

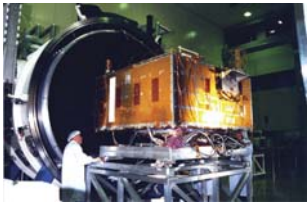


Responsibility and Climate Change

Brazilian Perspective and 30/May/1997 Brazilian Proposal for the AGBM

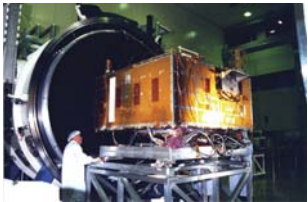
José Miguez

Brazilian Ministry of Science and Technology



Introduction

- Kyoto
 - no attempt to establish an objective criterion for how to mitigate climate change
- New Challenge
 - temperature increase resulting from greenhouse gas emissions represents a long-term process that will span over a period greater than a hundred years



Kyoto Process

Ministério da
Ciência e Tecnologia

- Criteria

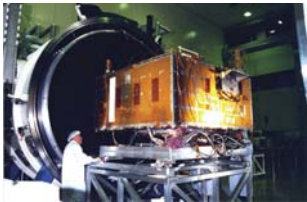
- There was no attempt to establish an objective criterion for how to mitigate climate change (by how much and for how long)

- emission reduction for all Annex I countries of 5% in average in the period of five years centered around 2010 as compared to 1990 levels, represents an additional enhancement of the greenhouse effect as compared to the previous commitment of developed countries to stabilize their overall greenhouse emissions at 1990 levels by 2000, and maintaining these levels until 2010.



Current Paradigm

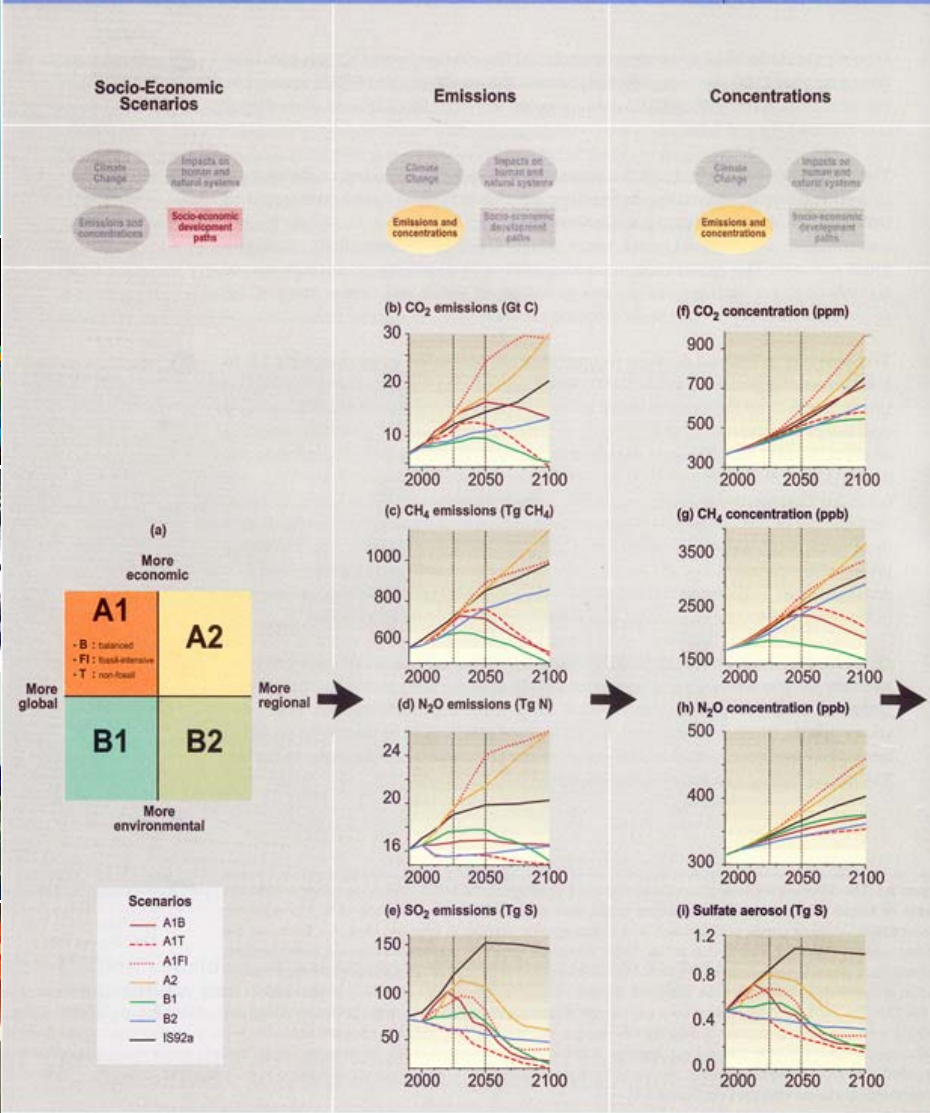
- The Climate Convention is based on emission accounting by means of inventory reporting by each country of its anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol.
 - First, policy makers can only have some level of control and establish regulations over anthropogenic emissions (or at least part of them)
 - Second, in urban atmospheric pollution or water contamination, actual emissions have been used as a measure of the responsibility of polluters. (This is not the case for the climate change problem because of the long-lived greenhouse gases.)
 - problem of choosing a base year



