

The Alps - a generator of tornadoes?

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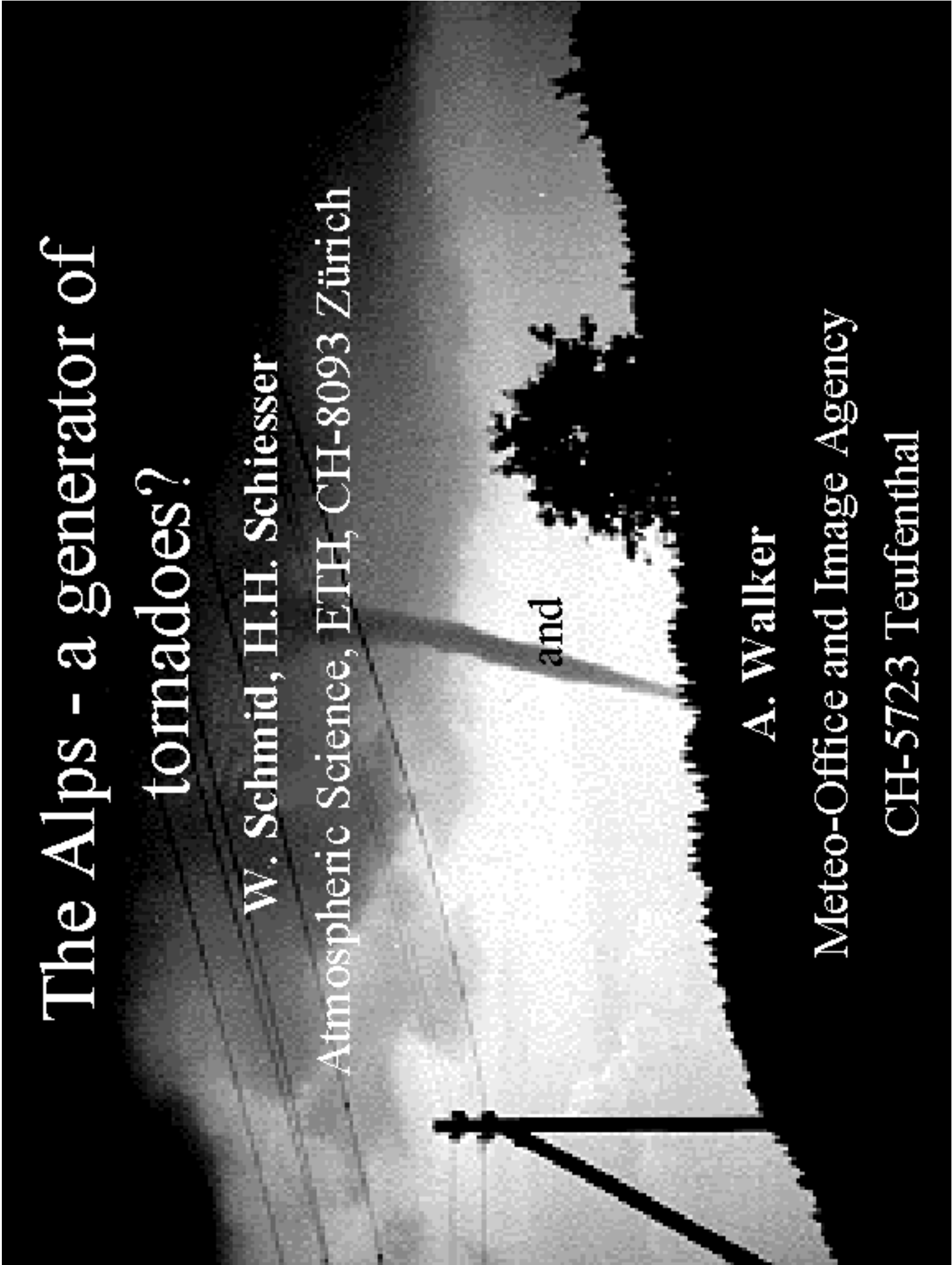
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» **Spatial distribution (Tornado/Hail)**

» **Airflow and the Alps**

» **2 June 1999**

» **Outlook**

Wo hagelt es in der Schweiz?

