



Contribution ID: 50

Type: Talk

Did the 2022 Hunga eruption impact the noctilucent cloud season in 2023/24 and 2024?

In January 2022, the Hunga Tonga - Hunga Ha'apai volcano emitted approximately 150 Tg H₂O into the middle atmosphere. This water vapour reached the upper polar mesosphere in the Southern Hemisphere in the beginning of 2024 and increased the H₂O mixing ratio in January by about 1 ppmv between 70°S - 80°S up to an altitude of 83 km. However, no clear perturbations were found in the noctilucent cloud occurrence frequency, except for a slight increase from mid-January to February. Half a year later, the Hunga water vapour anomaly reached the polar summer mesopause region in the Northern Hemisphere, but did not result in an extraordinary noctilucent cloud season 2024. This might be due to an anomalous polar mesosphere warming in the second half of the 2024 season, which could have hindered ice particle formation. To summarize, this study indicates that the volcanic water vapour needed two years to reach the summer polar mesopause region. This resembles the 1883 Krakatoa eruption that was possibly linked to the first sightings of noctilucent clouds two years after its eruption.

Topic

Atmospheric composition (Earth and planets), chemistry and transport

Author: WALLIS, Sandra (University of Greifswald)

Co-authors: DELAND, Matthew (Science Systems and Applications Inc.); VON SAVIGNY, Christian (University of Greifswald)

Presenter: WALLIS, Sandra (University of Greifswald)