New Paradigm

- The increase in global mean surface temperature is roughly proportional to the accumulation over time of the radiative warming. The radiative warming is, in turn, proportional to the atmospheric concentration of the greenhouse gas. It follows that the temperature increase itself is proportional to the accumulation of the atmospheric concentration of the greenhouse gas.
- The idea was to demonstrate that a very simple calculation scheme can be used in lieu of the complex climate models, while still maintaining the correct functional dependence of the increase in mean surface temperature upon the emissions over a period of time
- Emissions, as the cause of the problem, do not correspond to the responsibility for causing climate change. Responsibility has to be associated with the effect of emissions in terms of global warming.



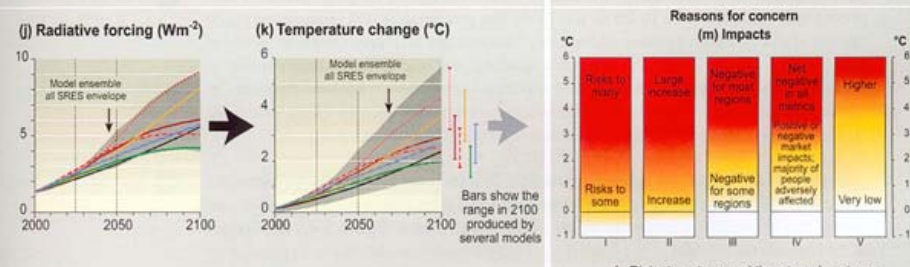
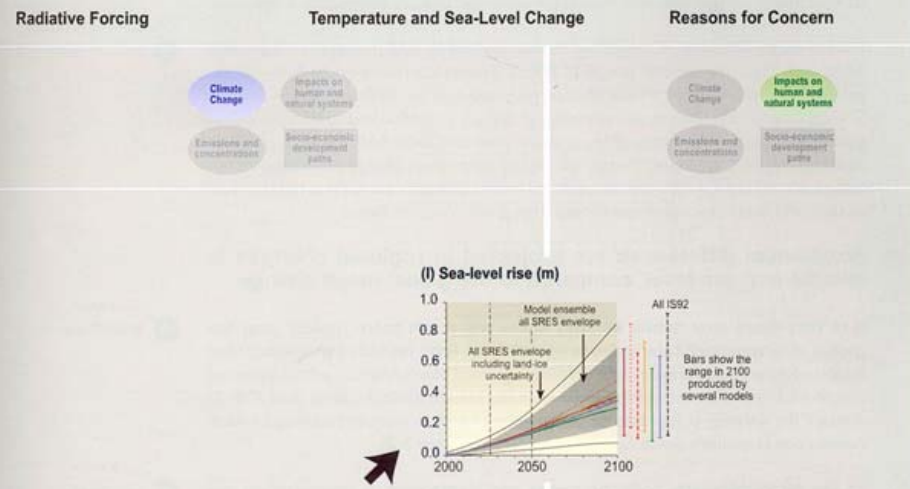


A1FI, A1T, and A1B

The A1 storyline and scenario family describes a future world of very rapid economic growth, global population that peaks in mid-century and declines thereafter, and the rapid introduction of new and more efficient technologies. Major underlying themes are convergence among regions, capacity-building, and increased cultural and social interactions, with a

substantial reduction in regional differences in per capita income. The A1 scenario family develops into three groups that describe alternative directions of technological change in the energy system. The three A1 groups are distinguished by their technological emphasis: fossil intensive (A1FI), non-fossil energy sources (A1T), or a balance across all

sources (A1B) (where balanced is defined as not relying too heavily on one particular energy source, on the assumption that similar improvement rates apply to all energy supply and end use technologies).



Scenarios

- A1B
- A1T
- A1FI
- A2
- B1
- B2
- IS92a

A2

The A2 storyline and scenario family describes a very heterogeneous world. The underlying theme is self-reliance and preservation of local identities. Fertility patterns across regions converge very slowly, which results in continuously increasing population. Economic development is primarily regionally oriented and per capita economic growth and technological change more fragmented and slower than other storylines.

