

産学連携に基づく比良おろしの実態解明に向けた観測データベースの構築 Academic-Industrial collaboration study on the observational database for elucidation of the localized katabatic wind

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Localized meteorological phenomena often cause severe disasters. The dynamics of these severe phenomena has not fully elucidated, because of their small temporal and spatial scale. This thesis focuses on localized katabatic wind called as Hira-Oroshi seen in the region between Hira mountain range and Biwako lake on October-May. Conventional knowledge of the katabatic wind is not enough to fully explain the mechanism of the narrow width and the rapid migration of the strong wind region.

Comprehensive observation for monitoring the horizontal structure of Hira-Oroshi is very useful to solve the puzzle of Hira-Oroshi phenomena.

The Kyoto University started academic-industrial collaboration research for the elucidation of Hira-Oroshi phenomena throughout the dense surface meteorological observation distributed in the whole of Hira-Oroshi area.

NTT DOCOMO environmental sensor network started surface weather observation at nineteen metrological stations from October, 2012. Due to the regulation of observation height, the observed data included the effect of height variations. The excellent cross-correlation coefficient among the neighboring data were confirmed. The wind velocity difference due to the difference of observation height were compensated by using logarithmic raw of wind velocity in the frictional atmospheric boundary layer. After the QC of the data, the comprehensive database of surface wind velocity in Hira-Oroshi area was successfully constructed.

The availability of the database was clearly demonstrated by unveiling the detailed two-dimensional structure of four Hira-Oroshi events occurred on October-December, 2012.

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