

The Global Picture of Star Formation in NGC 3603

Dieter E. A. Nürnberger

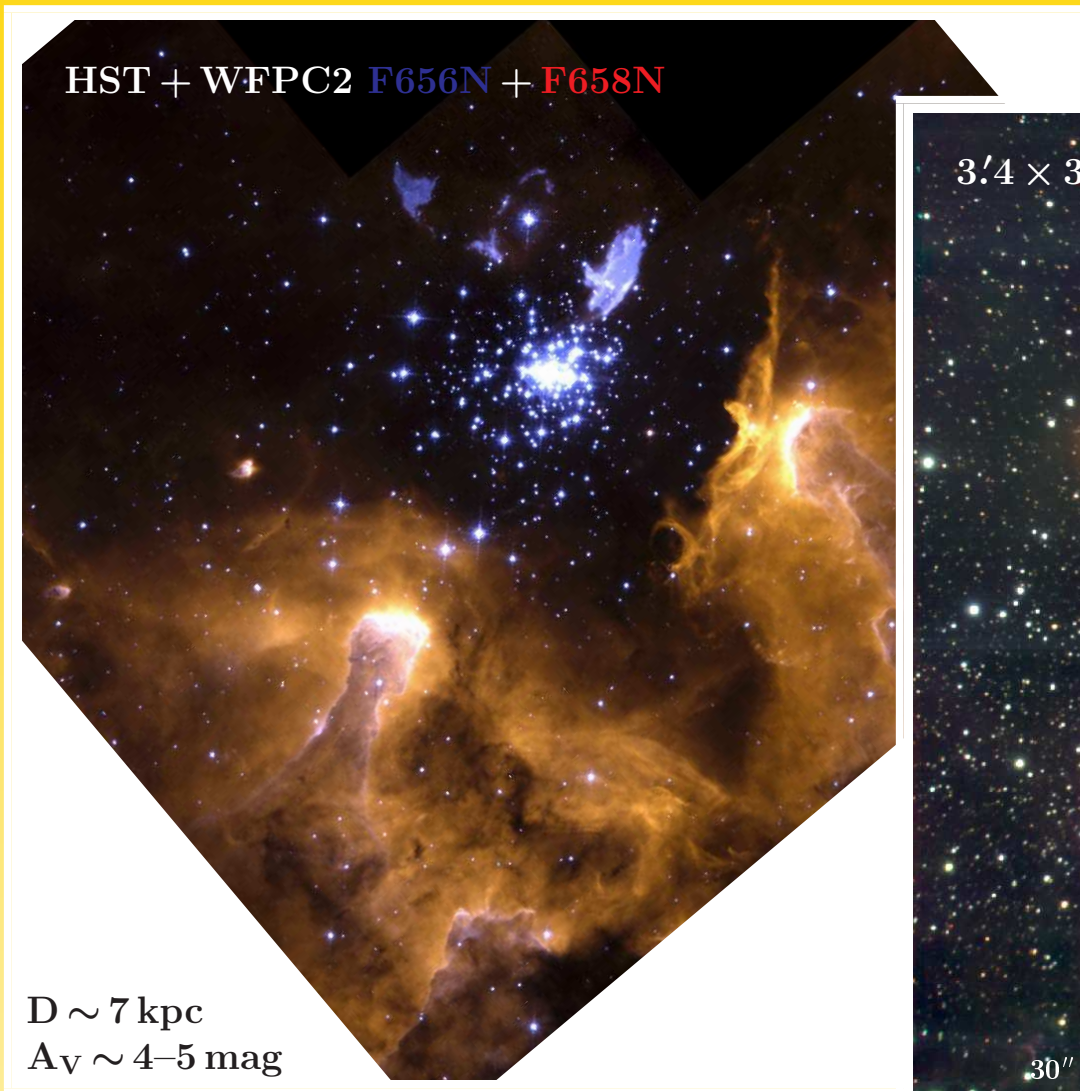


Workshop on "Spectroscopy with SOFIA" Ringberg Castle, Germany, 16.03.2015

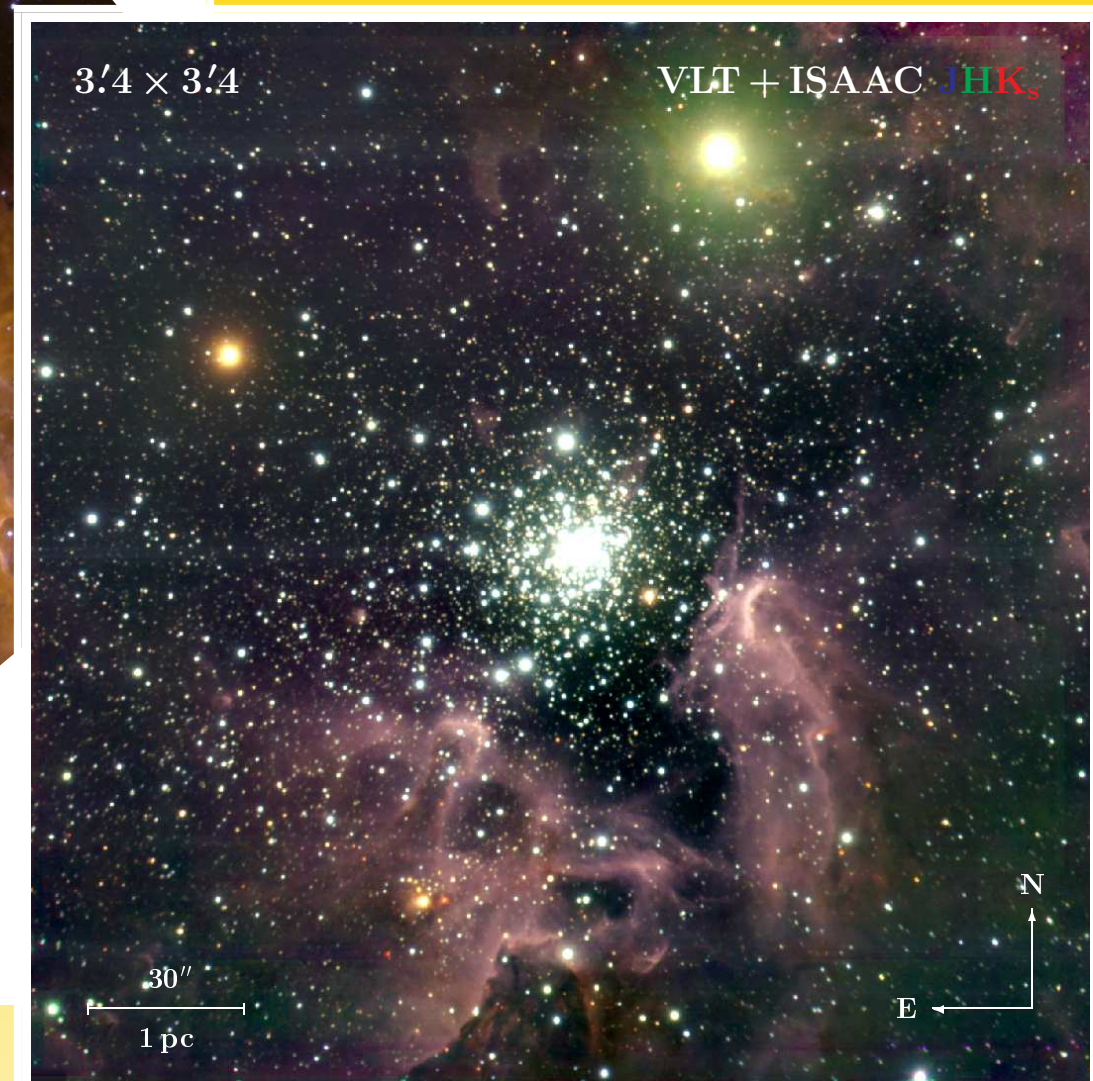
[Background Image courtesy Michael J. West]

NGC 3603 as seen by HST + WFPC2 and VLT + ISAAC

ESO Press Releases 16/99 and 15/03
(Brandl et al. and Nürnberger et al.)

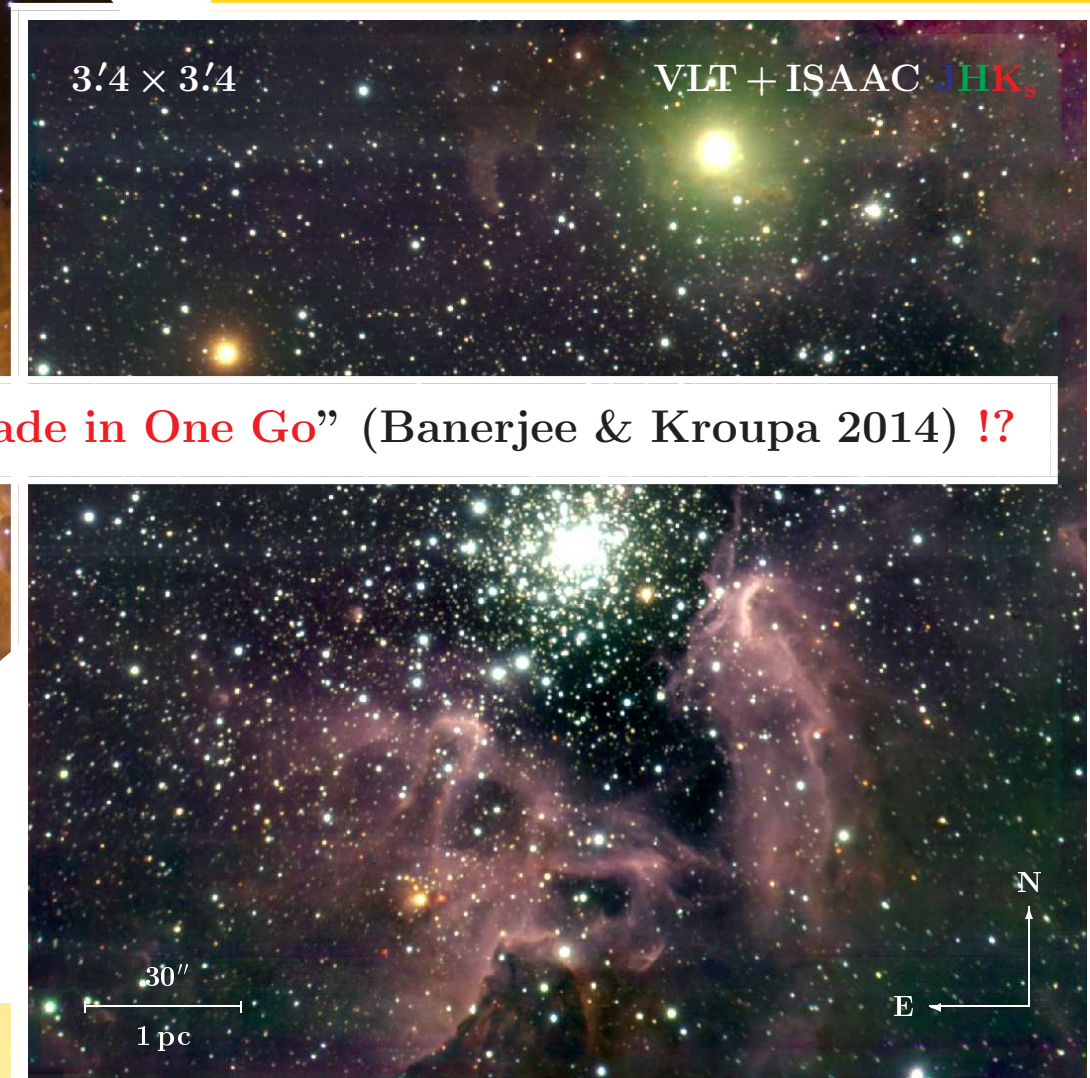
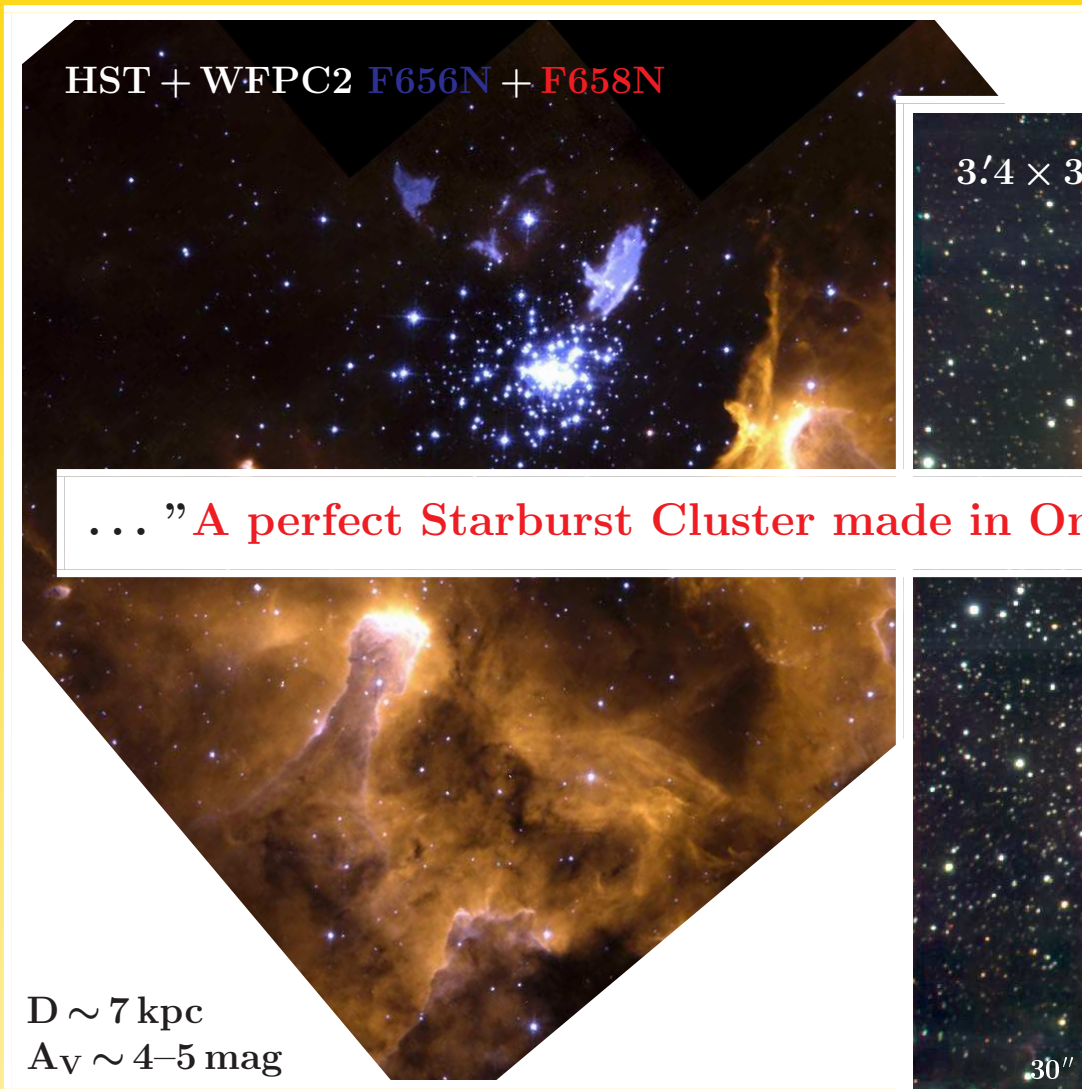


STScI Press Release 1999-20
(Brandner et al.)



