

The star formation history of embedded clusters as probe of cluster formation.

Arjan Bik (University of Stockholm, Stockholm, Sweden)

Massive stars are typically observed to form in clustered environments, with morphologies ranging from very dense, centrally concentrated starburst clusters to loose associations. These associations and clusters are morphologically and dynamically different. It is not clear if these differences arise from different initial conditions in the star formation process or environmental effects, presence of filaments, stellar feedback and dynamical processes.

I will present results of a large observational campaign aimed at the reconstruction the star formation history of several massive star formation complexes in order to place constraints on cluster formation mechanisms. Based on the several regions we have analyzed, I will demonstrate that near-infrared spectroscopy and photometry using LBT and VLT, combined with a large suite of multi-wavelength observations allow us to obtain a detailed picture of the stellar clusters and their stellar populations. Different stellar populations are found in many embedded clusters, suggesting that the star formation history is often much more complex than a single star formation event and different formation mechanism are needed to explain the observed stellar population.