Symbol	Description
Constants	
T_0	Temperature of the triple point of water (K)
R_v	Vapor constant for water ($\mathrm{J\,kg^{-1}\,K^{-1}}$)
L_{sub}	Latent heat of sublimation of water ($\mathrm{J\,m^{-3}}$)
$C\mathrm{v0}$	Vapor mass concentration at 273.16 K ($\mathrm{kg\,m^{-3}}$ of air)
D_{ice}	Diffusivity of water molecules in solid ice ($\mathrm{m^2\,s^{-1}}$)
D_{v}	Diffusivity of vapor in air at 263 K ($\mathrm{m^2\,s^{-1}}$) (temperature dependency neglected)
ρ_{ice}	Density of ice ($\mathrm{kg\,m^{-3}}$)
a_{GR}	Annual accumulation rate at GRIP, Greenland (m ice eq. $\mathrm{yr^{-1}}$)
a_{DC}	Annual accumulation rate at Dome C, Antarctica (m ice eq. $\mathrm{yr^{-1}}$)
R_{moy}	Average snow grain radius (m)
Δt_{sol}	Characteristic time for solid diffusion (s)
$\Delta t_{\mathrm{surf/center}}$	Periodicity of the mixing between grain center and grain surface because of grain center translation (s)
1-D variables	
t	Time (s)
N	Layer number from top of the snowpack
$\delta^{18}\mathrm{O}_{\mathrm{sf}}\,(t)$	Isotopic composition of oxygen in the snowfall (‰)
$T_{\mathrm{air}}\,(t)$	Temperature of the air at 2 m (K)
2-D variables	
$h(t,n)$	Height of the center of the snow layer relative to the bottom of the snowpack (m)
$z(t,n)$	Depth of the center of the snow layer (m from surface)
$\mathrm{d}z(t,n)$	Thickness of the snow layer (m)
$T(t,n)$	Temperature of the snow layer (K)
$\rho_{\mathrm{sn}}(t,n)$	Density of the snow layer ($\mathrm{kg\,m^{-3}}$)
$m_{\mathrm{sn}}(t,n)$	Mass of the snow layer (kg)
$C_{\mathrm{v}}(t,n)$	Vapor mass concentration at saturation in the porosity of the snow layer ($\mathrm{kg\,m^{-3}}$ of air)
$D_{\mathrm{eff}}(t,n)$	Effective diffusivity of vapor in the layer ($\mathrm{m^2\,s^{-1}}$)
$\delta^{18}\mathrm{O}\,(t,n)$	Isotopic composition of oxygen in the snow layer (‰)
$F^{18}(n+1\rightarrow n)$	Flux of the heavy water molecules ($^{18}\mathrm{O}$) from layer $n+1$ to layer n ($\mathrm{kg\,m^{-2}\,s^{-1}}$)
$F(n+1\rightarrow n)$	Vapor flux from layer $n+1$ to layer n ($\mathrm{kg\,m^{-2}\,s^{-1}}$)
$D_{\mathrm{eff}}\,(t,n\rightarrow n+1)$	Effective interfacial diffusivity between layers n and $n+1$ ($\mathrm{m^2\,s^{-1}}$)
$R^i_{\mathrm{vap,ini}}$	Isotopic ratio in the initial vapor (i is either $^{18}\mathrm{O}$, $^{17}\mathrm{O}$, or D)
$R^i_{\mathrm{surf,ini}}$	Isotopic ratio in the grain surface sub-compartment before vapor individualization
$c^x_{\mathrm{vap,ini}}$	Ratio between the mass of a given isotopologue in the initial vapor (x is $^{18}\mathrm{O}$, $^{17}\mathrm{O}$, $^{16}\mathrm{O}$, $^{1}\mathrm{H}$, or D) and the total mass of vapor (no unit). The mass balance is made separately and independently for H and O (i.e., $c^{18}_{\mathrm{vap,ini}}+c^{17}_{\mathrm{vap,ini}}+c^{16}_{\mathrm{vap,ini}}=1$ and $c^{1H}_{\mathrm{vap,ini}}+c^{D}_{\mathrm{vap,ini}}=1$).
α^i_{sub}	Fractionation coefficients at equilibrium during sublimation (i is either $^{18}\mathrm{O}$, $^{17}\mathrm{O}$, or D)
α^i_{cond}	Fractionation coefficients during condensation (i is either $^{18}\mathrm{O}$, $^{17}\mathrm{O}$, or D)
$\alpha^i_{\mathrm{cond,eff}}$	No fractionation
$\alpha^i_{\mathrm{cond,kin}}$	Effective (total) fractionation
$\alpha^i_{\mathrm{cond,eq}}$	Kinetic fractionation only
$m_{\mathrm{vap,ini}}$	Equilibrium fractionation only
$m_{\mathrm{surf,ini}}$	Initial mass of vapor in the porosity (kg)
$m_{\mathrm{surf,new}}$	Mass of water in the grain surface sub-compartment before vapor individualization (kg)
τ	Mass of water in the grain surface sub-compartment after vapor individualization (kg)
m_{surf}	Ratio between the mass of the grain surface compartment and the mass of total grain
m_{center}	Mass of grain surface compartment
m_{vap}	Mass of grain center compartment
V_{tot}	Mass of vapor in the porosity
Φ	Total volume of the considered layer
$m^{18}_{\mathrm{surf,ini}}$	Porosity of the layer
$m^{18}_{\mathrm{surf,new}}$	Mass of heavy water molecules ($^{18}\mathrm{O}$) in the grain surface before vapor individualization (kg)
$\mathrm{D}^{18}\,/\,\mathrm{D}$	Mass of heavy water molecules ($^{18}\mathrm{O}$) in the grain surface after vapor individualization (kg)
$\Delta m_{\mathrm{vap,exc}}$	Ratio of diffusivities between heavy isotope and light isotope
$\rho_{\mathrm{sn,ini}}$	Mass of vapor in excess in the porosity after vapor transport (kg)
$\rho_{\mathrm{sn,new}}$	Density of the snow layer before vapor transport
T_{ini}, T_{new}	Density of the snow layer after vapor transport
	Temperature of the snow layer before and after vapor transport