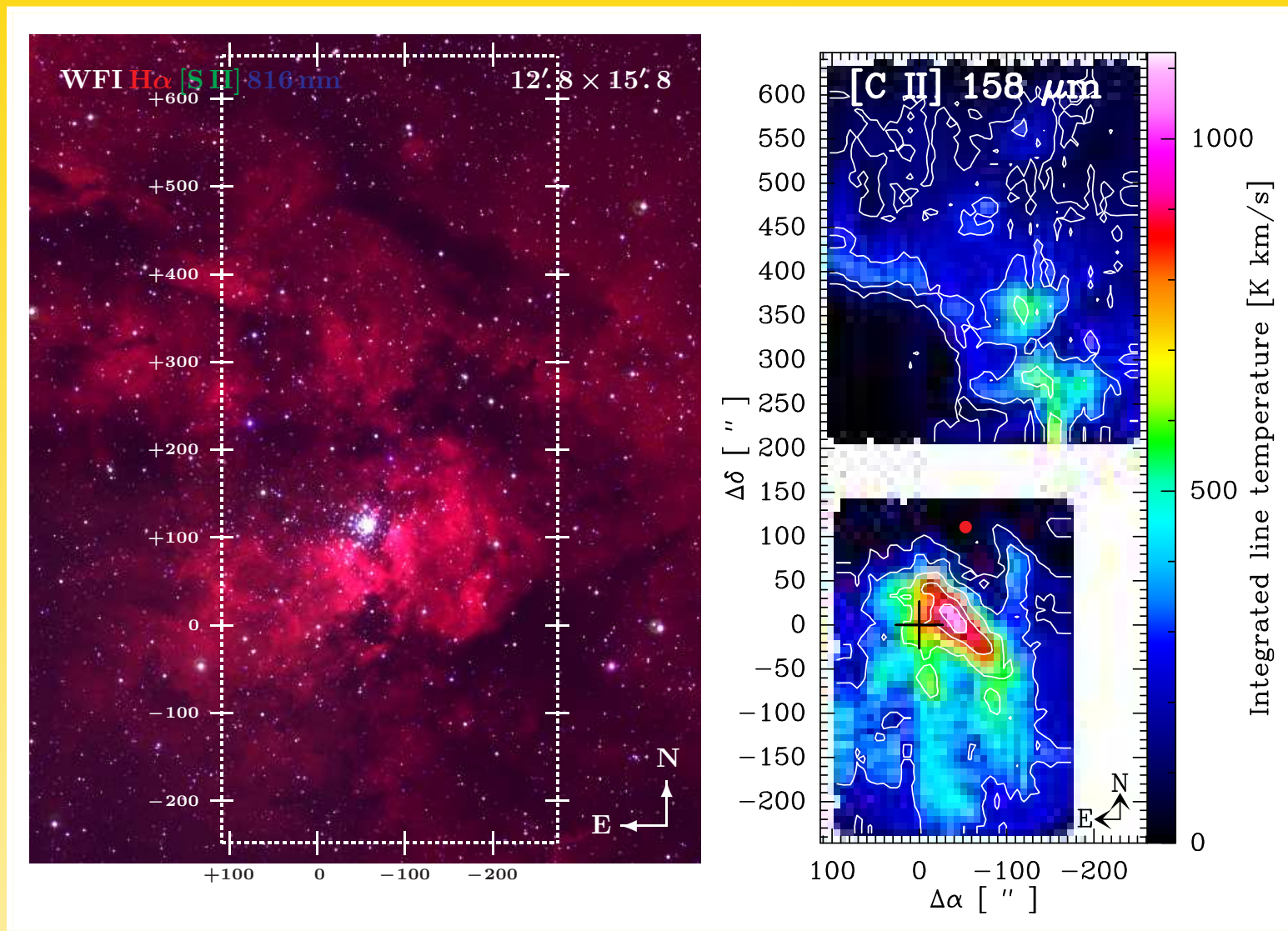
NGC 3603 as seen by HST + WFPC2 and VLT + ISAAC

ESO Press Releases 16/99 and 15/03
(Brandl et al. and Nürnberger et al.)



... "A perfect Starburst Cluster made in One Go" (Banerjee & Kroupa 2014) !?

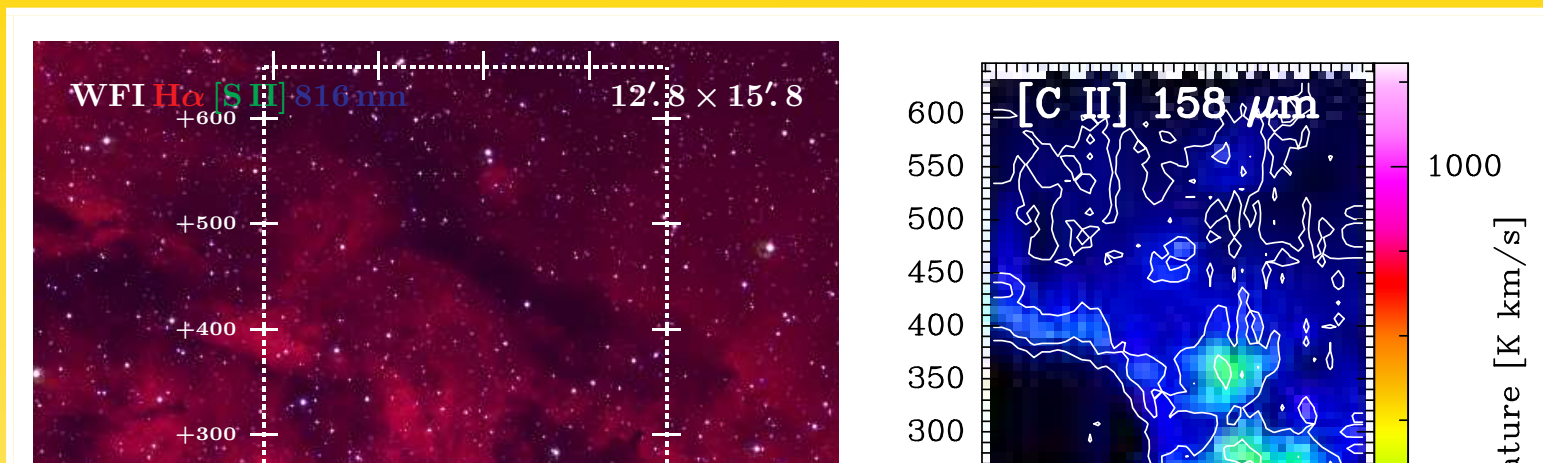
Spatial Distribution of H α Emission versus [C II] 158 μ m Emission



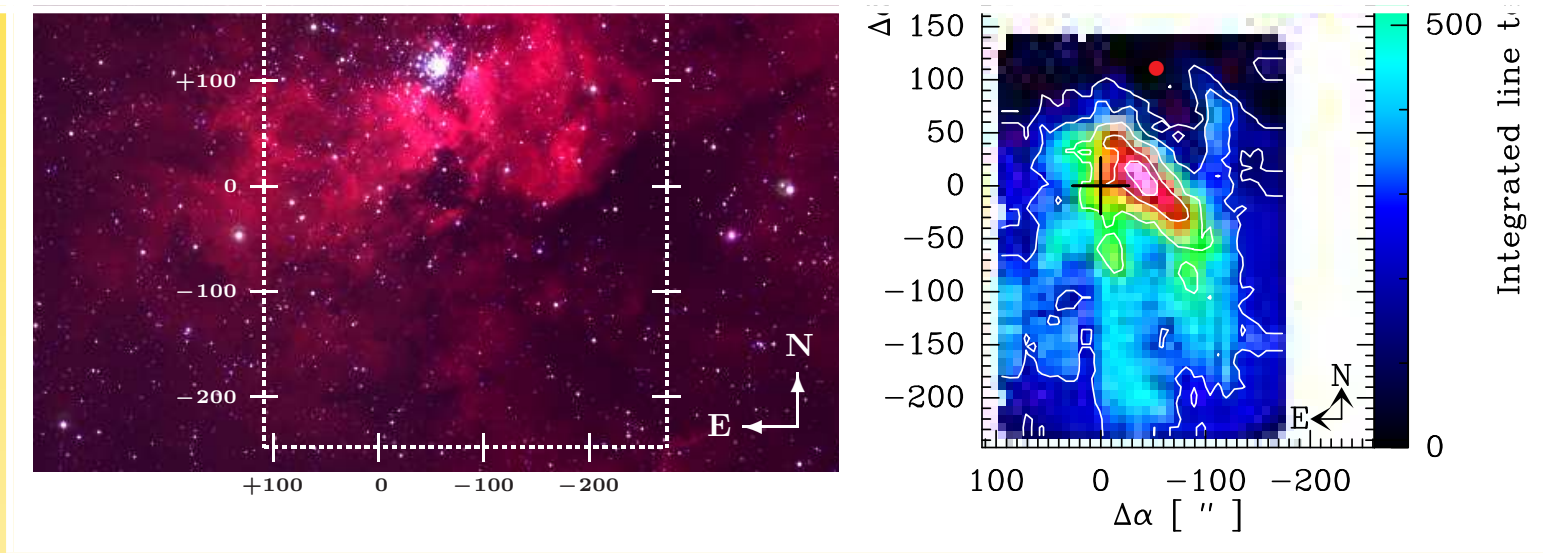
Pérez-Beaupuits et al., in prep.



Spatial Distribution of H α Emission versus [C II] 158 μ m Emission



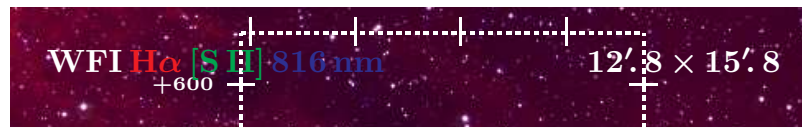
... Do we understand the Global Picture of Star Formation in NGC 3603 ?



Pérez-Beaupuits et al., in prep.



Spatial Distribution of H α Emission versus [C II] 158 μ m Emission



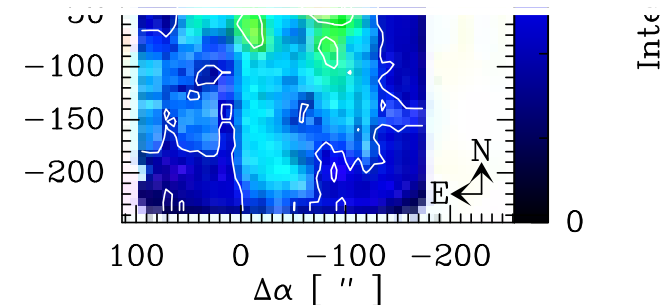
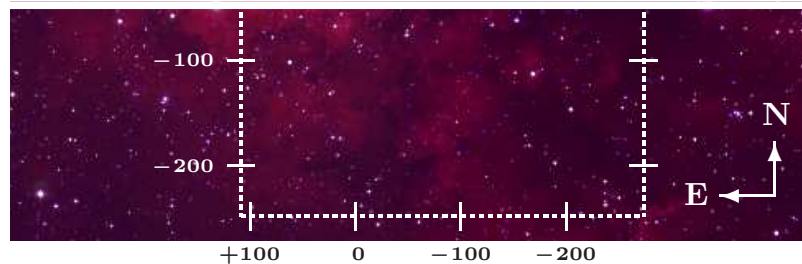
... Do we understand the Global Picture of Star Formation in NGC 3603 ?



- Overall Distribution of Star Forming Gas and Dust in NGC 3603 ?
 - Anything else Beyond that ?
 - (New) Insight into NGC 3603's Star Formation History ?



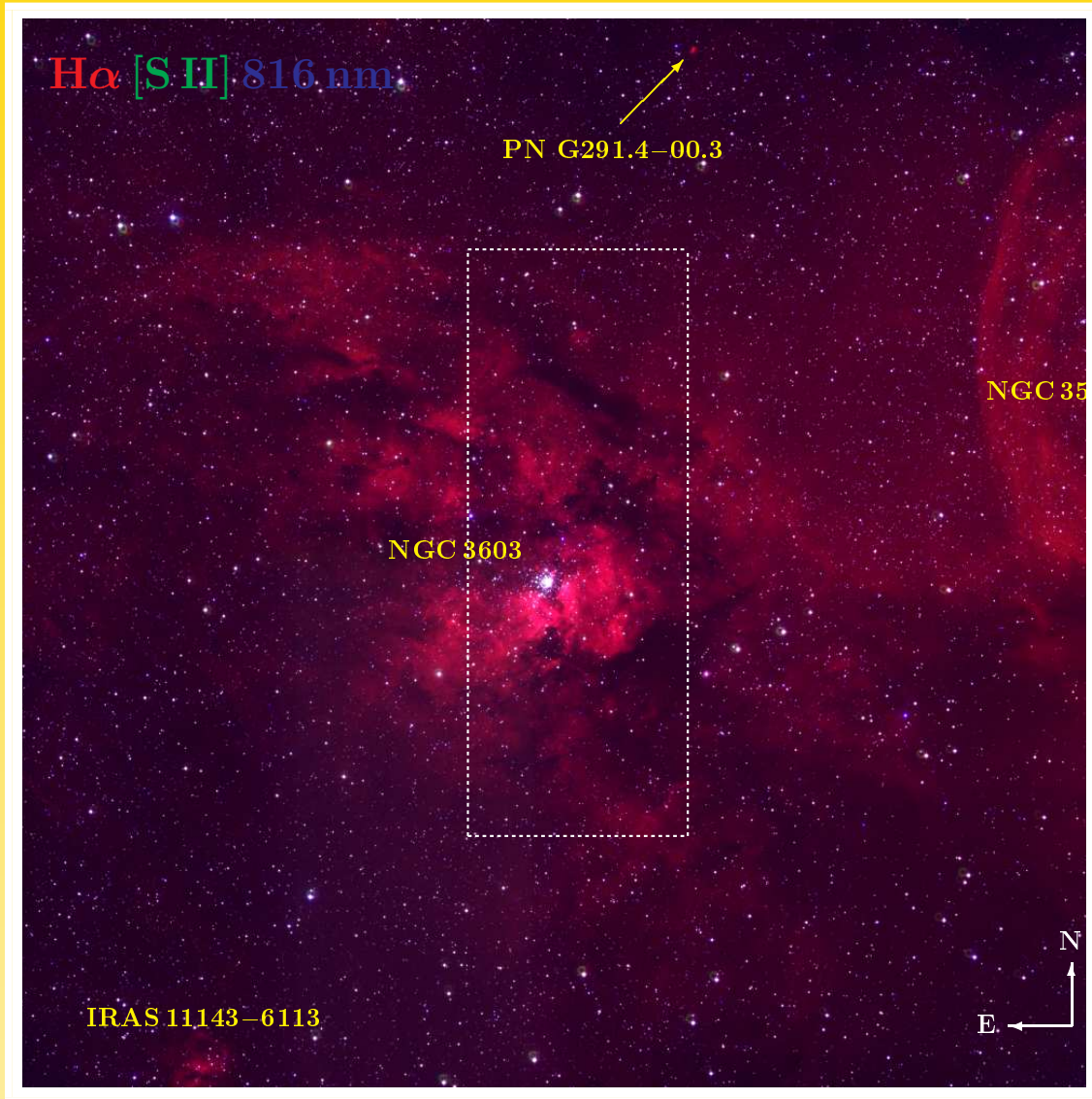
... Rosetta Stone for Studies of unresolved Extragalactic Starburst Regions !



