Asymmetrical foehn approach in the upper Rhine Valley on 24th December 2000

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Overview

→ Synoptical situation and target area
  - Visual description of foehn approach
  - Comparison of visual description with meteorological data
  - Comparison with foehn approaches in MAP-SOP
→ Conclusions
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· Synoptical situation and target area

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Conclusions
Synoptical situation

- 24. December 12 UTC: Surface pressure (left) and 500 hPa height (right)
Target area

- Overview of Rhine Valley
Observations before foehn approach

- Shallow fog layer up to 600 m a.s.l.
Observations before foehn approach

- Shallow fog layer up to 600 m a.s.l.
- Observation of waves on the surface of the fog layer
Observations before foehn approach

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- Waves in the center of the valley were moving northward, and they were moving southward at the sides
Observations before foehn approach

- Shallow fog layer up to 600 m a.s.l.
- Observation of waves on the surface of the fog layer
- Waves in the center of the valley were moving northward, and they were moving southward at the sides
- After dissolution of fog hoarfrost remained on fields and trees up to 550 m a.s.l. in the cold air pool
Foehn onset in target area

- Growing area of melted hoarfrost: 1300 UTC (left) and 1304 UTC (right)
Observational data

- Office for environment protection (AFU), station located in Grabs
Observational data

- Office for environment protection (AFU), station located in Grabs
- Automatical station from MeteoSwiss (ANETZ) in Vaduz
Observational data

- Office for environment protection (AFU), station located in Grabs
- Automatical station from MeteoSwiss (ANETZ) in Vaduz
- Artillery sounding station from Swiss army north of Buchs during MAP
Stages of foehn approach in Rhine valley

- Red lines: isochrones, blue point: observer, black point: AFU, red point: sounding station, green point: ANETZ, times given in UTC
Comparison with meteorological data

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- Estimated foehn onset in Grabs between 1320 and 1330, and between 1340 and 1350 in Vaduz
Comparison with 6 MAP-SOP foehn approaches

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Conclusions

» Foehn approaches are not necessarily symmetrical to the Rhine Valley axis

· Different foehn cases showed different spacial behaviour in their foehn approaches in the upper Rhine Valley
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