

Sano, T., and S. Oishi, 2018: Observational study on formation of a localized rainfall on a basin with heat and aridity on days of weak synoptic disturbance in summer. *J. Meteor. Soc. Japan*, **96A**, 95-117.

<https://doi.org/10.2151/jmsj.2018-012>

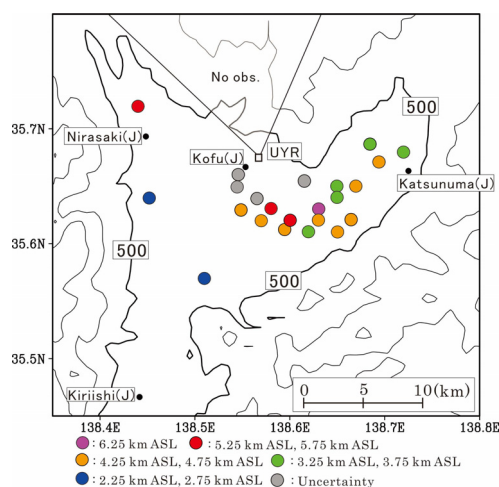


Figure 1. Appearance positions with altitudes of primary cellular echoes (colored dots) in 23 localized rainfall events observed by the X-band multi-parameter radar at the Kofu Campus of University of Yamanashi (UYR). The black contours indicate the terrains from 500 m every 500 m.

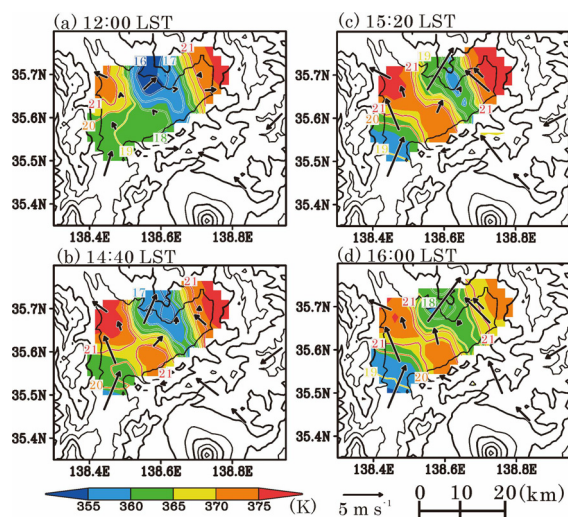


Figure 2. Equivalent potential temperature (shaded areas), water vapor mixing ratio (color contours) and winds (arrows each the observation point) at surface observation points on the Kofu Basin at (a) 12:00 LST, (b) 14:40 LST, (c) 15:20 LST and (d) 16:00 LST on 25 July 2014. The black contours are same as those in Fig.1.

- To elucidate the formation of a localized rainfall on a basin with heat and aridity under weak synoptic disturbance in summer, the characteristics of atmospheric conditions on the Kofu Basin preceding the appearance of almost primary precipitating cells were described from localized rainfall events on the Kofu Basin on days of weak synoptic disturbance at the surface.
- According to 23 localized rainfall events on the Kofu Basin on days of weak synoptic disturbance at the surface from 1 June to 30 September in 2012 to 2014, the appearance positions of the almost primary cellular echoes, which is corresponded to precipitating cells, observed by the X-band multi-parameter radar at the Kofu Campus of University of Yamanashi (UYR) were concentrated in the central to eastern regions on the Kofu Basin (Fig.1).
- According to the observation case on 25 July 2014, owing to the thermal contrast between the Kofu Basin with heat and aridity and the outside environment, the south-component wind blowing in the valley connecting it to the coastal region of Suruga Bay and the east-component wind blowing in the valley connecting it to the Kanto Plain entered the Kofu Basin, which caused an increase in the water vapor mixing ratio and the equivalent potential temperature at the surface in the Kofu Basin (Fig.2). After that, through the abrupt increase in precipitable water vapor in the central region of the Kofu Basin, the precipitating cells appeared over the local region between the southern-component wind and the eastern-component wind.