CLOGS
CO Large Outer Galaxy Survey

David Eden - JCMT Users’ Meeting - February 24th, 2022
Talk Outline

• Motivation
• Previous JCMT Surveys
• CLOGS - CO Large Outer Galaxy Survey
• Science Goals
Previous Milky Way Results - CFE/DGMF

Eden+12

Urquhart+21
Previous Milky Way Results - CFE/DGMF

Urquhart+21

Eden+13
Previous Milky Way Results - CFE/DGMF

Break: 7.78 pc (5.74 - 11.5 pc)
Median Cloud Size: 10.1 pc
Previous Milky Way Results - SFE

Eden+15

Moore+12
Previous Milky Way Results - SFE

Ragan+18
Previous Milky Way Results - SFE

Ragan+18
Galactic Scale Mechanisms

Sofue & Nakanishi 2016

Longmore+13
Previous JCMT CO Surveys

COHRS
$^{12}$CO
$l = 10^\circ - 56^\circ$
$b = \pm 0.5^\circ$

CHIMPS
$^{13}$CO/$^{18}$O
$l = 28^\circ - 46^\circ$
$b = \pm 0.5^\circ$

CHIMPS2: CMZ
$^{12}$CO/$^{13}$CO/$^{18}$O
$l = \pm 5^\circ$
$b = \pm 0.5^\circ$

CHIMPS2: Inner Galaxy
$^{13}$CO/$^{18}$O
$l = 5^\circ - 28^\circ$
$b = \pm 0.5^\circ$

CHIMPS2: Outer Galaxy
$^{12}$CO/$^{13}$CO/$^{18}$O
$l = 215^\circ - 225^\circ$
$b = -2^\circ - 0^\circ$
CHIMPS2 $^{12}$CO Outer Galaxy Data
CHIMPS2 $^{12}$CO Outer Galaxy Data
CHIMPS2 $^{12}$CO Outer Galaxy Data
CHIMPS2 $^{12}$CO Outer Galaxy Data
CLOGS

$^{12}$CO

$\ell = 198^\circ - 236^\circ$

$b = -2^\circ - 0^\circ$

Schisano+20

Eden+20
Science Goals
Star Formation in the Outer Galaxy
Science Goals
Star Formation in the Outer Galaxy

Urquhart+21
Science Goals
Star Formation in the Outer Galaxy

Dense Gas Fraction

Galactic Distance (kpc)

Urquhart+21
Science Goals
Star Formation in the Outer Galaxy

Urquhart+21
Science Goals

Cloud turbulence, density structure, and star formation

Ratio of compressive to solenoidal turbulence. High solenoidal fraction in CMZ clouds linked to low SFE in that region.

Rani+ in prep
Science Goals
Cloud formation and properties in the Outer Galaxy

Lepine+11

Sofue & Nakanishi 2016
Science Goals

Galactic Structure

Park+ in prep

Rigby+16

Umemoto+17
Science Goals
Galactic Structure

\[ ^{12}\text{CO} \ (J = 1 \rightarrow 0) \]
Summary

• CLOGS - CO Large Outer Galaxy Survey

• Covering $\ell = 198^\circ - 236^\circ, b = -2^\circ - 0^\circ$

• Most sensitive, highest resolution Outer Galaxy survey

• Goals: investigate star formation in the Outer Galaxy, disentangle high Galactocentric distances from high heliocentric distances, and give new insight into Galactic structure in this region.