Nocturnal wind maximum mapped for first time

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On beautiful, sunny days with quiet weather conditions a strong wind develops in the evening at a height of about 200 metres.

Peter Baas from the Netherlands Meteorological Institute is the first to map how such a powerful wind develops high in the air. With his research he has made an important contribution to the improvement of weather and climate models. Moreover, knowledge of these air currents is important for the aviation sector and the generation of wind energy, for example.

During the evening the wind near the ground often dies down, in contrast to the wind several hundred metres above the ground that strongly increases at this time. This is because cooled air just above the Earth's surface remains hanging under warmer air above. The wind speed at an altitude of several hundred metres is strongly dependent on how the cool and warm air mix. The mixing stops during the night and a stable boundary layer develops. On the upper side of this layer the wind speed can rapidly increase. Peter Baas investigated how cold air and higher layers of warm air mix.

The researcher analysed the maximum wind speed at night using the measurements from the 200 m high KNMI measurement mast in Cabauw. Furthermore, he tested the processes that play a role in the development of the nocturnal wind maximum and showed how the mixing of air layers must be represented in models to predict nocturnal wind speeds.

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