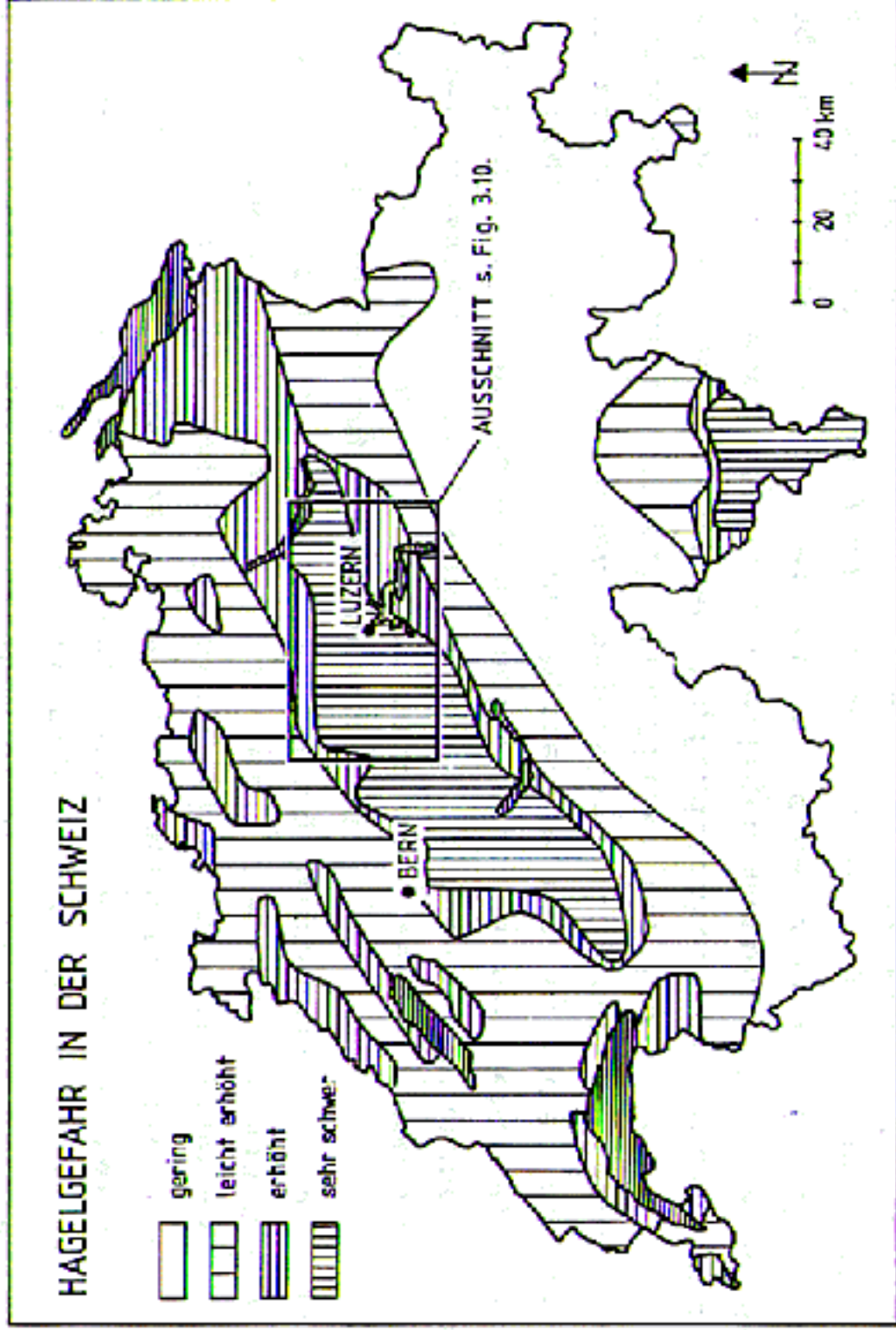
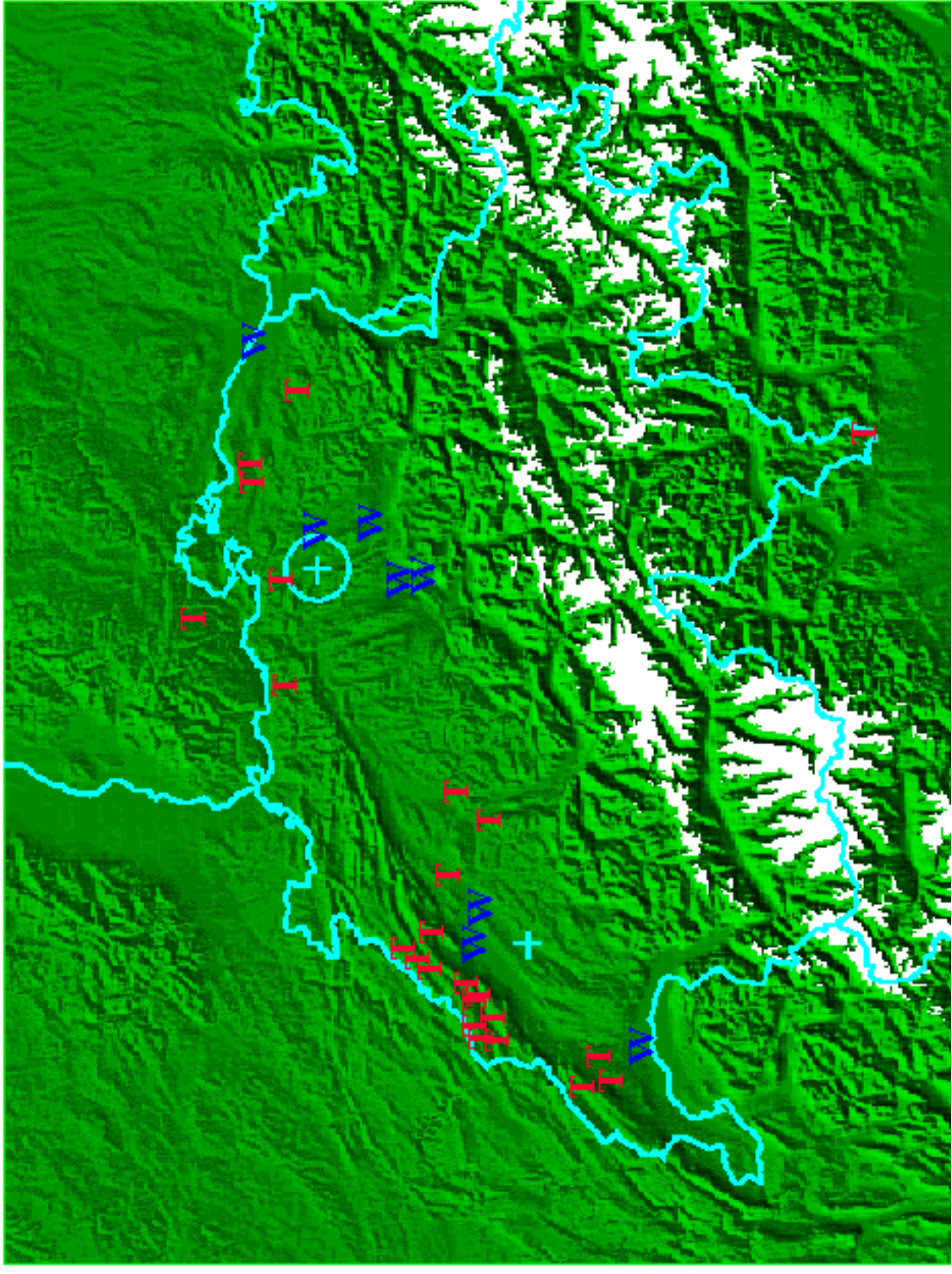


Fig. 3.9. Schematisierte Hagelrisikokarte. Gezeichnet nach einer Karte der SHV (1980b) aufgrund der Hagelhäufigkeit (Anzahl Jahre mit Hagelschaden pro Gemeinde) für den Beobachtungszeitraum 1941-1979.

