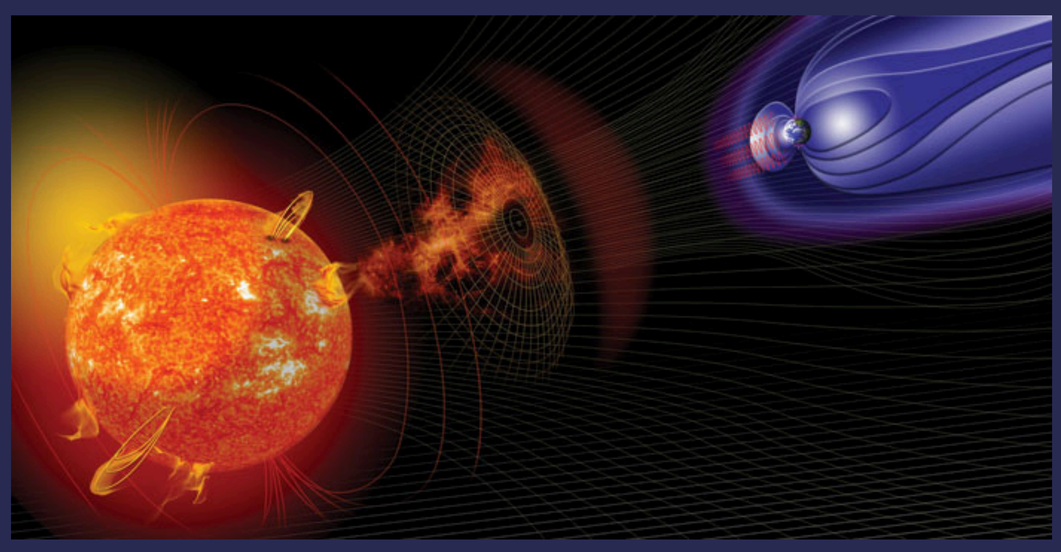
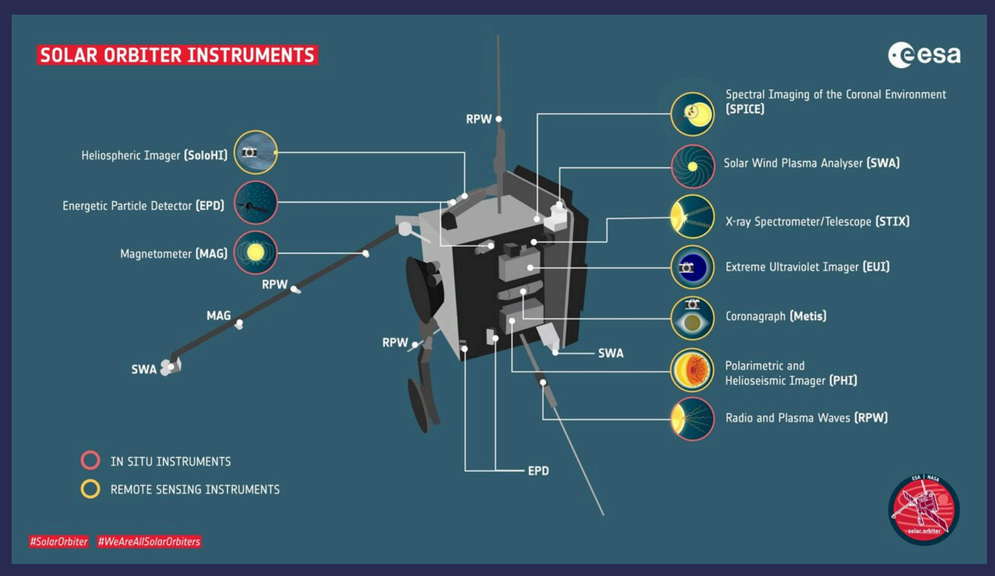
SOLAR WIND



Stream of highly ionized charged particles



TYPES OF WINDS

FAST

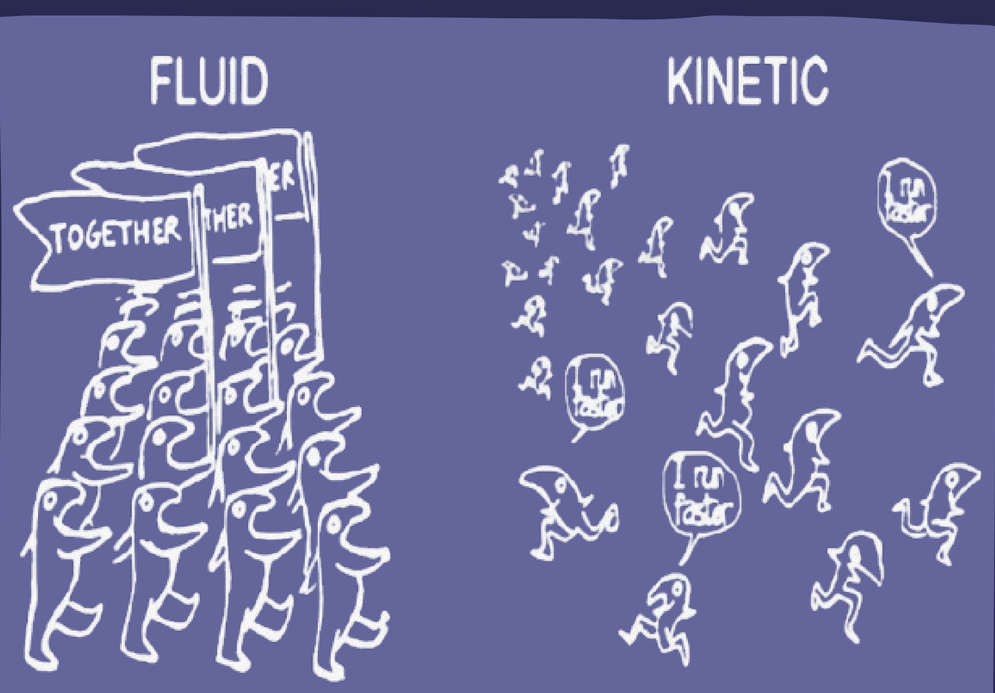
- Velocity 450-1000 km/s
- Low proton number density
- origin coronal holes
- Protons, Heavy Ions, Alpha particles

SLOW

- Velocity 250-450 km/s
- High proton number density
- origin streamers
- Protons, Heavy Ions, Alpha particles

SOLAR ORBITER

- Launched in 2020
- one of the closest satellites to the Sun
- Both in-situ and remote sensing
- MAG & SWAS



MHD AND KINETIC SCALES

- MHD - Low-frequency regime
- Collective behavior of the plasma in fluid scale
- Magnetic energy dominates the plasma
- Kinetic scale - High-frequency regime
- Micro-processes drives the plasma

KINETIC SCALE WAVES

Space telescopes are launched into orbit and are used to capture clearer images of our solar system, our galaxy, and beyond.

kinetic Alfven waves

- 0.001 - 0.1 Hz frequency
- Perpendicular to the magnetic field
- Landau Damping

Ion cyclotron waves

- 0.1 - 1 Hz frequency
- Parallel to the magnet
- Cyclotron Damping

Whistler waves

- 1 - 1000 Hz frequency
- Parallel to the Magnetic field
- Cyclotron resonance Damping

Mirror Mode waves

- 0.001 - 0.01 Hz frequency
- Oblique propagating

MSc student | Shubham Kadam
Department of Physics