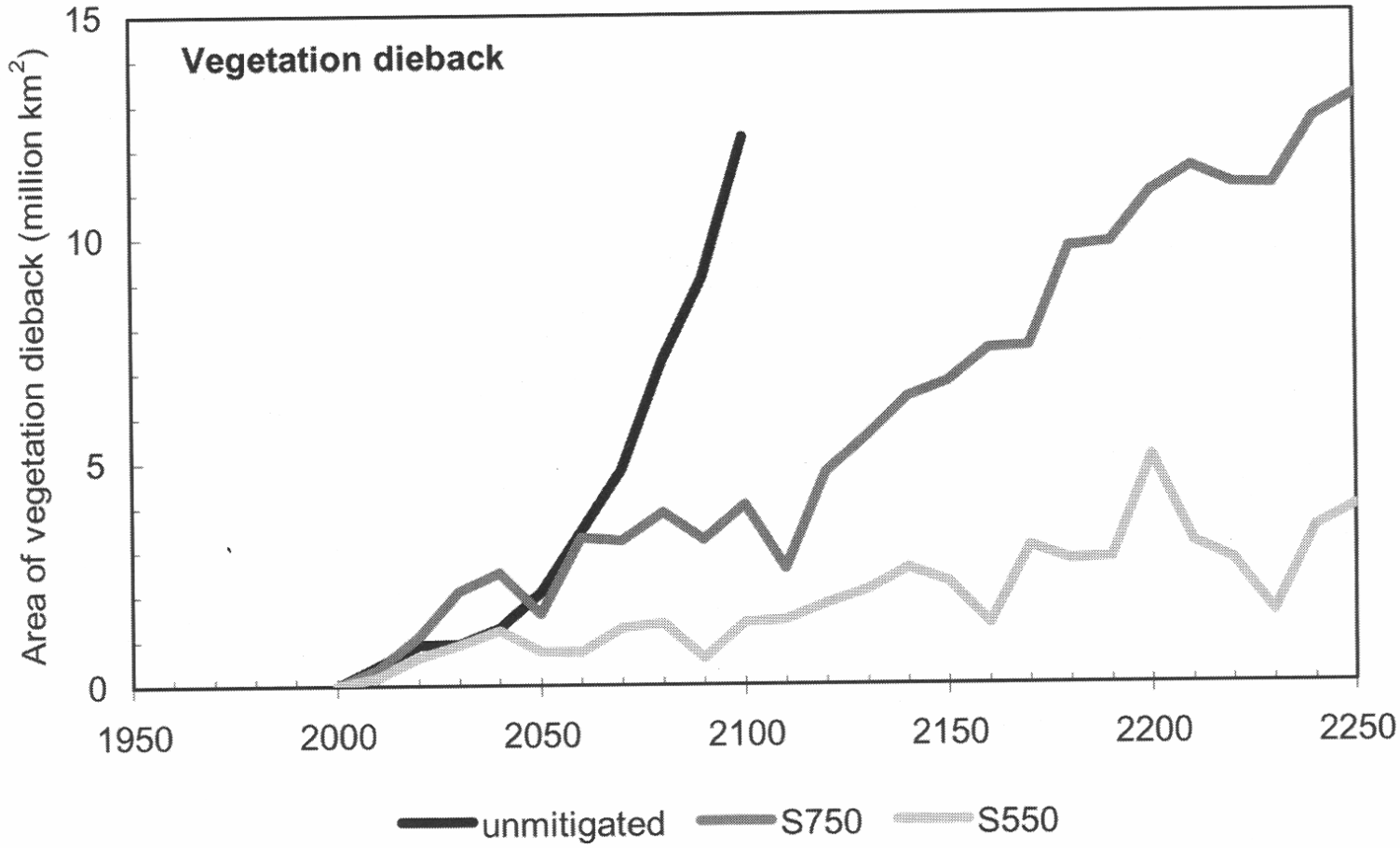


Figure 6. Area of vegetation dieback in response to climate change, under unmitigated emissions (top line), S750 (middle line) and S550 (bottom line).

