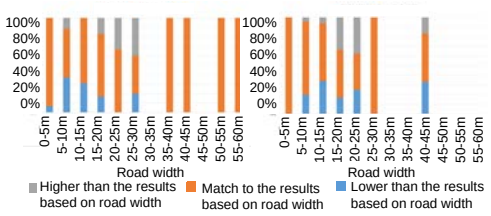

Fig.22 Ratio of the weak wind risk estimations based on CFD calculations to the weak wind risk estimations based on road width and building height (left: road parallel to the main wind direction, right: road perpendicular to the main wind direction)

4. Conclusion

Relationships between the characteristics of buildings and urban blocks and wind and radiant environment in street canyons are analyzed in order to produce urban climate maps at district scale. From the analysis of the radiation environment, the priority of adopting mitigation strategies for heat islands is low in areas placed at *H*/3 from the southern building wall that do not receive solar radiation from 11:00 to 13:00 and in areas placed at 2*H*/3 from the eastern and western building walls that are characterized by a gradient of about *H*/4 from the southern tip of the building and do not receive solar radiation from 14:30 to sunset.

From the analysis of the wind environment, a high weak wind risk area is defined in the three following cases: (1) the road width is 0 to 5 m; (2) a road parallel to the main wind direction has width between 5 m and 15 m, or a road perpendicular to the main wind direction has width between 5 m and 10 m, and the building height is less than 30 m; and (3) a road perpendicular to the main wind direction has width between 10 m and 15 m and building height is less than 40 m. It is observed that when comparing results obtained using building characteristics against results based on CFD computations, the matching rate between the two methodologies is improved from 48 % to 64 % by considering not only the road width but also the building height.

It has to be stressed that while the results of the radiation environment analysis are valid also for other Japanese cities located at similar latitude, this is not true for the results relative to the wind environment analysis. In fact, when interested in other cities, it is necessary to re-examine the wind environment taking into consideration the specific shapes of the buildings that are present in the city for the analysis.

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