# Article information:

Atmospheric and Surface Contributions to Planetary Albedo on JSTOR  
<https://www.jstor.org/stable/26191152>

# Article summary:

1. The planetary albedo is divided into atmospheric and surface contributions using shortwave fluxes and a radiation model, with the majority (88%) being due to atmospheric reflection.

2. Intermodel differences in atmospheric albedo are the main cause of variation in planetary albedo among CMIP3 models, while surface processes play a smaller role.

3. Changes in atmospheric reflection explain over 90% of the intermodel spread in planetary albedo under doubled carbon dioxide levels, while changes in surface albedo associated with cryosphere contraction have a smaller effect compared to model differences in cloud changes.

# Article rating:

May be slightly imbalanced: The article presents the information in a generally reliable way, but there are minor points of consideration that could be explored further or claims that are not fully backed by appropriate evidence. Some perspectives may also be omitted, and you are encouraged to use the research topics section to explore the topic further.

# Article analysis:

The article "Atmospheric and Surface Contributions to Planetary Albedo" provides a detailed analysis of the partitioning of planetary albedo into atmospheric and surface contributions. The study uses shortwave fluxes at the surface and top of the atmosphere in conjunction with a simple radiation model to estimate the relative contributions of these two components.

One potential bias in this study is that it relies on a simple radiation model, which may not accurately capture all of the complex processes involved in determining planetary albedo. Additionally, the study only considers shortwave fluxes, neglecting other important factors such as longwave radiation and aerosol effects.

The article reports that the vast majority (88%) of observed global average planetary albedo is due to atmospheric reflection, while surface reflection makes a relatively small contribution. However, it does not provide any evidence or explanation for why this might be the case.

The study also finds that intermodel differences in atmospheric albedo are the primary source of variability in planetary albedo among different climate models. This suggests that improving our understanding of atmospheric processes could be key to reducing uncertainty in future climate projections.

One limitation of this study is that it only considers preindustrial simulations from phase 3 of the Coupled Model Intercomparison Project (CMIP3). It would be interesting to see how these results compare to more recent simulations from CMIP5 or CMIP6.

Overall, while this article provides valuable insights into the relative contributions of atmospheric and surface processes to planetary albedo, it is important to consider its limitations and potential biases when interpreting its findings.

# Topics for further research:

* Longwave radiation and planetary albedo
* Aerosol effects on planetary albedo
* Complex processes involved in determining planetary albedo
* Surface albedo and climate modeling
* Intermodel differences in atmospheric albedo
* Planetary albedo in CMIP5 and CMIP6 simulations

# Report location:

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