Tornadoes, funnel clouds and waterspouts in Switzerland

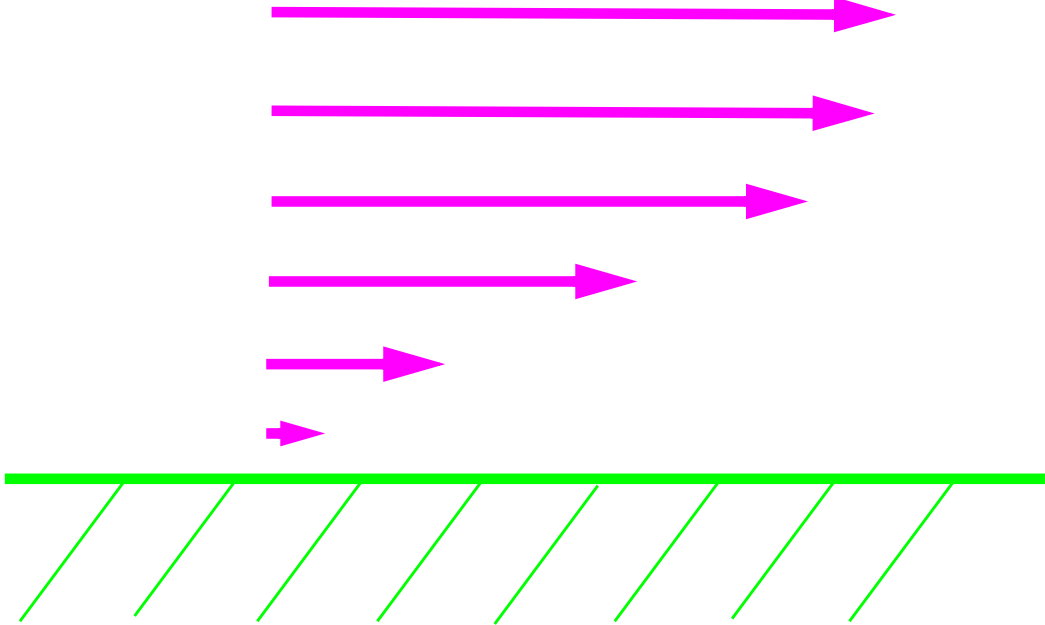


Low-level wind, Jura mountains

10 m/s

2500 m

1000 m

