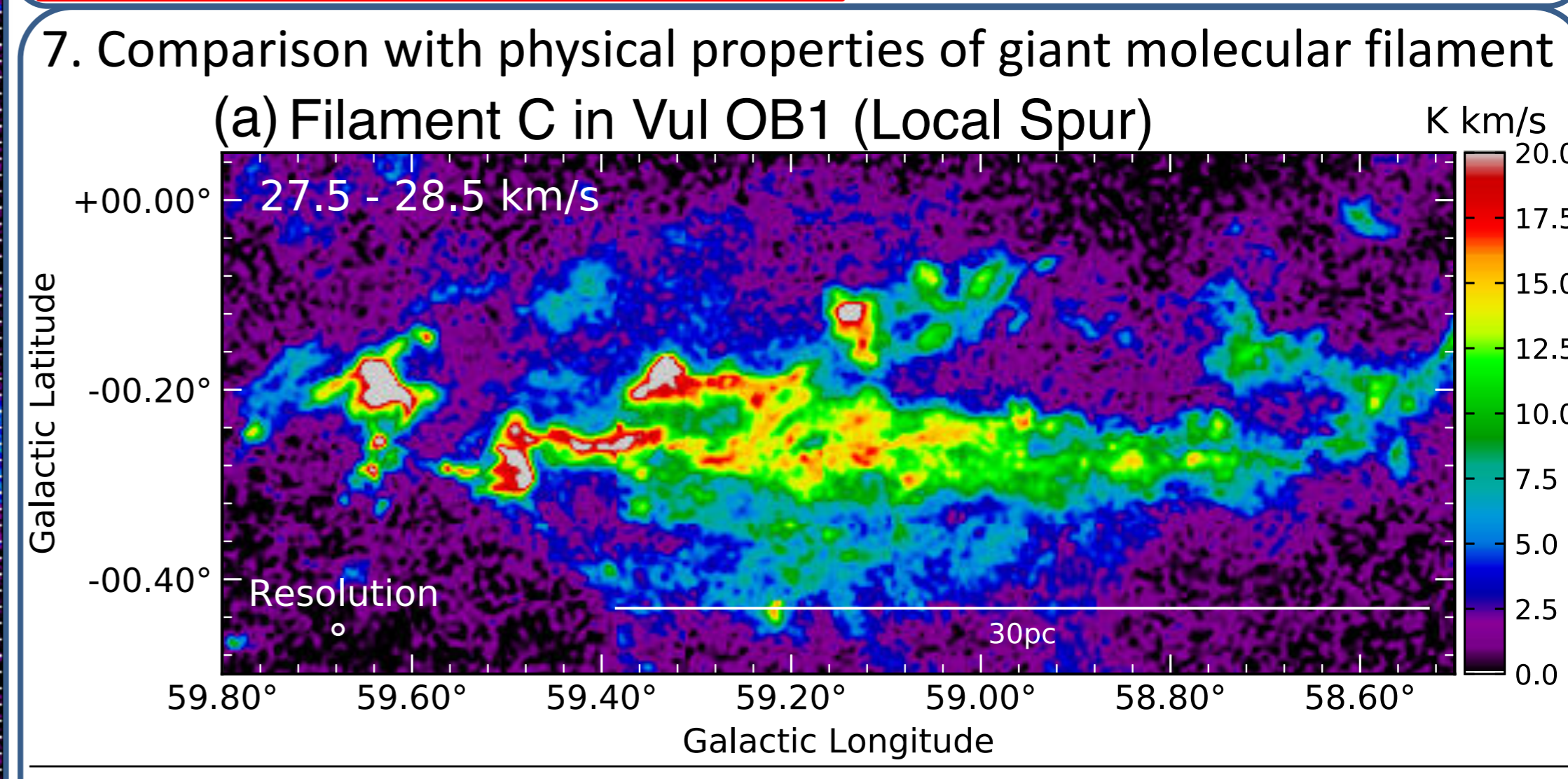
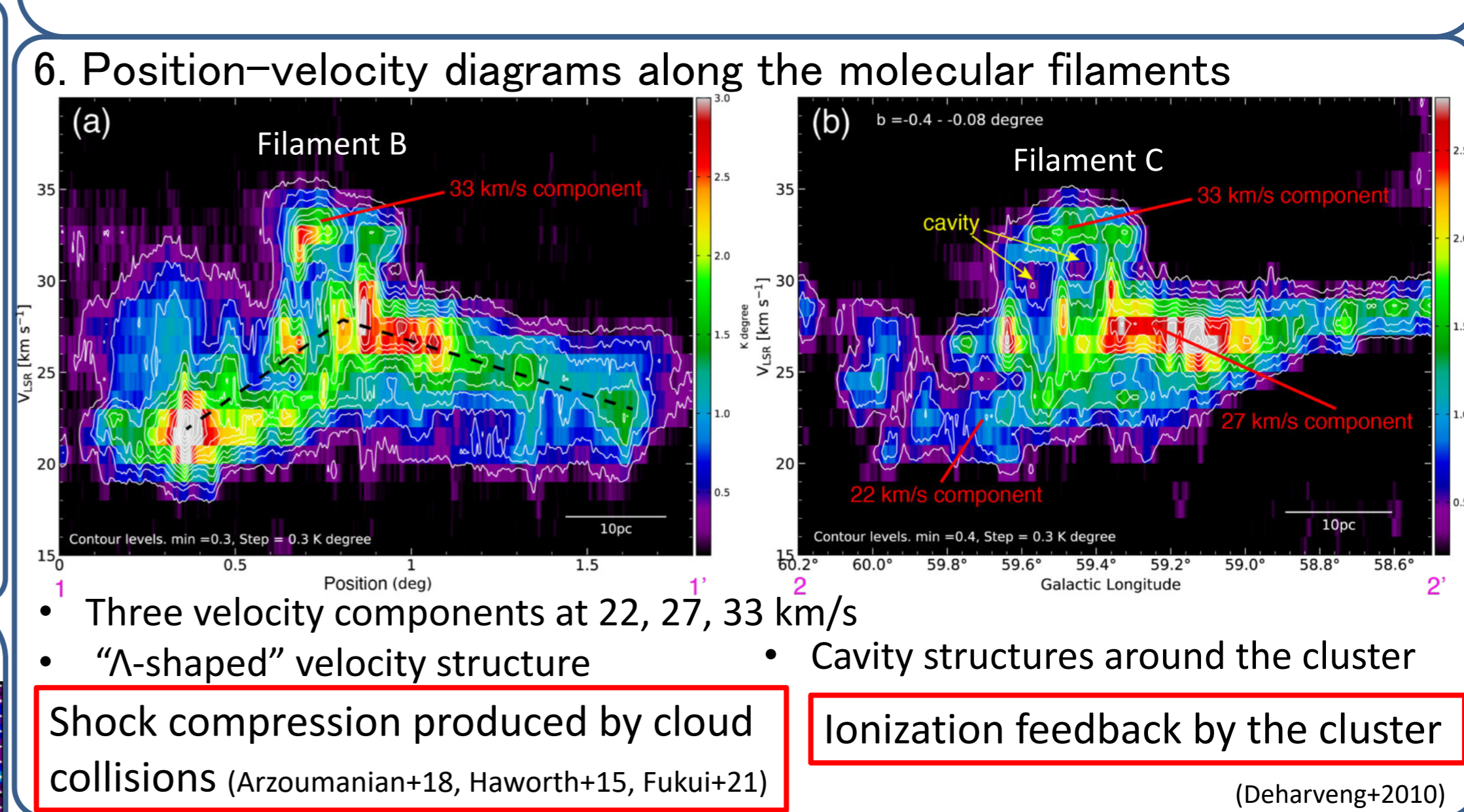
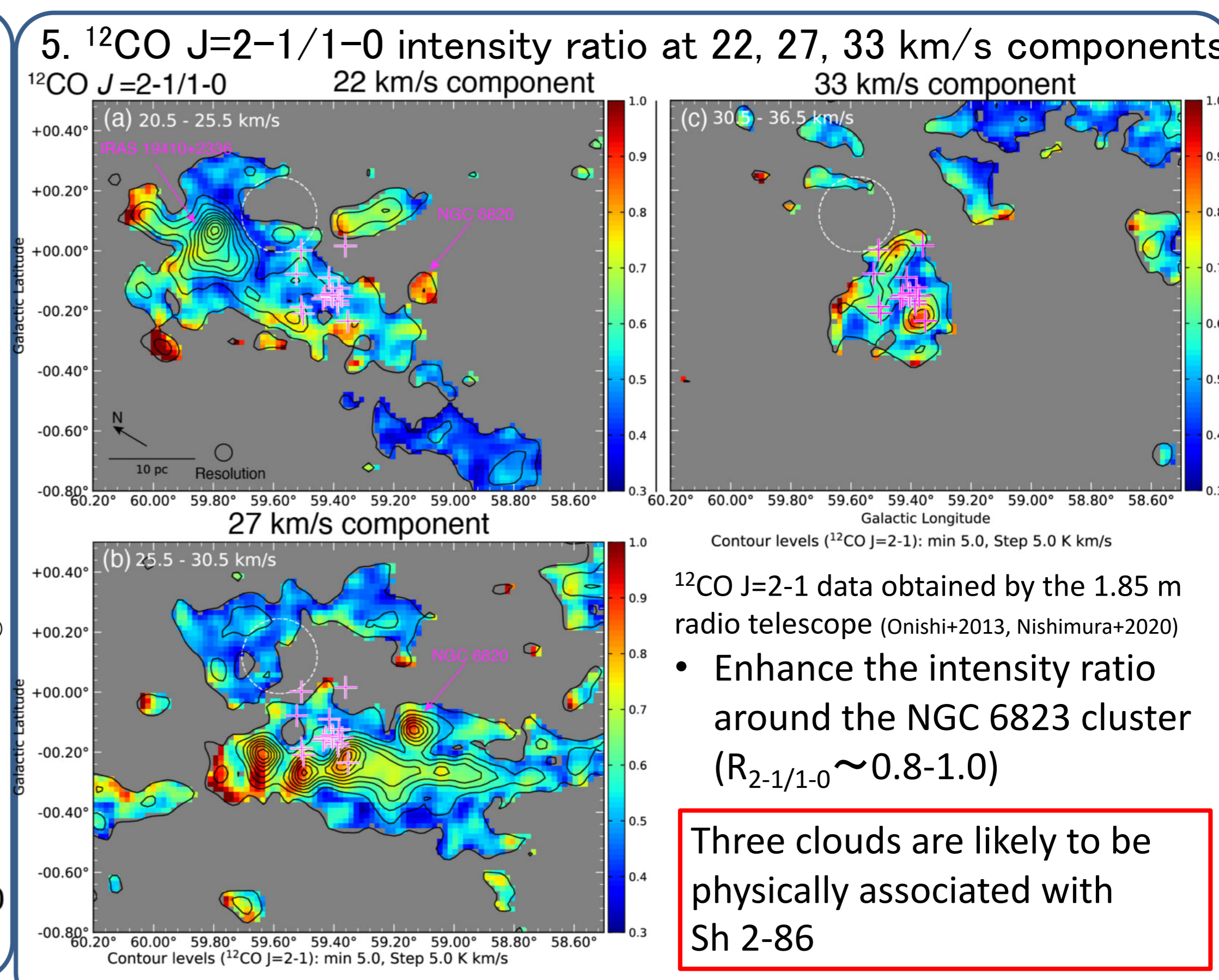
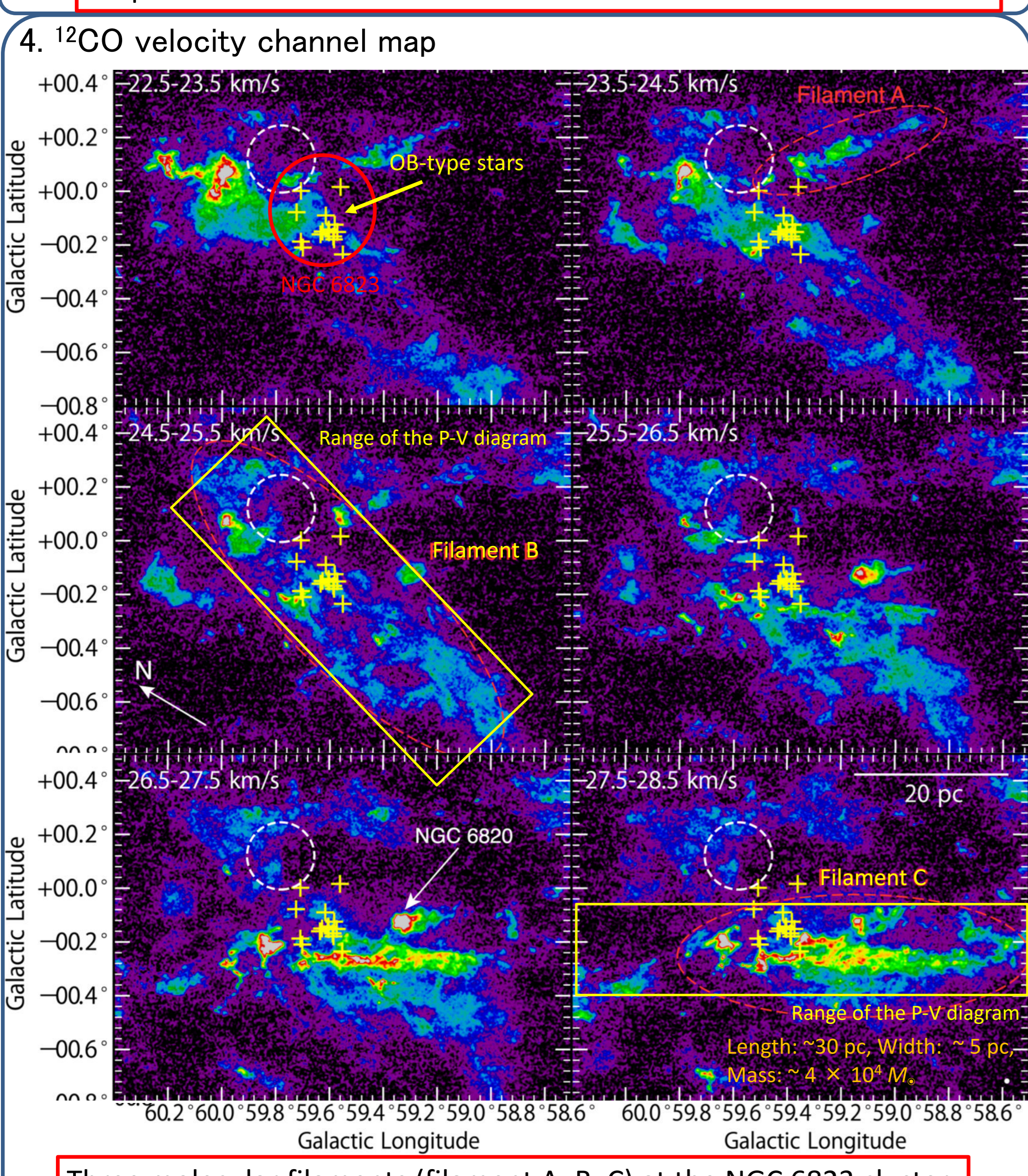
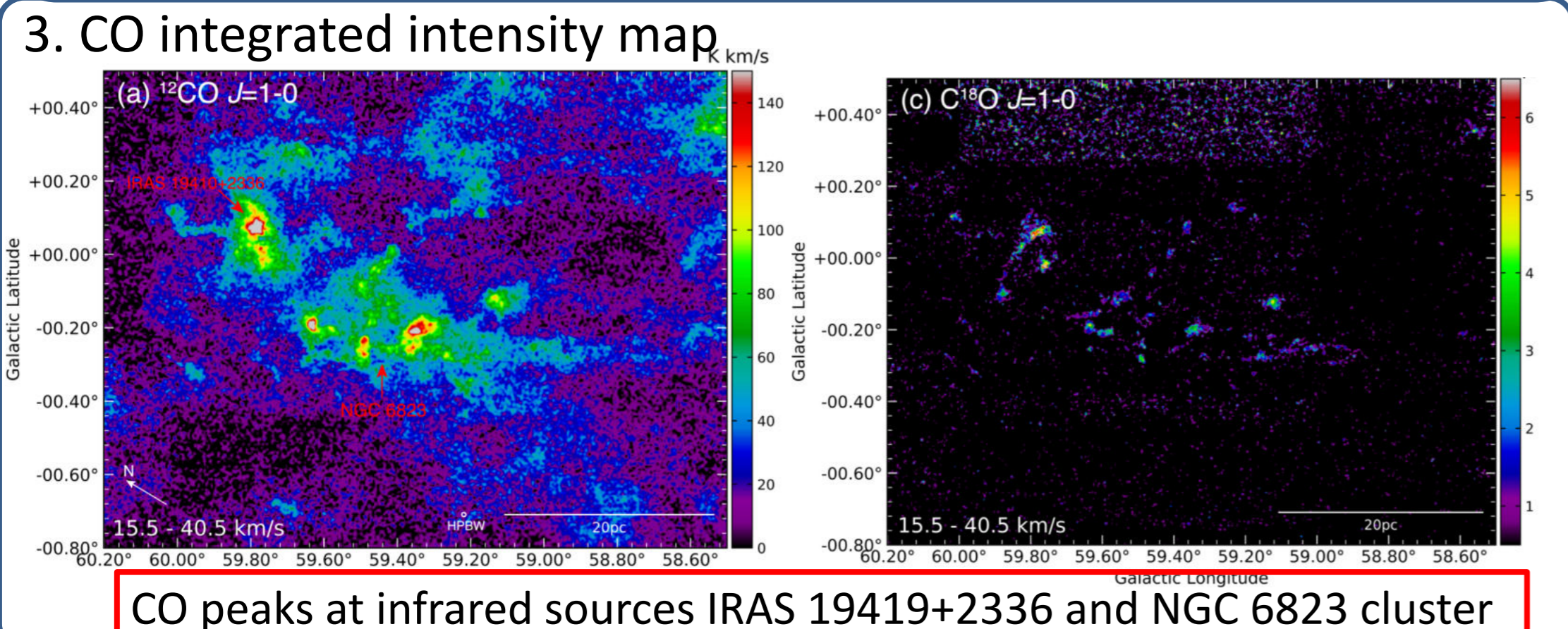
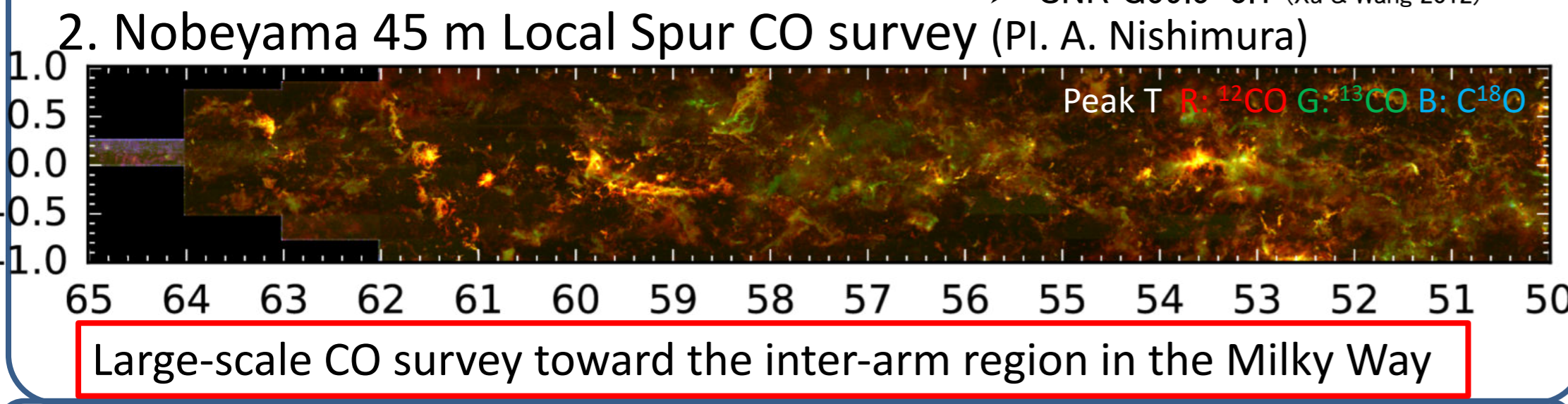