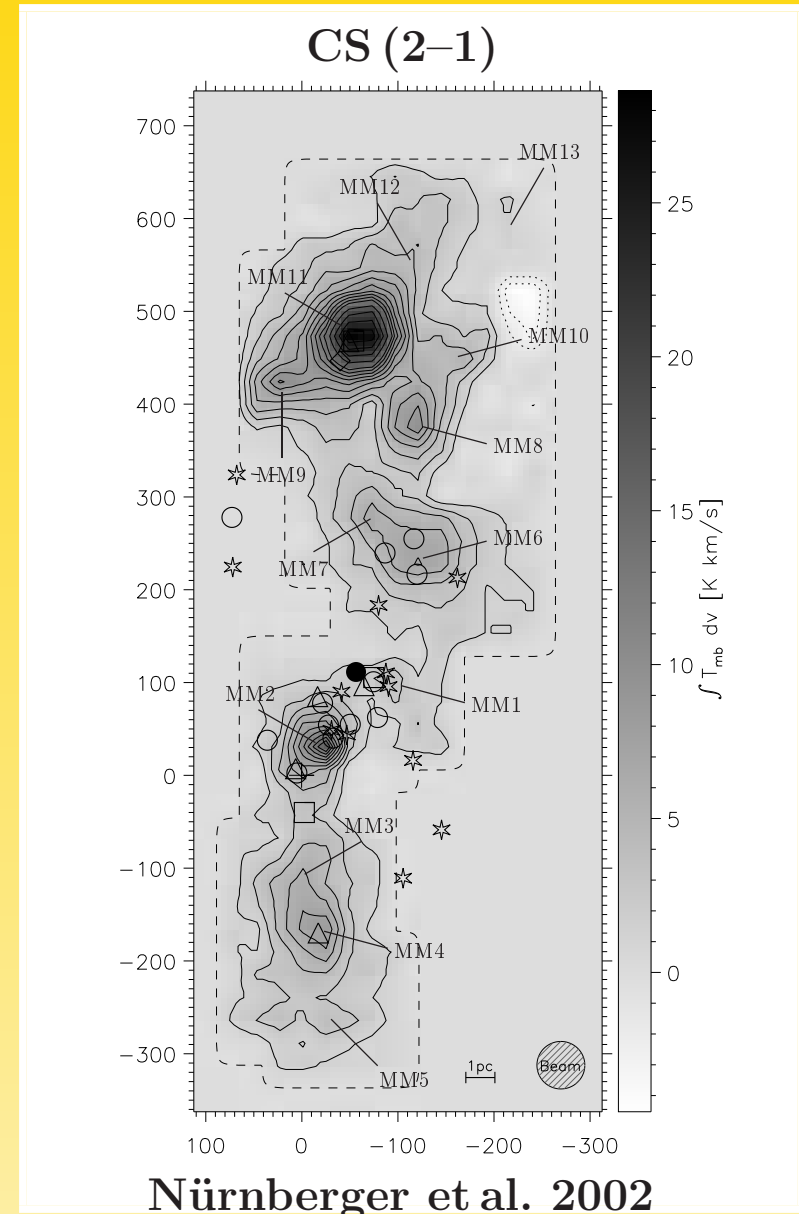
Pérez-Beaupuits et al., in prep.



Distribution and Kinematics of Cold and Dense Molecular Gas and Dust

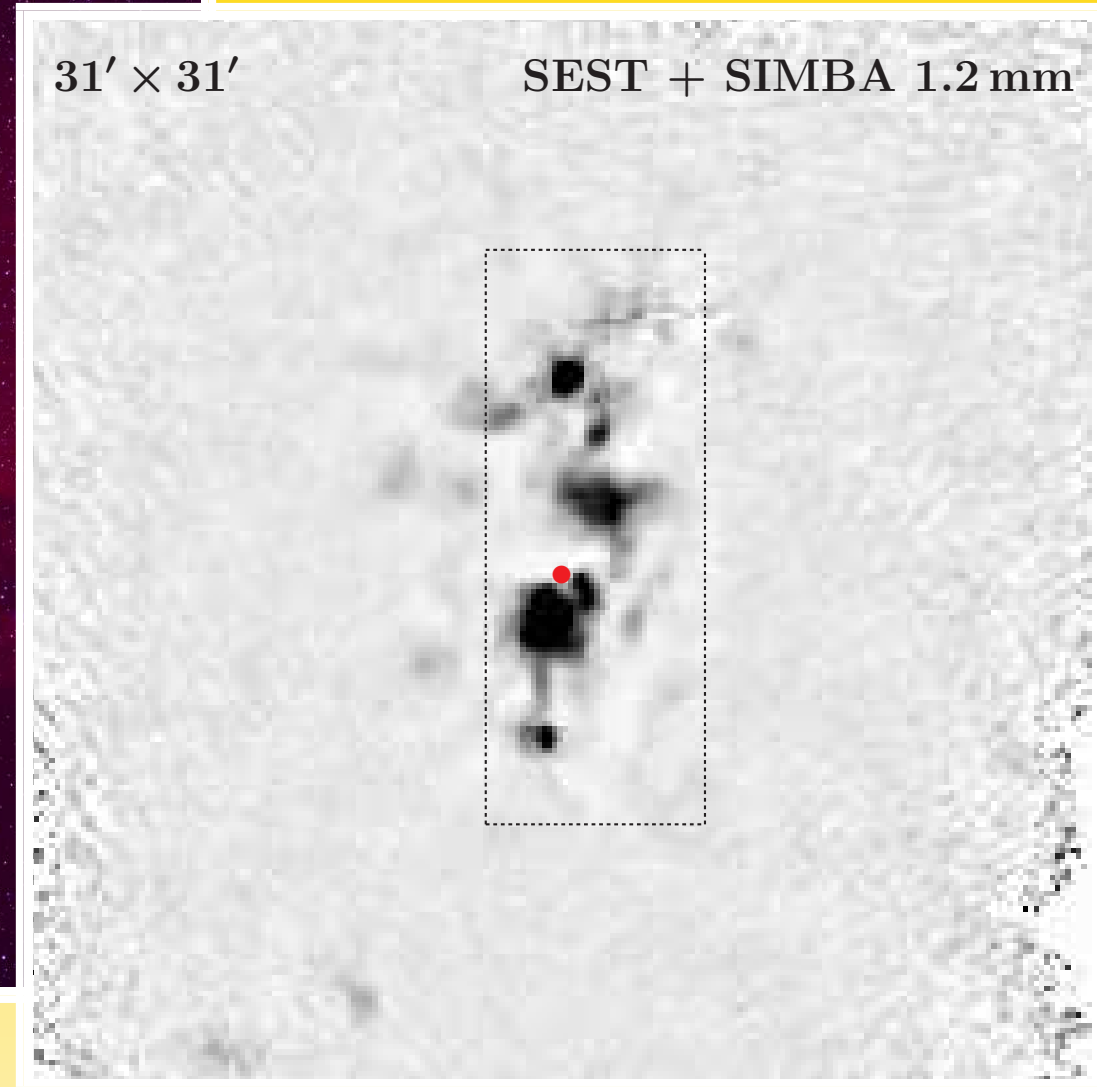
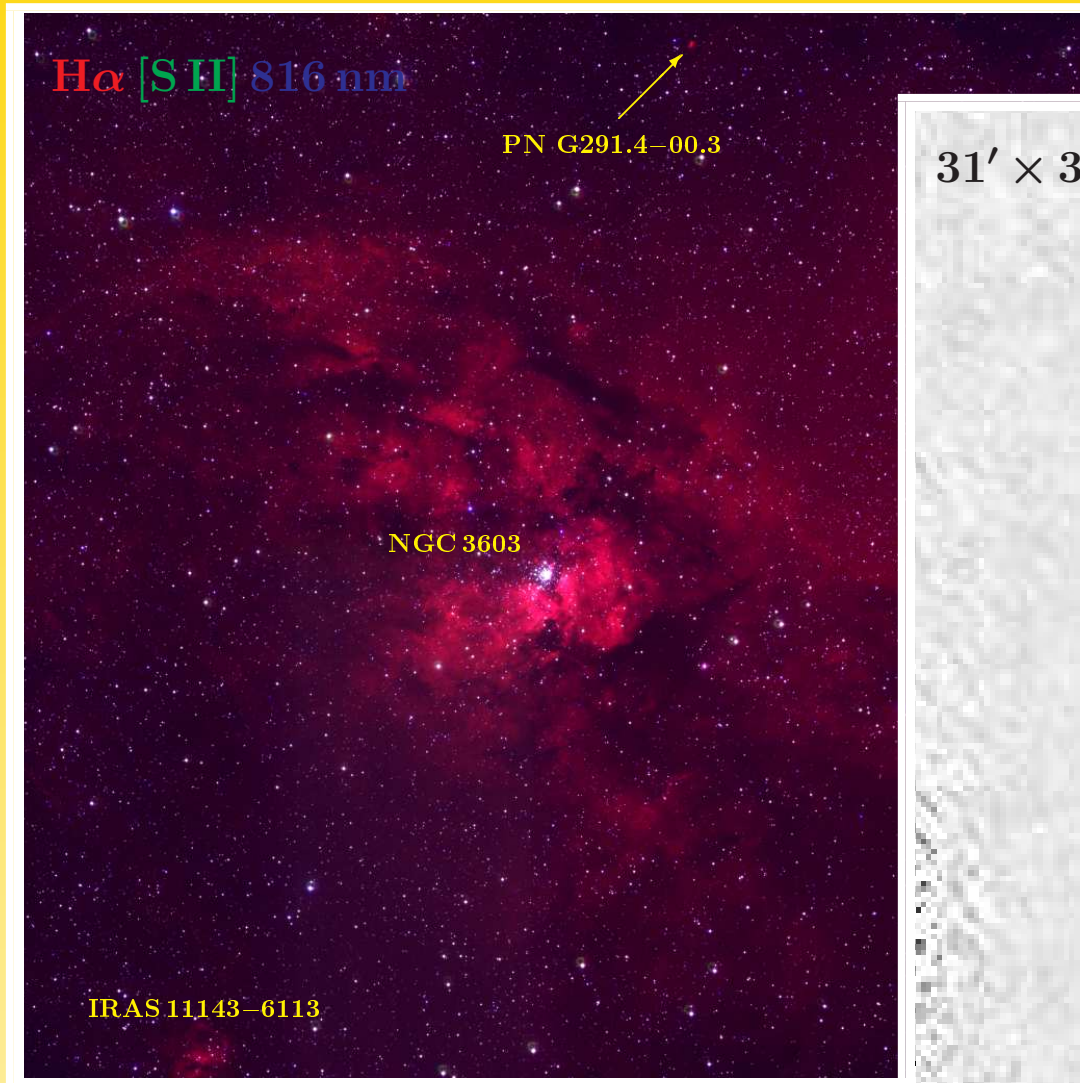


ESO / MPG 2.2 m + WFI



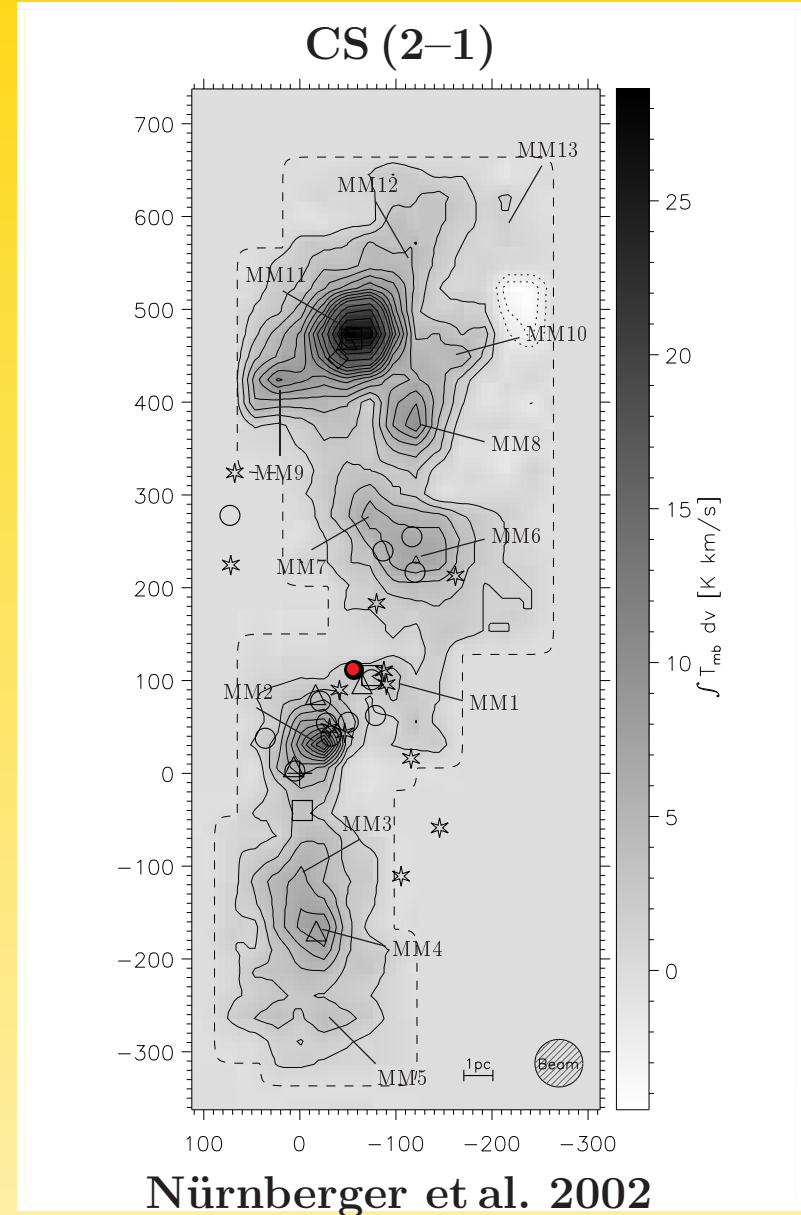
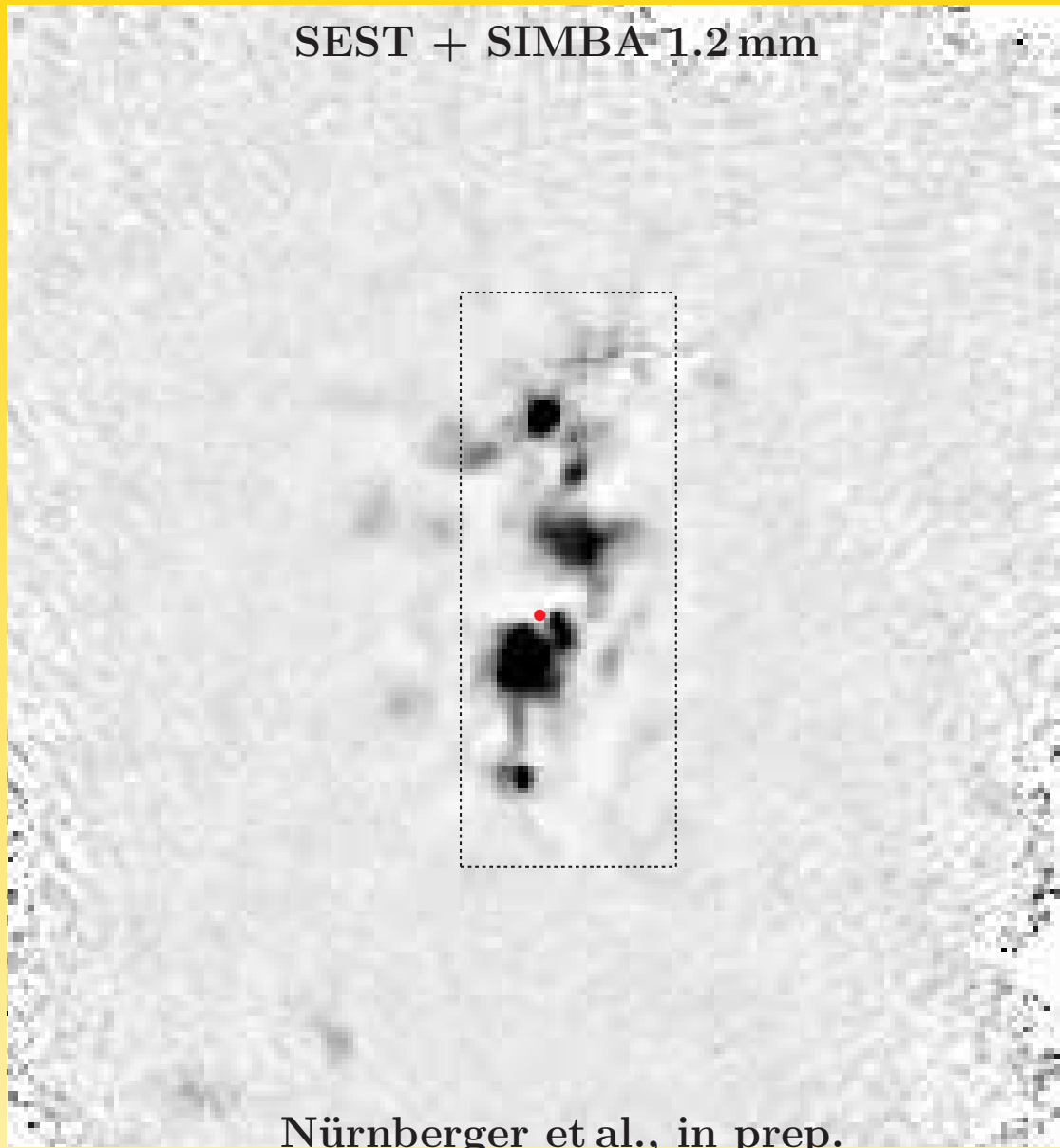
Distribution and Kinematics of Cold and Dense Molecular Gas and Dust