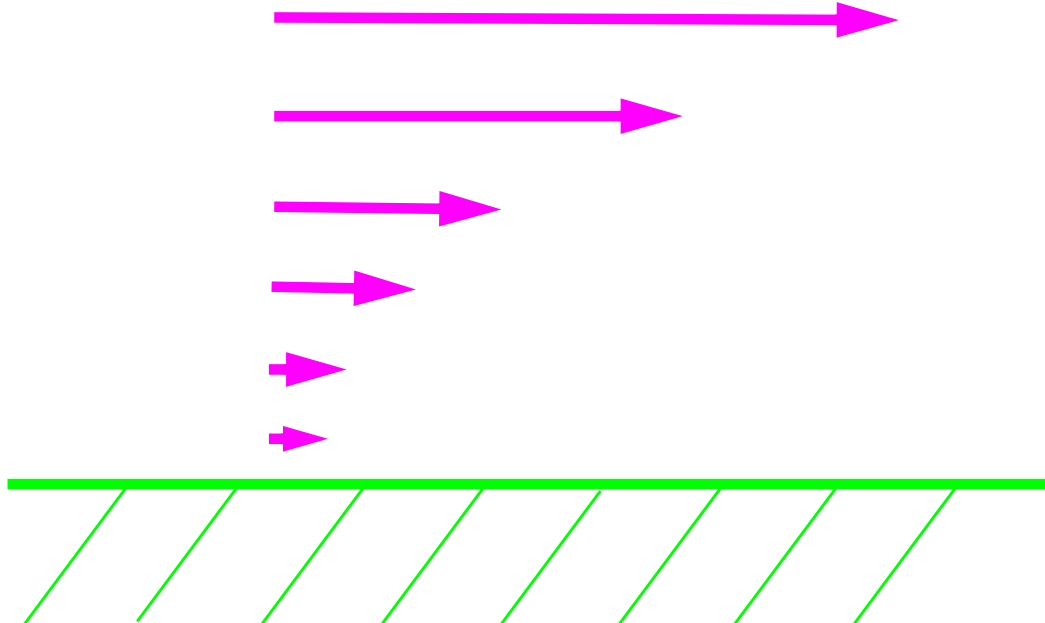


Low-level wind, central Switzerland

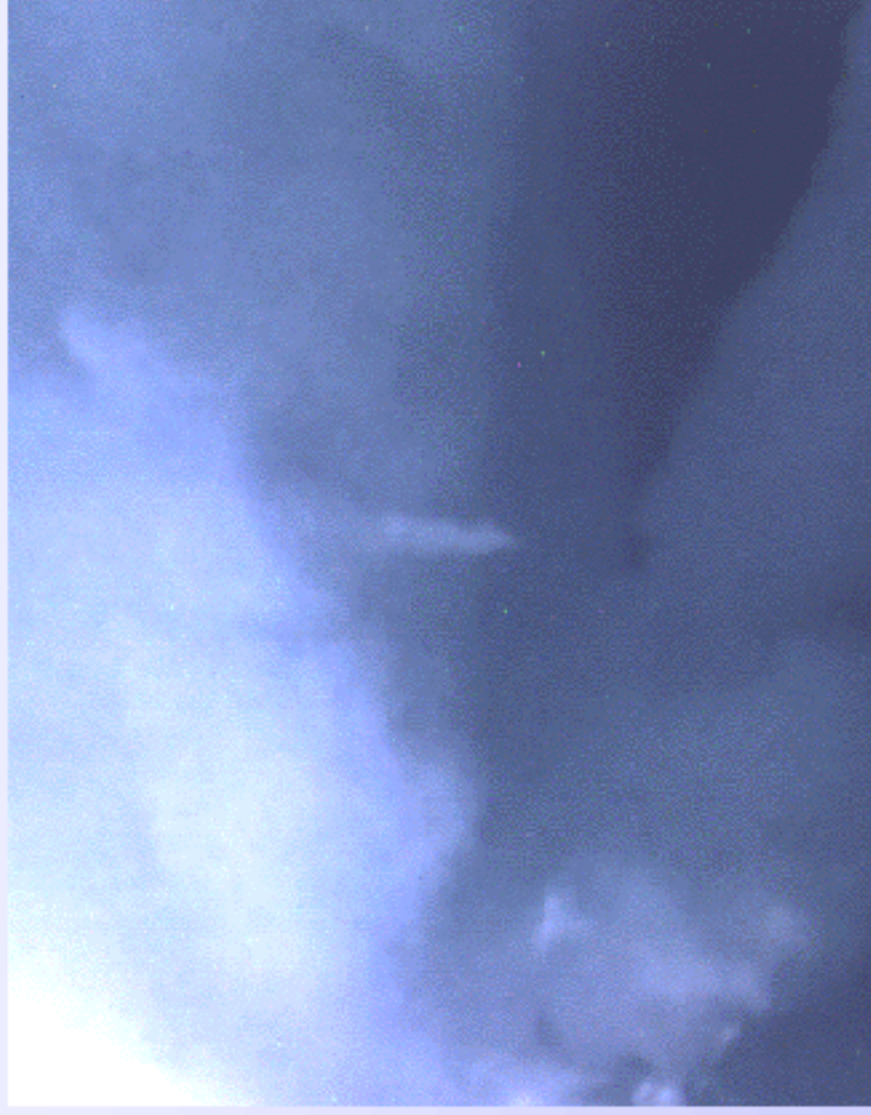
10 m/s

2500 m

1000 m



2 June 1999

