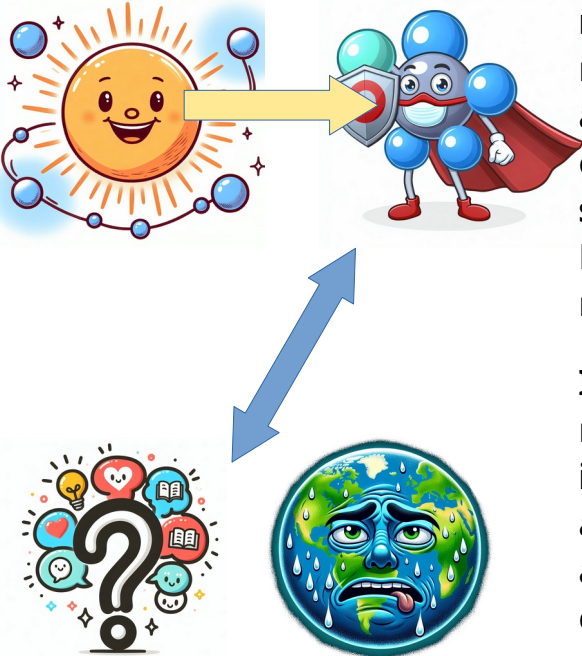


Topic: Comparison of Simplified Ozone Parameterizations in ICON-ART

Contact Person: Stefan Versick, stefan.versick@kit.edu



The **stratospheric ozone layer** is crucial for life on Earth as it **absorbs** harmful **ultraviolet radiation**. Depletion of this layer can lead to serious consequences like increased skin cancer risk and ecosystem damage. Climate research uses numerical models to understand atmospheric processes and predict future changes. Simulating atmospheric chemistry, e.g. ozone chemistry, is **computationally intensive**. Therefore, climate models often use **simplified parameterizations** to represent key processes of ozone formation and depletion. Linearized parameterizations are more computationally efficient than detailed chemical models, allowing for longer simulations and higher resolution.

In this master's thesis, three **different linearized ozone parameterizations** in the climate model ICON-ART will be compared. **Two** of these parameterizations **are already implemented** in the model, while the **third will be incorporated as part of this work**. The aim is to **evaluate the advantages and disadvantages** of the different parameterizations and to examine their impact on the simulated ozone distribution, atmospheric circulation, climate change, ozone hole, ozone recovery, and UV-index, based on the student's preferences.