PRESSURE DRIVEN CURRENTS DERIVED FROM GLOBAL ENA IMAGES BY IMAGE/HENA

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The global ion distributions inverted from ENA images measured by IMAGE/HENA can be used to calculate the plasma pressure. In principle, knowing the plasma pressure distribution and the magnetic field, one can also calculate the three-dimensional current system that is driven by the pressure gradient. The currents perpendicular to the magnetic field depend on the pressure gradient and the magnetic field strength. Assuming current continuity ($\nabla J = 0$), the parallell currents are driven by the misalignment between ∇B and pressure gradient. We will describe a method where we use Euler potentials to calculate the current distribution. We will look at how the current depends on the choice of magnetic field model. The method will then be applied to some pressure distributions measured by IMAGE/HENA and the resulting field aligned currents (FAC) will be compared to the global FAC maps derived from Irridium magnetometer data.