# Effect of Solar Radiation and Modeling Approaches of Window Blinds

For applications where sun loading affects heat transfer, scSTREAM can take into account the effect of solar radiation. Selecting the time and geographical location for the calculation prompts thermal energy to be added to model surfaces where the solar rays hit according to the time and latitude/longitude of the location.

Simulation Model
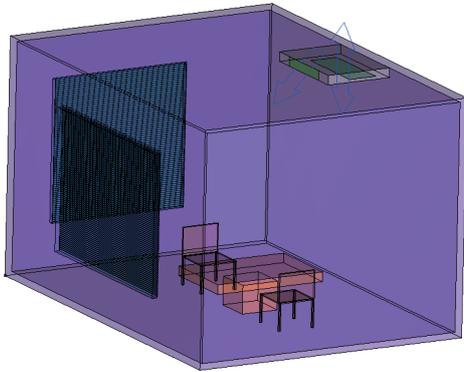
Model: A room with two windows equipped with an air-conditioner at 300W cooling capacity
Time: August 10th, 13:00
Location: Tokyo, Japan
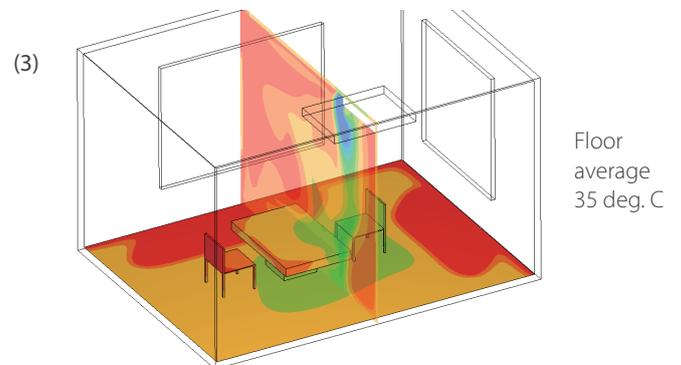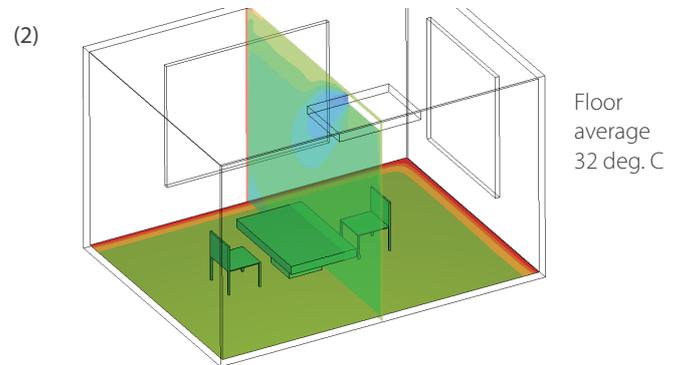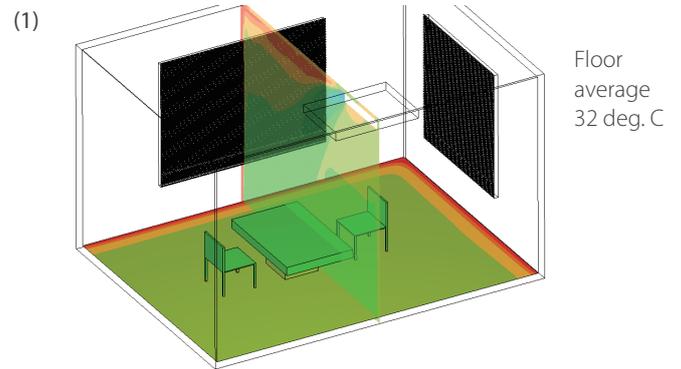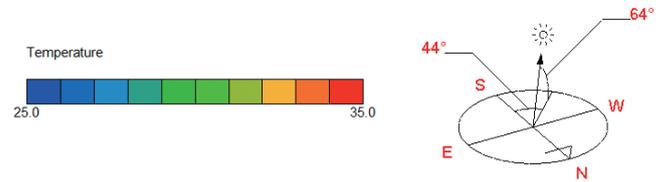
Model	Mesh	Blinds
(1)	2.2 M elements	Detailed blind models (each slat shape is modeled)
(2)	0.6 M elements	Simplified blind models (slats are collectively modeled by a single plane with opening ratio of 0.1)
(3)	0.6 M elements	No blinds

Calculation time

Simulation Results

(1)

Floor average 32 deg. C

(2)

Floor average 32 deg. C

(3)

Floor average 35 deg. C
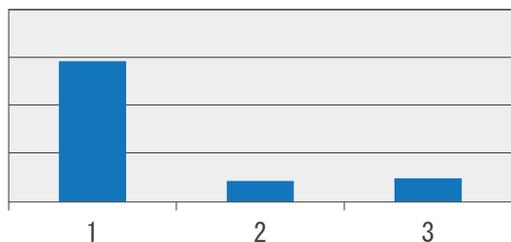
Notes

The effectiveness of window blinds for shielding solar radiation was calculated. A simplified model of the blinds produced the same results as the original, more complex blind model and significantly reduced calculation time.