

LIVING IN SAHARAN HEAT

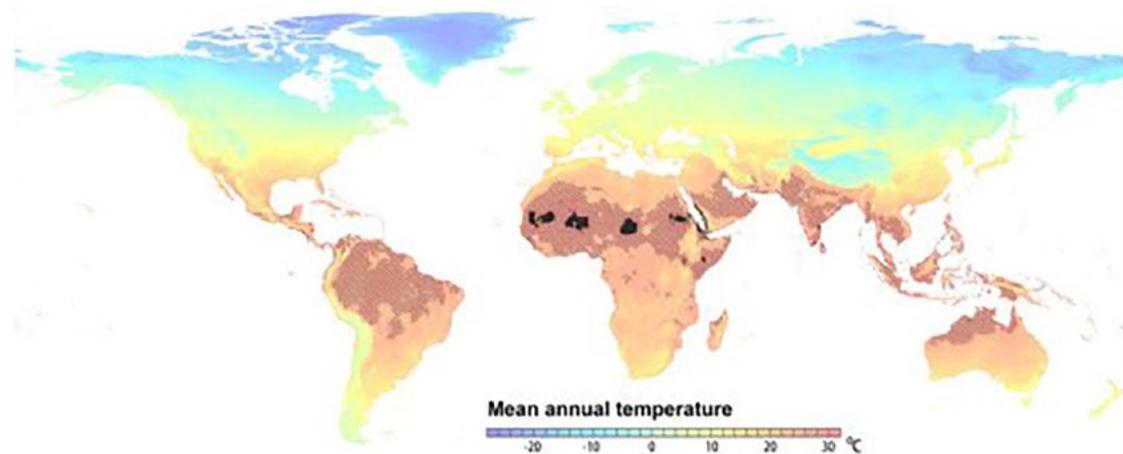
If global warming is not brought under control, in 50 years' time 3.5 billion people will be living in Saharan temperatures, shows a study by Professor Marten Scheffer.

An article about this in *PNAS (Proceedings of the National Academy of Sciences)* has attracted a lot of attention internationally. The study documents the shift in the zones on the Earth where humans feel most comfortable and perform best. Thanks to global warming, the human species' 'niche' is moving. And that could lead to mass migration.

BELL CURVE

Scheffer hit upon the idea of mapping the human 'comfort zone' during a conference in the Mexican city of Merida, where it was hot and humid. 'Is that good for a human being?' Scheffer asked himself. The thought led to a study of the limits for human habitation and the link between the average annual temperature and human habitation. Plotting that link gives a classic bell curve with an optimum of around 13 degrees Celsius.

That optimal temperature and the range around it (-11 to +15 degrees Celsius) does not appear to have changed for the past 6000 years. This led to the next question, of



▲ The expansion of hot zones by 2070. In brown: the zones where it is too hot to live.

what impact global warming will have on that human habitat. Scheffer and his international team (which includes an archaeologist, a social geographer and a climate scientist) are looking 50 years ahead.

'We have calculated a kind of social sensitivity to global warming'

Without a big reduction in greenhouse gases, 19 per cent of the Earth's surface will have Sahara-like annual average temperatures of over 29 degrees Celsius.

And one third of the world population will be living there: the north of South America, Australia, Africa, India and South-East Asia. Scheffer: 'India is already at the limit of what is viable.'

SOCIAL SENSITIVITY

But even the less extreme climate scenarios produce worrying figures. Even if the rise in temperature can be limited through various measures, we shall still have 1.5 billion people living in zones that are too hot. An alarming message, but Scheffer prefers to see it positively. 'You can also say that for every degree less warming, one billion fewer people get into difficulties.' That core message is the strength

of this study, says Scheffer. 'The impact of climate change is often expressed in dollars. This makes more of an impression on people, and it hasn't been done before. We have calculated a kind of social sensitivity to warming.' As far as Scheffer is concerned, it is a given that global warming will lead to mass migration.

Scheffer dismisses the criticism that working with the worst case scenario is pessimistic. 'A lot of measures are being taken, but for the time being, CO₂ emissions are still rising. What is more, there are more and more signs that the Earth is much more sensitive to those emissions than we thought.' **GRK**