Nürnbergger et al., in prep.

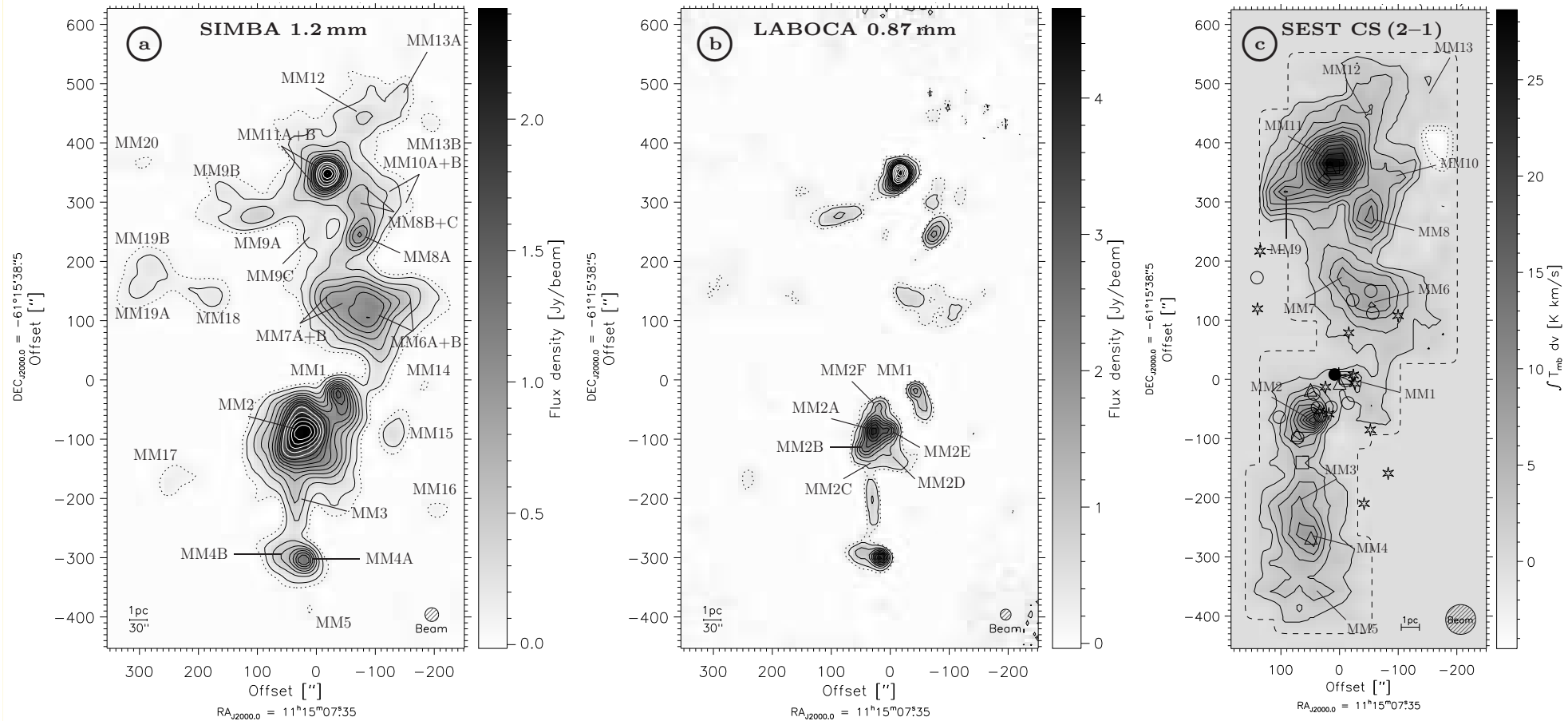


ESO / MPG 2.2 m + WFI

Distribution and Kinematics of Cold and Dense Molecular Gas and Dust



Distribution and Kinematics of Cold and Dense Molecular Gas and Dust



$$\text{rms } (1 \sigma) \sim 25 \text{ mJy beam}^{-1} \quad \text{rms } (1 \sigma) \sim 50 \text{ mJy beam}^{-1}$$

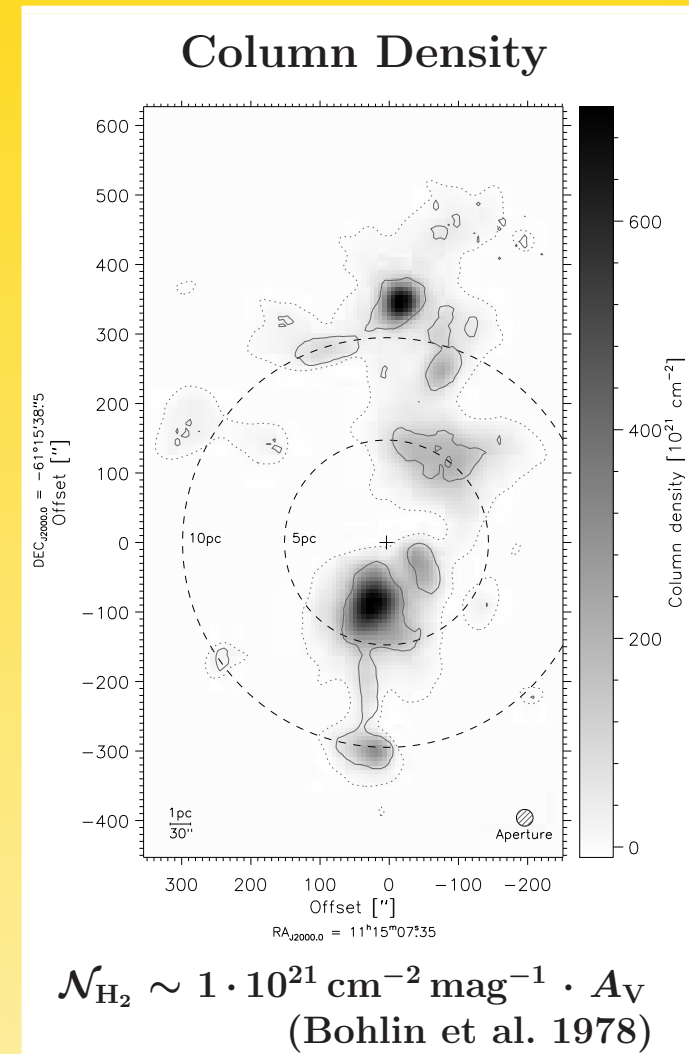
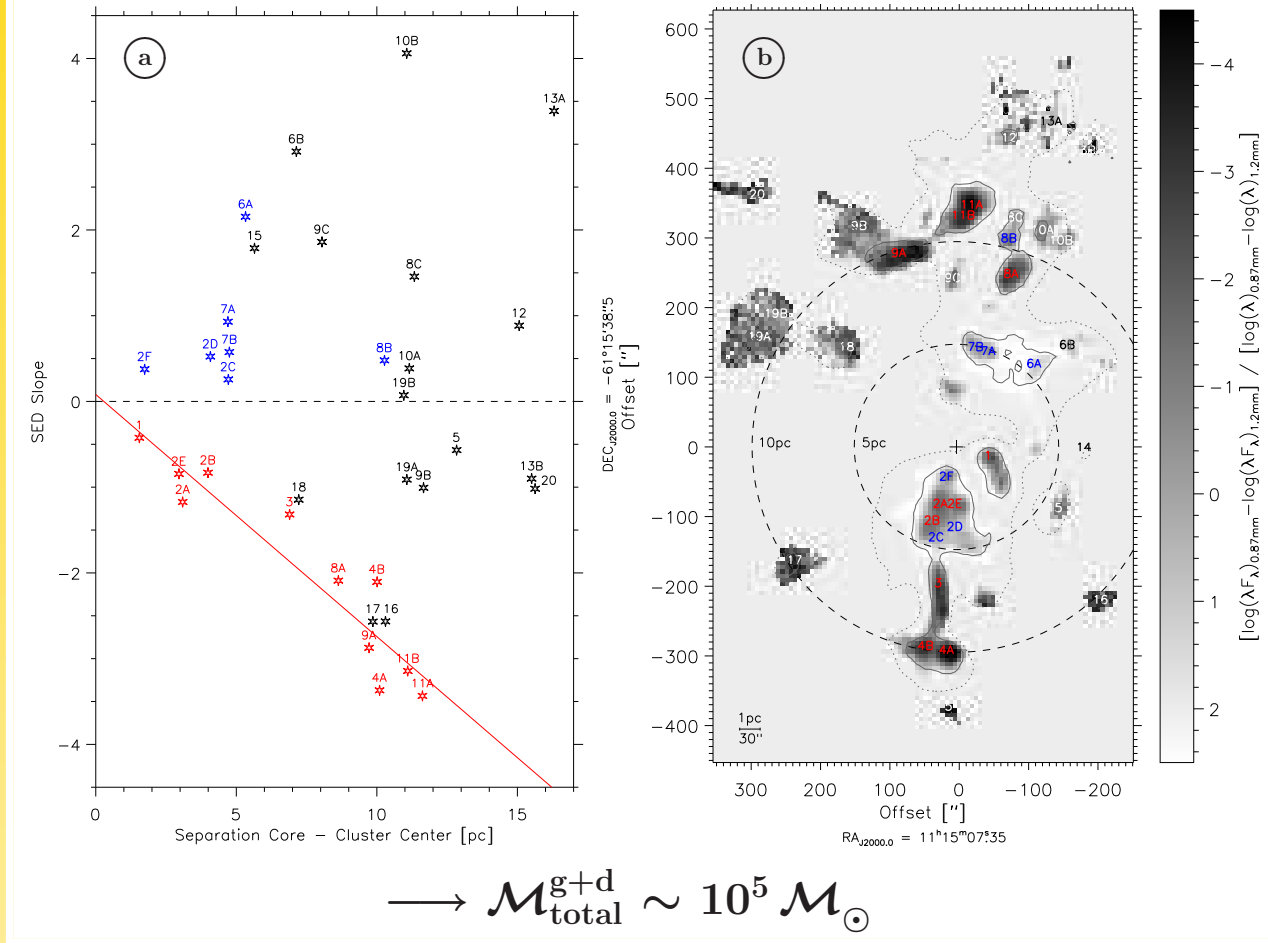
$$\longrightarrow \sigma_M \sim 100 M_{\odot}$$

Nürnbergger et al., in prep.