Arnell et al. 2002 Climatic Change

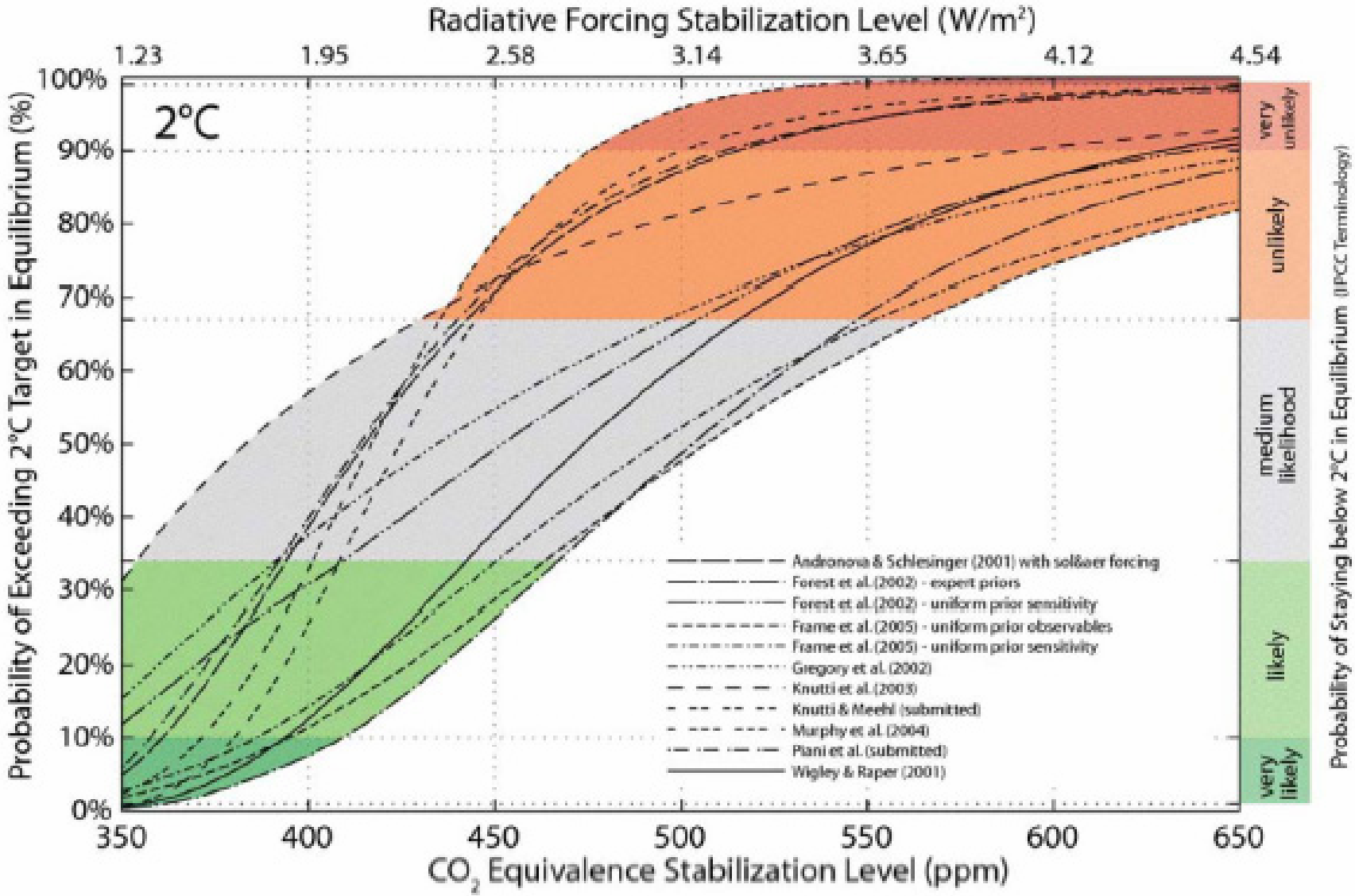


Figure 19.1: *Probability (see Key Caveat above on low confidence for specific quantitatitive results) of exceeding an equilibrium global warming of 2°C above preindustrial (1.4°C above 1990 levels), for*

IPCC AR4 WG2 2007. Chapter 19