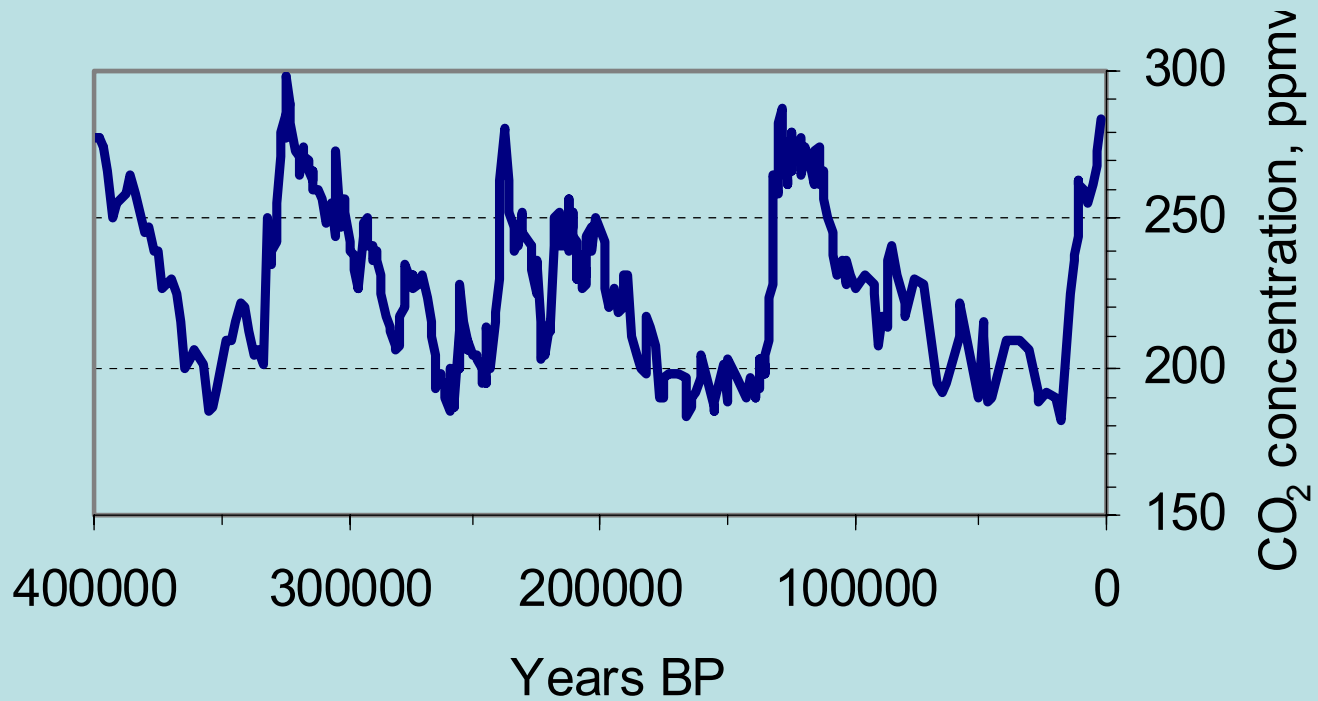
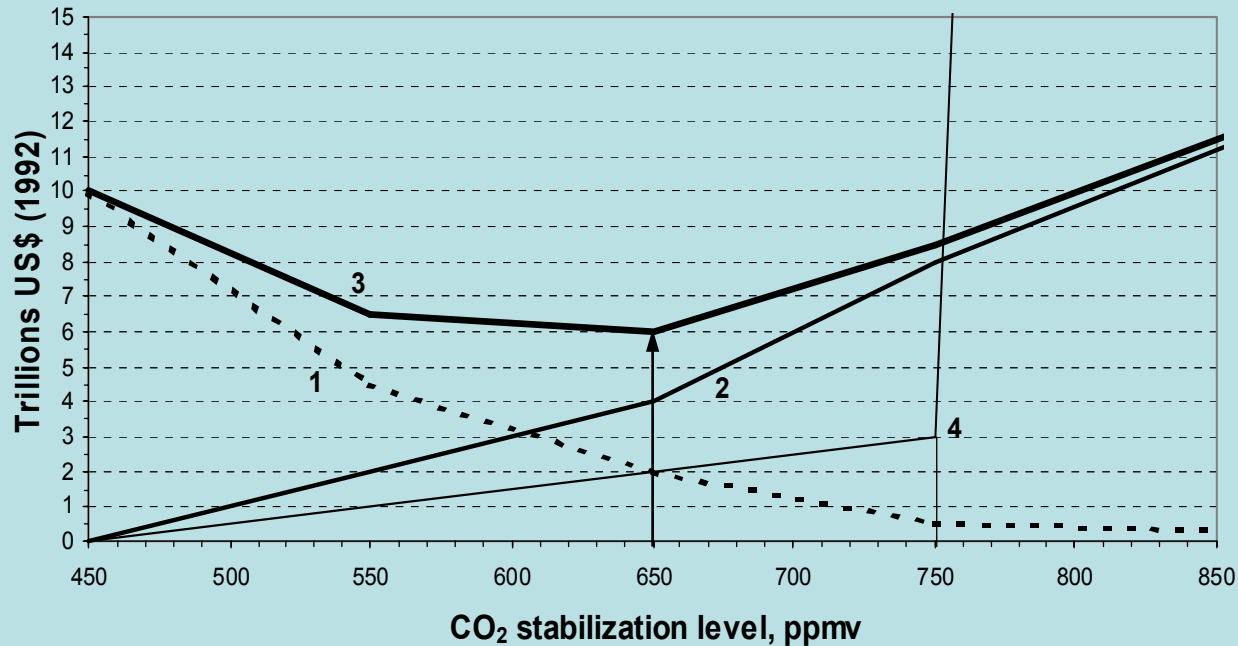


