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Second generation of a mobile, car-mounted meteorological measurement platform

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Ground-based measurements of traditional meteorological variables like pressure, temperature, humidity, and wind are usually performed with a fixed network of automatic weather stations. For some applications, especially field measurement campaigns and exploratory measurements, a higher spatial resolution of the measurements might be desirable. This can be achieved by putting the weather station on wheels, e.g. by mounting it on a car.

Such an automobile platform was developed for the measurement of downslope windstorms in the Mesoscale Alpine Programme. A second generation of this platform was developed that uses faster sensors and includes 2D wind measurements. The platform was designed to be deployable with almost any kind of car - allowing to use rental cars in international field campaigns. Data and computed conservative variables are displayed in real time to be able to adjust the measurement track.

Issues of calibration, dealing with the flow distortion induced by the car, and examples from a pilot field campaign for T-REX (Terrain-induced Rotor EXperiment) downstream of the US Sierra Nevada will be presented.