Physical Properties of Cold and Dense Molecular Gas and Dust

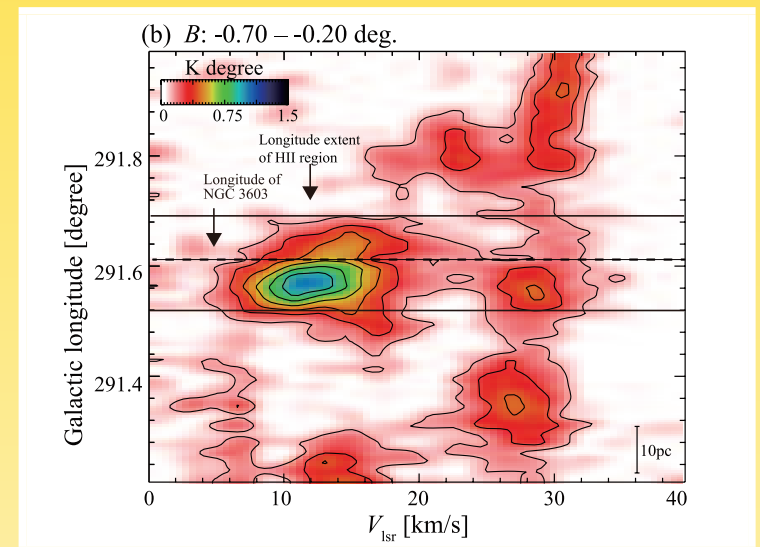
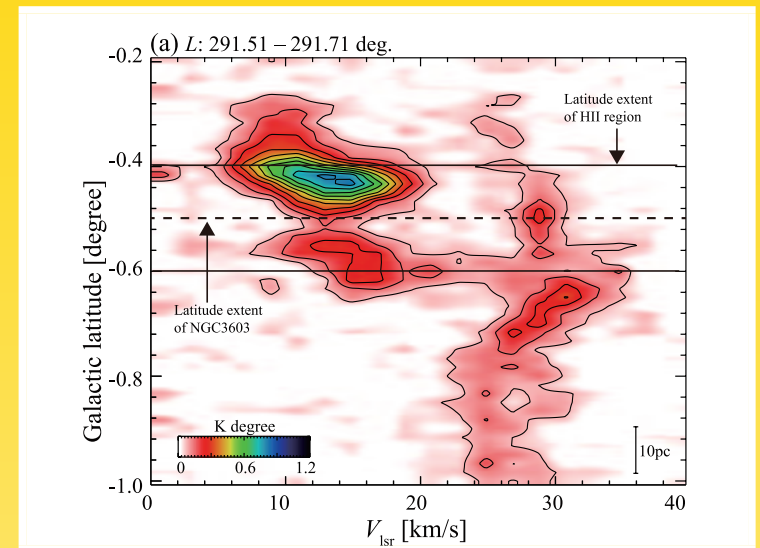
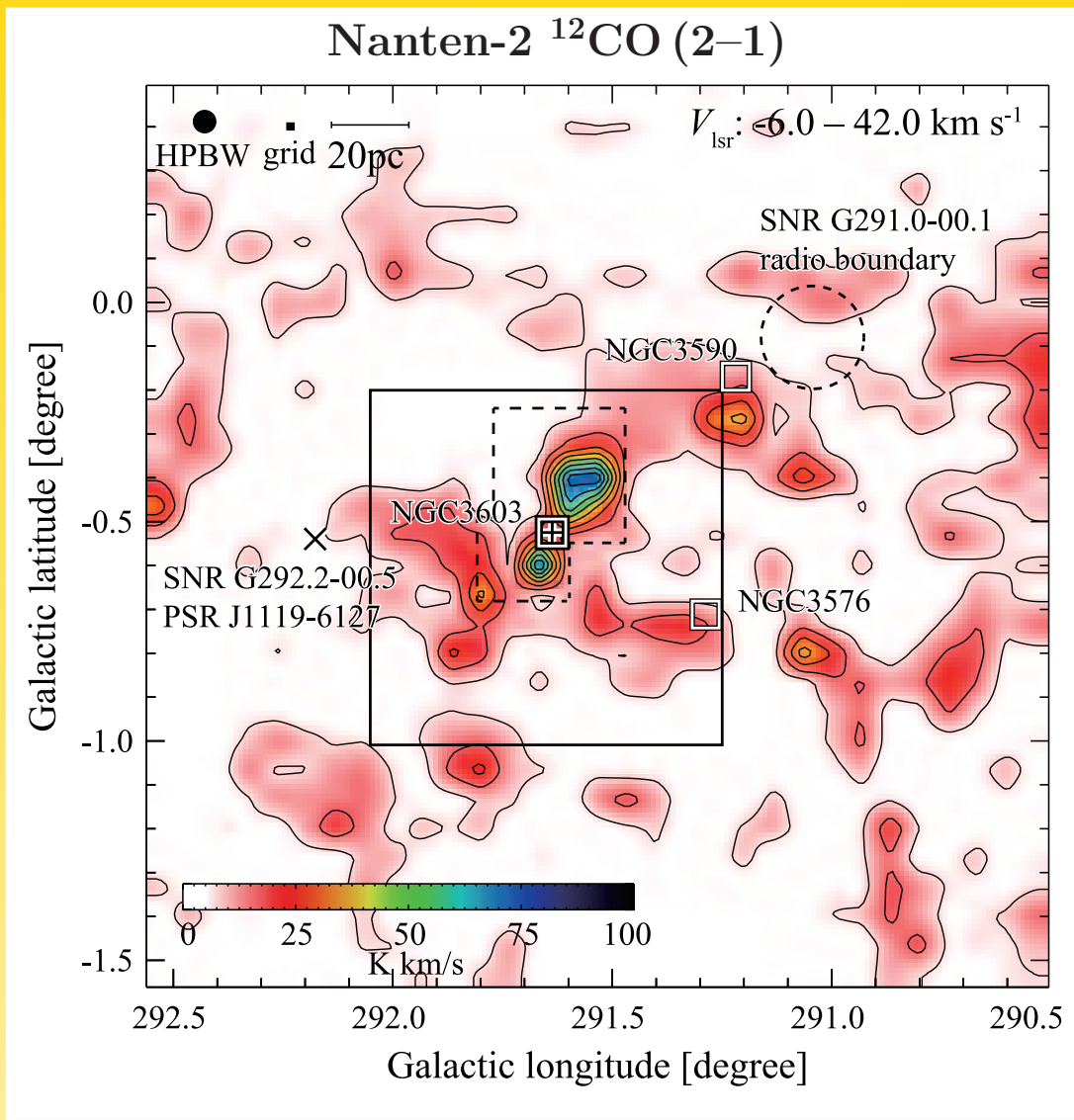
[Dust Temperature and Dust Grain Emissivity]



Nürnbergger et al., in prep.

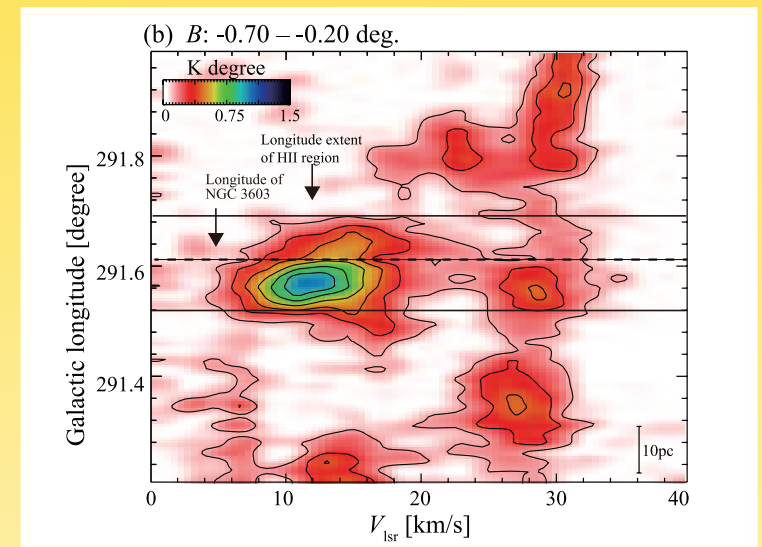
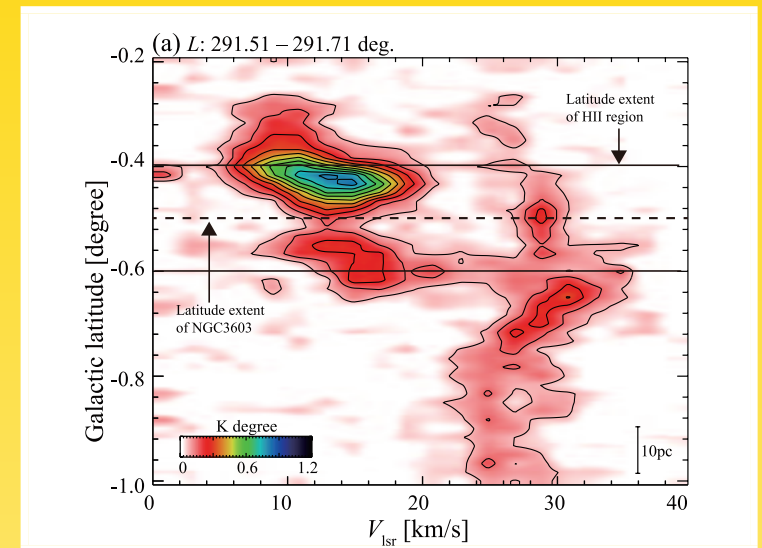
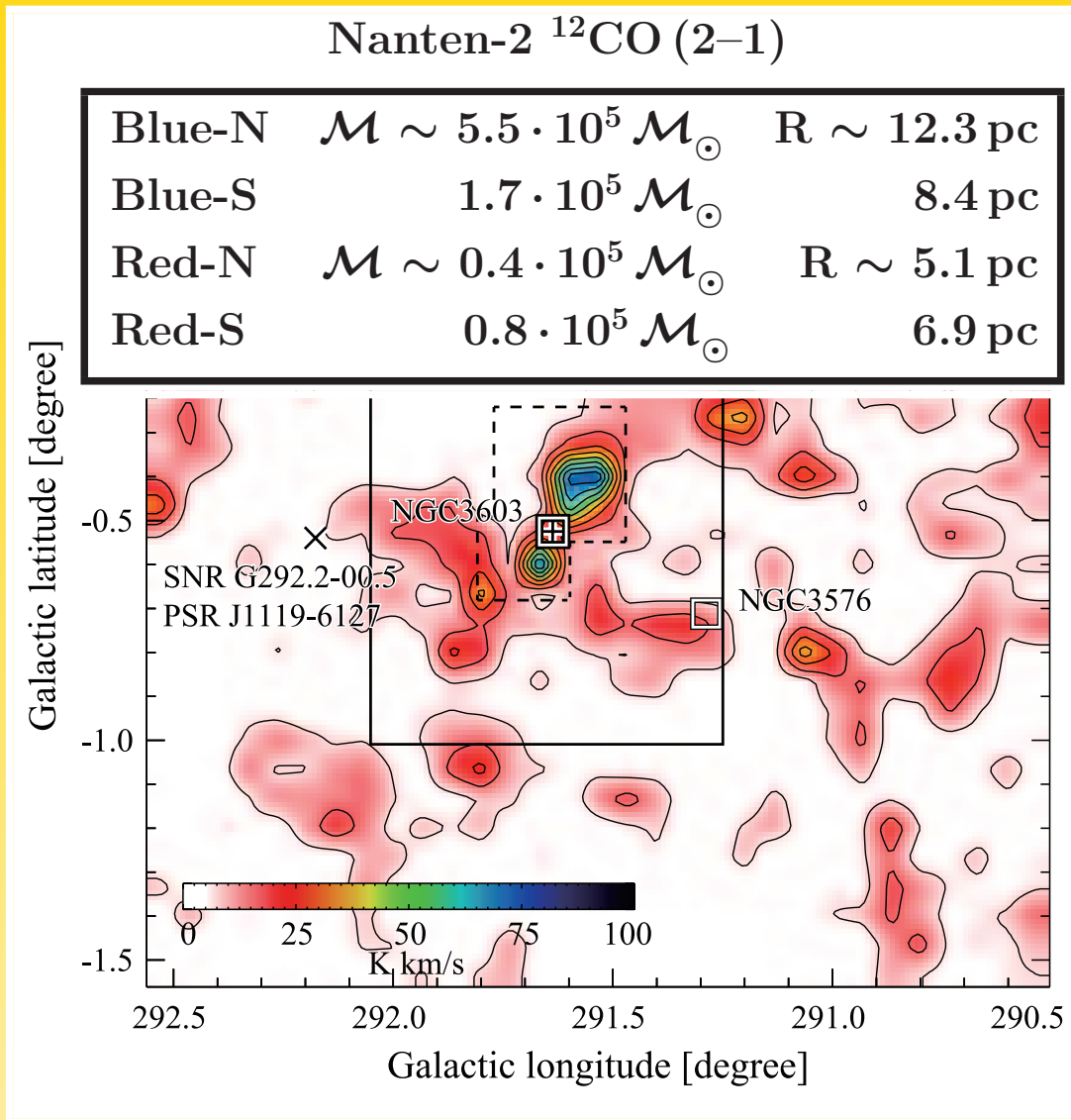
Potential Origin of Starburst : Cloud – Cloud Collision ?

Fukui et al. 2014

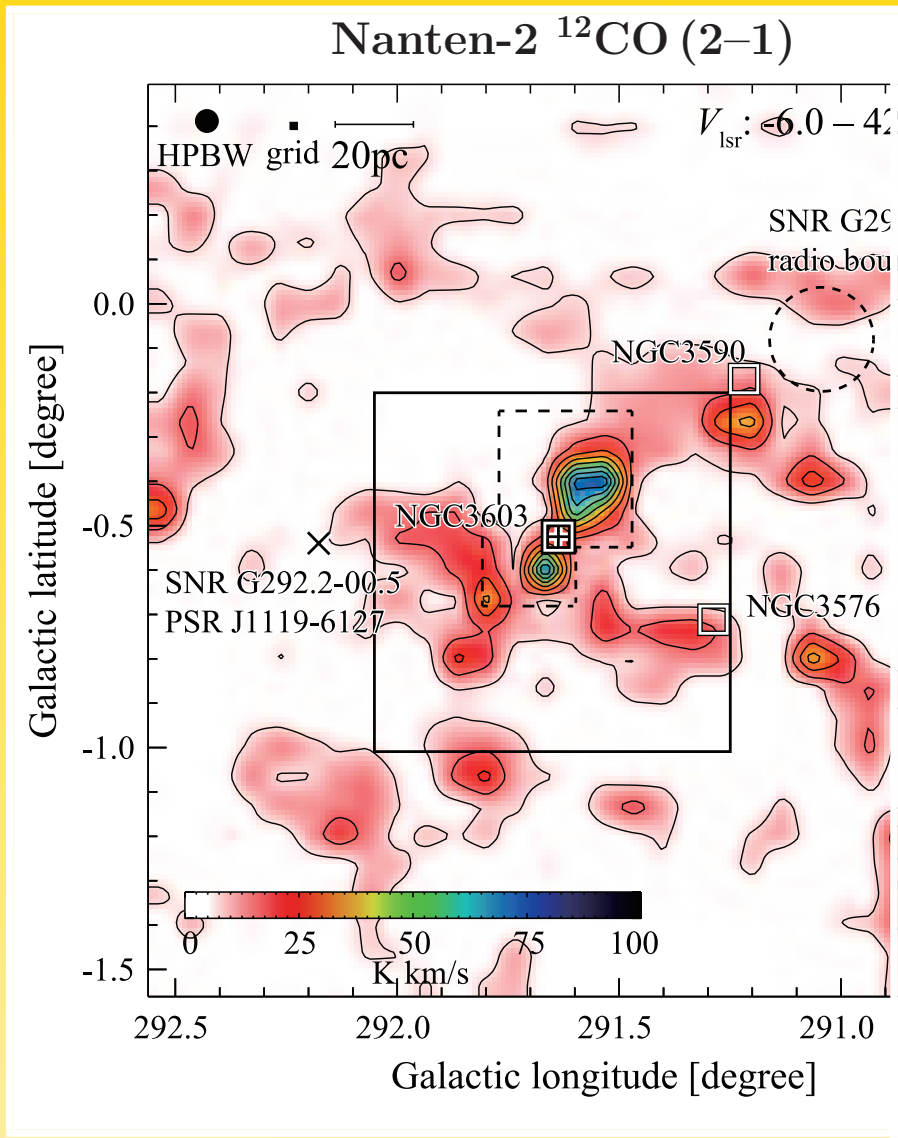


Potential Origin of Starburst : Cloud – Cloud Collision ?