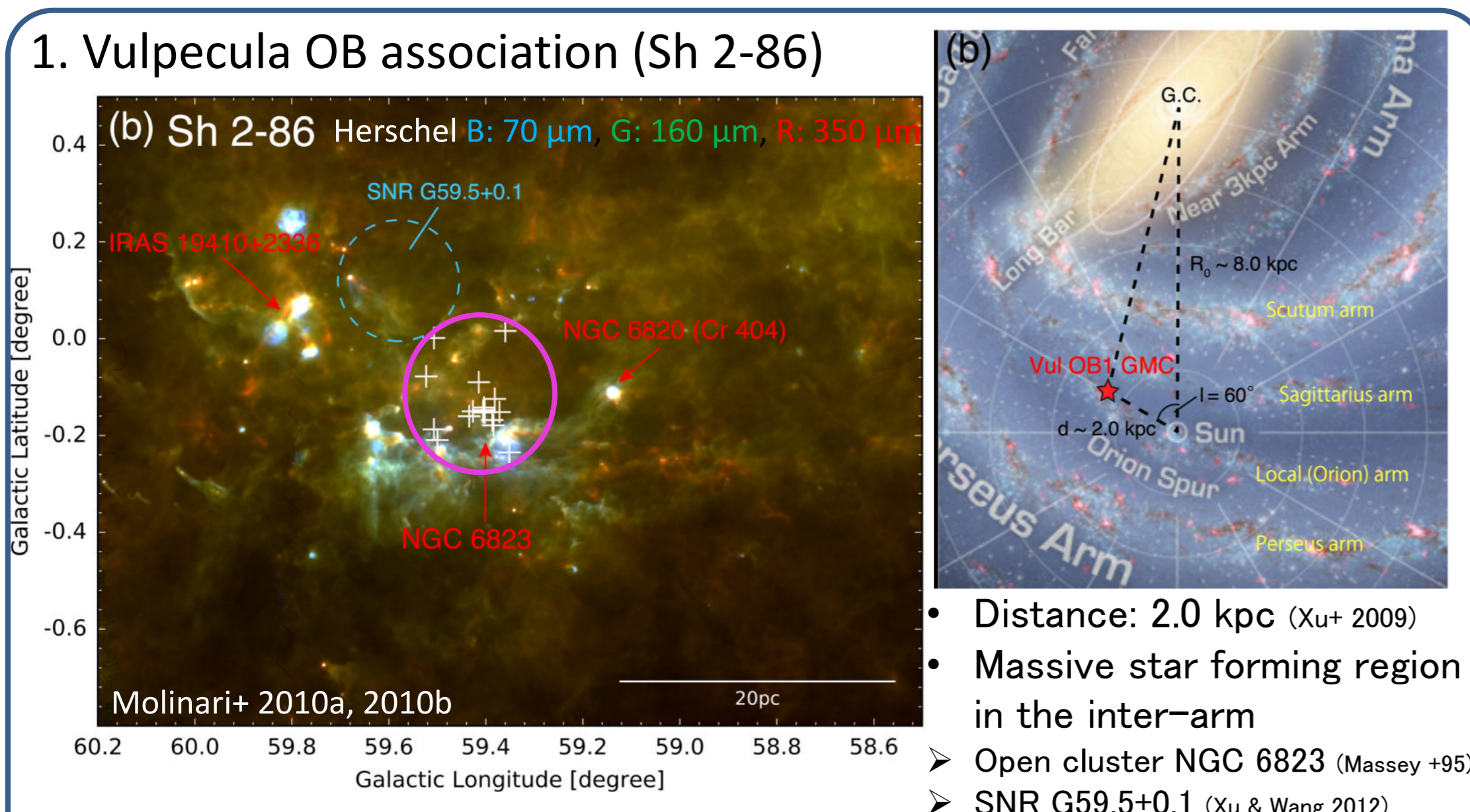


# Nobeyama 45 m Local Spur CO survey: Giant molecular filaments and cluster formation in the Vulpecula OB association

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**Abstract**  
We have performed new large-scale  $^{12}\text{CO}$ ,  $^{13}\text{CO}$ , and  $\text{C}^{18}\text{O}$   $J=1-0$  observations of the Vulpecula OB association as a part of the Nobeyama 45m Local Spur CO survey project. We revealed the three velocity components including filamentary structures, which are likely to be physically associated with these high-mass star-forming regions based on the results of high  $^{12}\text{CO}$   $J=2-1$  to  $J=1-0$  intensity ratio. These clouds are connected in the velocity space, and the NGC 6823 open cluster exists at the intersection of these clouds. Therefore, we suggest that the multiple cloud interaction scenario can explain the origin of the massive cluster formation in the Vulpecula OB association. Kohno et al. 2022, PASJ, 74, 24



Giant molecular filament in the Local spur has the length of 1/3-1/2 and total mass of 1/10 comparing with High Velocity Stream in W51 and GMC-16 in M33.

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