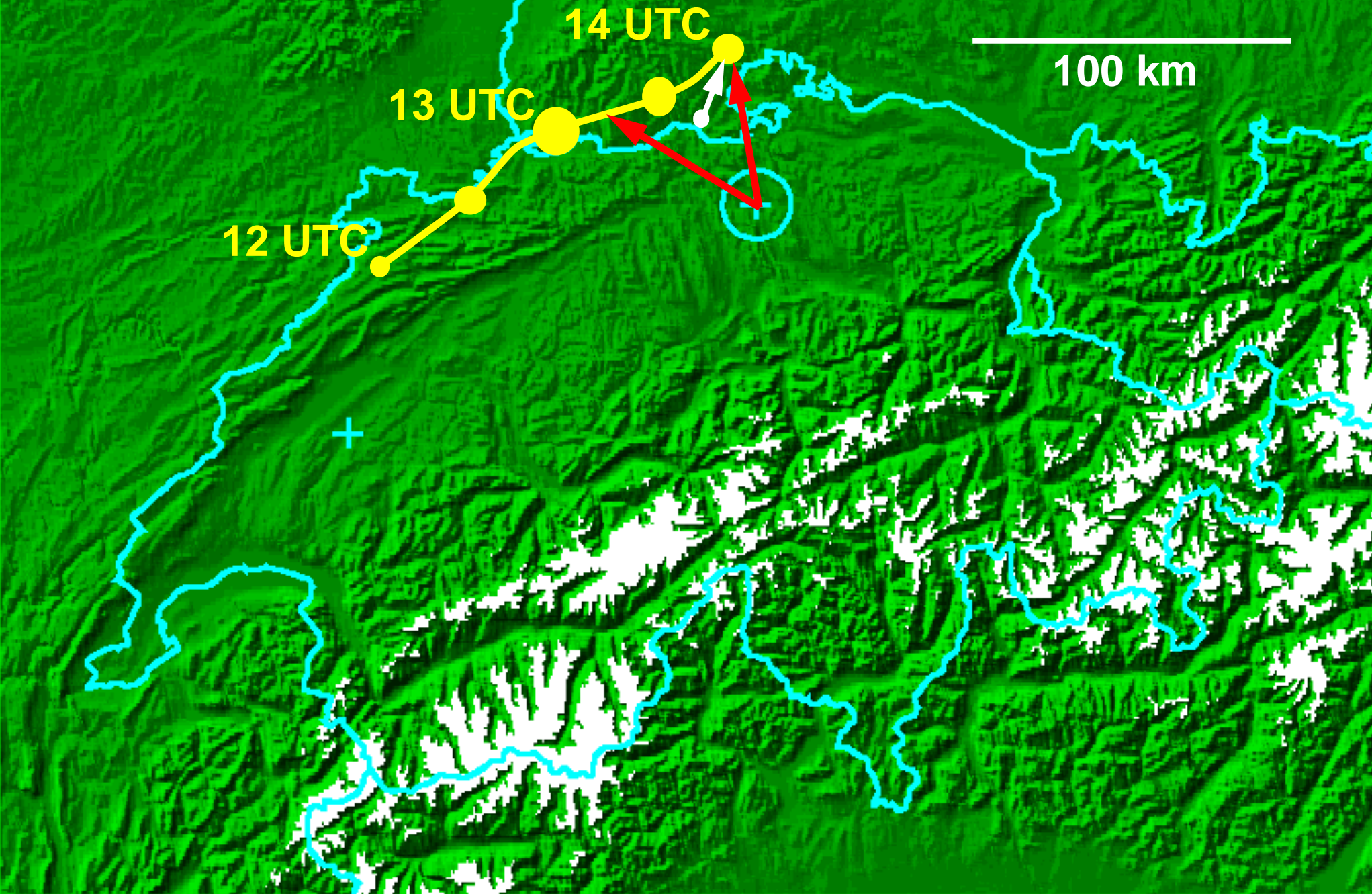


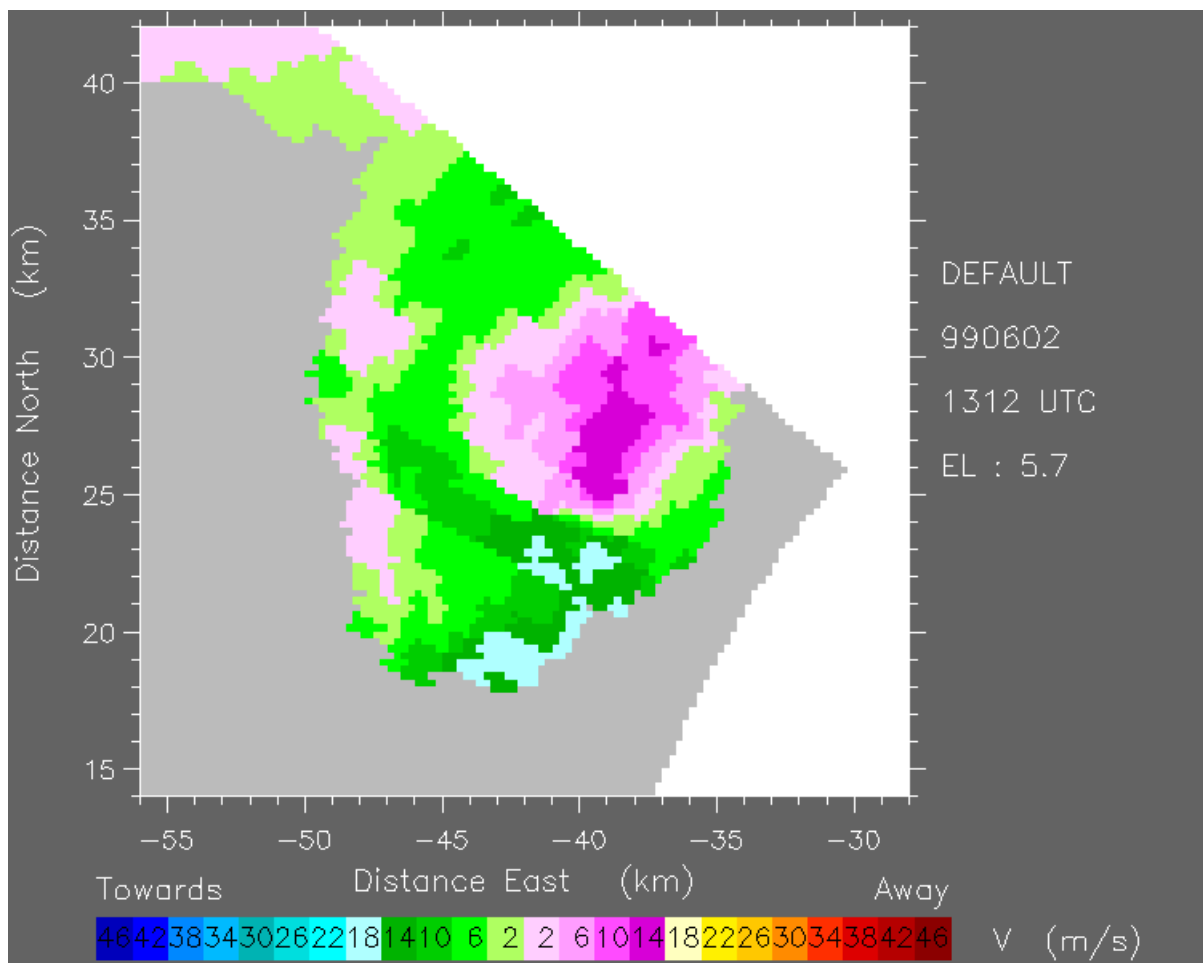
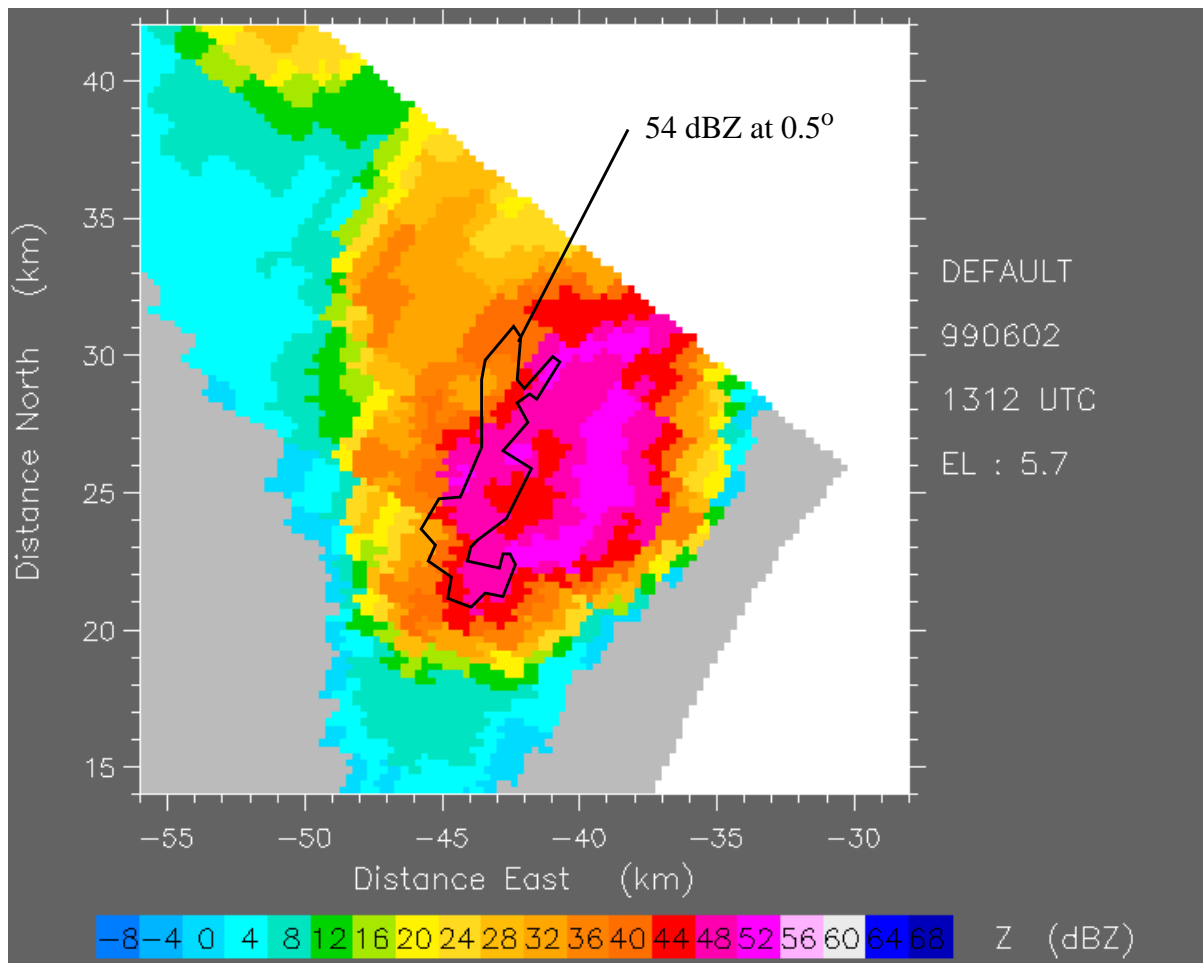
Funnel cloud, photographed by Andreas Walker on 2 June 1999

