Astronomy & Astrophysics

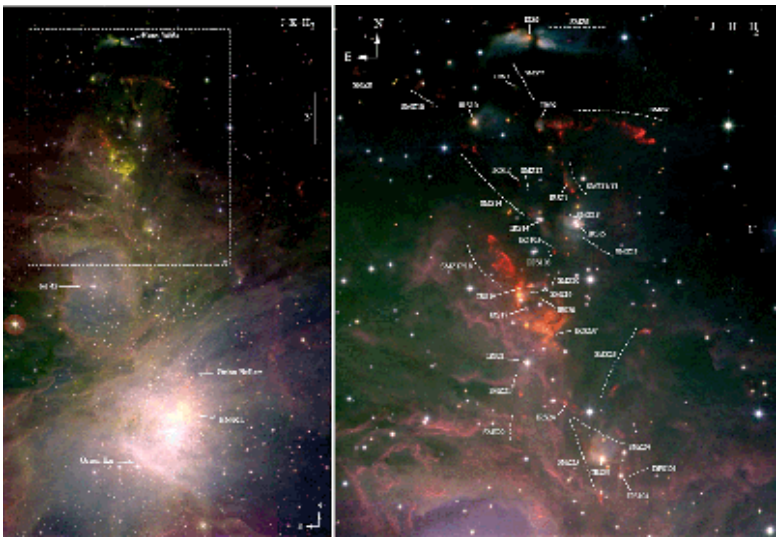
HIGHLIGHTS: this week in A&A

Volume 496-1 (March II 2009)

In section 6. Interstellar and circumstellar matter

"Star formation around RCW 120, the perfect bubble", by L. Deharveng, A. Zavagno, F. Schuller, J. Caplan, M. Pomares, and C. De Breuck, A&A 496, p. 177

The authors take advantage of the simple morphology of RCW 120 – a perfect bubble – to understand the mechanisms triggering star formation around an HII region, using 870 µm observations obtained with the APEX-LABOCA camera and Spitzer-MIPS observations at 24 µm and 70 µm. They show that a layer of dense neutral material swept up during the expansion surrounds the entire HII region. The neutral layer has a mass greater than 2000 solar masses and displays massive fragments elongated along the ionization front (IF). They find 138 infrared sources, 39 of which are flat-spectrum young stellar objects observed in the direction of the collected layer. They suggest that the formation of these young stars is the result of Jeans gravitational instabilities in the collected layer.



In section 6. Interstellar and circumstellar matter

"A census of molecular outflows and their sources along the Orion A molecular ridge. Characteristics and overall distribution", by C.J. Davis, D. Froebrich et al., A&A 496, p. 153

The authors present a census of molecular hydrogen flows across the entire Orion A giant molecular cloud, aiming at associating each flow with its progenitor and associated molecular core, so that the characteristics of the outflows and outflow sources can be established. They demonstrate that H2 jet sources are predominantly protostellar sources rather than disk-excess (or T Tauri) stars. Most protostars associated with molecular cores drive H2 outflows. The authors suggest that the H2 emission regions in jets and outflows from young stars weaken and fade very quickly, before the source evolves from protostar to pre-main-sequence star, and on time scales much shorter than those associated with the T Tauri phase, the Herbig-Haro jet phase, and the dispersal of young stellar objects.