



## Local wind phenomena at the Waldstein/Weidenbrunnen FLUXNET site

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Two Intensive Observation Periods (IOP) of the EGER project (ExchanGE processes in mountainous Regions) were performed at the Waldstein/Weidenbrunnen FLUXNET site (DE-Bay) in the Fichtelgebirge/Germany. IOP1 was conducted in September and October 2007, IOP2 in June and July 2008. The project is focused on the detailed quantification of relevant processes within the soil-vegetation-atmosphere system by observing diurnal and annual cycles of energy, water and trace gases. The atmospheric boundary layer was profiled with an acoustic and radar remote sensing system (SODAR-RASS). The SODAR provided 10 minute mean profiles up to 500 m a.g.l. In contrast to IOP1 a second SODAR (referred to as miniSODAR) without a RASS-extension was used during IOP2 and provided 5 minute mean profiles up to 200 m a.g.l. The aims of this study included the observation of local wind phenomena at the site, the determination of their frequency and their relation to surrounding meteorological circumstances.

During both IOPs some nocturnal low-level jets (LLJ) with a duration time of several hours were observed. Maximum horizontal wind speed ( $v_{hmax}$ ) was in the range from 11.5 to 12.3 m s<sup>-1</sup> for IOP1 and in the range from 8.0 to 11.6 m s<sup>-1</sup> for IOP2. The height of  $v_{hmax}$  varied between 100 and 230 m a.g.l. Most of the LLJ events were characterised by an approaching flow from south-easterly directions. Another phenomenon was observed in the profile of the wind vector. It showed a strong turn of the wind direction with increasing height. At night times and during the morning hours flows above the canopy came from the east while the geostrophic wind approached from the south-westerly directions. The topography and resulting canalising effects seem to be the reason for the generation of LLJ as well as for the turn of the wind direction.