# Different generations of HMXBs:
Clues about their formation efficiency from Magellanic Clouds studies

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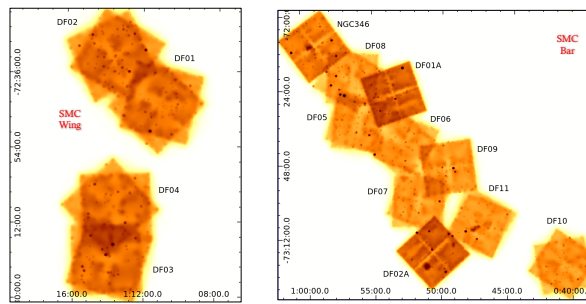and the SMC XVP Collaboration*

Average star-formation history of **SMC** & **LMC** regions with & without *young X-ray binaries* showing their *association with stellar populations of different ages.*

SMC (Antoniou +2010, ApJL, 716, 140)

LMC (Antoniou & Zezas 2016, MNRAS, 459, 528)
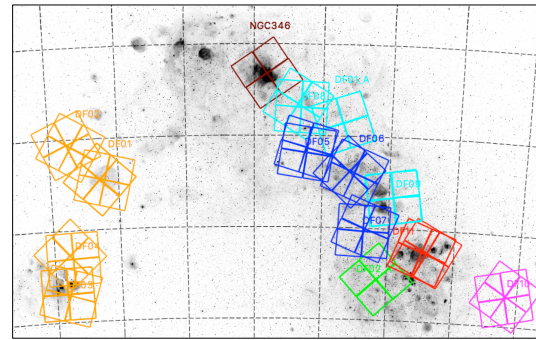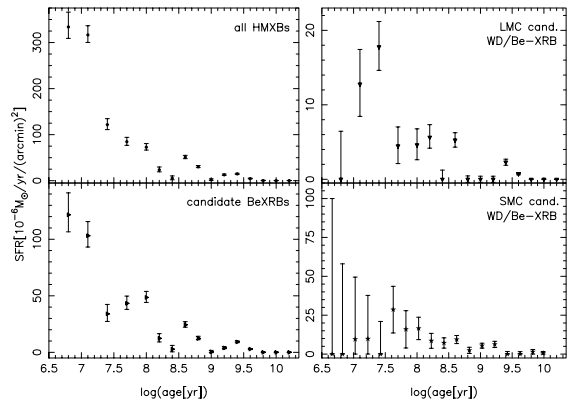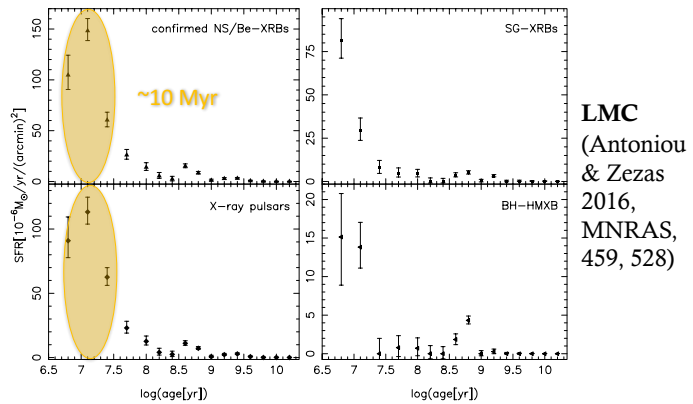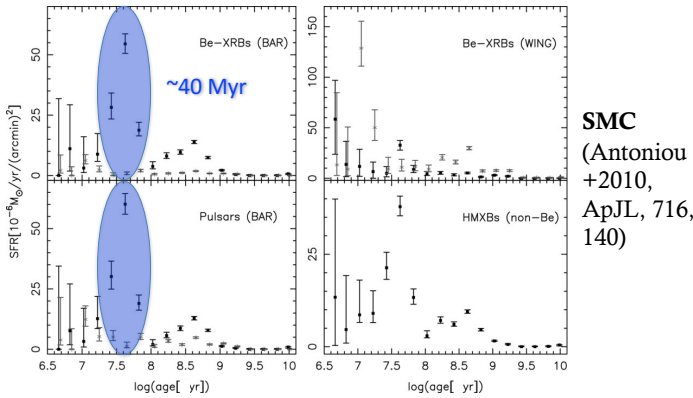
MCELS Hα image (F. Winkler/Middlebury College, the MCELS Team, and NOAO/AURA/NSF) overlaid with the 14 Chandra fields analyzed in this work, color-coded for the ages of their parent stellar population (**orange**: 11 Myr, **blue**: 34 Myr, **cyan**: 42 Myr, **magenta**: 67 Myr). Three fields have two distinct stellar populations: DF11 (7Myr and 42Myr – **red**), DF02 A (42Myr and 167.9Myr – **green**), and NGC346 (5 Myr and 42 Myr – **maroon**).


