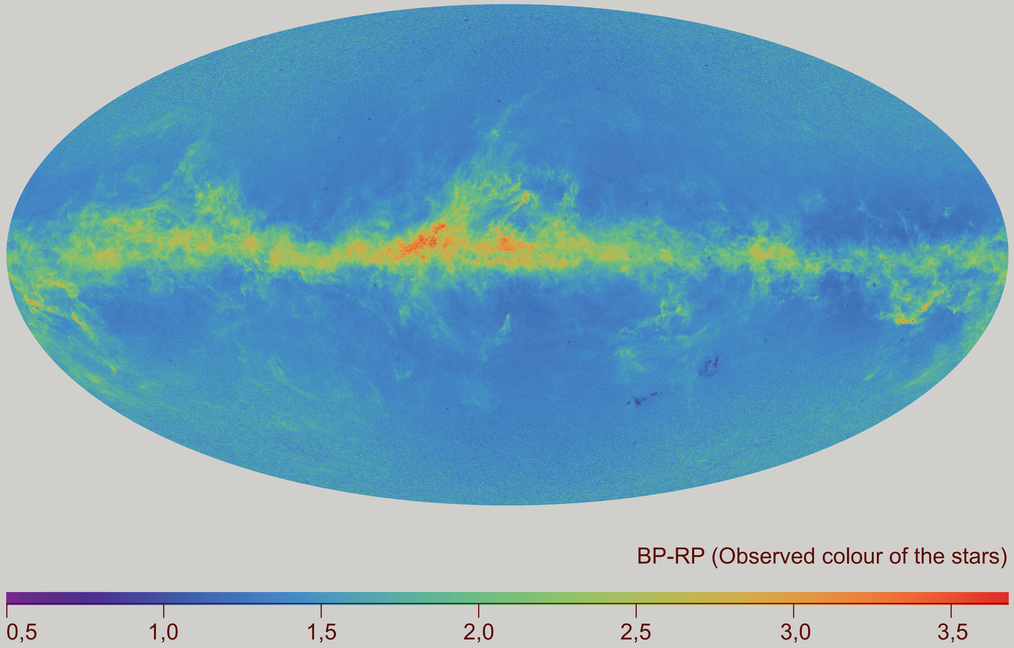
The sky in colours

Stars have different colours. The colours give us information about the temperatures of the stars, their age and the amount of dust that there is between them and us.

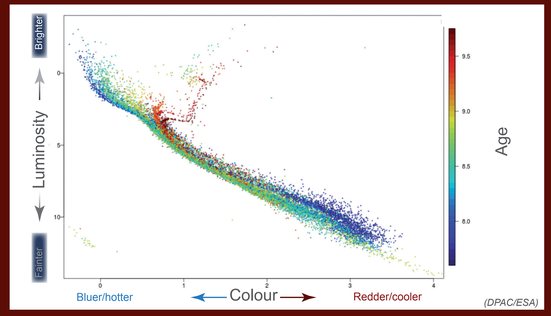


Distribution of the colour of the stars in the second publication of Gaia data (DPAC/ESA, April 2018)

Open Clusters

From an interstellar cloud of gas, thousands of stars can be born. Because bluer and brighter stars evolve faster (and disappear in a few millions years), only the younger clusters, as the open clusters, show these types of stars.

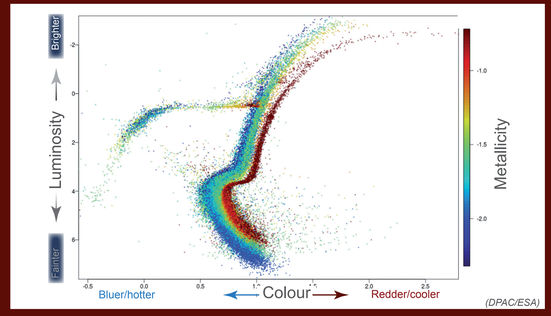
HR Diagrams for different clusters observed by Gaia:



Open clusters still have stars in the left side of the diagram (blue).

Globular Clusters

A globular cluster is formed by millions of very old stars (older than 10 000 million years). They have spherical shape (like a globe) and are located in the galactic halo. The stars that were born as blue are already dead and only yellow and red stars remain. That is the reason why globular cluster look redder.



In globular clusters blue stars have already died and only yellow and red stars are left.

The colour of stars

Like an incandescent iron, the hotter a star is, the more visible light it emits. The hotter stars emit bluer light and the cooler ones redder light. In this way we can know the temperature of stars from a distance. Star temperatures vary from a few thousand degrees to hundreds of thousands of degrees.

Interstellar reddening

The interstellar gas and dust limit the visibility of the stars behind. Not all colours have the same limit: red light travels farther through dust clouds than blue light. So the stars behind the clouds look redder than they really are. This effect is the interstellar reddening and it complicates the calculation of the temperature of the stars.

In the image the dark area indicates the presence of a dust cloud that blocks the light of the stars behind.