**CRITICAL LEVELS OF GREENHOUSE
GASES, STABILIZATION SCENARIOS,
AND IMPLICATIONS FOR THE GLOBAL
DECISIONS**

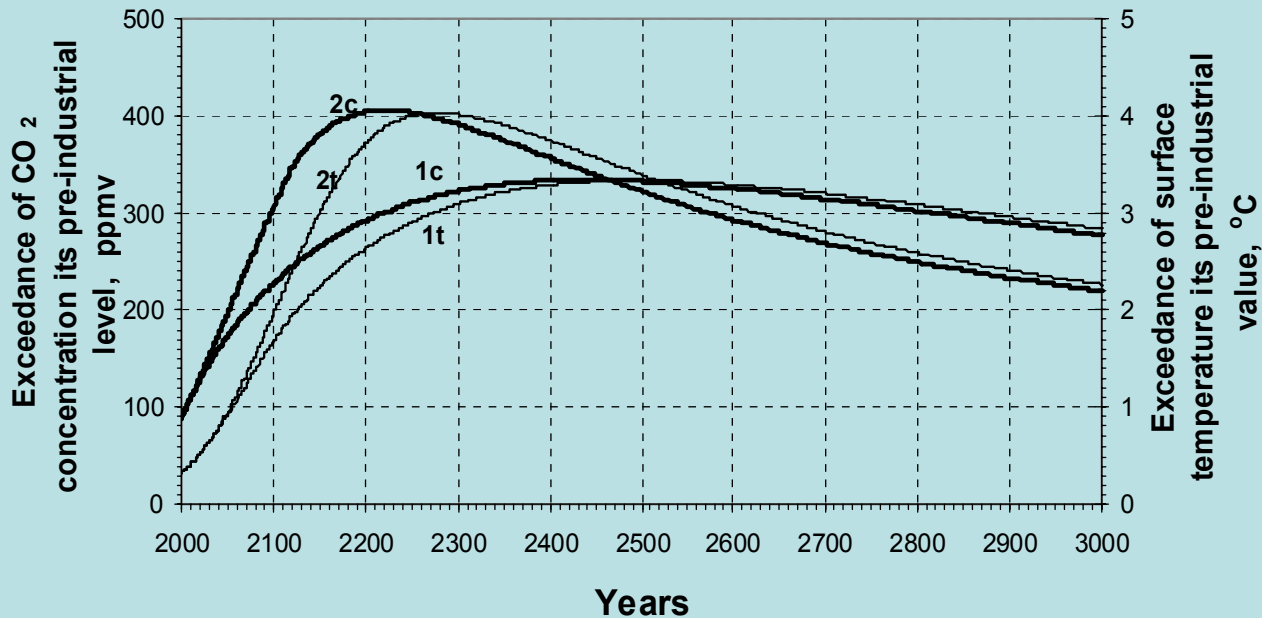
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Russian Federation**



