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Numerical Modeling of Ventilated Wall Cavities with Spray Evaporative Cooling System

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Nomenclature

a	radius of the droplet (m)	Sc	Schmidt number
A_g	cavity aspect ratio	Ta	Temperature of air inside the control volume (°C)
A_{cav}	cross section area of the cavity (m ²)	Ti	Temperature of induced air (°C)
A_{in}	area of wind catcher inlet (m ²)	T_{o1}	Temperature of outdoor surface of the outer cavity wall (°C)
A_{out}	area of the cavity outlet (m ²)	T_{o2}	Temperature of the indoor surface of the outer cavity wall (°C)
c	tangent of the half-angle of spray	T_{i2}	Temperature of the outside surface of the inner cavity wall (°C)
C_D	drag coefficient	T_{i1}	Temperature of the inside surface of the inner cavity wall (°C)
c_{pl}	specific heat of water (kJ/kg.K)	T_c	Temperature of air inside the ventilated cavity (°C)
c_{pa}	specific heat of air (kJ/kg.K)	T_{in}	indoor temperature (°C)
d	ventilated cavity depth (m)	T_{sol}	Sol-Air temperature (°C)
D_{AB}	mass diffusivity (m ² /s)	$T_{Sol-Air}$	Sol-Air temperature (°C)
D_h	hydraulic diameter of the ventilated cavity (m)	$T_{outdoor}$	outdoor air temperature (°C)
e	absolute roughness of cavity wall surface	V_a	induced air velocity (m/s)
FN	Flow Number	V_l	droplet velocity (m/s)
g	gravitational acceleration	V_{l0}	initial velocity of the droplet (m/s)

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