B1

The B1 storyline and scenario family describes a convergent world with the same global population that peaks in mid-century and declines thereafter, as in the A1 storyline, but with rapid change in economic structures toward a service and information economy, with reductions in material intensity and the introduction of clean and resource-efficient technologies. The emphasis is on global solutions to economic, social, and environmental sustainability, including improved equity, but without additional climate initiatives.

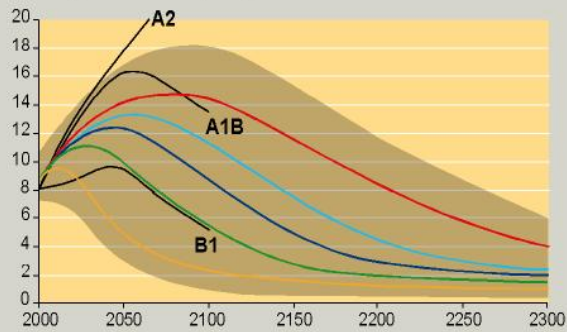
B2

The B2 storyline and scenario family describes a world in which the emphasis is on local solutions to economic, social, and environmental sustainability. It is a world with continuously increasing global population, at a rate lower than A2, intermediate levels of economic development, and less rapid and more diverse technological change than in the B1 and A1 storylines. While the scenario is also oriented towards environmental protection and social equity, it focuses on local and regional levels.

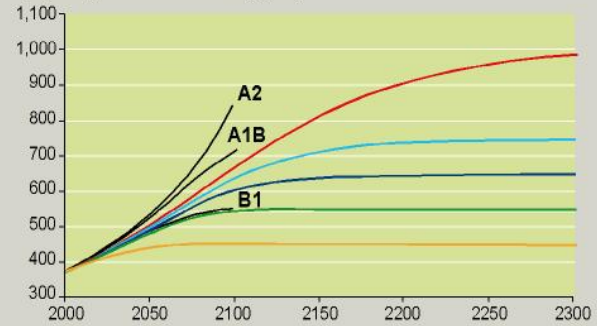
- I Risks to unique and threatened systems
- II Risks from extreme climate events
- III Distribution of impacts
- IV Aggregate impacts
- V Risks from future large-scale discontinuities

Emissions, concentrations, and temperature changes corresponding to different stabilization levels for CO₂ concentrations

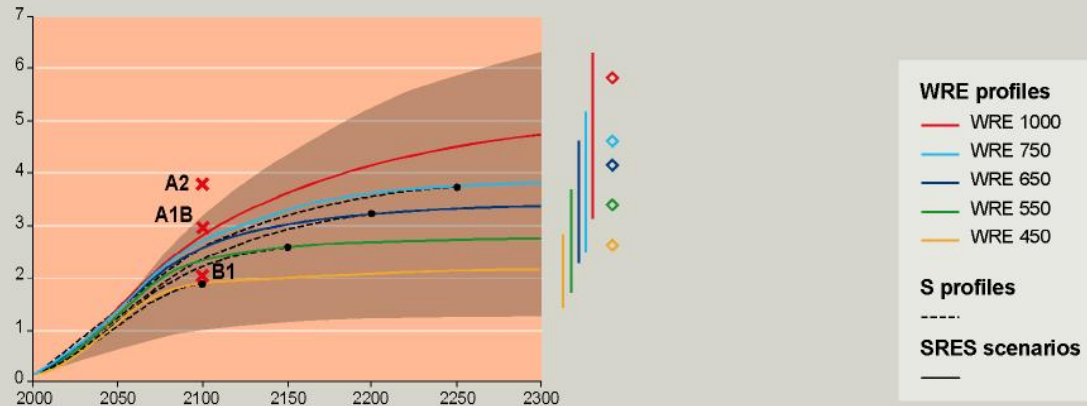
(a) CO₂ emissions (Gt C)



(b) CO₂ concentration (ppm)



(c) Global mean temperature change (°C)



