

>> SYNTHESIZE MOUNTAINS OF KNOWLEDGE <<

## Submitted Abstract

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## Abstract

Mountains are hotspots of biodiversity and ecosystem services, but are warming about twice as fast as the global average. Similar warming is observed in the Arctic, resulting in pronounced greening and melting. However, it is unclear whether such large-scale trends are also apparent in mountain environments. Here, we demonstrate that 69% of the European Alps above the tree line experienced greening and only 1% browning over the last four decades. Snow cover declined, albeit to a lesser extent. These trends were only weakly correlated, because greening predominated in warmer areas than melting, i.e., at lower elevations. Greening was mainly driven by warming, while melting was additionally affected by precipitation changes. Even though greening involves carbon sequestration, this is unlikely to outweigh the negative implications of the observed trends, such as reduced albedo and water availability, melting permafrost, and loss of habitats.