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# The Influence of Radiation Effect of Louvred Screens on Temperature Measurement

--Based on Computational Fluid Dynamics Simulation

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2017.10.26

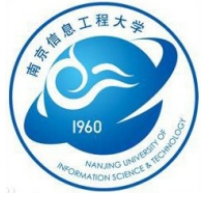
Offenbach am Main, Germany



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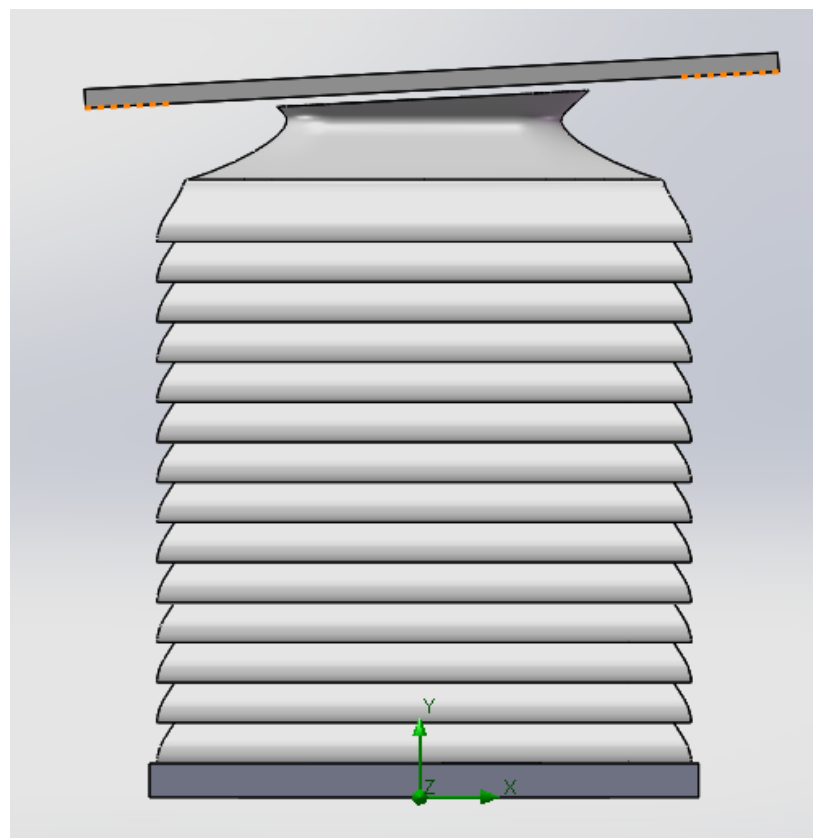


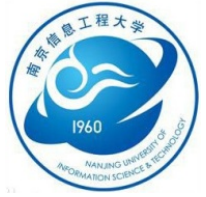
# Background

- Air temperature is one of the key parameter
- Comparison tests show differences results among different systems at the macro level
- It is difficult to show the details of the causes , such as:
  - The Radiation Effect of the Screen
  - The temperature distribution inside of the screen
  - The flow field changes caused by the structure of the screen
- CFD Simulation may be a convenient platform to approach



# Simulation Experiment - 3D Modeling





# Simulation Experiment - Parameter Setting

- Air Condition
  - Pressure
  - Temperature
  - Humidity
  - Wind
  - ...
- Material Properties
  - Density
  - Heat capacity
  - Thermal conductivity
  - Thermal emissivity
  - ...