SYR - FIGURE 6-1

Extended CO2 emissions IPCC scenario IS92a

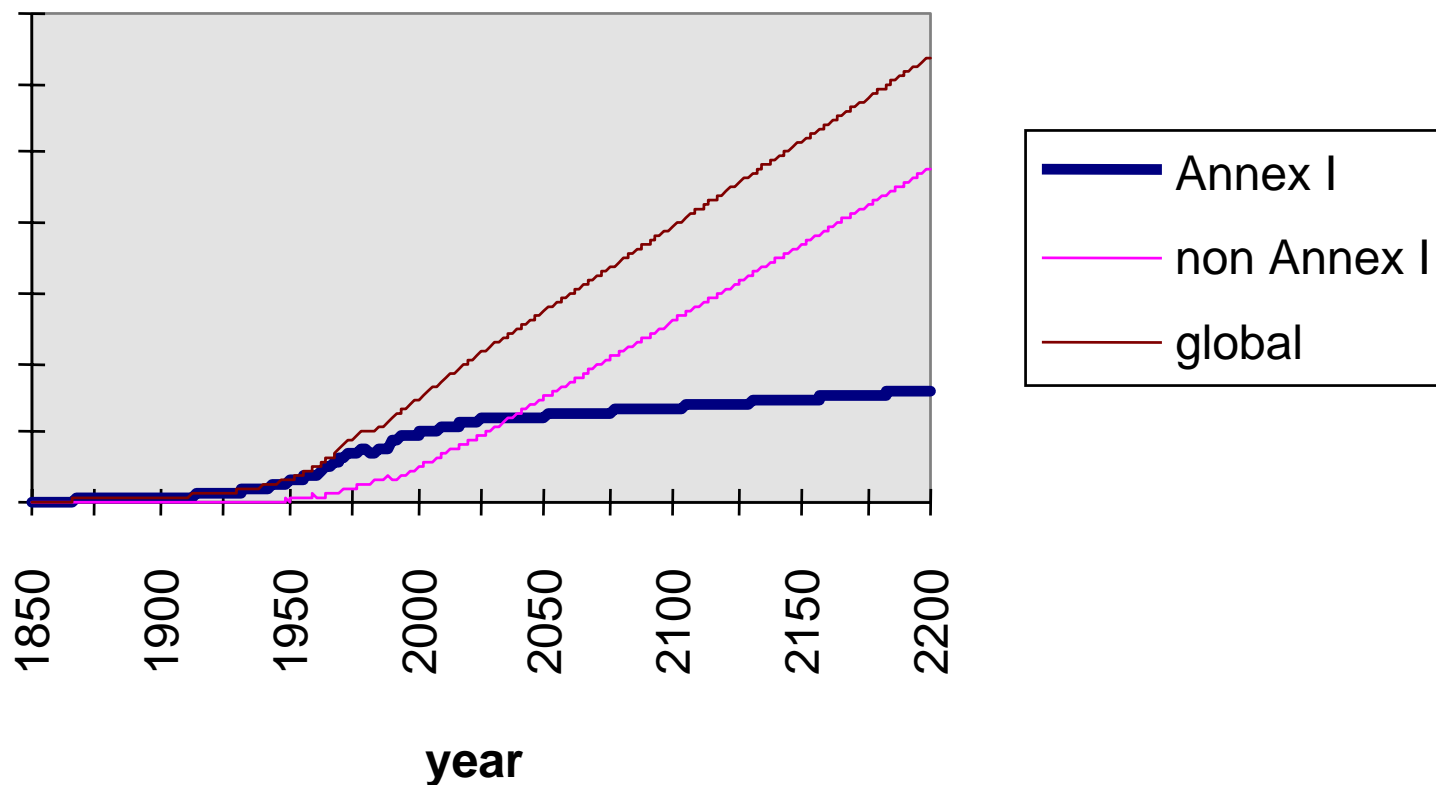


Figure A2.3 – ORNL data and best fit curves for the USA.