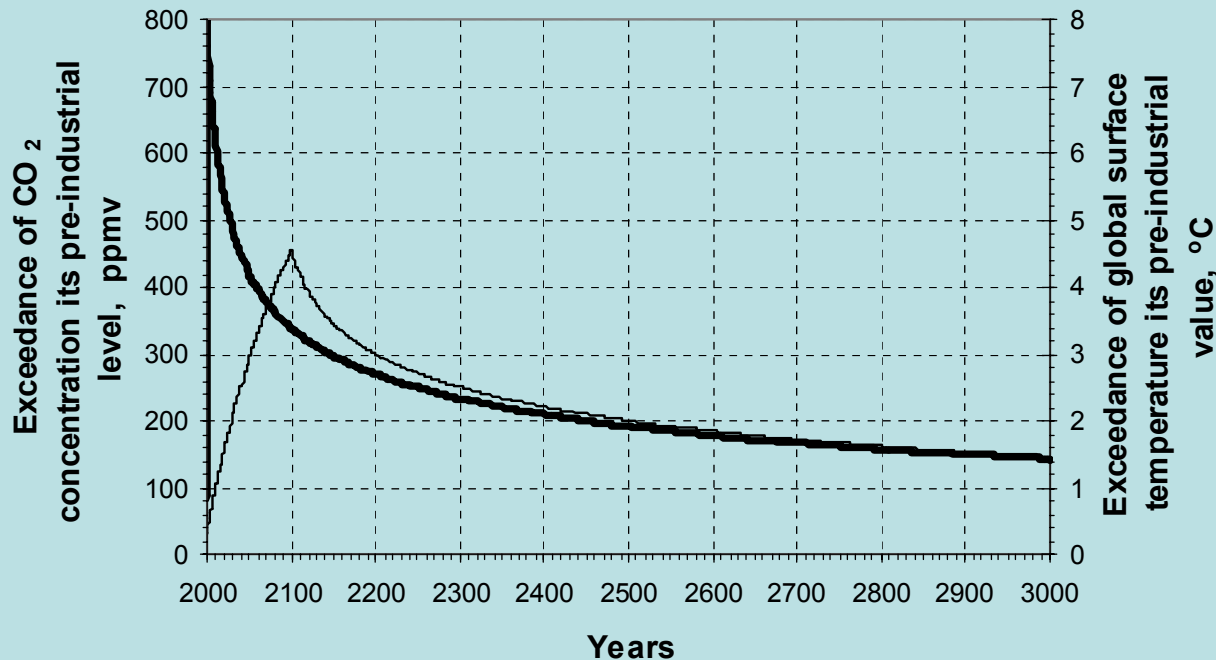
**Historical records of CO₂ concentrations,
Vostok station, Antarctica**



Stabilization of CO₂ level (illustrative example):
1 - stabilization cost as depended on stabilization level approximately as given in (IPCC, 2001); 2 – residual climate-change caused damage increasing with the level;
3 – their sum {STABILIZATION COST + RESIDUAL DAMAGE} as depended on the level; 4 – residual damage associated with certain key vulnerable element.



Changes in CO₂ concentration (heavy lines 1c and 2c) and global mean surface temperature (normal lines 1t and 2t) under two scenarios: 1 - annual, starting from 2012, reduction of global emission associated with fossil fuel burning, cement production and gas flaring by 0.29%, while net-flux associated with changes in land use and land management is annually reduced by 0.1%; 2 - annual, starting from 2112, reduction of global emission associated with fossil fuel burning, cement production and gas flaring by 0.83%, while net-flux associated with changes in land use and land management is annually reduced by 0.1%.



Changes in CO₂ concentration (heavy line) and global mean surface temperature (normal line) under theoretical, hypothetical scenario: all known resources of gas, oil and coal (commercially efficient coal fields only) are burned at once at the beginning of 2000, and then anthropogenic emissions of all types are stopped.

UPPER LEVELS OF GREENHOUSE GASES

- a) CO₂ concentration should not exceed 550-700 ppmv;
- b) A rise in surface temperature should be less than 2.5°C for the globe and less than 4°C for the Arctic;
- c) Global mitigation costs should not exceed 10-20% (1-2%) of the increase in GDP;
- d) Sea level rise should be less than 1 m.

These values will not result in global catastrophic events

- Can these goals be achieved (and under which particular scenarios) through the efforts of countries of Annex I only, and what reductions of CO₂ emission will be needed?
- Will certain reduction of emissions of developing countries be absolutely necessary for the fulfilment of these criteria, and how can they be quantified at present?
- What is the critical level of greenhouse gas concentration?

- Besides a certain deceleration of the increase of global GDP, will the fulfilment of these criteria require also fundamental restructuring of the existing mode of life in the most countries, as well as certain decrease in living standards?

It should be emphasized that in its present state, the Kyoto Protocol is not able to answer these questions