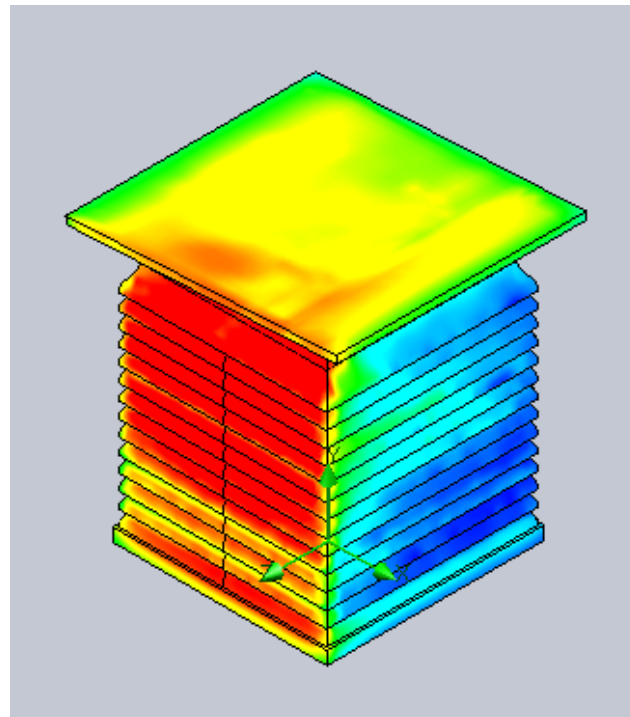
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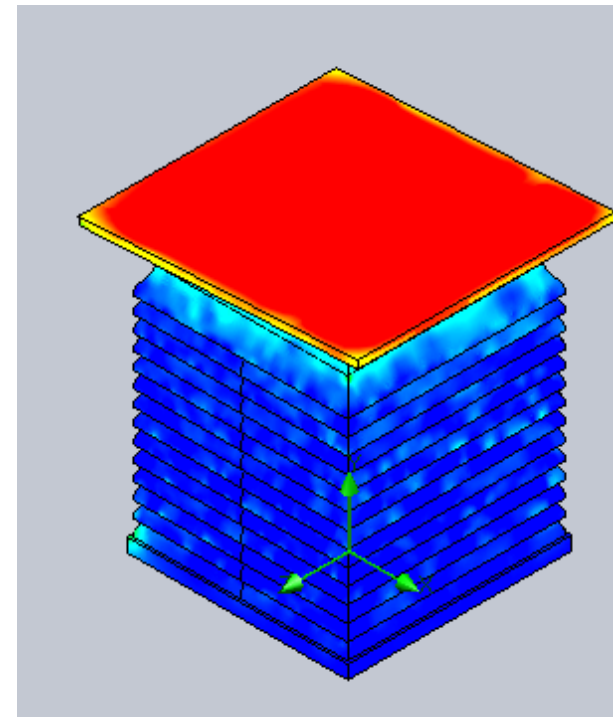
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# Simulation Results- Temperature Distribution(summer)



08:00



12:00



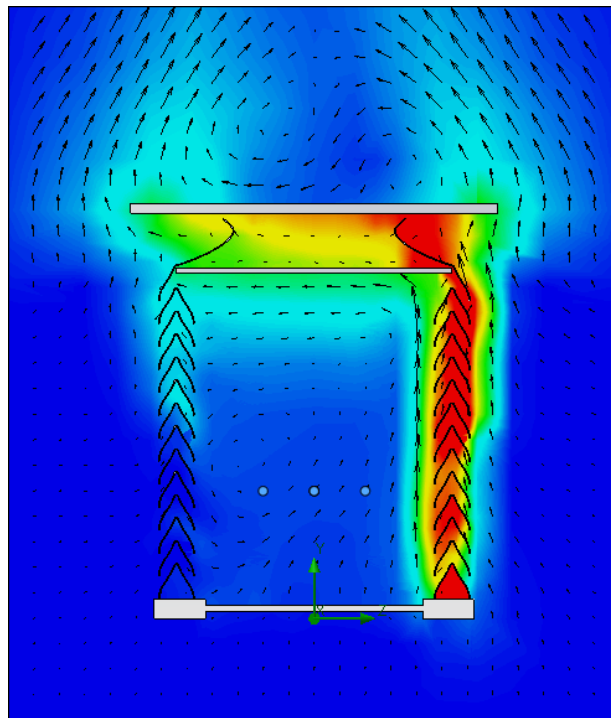
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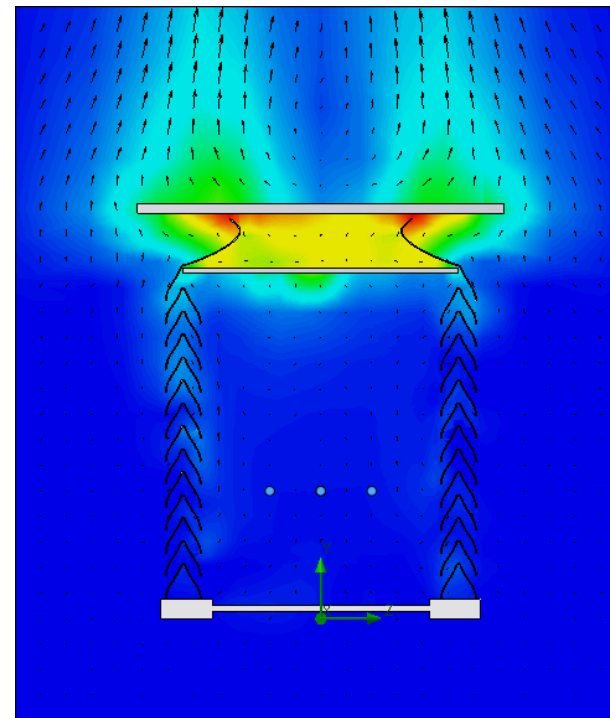
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# Simulation Results- Temperature Distribution(summer)



