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The heat source of the foehn revisited

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A large observational data set from Iceland is used to explore the connection between the heat surplus on the downstream side of mountains, upstream precipitation and elements of the atmospheric flow. A typical foehn case is also simulated and used to explore the role of precipitation and latent heat in heating the downstream flow. Some of the key findings are that latent heating appears not to be an important factor for heating the foehn in Iceland and that there is no clear relationship between upstream precipitation and downstream heating. The heating on the downstream side is attributed to descent of potentially warm air and insolation. The case study suggests that the latent heating may have an impact, however not through heating aloft, but through cooling at low levels and enhanced upstream blocking effect.