ACIS-I full band csmoothed exposure corrected images of the 11 Chandra X-ray Visionary fields analyzed in this work along with 3 archival exposures reaching the same depth.

* THE SMC XVP COLLABORATION: C. Badenes, B. Blair, R. Di Stefano, A. Foster, T. Gaetz, F. Haberl, J. Hong, V. Kalogera, K. Kuntz, S. Laycock, T. Linden, K. Long, S. Mineo, M. Sasaki, R. Smith, S. Snowden, R. Sturm, B. Williams, F. Winkler, N. Wright
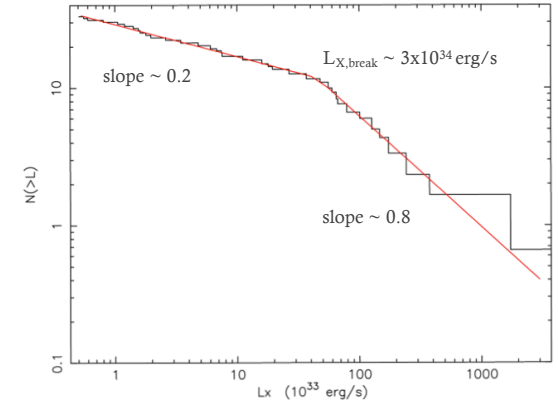
Deepest XLF ever recorded for a galaxy for source detections in the 14 Chandra fields showing a break at 3×10^{34} erg/s resulting either from the propeller effect or intermittent accretion from the Be-star equatorial wind.

SMC (Antoniou +2018, ApJ subm.)
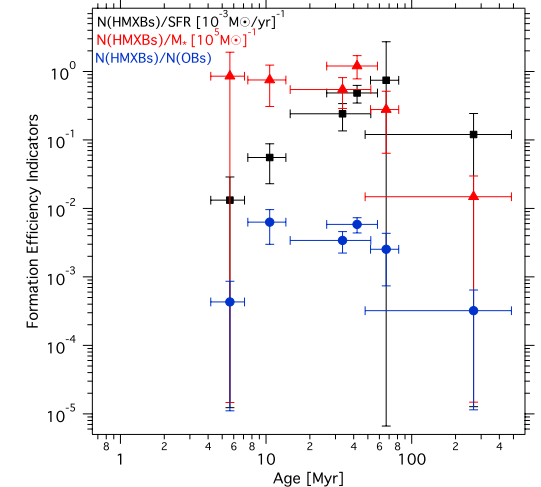
Three different *formation efficiency indicators* shown as a function of the age of their parent stellar populations: number of HMXBs, **N(HMXBs) over the SFR** (black squares); **N(HMXBs) over the M⋆** produced during the major star-formation burst (red triangles); **N(HMXBs) over** the number of OB stars, **N(OBs)**, in the studied fields (blue circles). Although they serve different purposes, they all show an increase in the formation rate for ages > 10-20 Myr and up to 40-60 Myr followed by a decline at older ages.