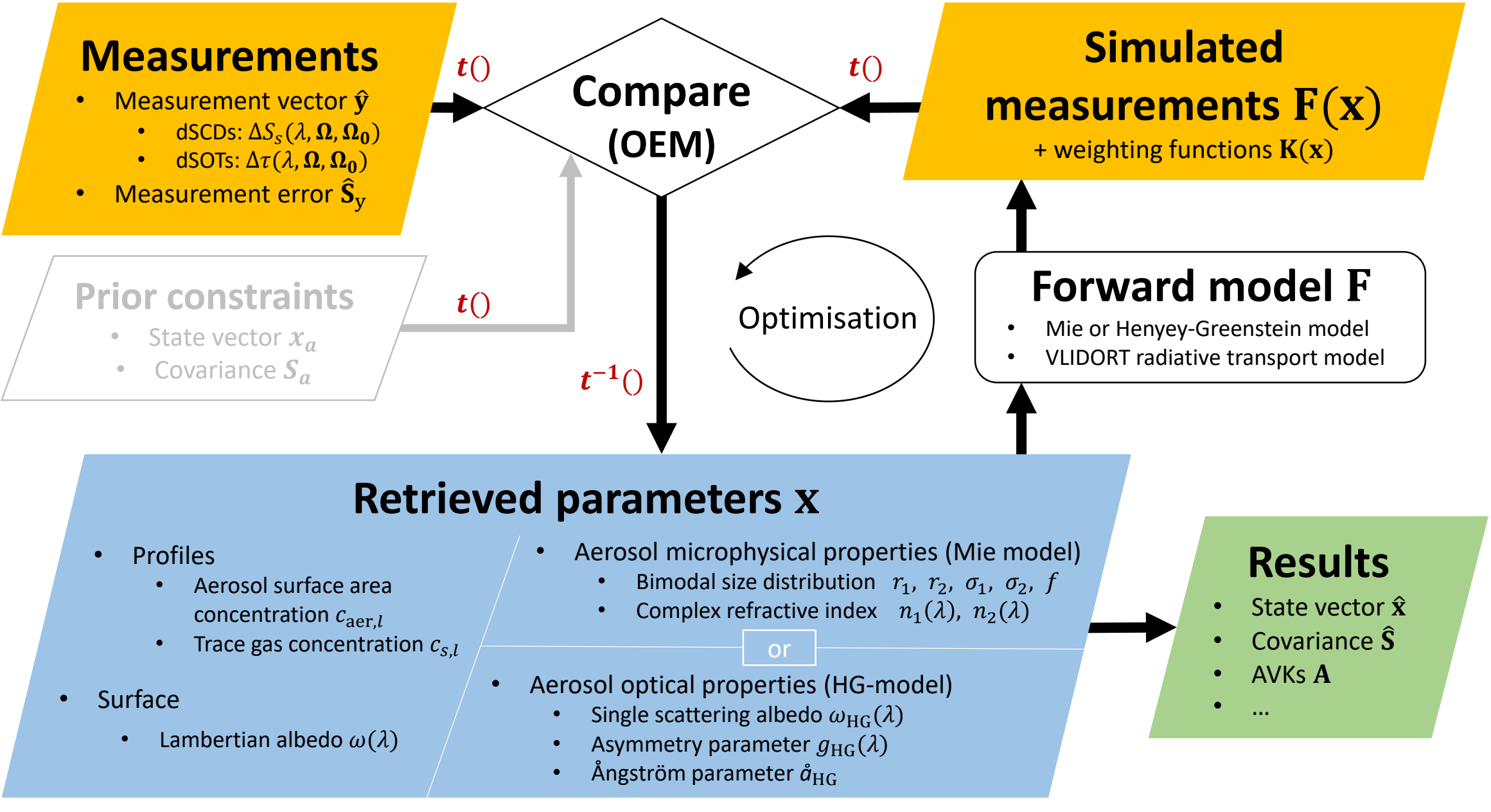
Measurements
Measurement vector $\hat{\mathbf{y}}$
dSCDs: $\Delta S_s(\lambda, \mathbf{\Omega}, \mathbf{\Omega_0})$
dSOTs: $\Delta\tau(\lambda, \mathbf{\Omega}, \mathbf{\Omega_0})$
Measurement error $\hat{\mathbf{S}}_\mathrm{y}$
$t()$
Compare (OEM)
$t()$
Simulated measurements $\mathbf{F}(\mathbf{x})$
+ weighting functions $\mathbf{K}(\mathbf{x})$
Prior constraints
State vector x_a
Covariance S_a
$t()$
$t^{-1}()$
Optimisation
Forward model $\mathbf{F}$
Mie or Henyey-Greenstein model
VLIDORT radiative transport model
Retrieved parameters $\mathbf{x}$
Profiles
Aerosol surface area concentration $c_{\mathrm{aer},l}$
Trace gas concentration $c_{s,l}$
Surface
Lambertian albedo $\omega(\lambda)$
Aerosol microphysical properties (Mie model)
Bimodal size distribution $r_1,\ r_2,\ \sigma_1,\ \sigma_2,\ f$
Complex refractive index $n_1(\lambda),\ n_2(\lambda)$
or
Aerosol optical properties (HG-model)
Single scattering albedo $\omega_{\mathrm{HG}}(\lambda)$
Asymmetry parameter $g_{\mathrm{HG}}(\lambda)$
Ångström parameter $\mathring{a}_{\mathrm{HG}}$
Results
State vector $\hat{\mathbf{x}}$
Covariance $\hat{\mathbf{S}}$
AVKs $\mathbf{A}$
...