United States of America

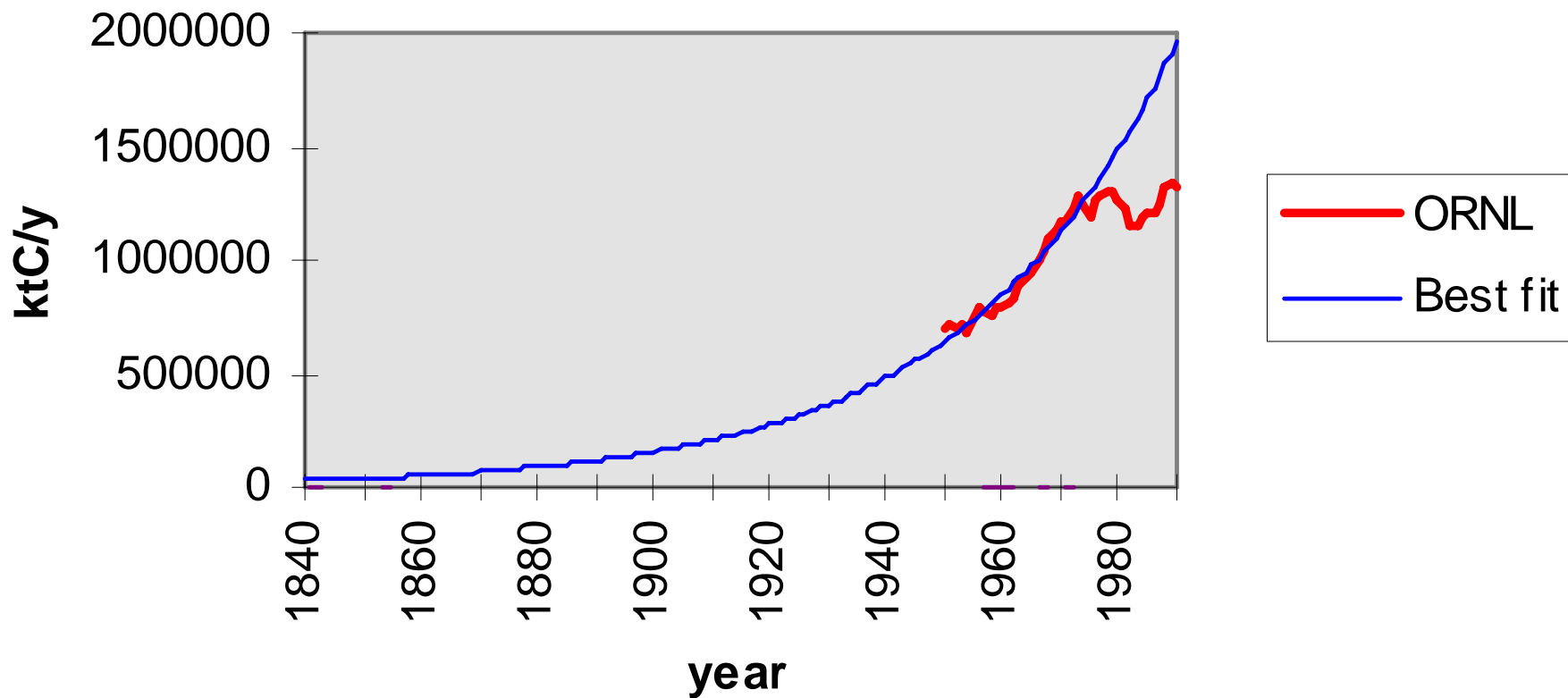


Figure A2.5 – ORNL data and best fit curves for Germany.

