



## **Lightning in the eastern Alps: Diurnal, seasonal and weather type dependence**

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Seven years of lightning data from the ground-based ALDIS network trace the dependence of lightning activity on time of day, season, and weather type.

Lightning season starts in late spring, mainly in the northern forelands. Snow coverage in the Alps suppresses convection. With the snow melt, convection moves into higher regions. Strongest source regions are mid-altitude mountain ranges and the Alpine rim. Towards fall the main lightning activity progresses to the south of the Alps.

Diurnally, convection and lightning start mostly on south-east facing slopes along the Alpine rim. In the evening and during the night thunderstorms move off the mountains into the forelands.

During weather situations with weak mid-tropospheric flow, lightning remains stationary at the main source regions. For stronger flow, preferred lightning regions can occur on the upwind side due to enhanced lifting, on the downwind side due to destabilization of the orographic mountain wave, and on the cyclonic side of flow around the Alps, respectively.