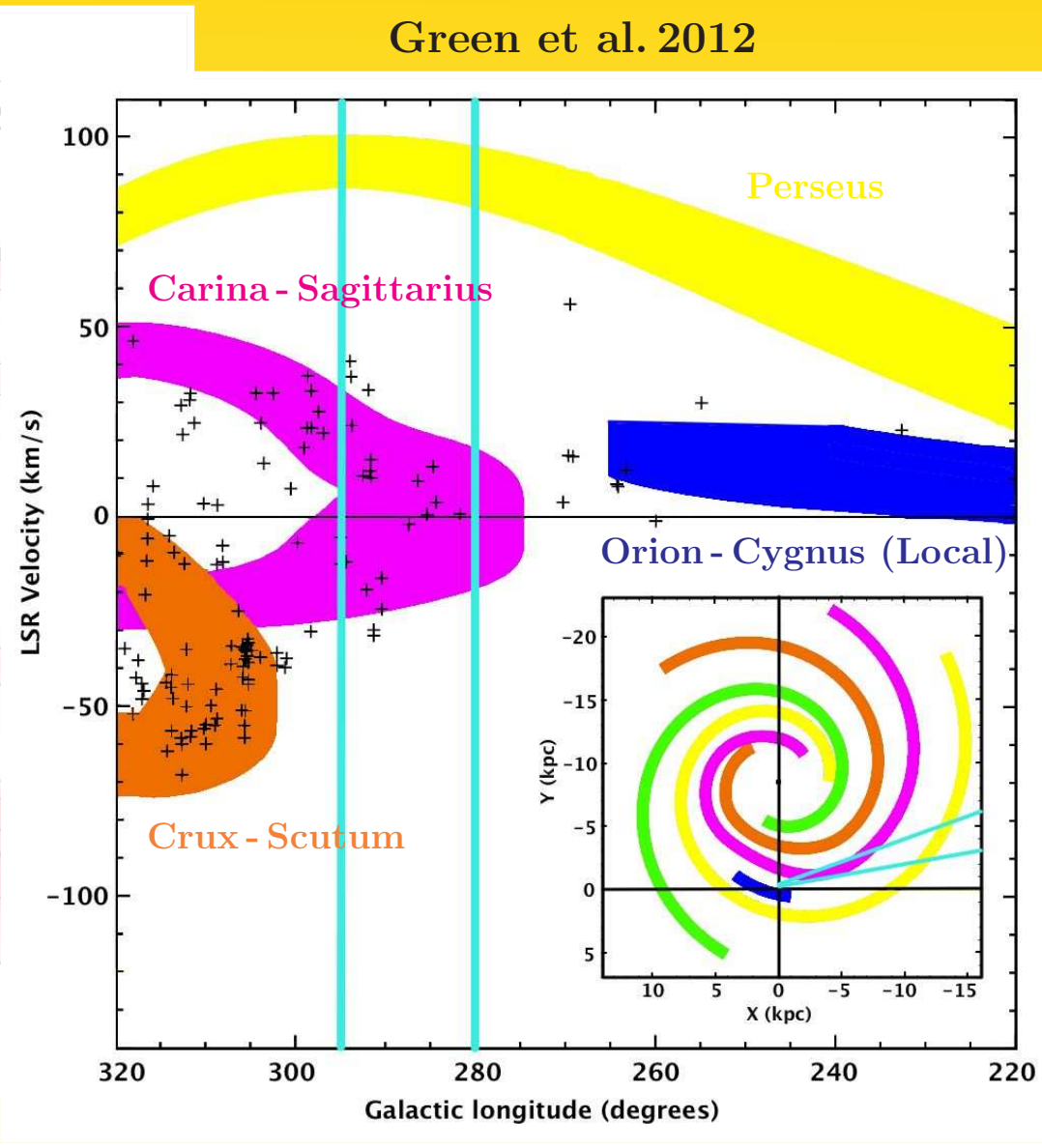
Fukui et al. 2014



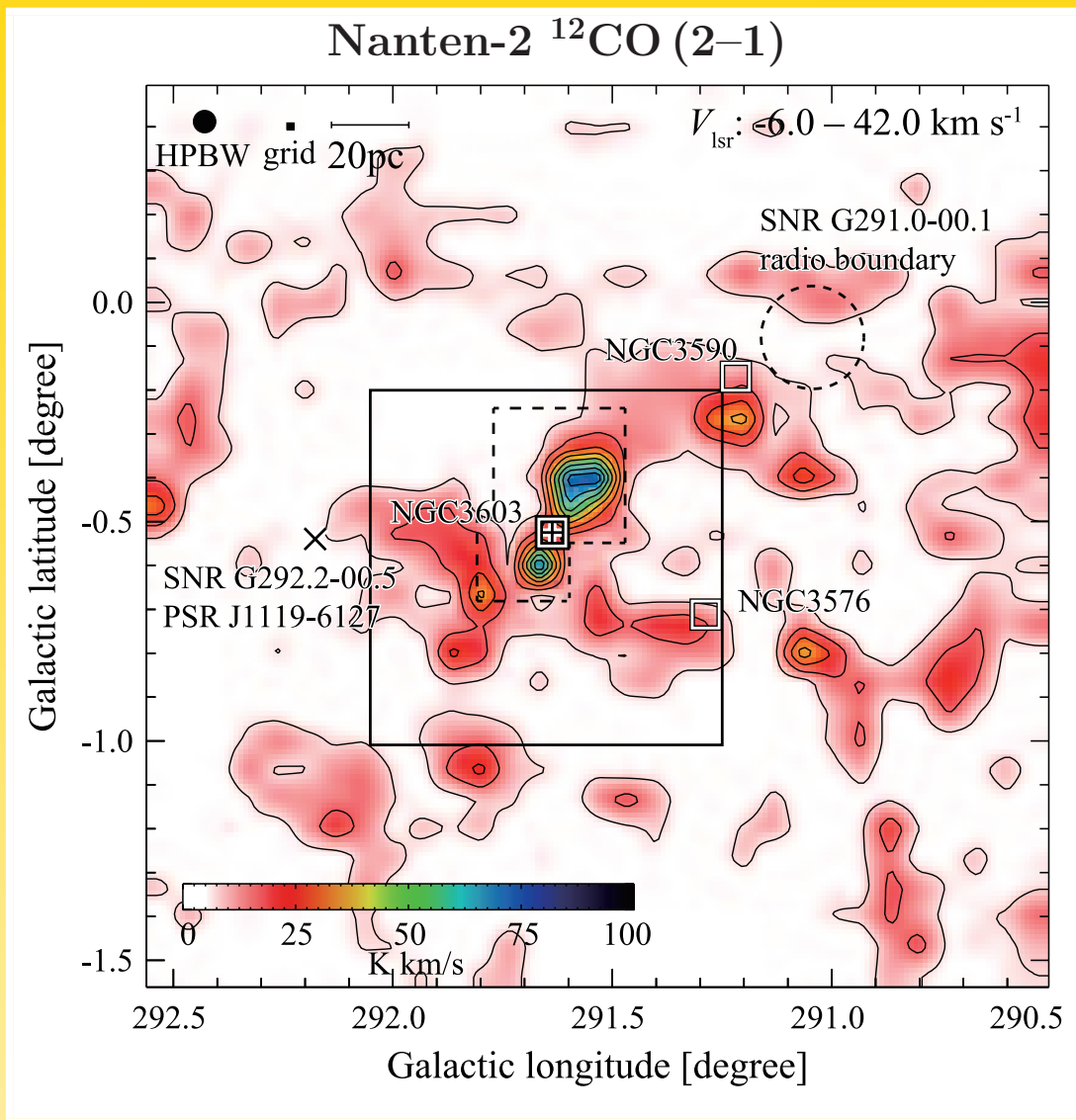
Potential Origin of Starburst: Cloud – Cloud Collision ?



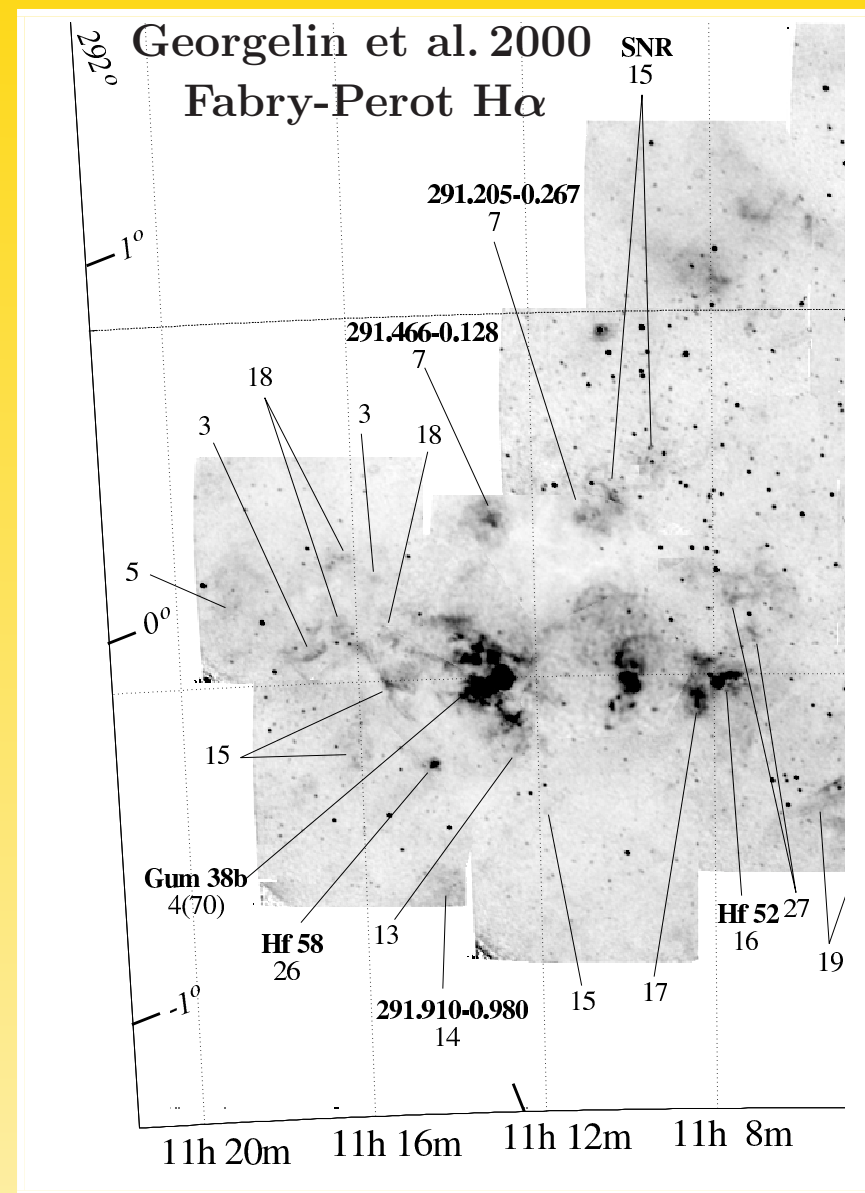
Fukui et al. 2014



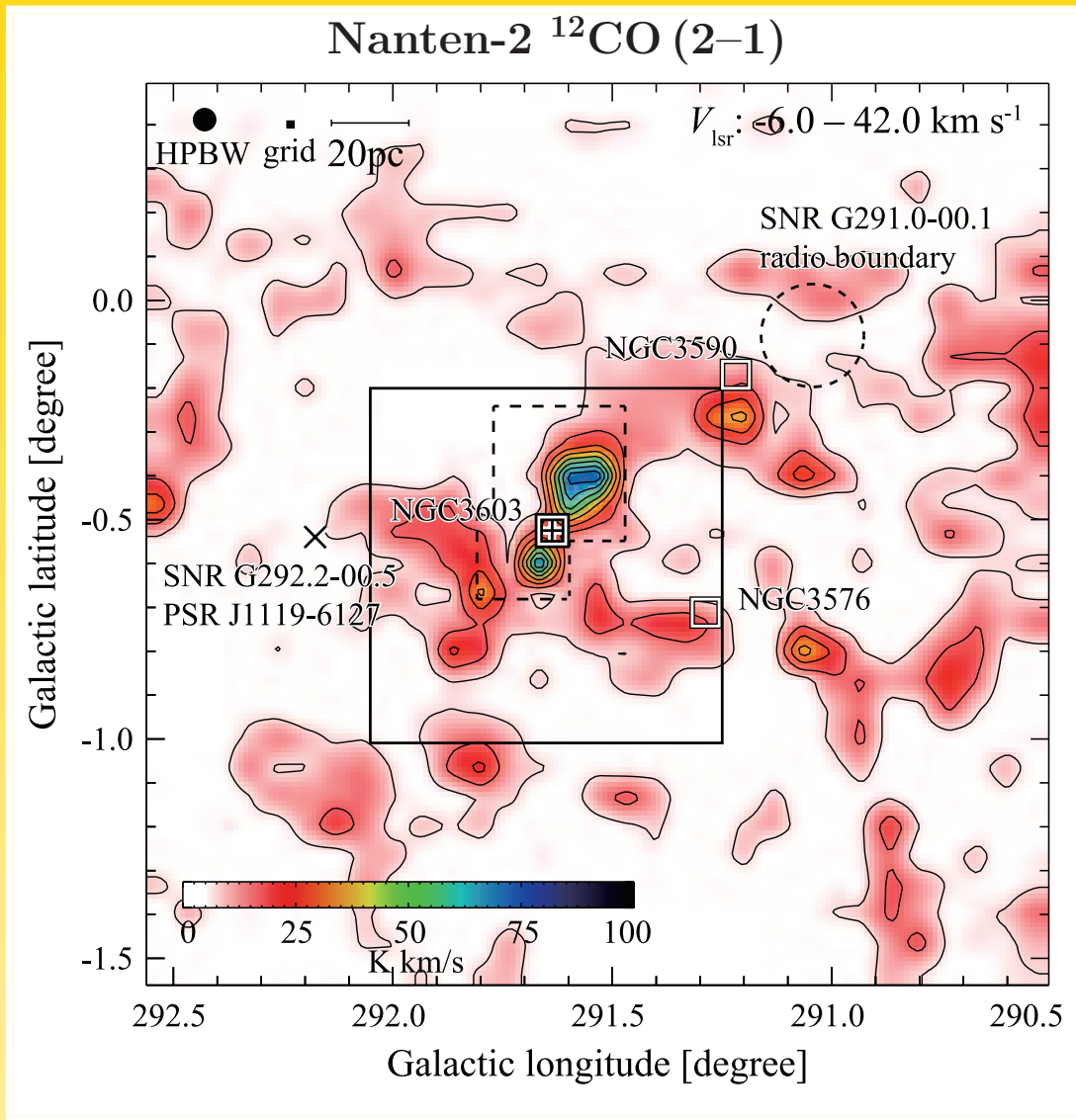
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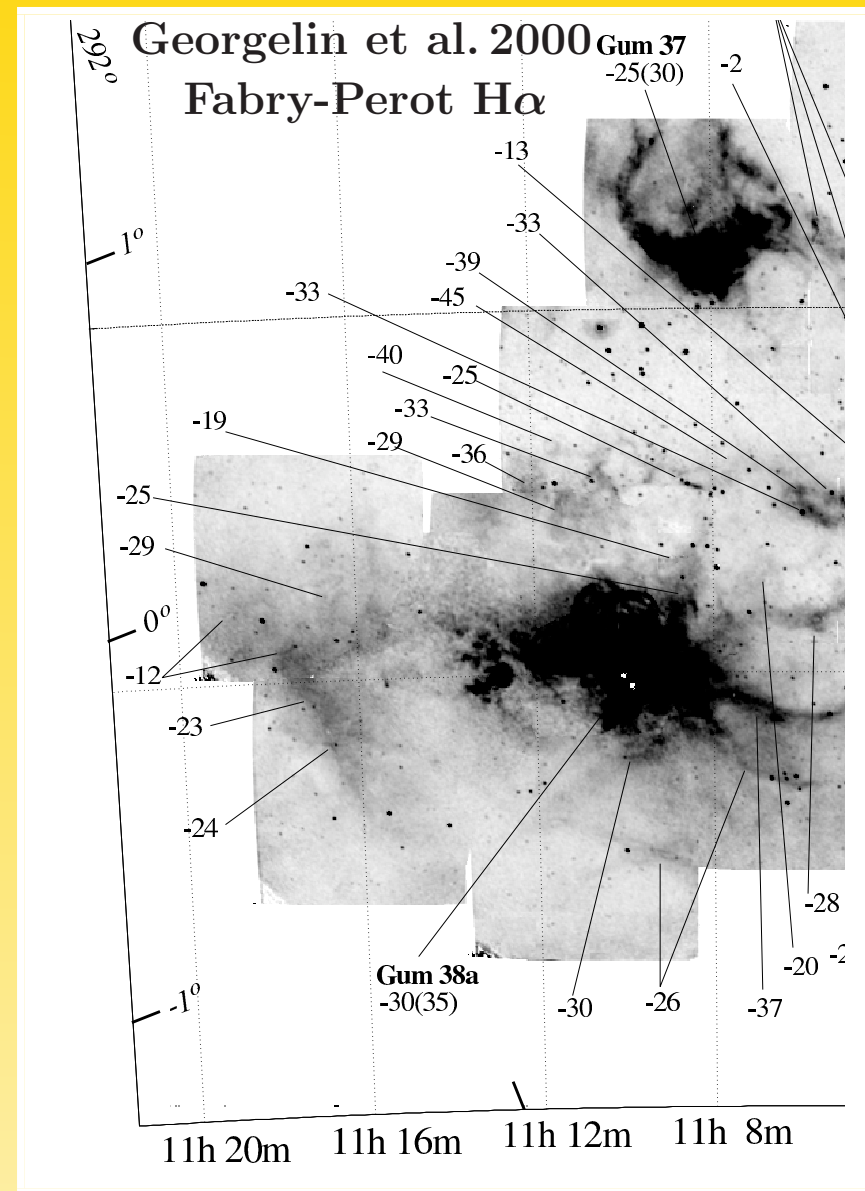
Fukui et al. 2014