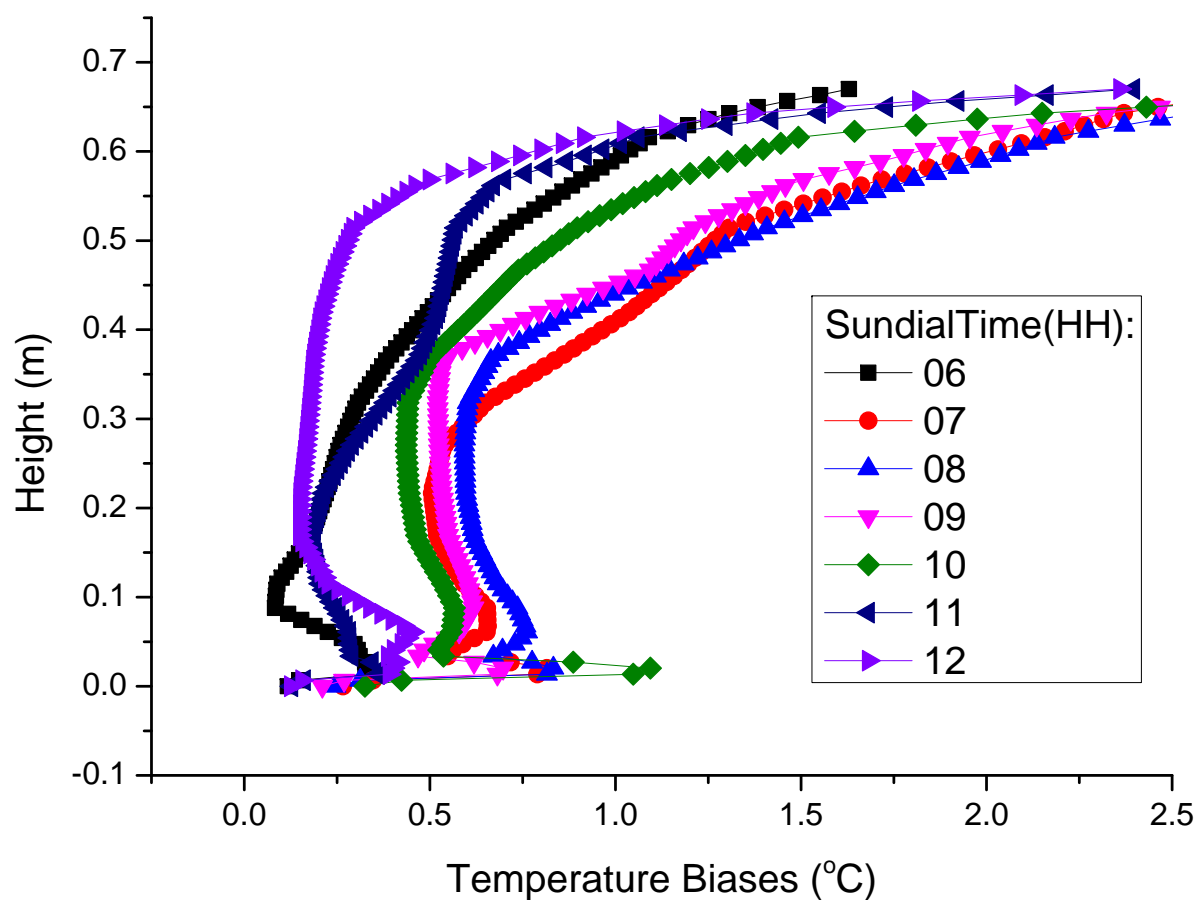
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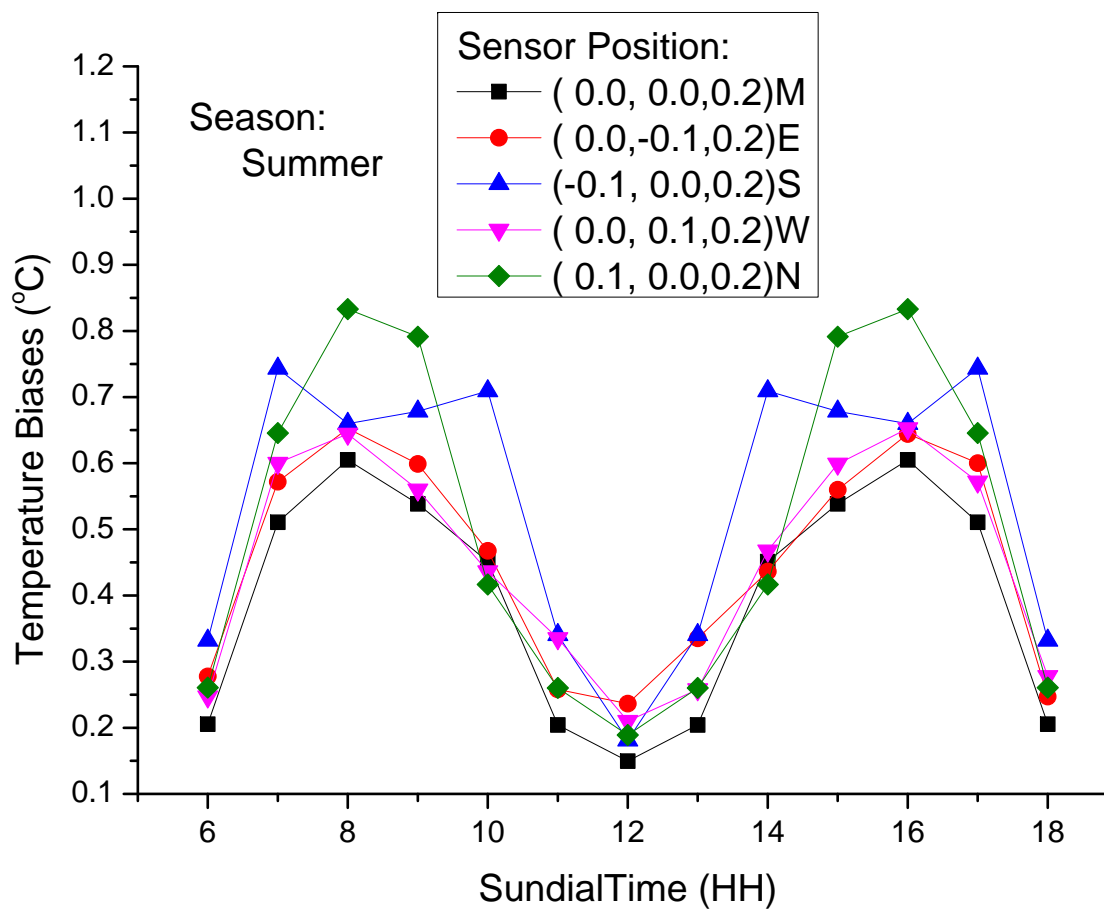
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# Simulation Results- Temperature Distribution(Vertical)

