WINDMI Table of description of parameters and nominal values

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In table and table below we give the calculated estimates and a short description of the major parameters in the WINDMI model.

L (90 H)	Inductance of the lobe cavity surrounded by the geotail current $I(t)$. The nominal value is $L = \mu_0 A_\ell / L_x^{\text{eff}}$ in Henries where A_ℓ is lobe area and L_x^{eff} the effective length of the geotail solenoidal. Computation of L as function of the IMF from Tsyganenko are given in *Horton and Doxas, JGR* (1998).
C (50000 F)	Capacitance of the central plasma sheet in Farads. The nominal value is $C = \rho_m L_x L_z / B^2 L_y$ where ρ_m is the mass density in $kg/m^3, L_x L_z$ is the meridional area of the plasma sheet, L_y the dawn-to-dusk width of the CPS and B the magnetic field on the equatorial plane. Computations of C are given in *Horton and Doxas, JGR* (1996).
Σ (8 mho)	Large gyroradius ρ_i plasma sheet conductance from the quasineutral layer of height $(L_z \rho_i)^{1/2}$ about the equatorial sheet. The nominal value of $\Sigma = 0.1(n_e/B_n)(\rho_i/L_z)^{1/2}$. Computation of Σ is given in *Horton and Tajima* (1992).
Ω_{cps} $(10^4 R_E^3)$	Volume of the central plasma sheet that supports mean pressure $p(t)$.
u_0 $(4 \times 10^{-9})/m/kg^{1/2}$	Heat flux limit parameter for parallel thermal flux on open magnetic field lines $q_\parallel = const \times v_\parallel p = u_0 (K_\parallel)^{1/2} p$. The mean parallel flow velocity is $(K_\parallel / (\rho_m \Omega))^{1/2}$.
$\tau_\parallel$ (10 min)	Confinement time for the parallel flow kinetic energy $K_\parallel$ in the central plasma sheet.
$I_{ps}(p)$ and α	The geotail current driven by the plasma pressure p confined in the central plasma sheet. Pressure balance between the lobe and the central plasma sheet gives $B_\ell^2 / 2\mu_0 = p$ with $2 L_x B_\ell = \mu_0 I_p$. This defines the coefficient α in $I_{ps} = \alpha p^{1/2}$ to be approximately $\alpha = 2.8 L_x / \mu_0^{1/2}$.
L_1 (20 H)	The self-inductance of the wedge current or the nightside region 1 current loop $I_1(t)$
M (1 H)	The mutual inductance between the nightside region 1 current loop I_1 and the geotail current loop I.

Table 1: WINDMI Nominal Parameters

L_2 ($8H$)	The inductance of the ring current.
C_1 (800 F)	The capacitance of the nightside region 1 plasma current loop.
Σ_I (3 mho)	The ionospheric Pedersen conductance of the westward electrojet current closing the I_1 current loop in the auroral (altitude $\sim 100\,\text{km}$, 68°) zone ionosphere.
R_{prc} (0.1 ohm)	The resistance of the partial ring current.
τ_{rc} (12 hrs)	The decay time for the ring current energy.
β (0.7)	Coupling factor for the input solar wind voltage across the magnetopause.
A_{eff} ($2R_E^2$)	The average effective area presented to the geotail plasma for plasma entry into the inner magnetosphere.
τ_E (1/2 hrs)	Characteristic time of thermal energy loss through earthward and tailward boundary of plasma sheet.
R_{A2} (0.3 ohm)	Resistance of the region 2 footprint in the Auroral Region.
L_y ($20R_E$)	The effective width of the magnetosphere for the solar wind dynamo.
I_c (1.78×10^7 A)	The critical current above which unloading occurs.
ΔI (1.25×10^5 A)	The rate of turn on of the unloading function.

Table 2: WINDMI Nominal Parameters