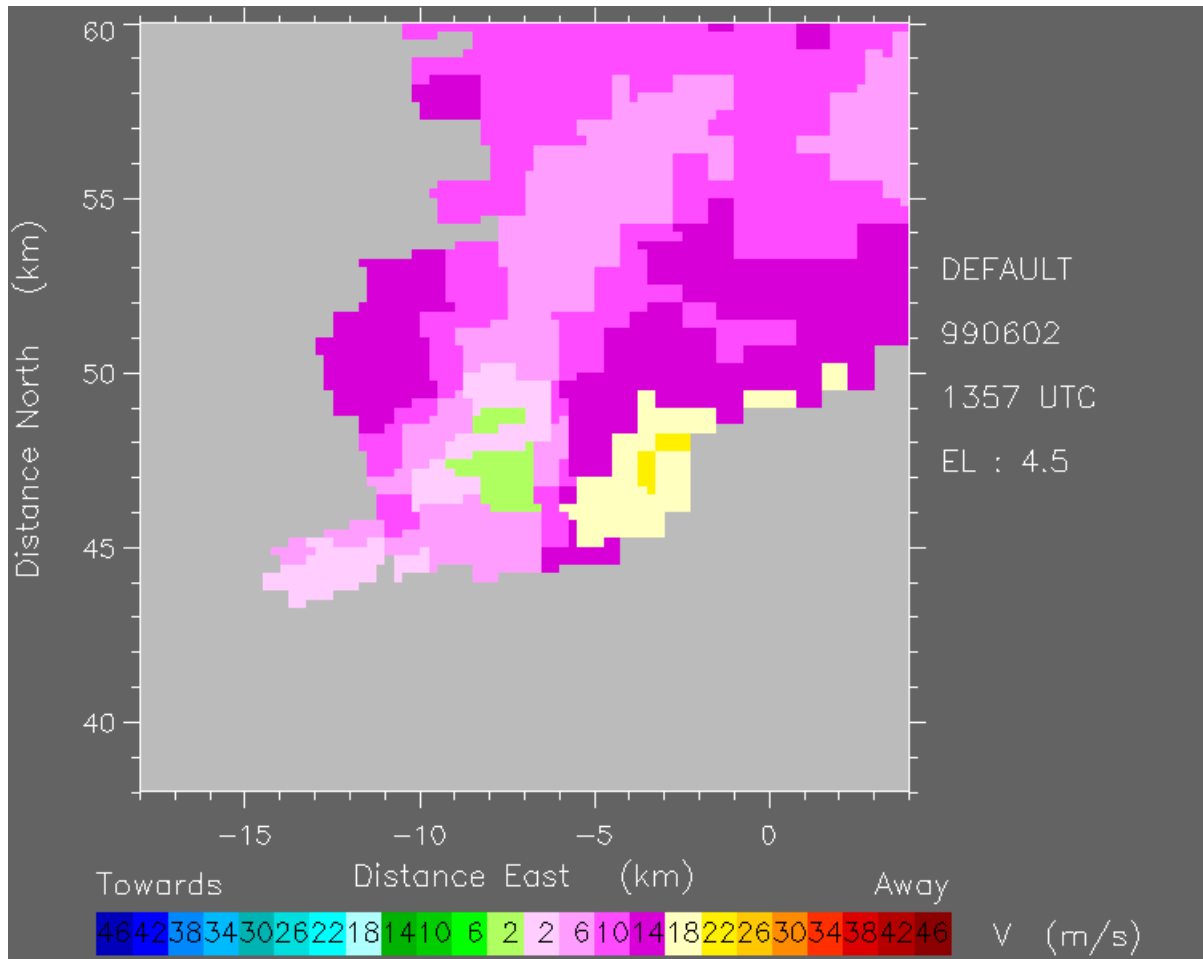
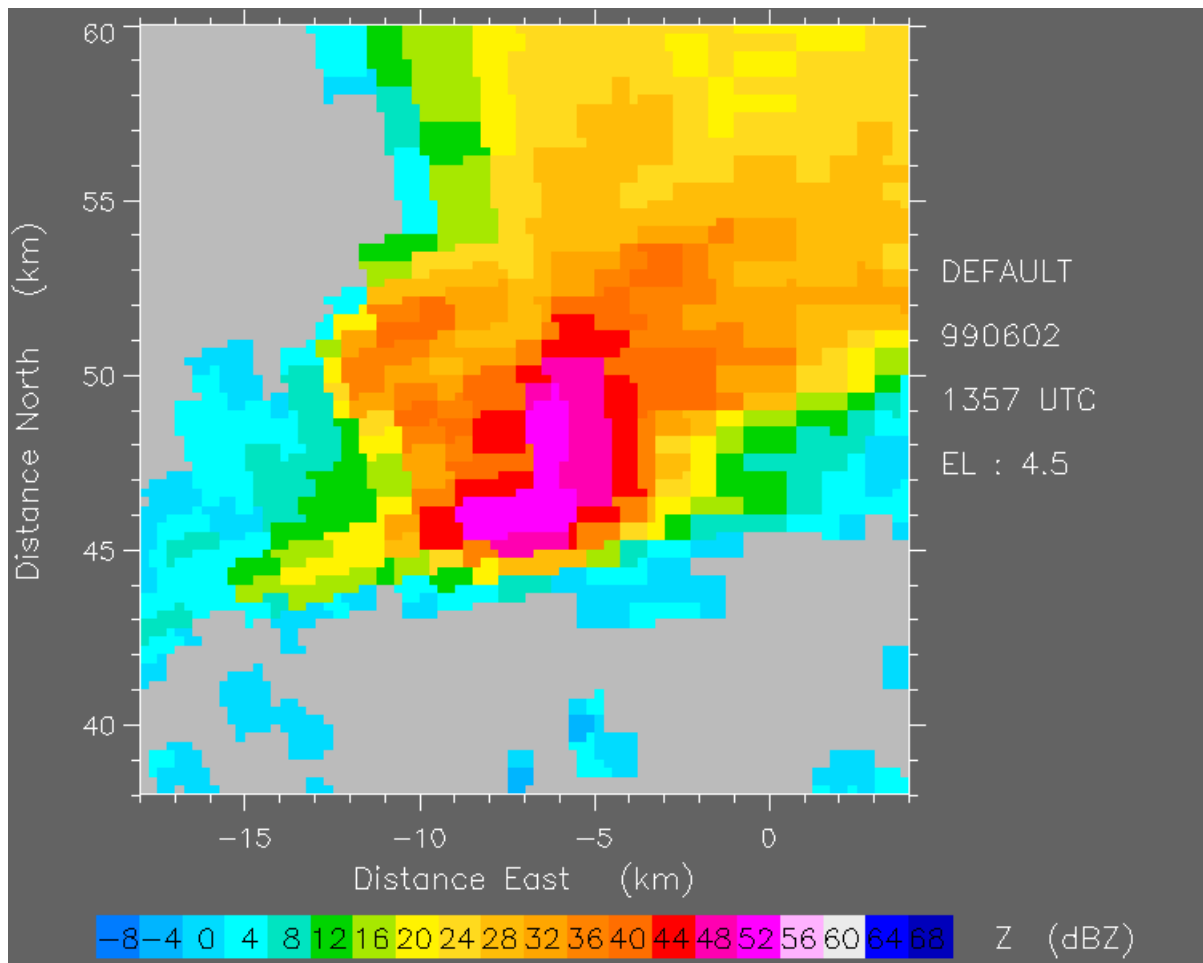
Supercell 2 June 1999

