Can you see astrosphere cocoons surrounding many stars in Orion Nebula in this picture?

Humans living on the Earth reside deep in a cocoon made by the sun, which we call the heliosphere. It is the magnetic field of the heliosphere that shields out more than 90% harmful high-energy radiation originated in the Galaxy. Because the material made up the heliosphere is very thin, less than one atom per cubic centimeter, it is invisible in all forms of light under the background emission from stars and galaxies. To see the heliosphere, we turn to use neutral atoms and very high-energy cosmic rays. Currently, NASA IBEX spacecraft is taking pictures of the heliosphere using a single-pixel neutral atom camera. The pictures obtained have surprised everybody. There are several large-scale cosmic ray air shower experiments that can image of the sky in TeV to PeV cosmic rays. In this seminar, we will see how our heliosphere looks like as we viewed from inside. Future research opportunities using the planned NASA IMAP mission and cosmic ray air shower experiments will also be presented.