

Our Weather - How Does it Work?



Image source: Lehrer-Online

Complete the following tasks in partner work. You can use the “Physik für das Klima und andere komplexe Systeme“ digital poster and the Lindau Online Matinee 2022 video for this:



<https://www.mediatheque.lindau-nobel.org/Get-File?id=39532>



<https://www.mediatheque.lindau-nobel.org/videos/39519/lindauer-matinee-2022>

Tasks

1. In everyday language we rarely distinguish between short-term and long-term weather forecasts. Scientists, however, are more precise in this respect.
Explain the difference between weather and climate in no more than three sentences.
2. People usually only perceive the sky when there are clusters of clouds or beautiful sunsets. Syukuro Manabe was one of the first scientists to study the interaction between the climate and the Earth's atmosphere.
Sketch a simple model of the Earth's atmosphere.
3. Many people take our atmosphere and the air we breathe for granted.
Explain why the existence of earth's atmosphere is crucial for the survival of mankind.

4. In 1969, Syukuro Manabe and Kirk Bryan published the world's first climate model that included the oceans.

Describe the model in your own words, which is also shown on the "Physics for Climate and Other Complex Systems" poster on the bottom left.

5. In the 1970s and 1980s, Syukuro Manabe and a group of scientists published studies on the influence of greenhouse gases on the Earth's climate. This work was an essential basis for the later assessment reports of the Intergovernmental Panel on Climate Change on global warming. In no more than five sentences, state the key finding of the latest Assessment Report of the Intergovernmental Panel on Climate Change. You can find a summary of the current reports on the Helmholtz Institute website: <https://www.helmholtz-klima.de/aktuelles/der-neue-sachstandsbericht-des-weltklimarats>



6. Manabe's research has also shown the influence of the melting ice caps at the North and South Poles. Research the facts and their consequences on the net. Name and explain what the positive and negative consequences of a further melting of the ice caps would have and sort the consequences according to relevance.
7. Using the internet, research the life of Syukuro Manabe and present your findings in a clear form (e.g. video, digital pinboard or poster). The results are then presented and discussed in plenary.



Additional task for quick learners: Research what is meant by the term "climate sensitivity" and consider what role it plays in the current climate debate. Present your results in an oral statement in the plenary.