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Sampling the atmospheric boundary layer on a moving platform; wind observations derived from hot air balloon flights.

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Hot air balloon flights can provide interesting weather information of the circulation in the lower atmosphere. The displacement of a hot air balloon is an averaged measure for the wind speed and direction and thus a potential source for wind observations in the atmospheric boundary layer. This part of the atmosphere is not frequently sampled, apart from radiosonde launches and measurements taken at atmospheric remote sensing sites and airports. A preliminary assessment will be presented of the quality of this new observation type. The hot air balloon flights contain interesting meteorological phenomena. Baroclinic effects like the turning of wind with height due to advection of colder or warmer air are present in the balloon tracks. Further we show the impact of a sea breeze circulation and a nocturnal low level jet on balloon flights. We conclude by presenting small scale vortices and spirals showing the potential of these wind observations for atmospheric research.