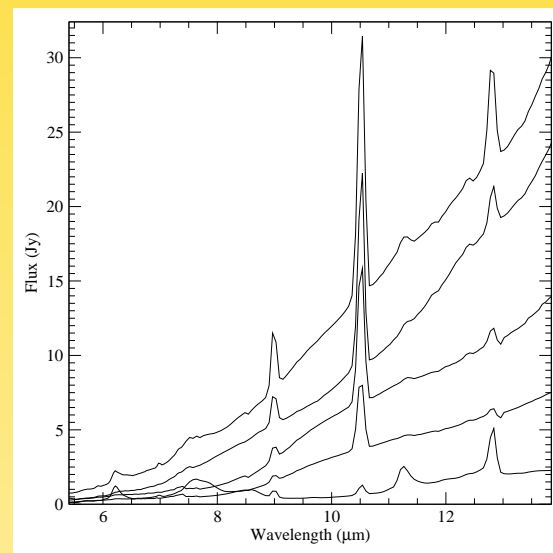
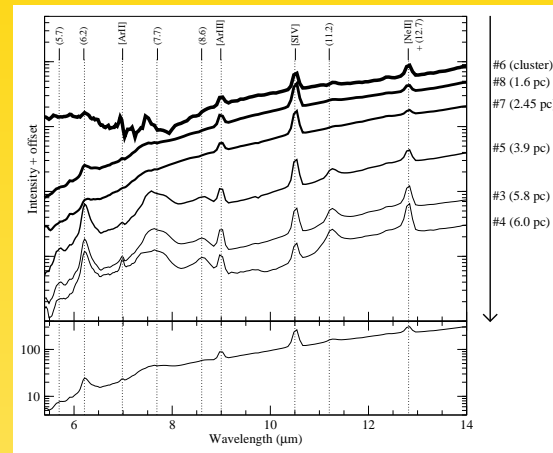
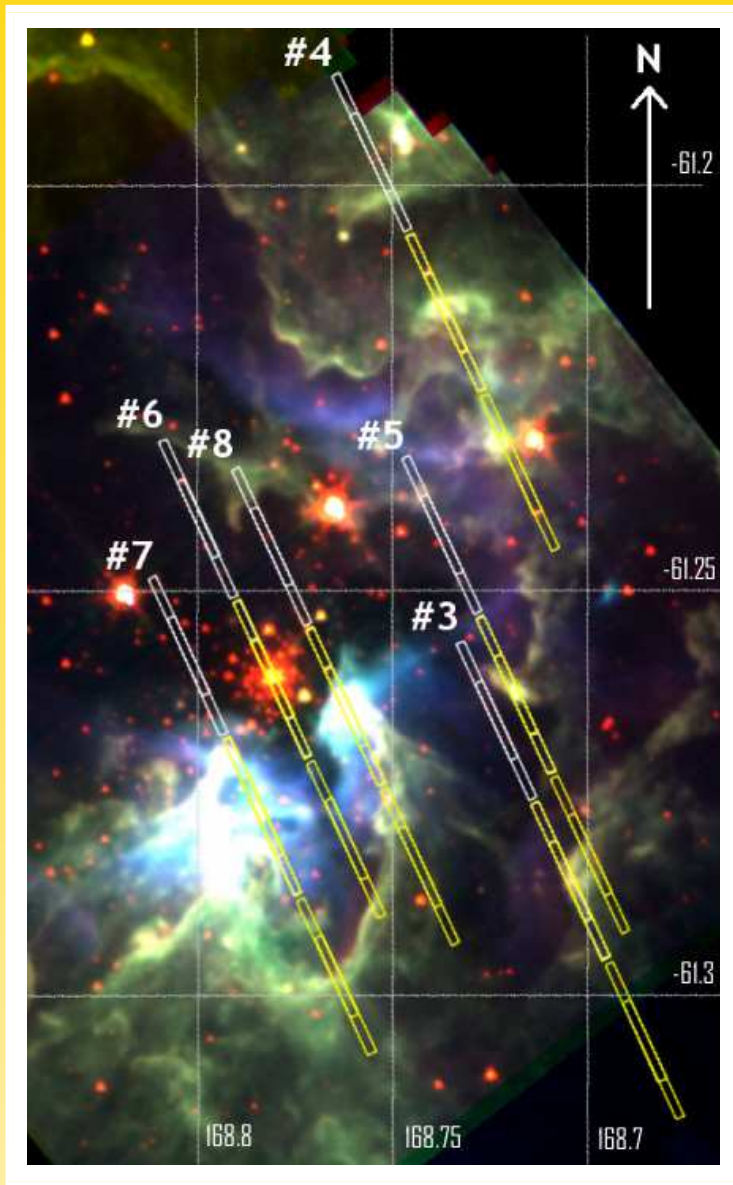
Potential Origin of Starburst : Cloud – Cloud Collision ?



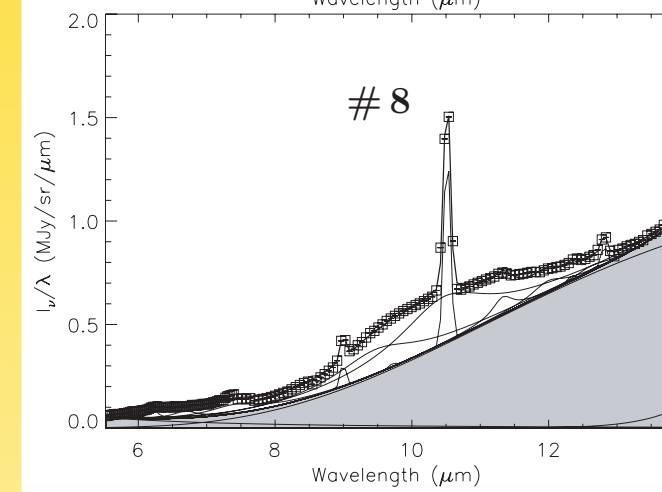
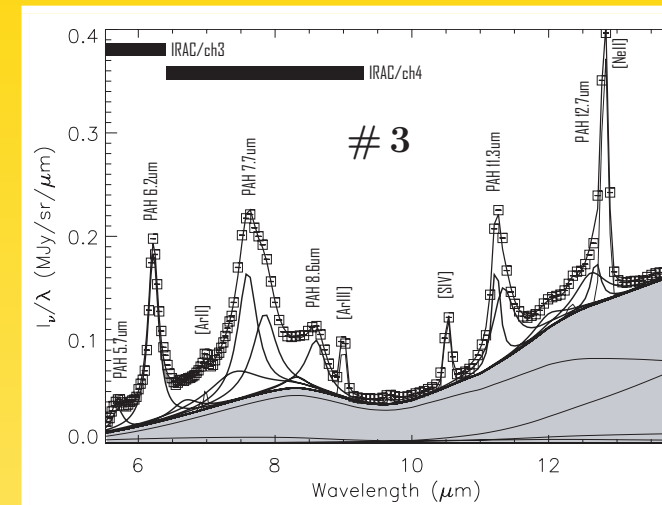
Fukui et al. 2014



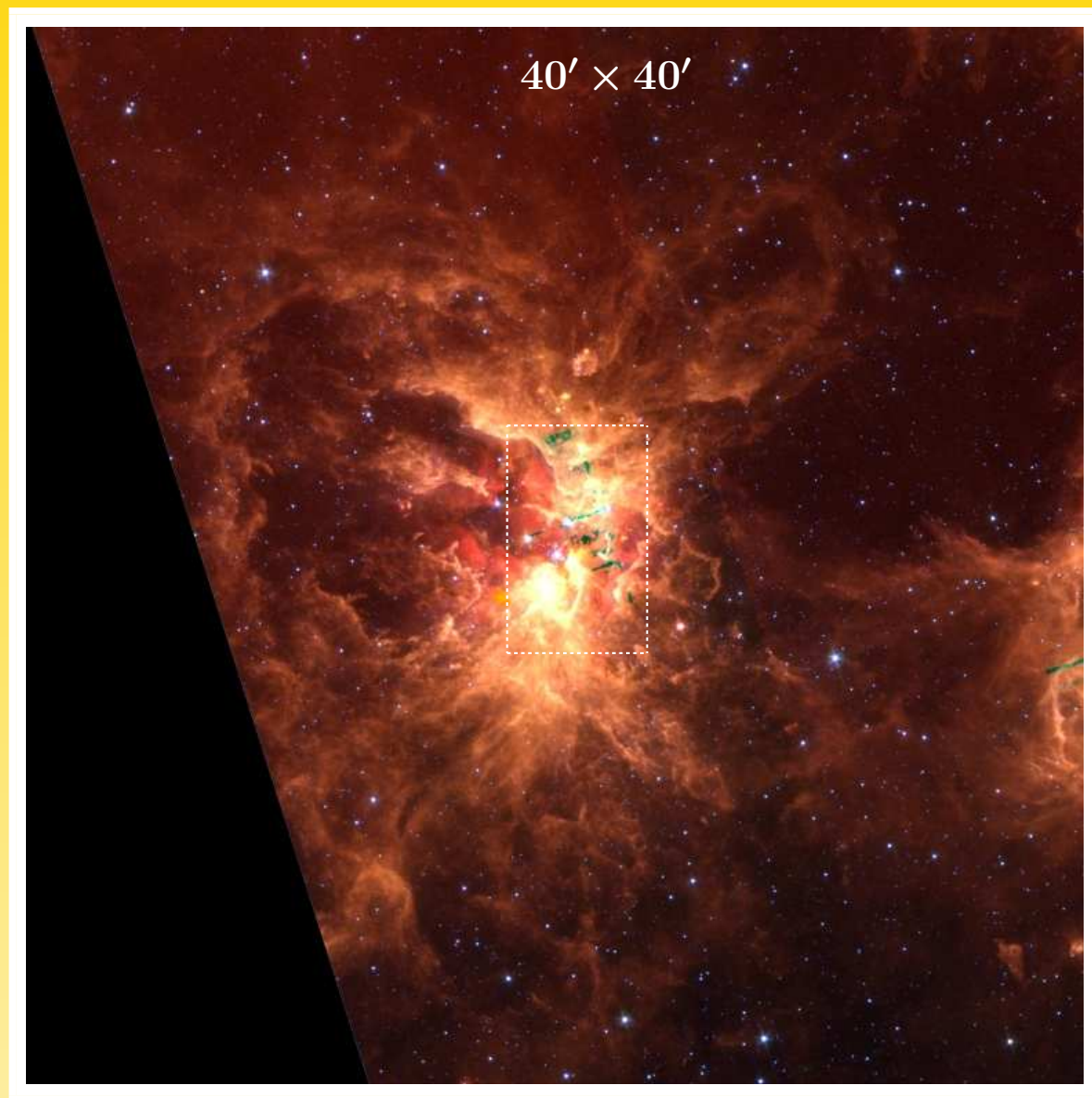
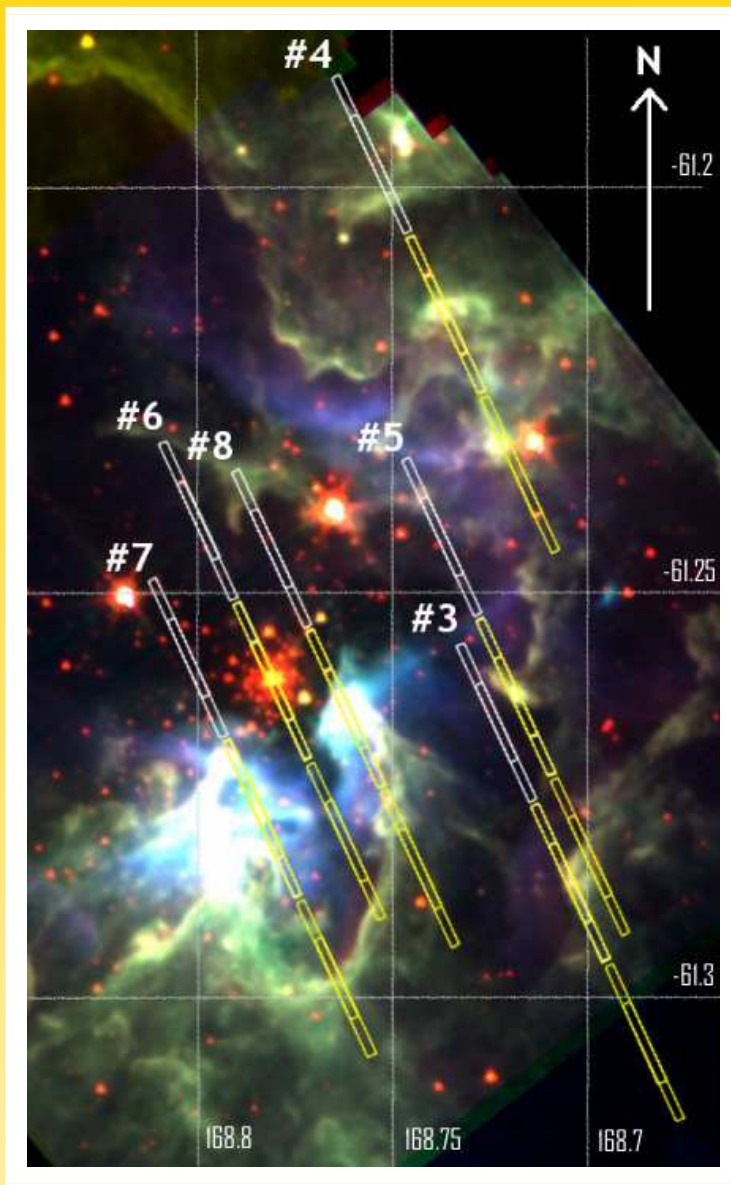
NGC 3603 as seen by Spitzer IRAC + IRS : PAH / VSG vs. ISRF hardness