Germany

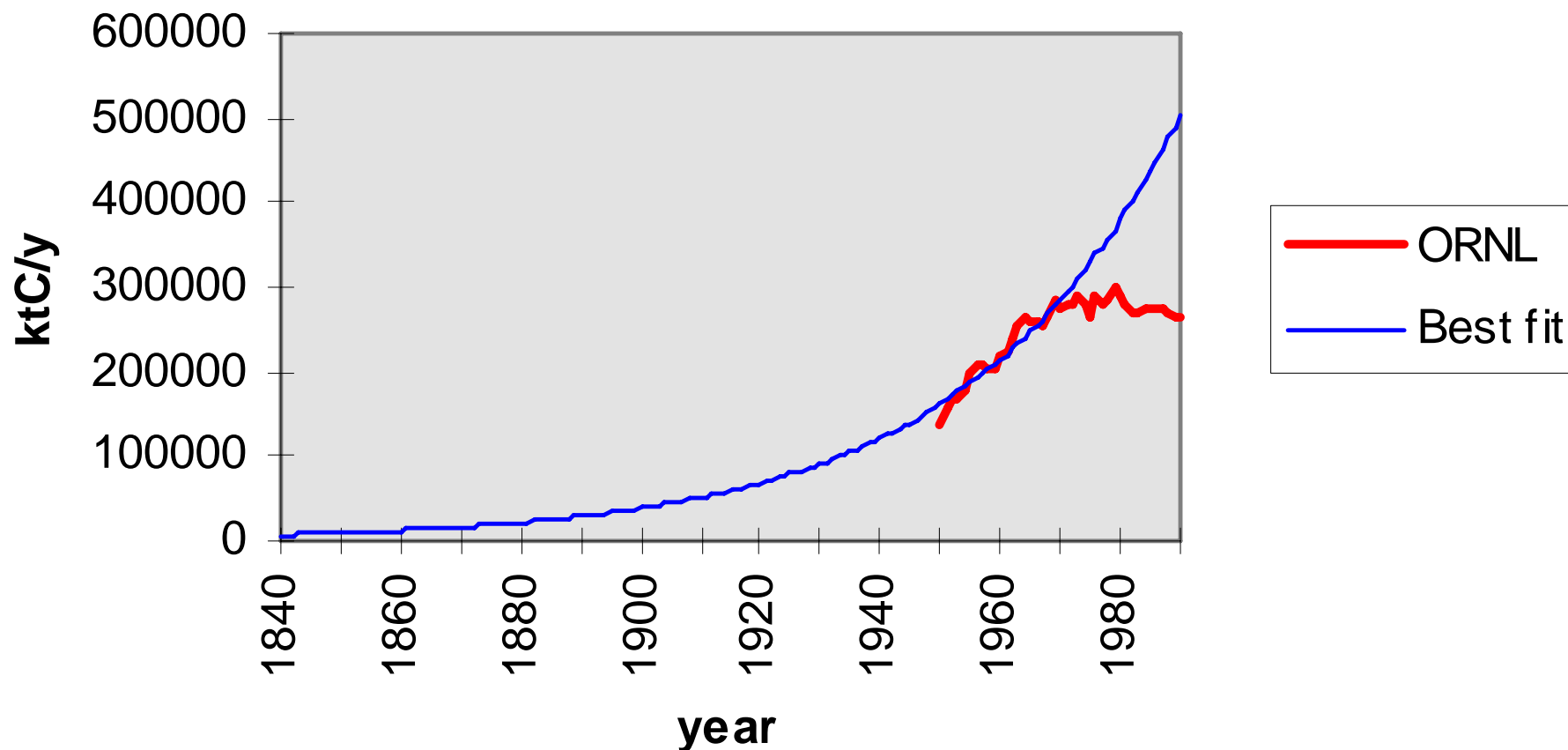


Figure A2.6 – ORNL data and best fit curves for the United Kingdom.

