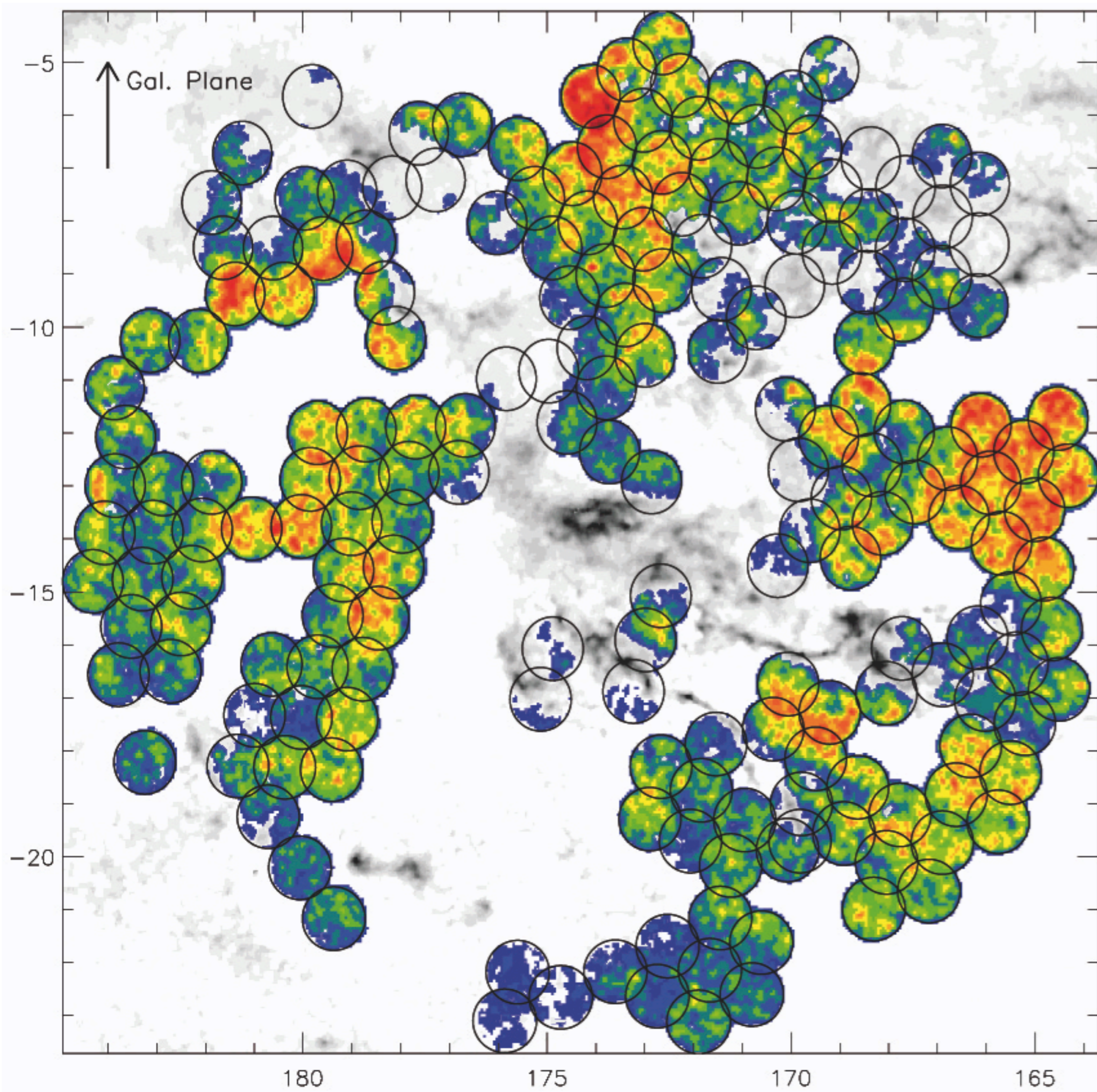


Abstract

In this contribution we report the results of our study of 192 fields observed with the GALactic Evolution eXplorer (GALEX) and covering a 10-degrees-radius region toward the Taurus Molecular Complex (TMC). The overall distribution of stars is described and compared with the information inferred from infrared maps of the region. For a given field, star counts are affected by both the extinction caused by the molecular cloud and the variation of stellar density with the galactic latitude. We take these effects into account to produce an extinction map of TMC outskirts. We also study the population of UV sources and provide a list of T-Tauri stars and brown dwarf candidates.