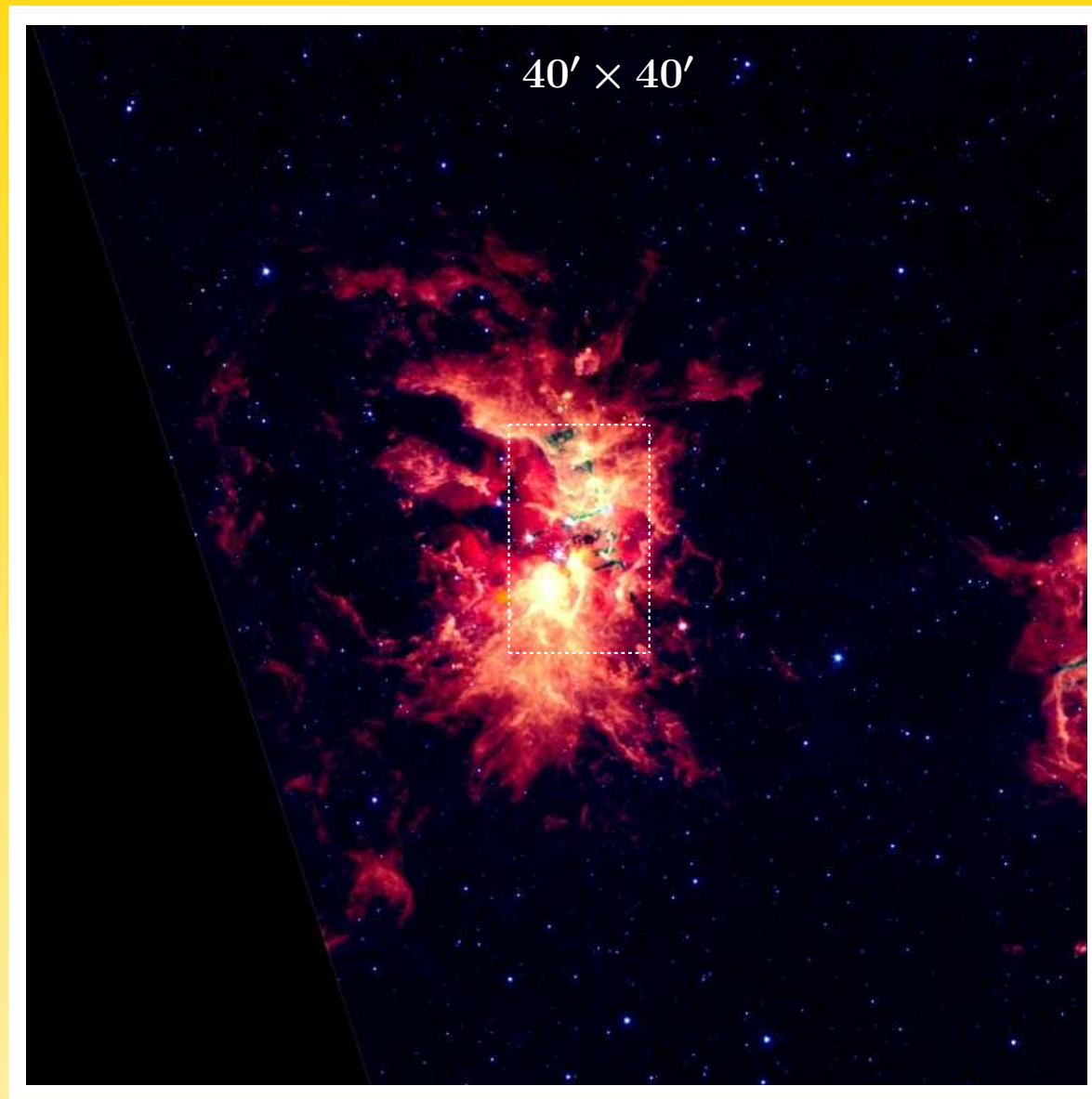
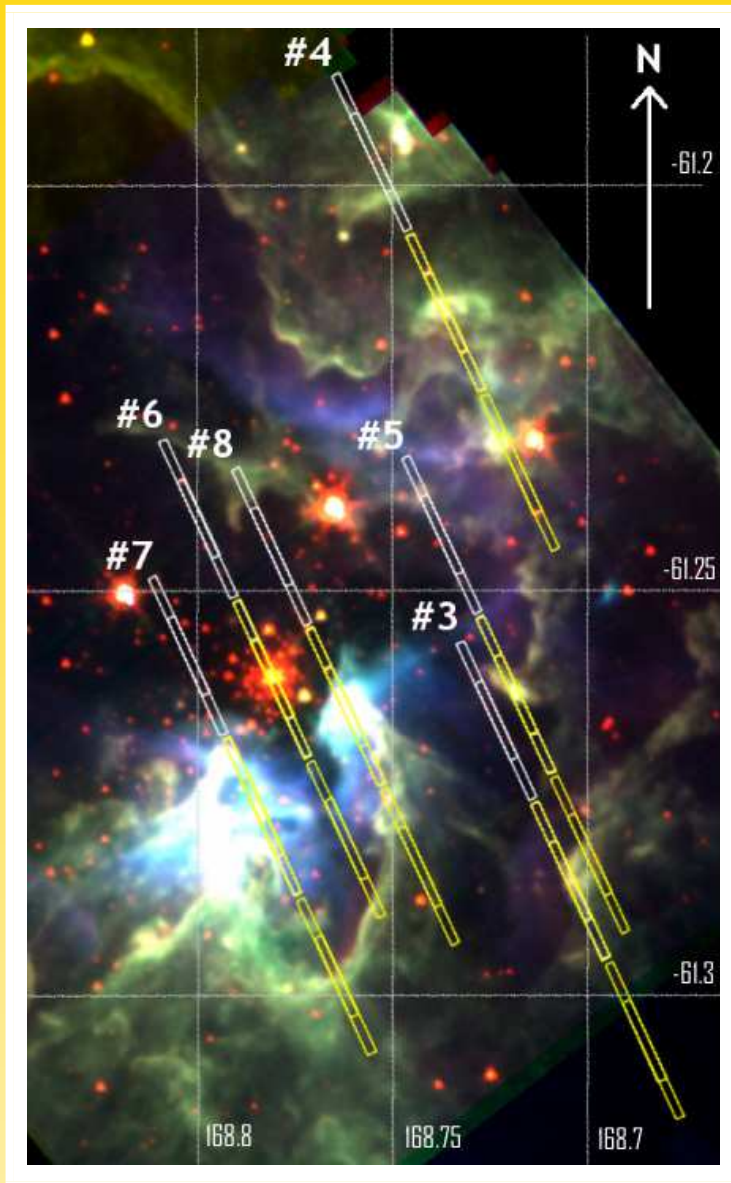
Lebouteiller et al. 2007



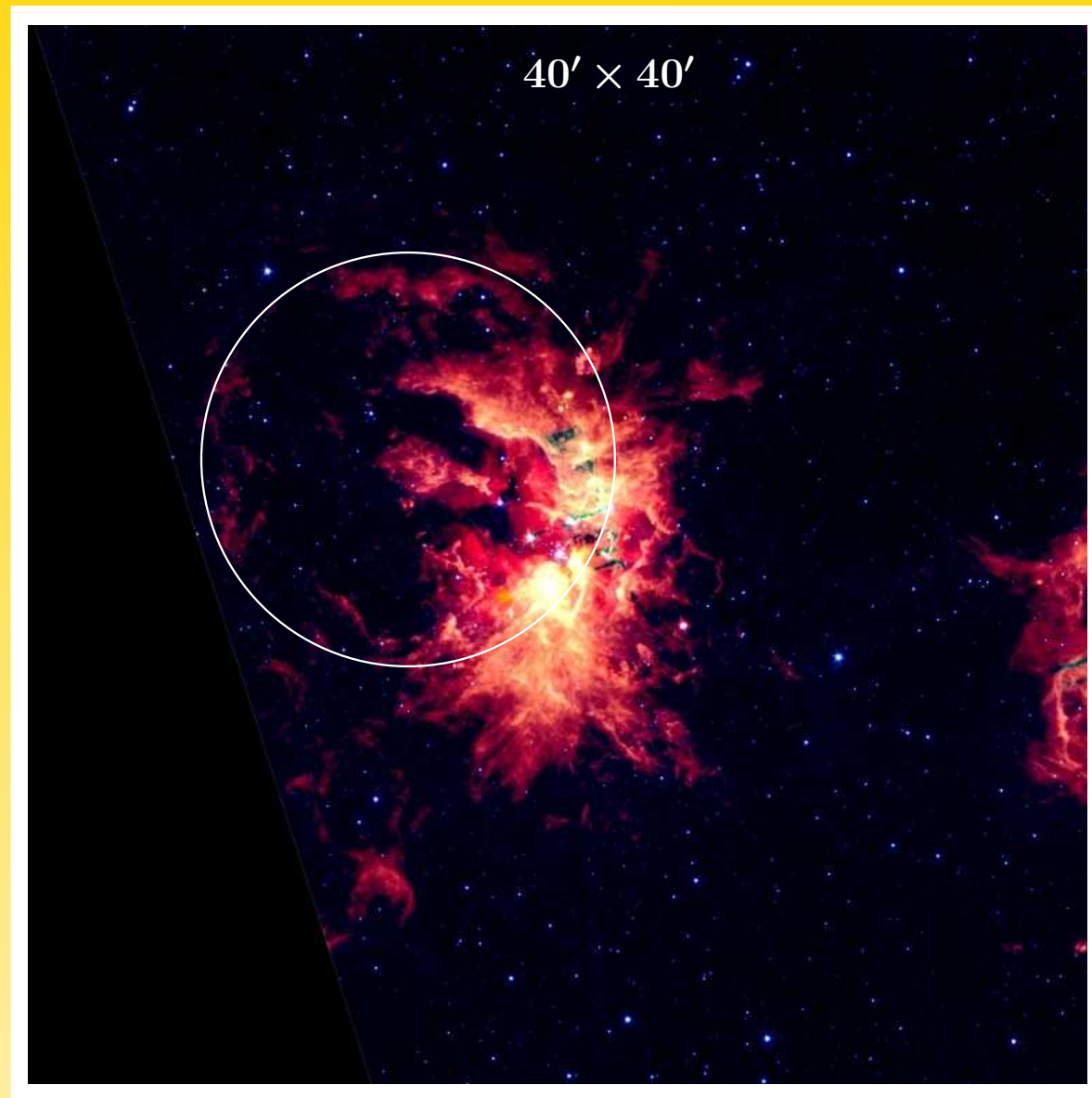
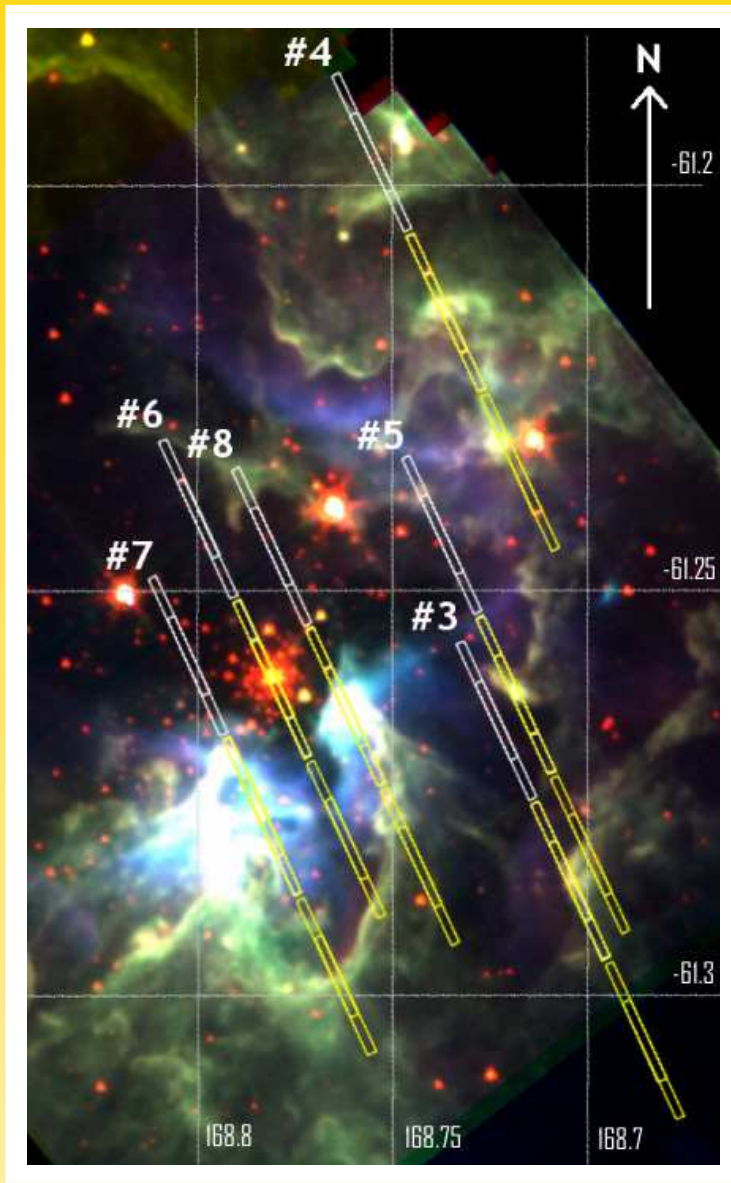
NGC 3603 as seen by Spitzer IRAC: wide FoV teaser



NGC 3603 as seen by Spitzer IRAC : wide FoV teaser



NGC 3603 as seen by Spitzer IRAC: wide FoV teaser



Time for Dinner and Relaxation !