United Kingdom of Great Britain and Northern Ireland

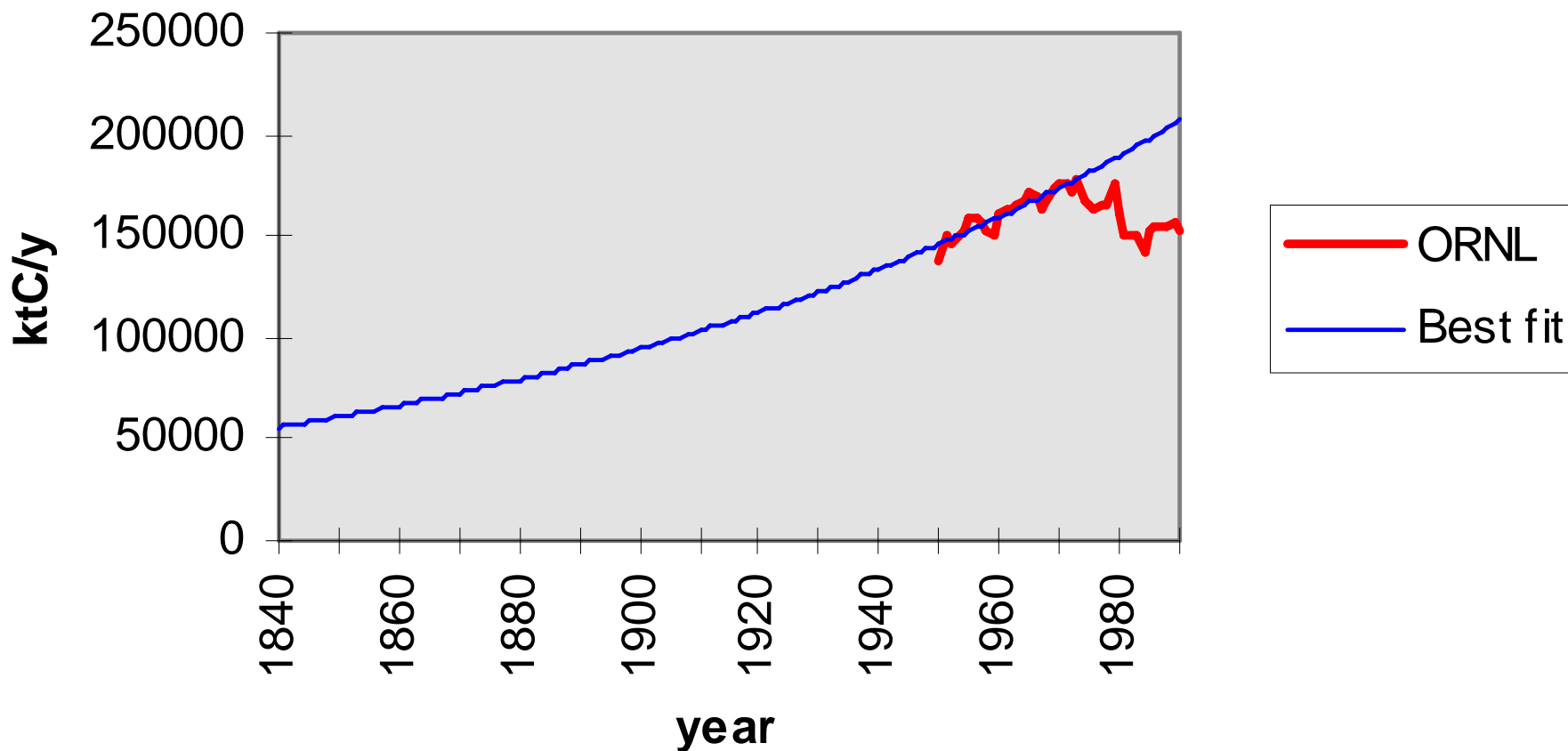
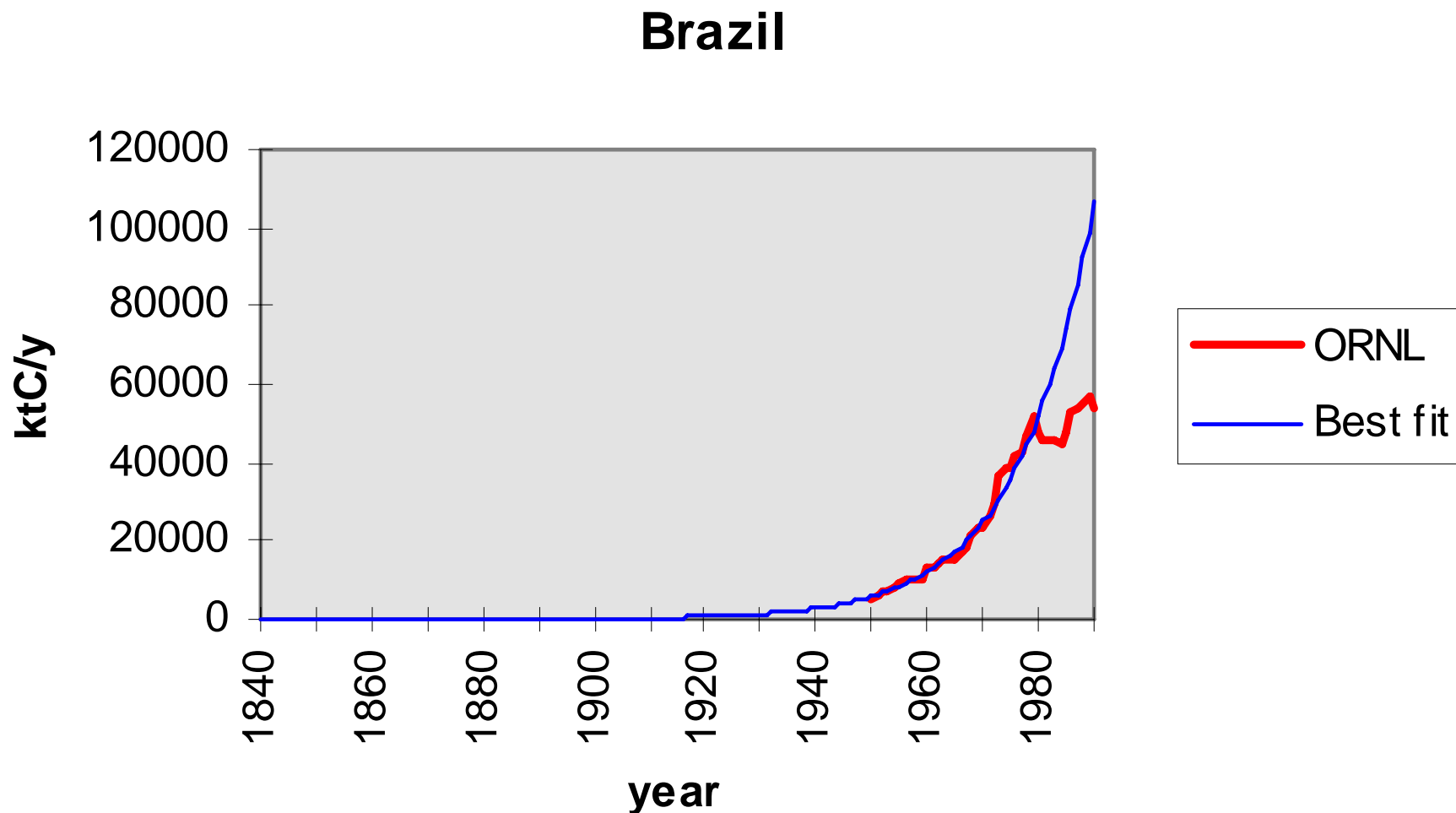
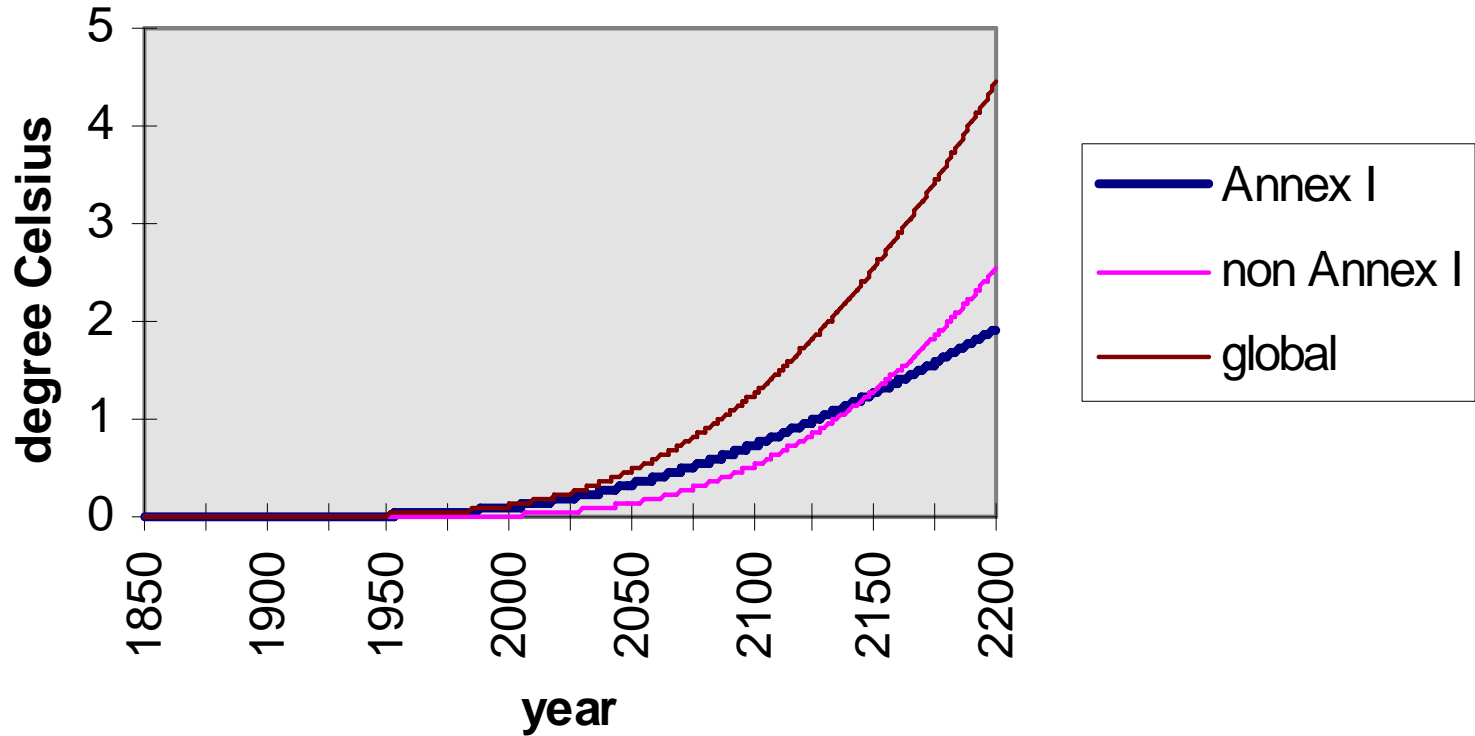