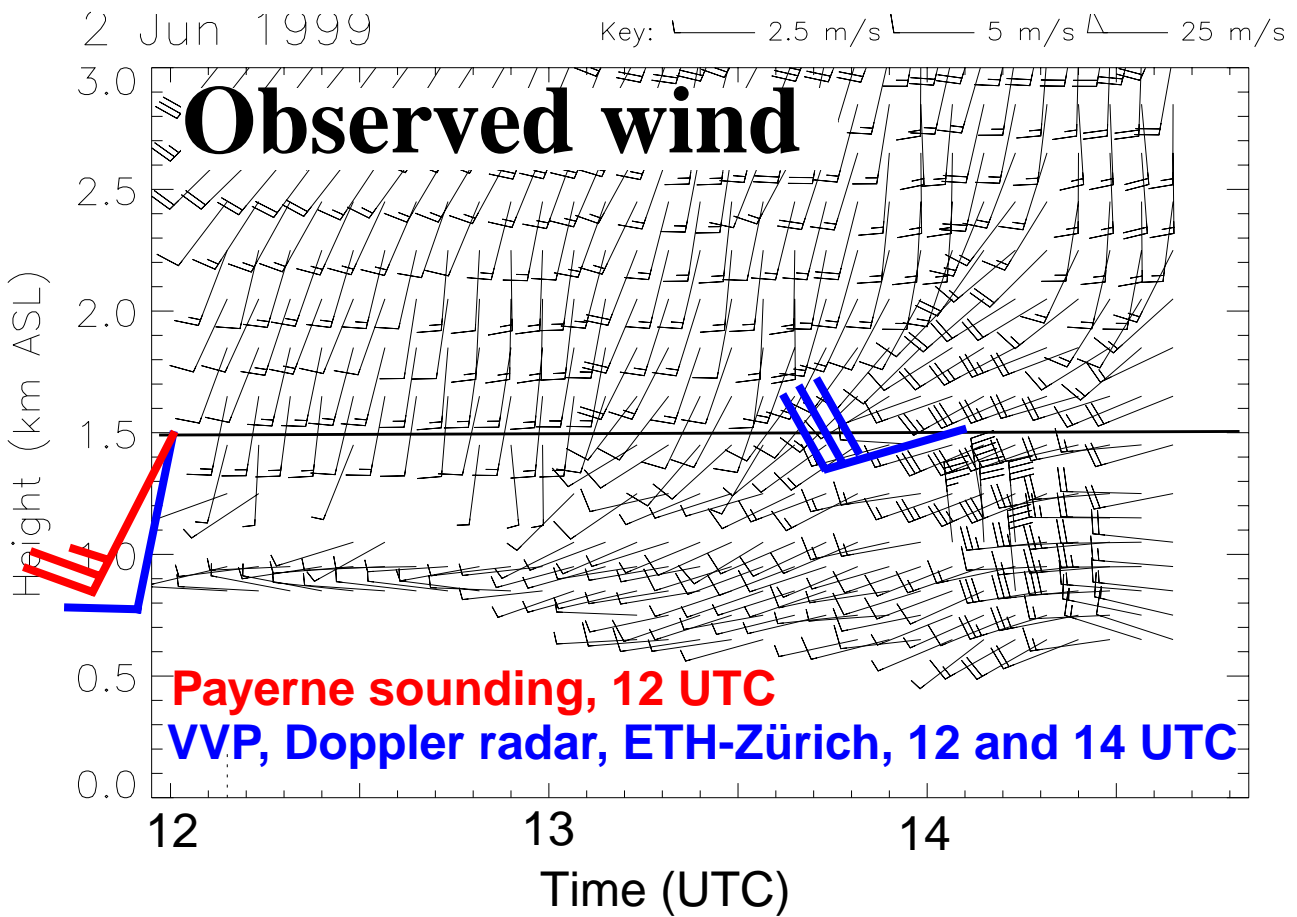
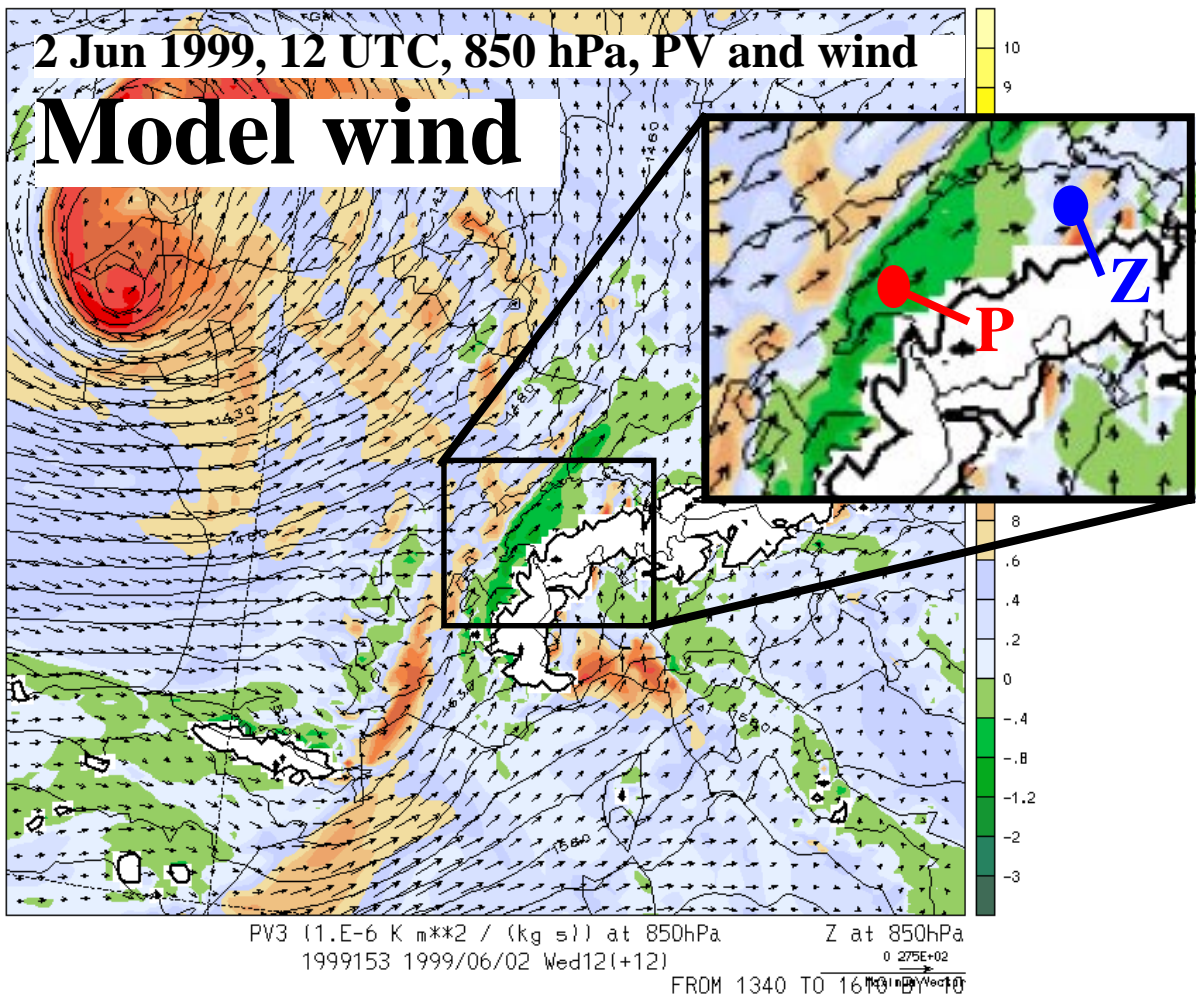
→ Foto of funnel cloud

→ Doppler-mesocyclones









The Alps modify the wind field such that the formation of tornadoes is favored at some locations and suppressed at other locations.

One possible mechanism works as follows: enhanced airflow at low layers is generated in the lee of the Alps, enhances vertical shear near the ground, and provides favorable conditions for tornadoes.

That mechanism can explain to some degree “tornado alleys” as found, for example, in the Jura mountains or the Rhine valley.