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Cometary electrons are born at typical energies of order 10 eV, but can cool to the temperature of the surrounding neutral gas (a few hundred K) by collisions. The collision rate depends on the density of the neutral gas, so outside some cometocentric distance we may call the collisionopause or exobase the cooling is inefficient, and two populations of warm (order 10 eV) and cold (below 0.1 eV) may be expected. In situ observations by Rosetta show that the electron flux at the position of the spacecraft was dominated by the warm population [1] throughout the mission. On the other hand, detailed modelling of some events [2,3] show that the flow of recently ionized molecules more or less follows the neutral gas. This is consistent with estimates based on the neutral gas density [4] suggesting the electron collisionopause was almost always inside of the Rosetta position but the ion collisionopause was further out at least for the months around perihelion. We present electron measurements from the instruments of the Rosetta Plasma Consortium, compare to model calculations, and discuss the physics of this intermediate region.

[1] Odelstad et al, GRL, 42, 10126 (2015)
[2] Vigren et al., Astron. J., 152, 59 (2016)
[3] Galand et al, MNRAS, 462, S331 (2016)
[4] Mandt et al., MNRAS, 462, S9 (2016)