Figure A2.9 – ORNL data and best fit curves for Brazil.



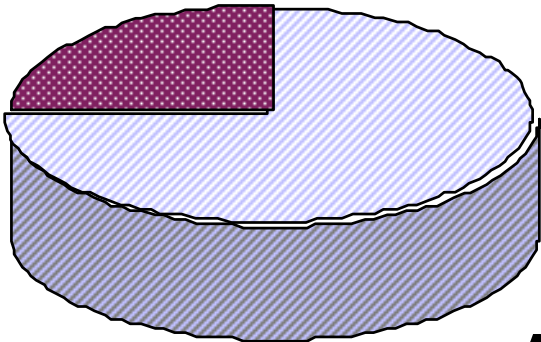
temperature increase due to both pre- and post-1990 CO2 emissions



Emissions

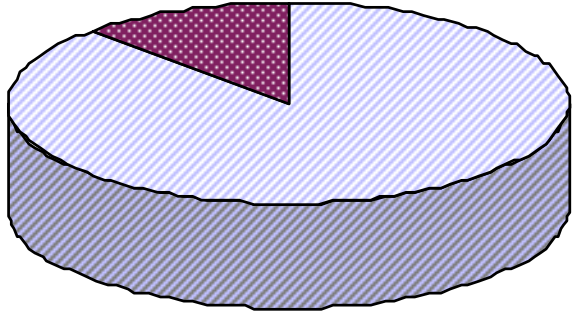
Temperature Increase

**Non-Annex I
25%**



**Annex I
75%**

**Non Annex I
12%**



**Annex I
88%**