The Survey

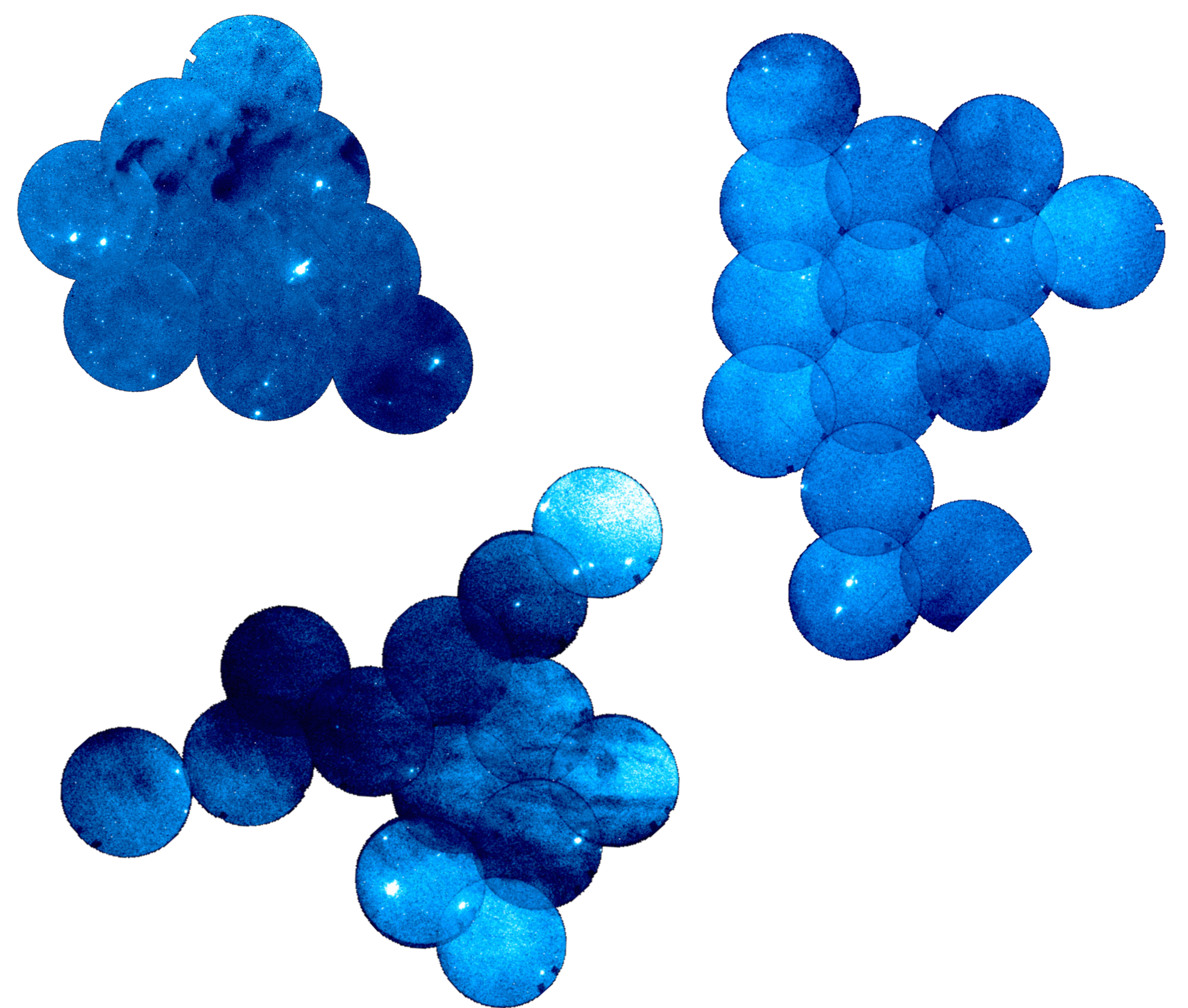
The baseline of the GALEX All Sky Survey was completed in 2007. GALEX AIS covers 26,000 deg² (~ 63% of the Sky) and provides broadband imaging to magnitude mAB = 20.5 mag in two UV bands: FUV (1350-1780 Angstroms) and NUV (1770-2730 Angstroms). The Galactic plane is excluded from the survey. GALEX obtained 192 images on the Taurus molecular cloud for a total coverage of ~ 200 deg² (see left panel for a plot of the GALEX fields over the 2MASS extinction map from Froebrich et al. 2007); note that the GALEX field of view is circular with radius 0.6°.

Cross correlation

The number of spurious detection in the GALEX archive is very large. As the Taurus region is very close to the galactic plane, a cross-identification with galactic sources from the Fourth USNO CCD Astrograph Catalog - U.S. Naval Observatory (UCAC4; Zacharias et al. 2013) and the 2MASS surveys (Strutskie et al. 2006) could be carried out. Typically, for each one of our GALEX fields, there are a factor of 3 more sources in the 2MASS survey and a factor of 10 in the UCAC4 survey; thus, they outnumber by far the UV sources identified by the GALEX pipeline and can be used to match the reliability of the GALEX identification. To complete the cross-identification of our sample with sources at different wavelengths, we have also cross-correlated our list with the WISE all-sky catalogue (Cutri et al. 2012) using the same criteria than for the other two databases.

Stellar density

The distribution of all the NUV sources in the GALEX AIS survey of the TMC is shown in the top figure overplotted to the 2MASS extinction map by Froebrich et al. (2007). The location of the GALEX tiles is marked, and the density of stars per 3 arcmin² is colour coded: red is more dense and blue is less dense. The density of stars in the NUV band is anticorrelated with the density of dust observed in the infrared. However, the UV is more sensitive to the presence of small-sized dust than the infrared, as observed in the figure at the right. In fact, the FUV is a powerful tool to reveal small clouds and Bok globules in the Taurus-Auriga molecular complex (see images at the right).



Young stellar population

The total number of sources detected in the NUV band and correlated with 2MASS sources within the Taurus field is about 167,000. Only 1% of them were also detected in the FUV band. We used colour-colour diagrams with UV, optical and IR bands to reveal stars with excesses in the UV and/or the IR. The figure at the bottom (right corner) shows one of those diagrams with known T Tauri stars in our sample plotted in green. The dashed line delimits the region where T Tauri candidates are selected. Spectral energy distributions (SEDs) of the selected candidates were studied with the Virtual Observatory tool VOSA, which permits fitting the SED using different stellar models. Below, the SEDs of several candidates are plotted.