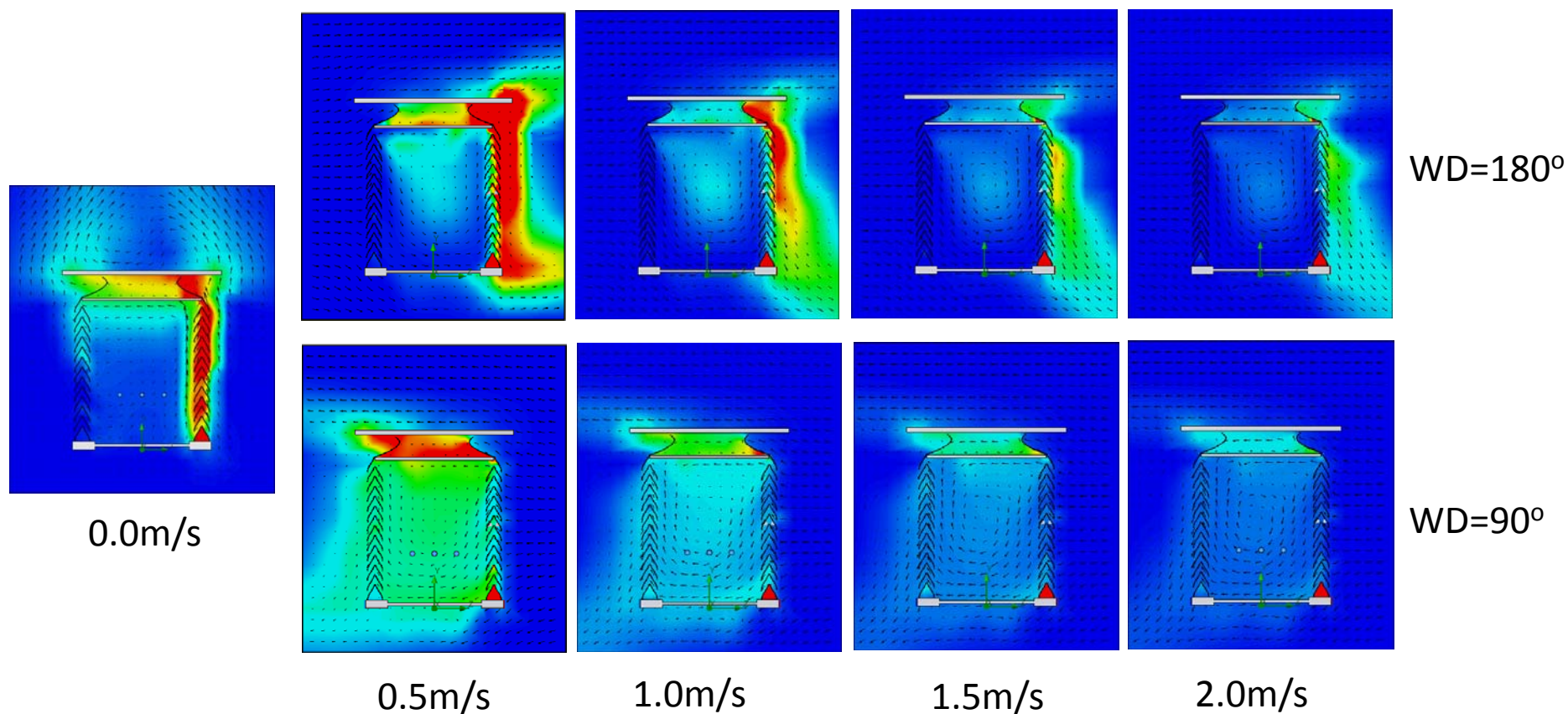


# Simulation Results- The biases varies with time

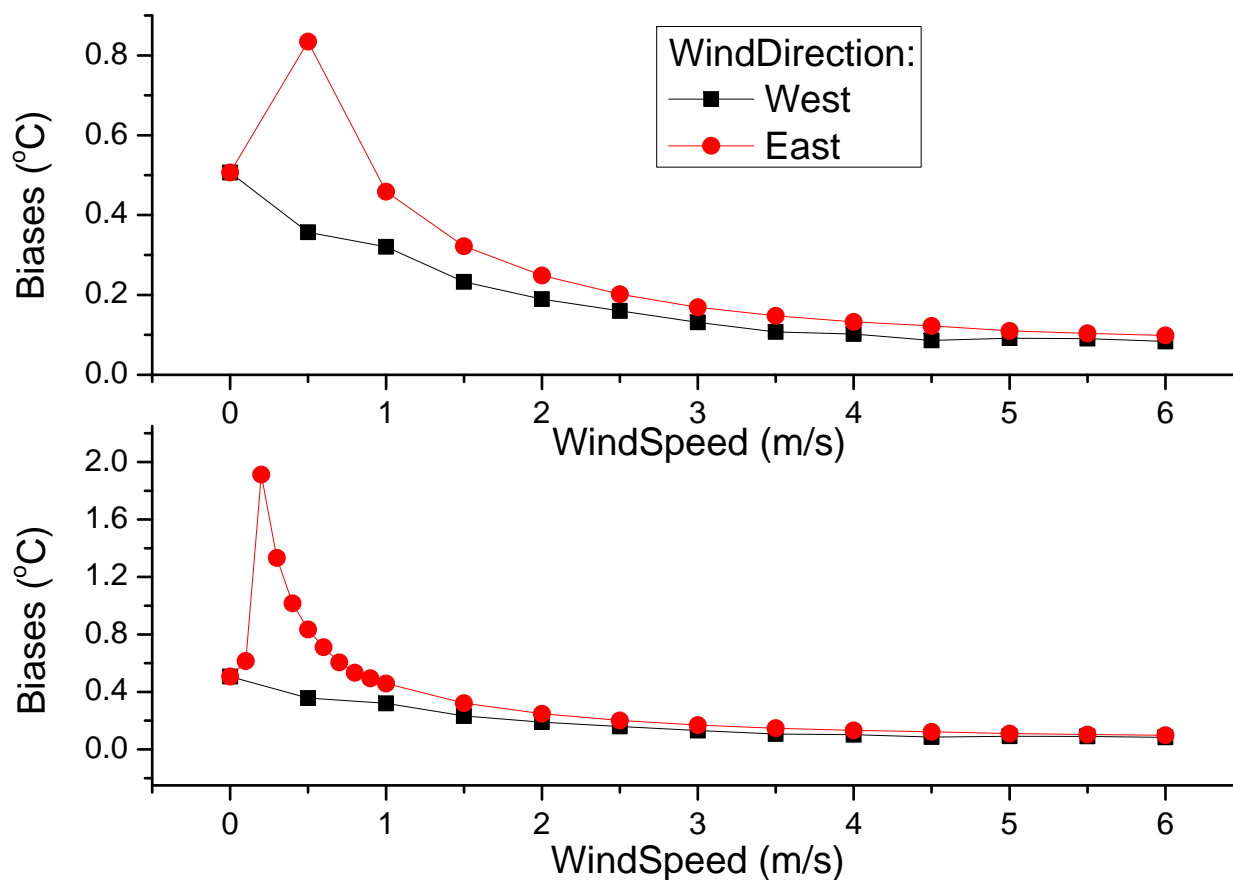


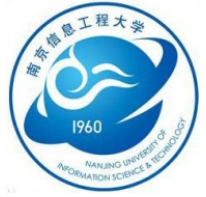


# Simulation Results- The biases varies with wind



# Simulation Results- The biases varies with wind





# Conclutions

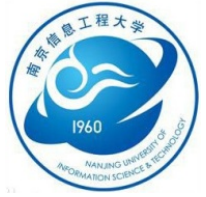
- The temperature distribution of louvred screens is uneven.
- Temperature biases inside varies with radiation, time and seasons, wind speed, direction
- CFD simulation would be a convenient way used to
  - Evaluate the performance
  - Correct the biases
  - Improve the structure
  - Carry out the comparison



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Thank You  
For Your Attention!