The Southern Parkes Large-Area Survey in Hydroxyl
Andrew Walsh (Curtin/ICRAR) and Jo Dawson (CSIRO)
on behalf of the SPLASH team

Introduction

SPLASH is a survey of all four ground-state transitions of OH (1612, 1665, 1667 and 1720 MHz). It is a high sensitivity, fully sampled, large scale survey, requiring about 1800 hours over 2.5 years on the Parkes radio telescope.

Our aims:
- Investigate diffuse OH in the density regime between CO and HI (the formation of molecular clouds)
- Constrain quantities like $T_{ex}$ and optical depth by comparing emission/absorption in multiple transitions
- Untargeted OH maser survey to identify flux limited population – star formation, evolved stars and SNRs
- Compare OH masers to other maser species – determine an evolutionary sequence of star formation
- Sister survey to GASKAP

Results

Masers in the pilot region

- Widespread OH thermal emission
- Widespread OH thermal absorption
- Masers

In all four OH transitions!

These are not moment maps

The four maps you see below show the distribution of emission (red/yellow) and absorption (dark blue/black) for the four spectral line data cubes. These maps are made in a two-stage process: 1. A ‘peak’ temperature map (showing the brightest pixel in the spectrum at each point in the map) and ‘trough’ temperature map (showing the most absorbed pixel in the spectrum at each point in the map) is made. 2. The peak and trough maps are added together. These maps are useful for showing the full extent over which absorption and emission exist. There is a limitation that the maps cannot clearly show points where both emission and absorption are seen in the same spectrum.

Survey Specs

Area: l: 333° – 0° – 7°; b: within 2° of the Galactic Plane
Spatial Resolution: 14 arcminutes (Followup of masers with ATCA ~10 arcseconds)
Spectral Resolution: 0.18 km/s at 1612 MHz, 0.17 km/s at 1720MHz
Sensitivity: 20 mK per $\delta v = 0.7$ km/s channel (binned)
Velocity range: -300 to +300 km/s

We have so far completed about 900 hours of observations with Parkes (about half-way) and are on track with regards to both area covered and survey sensitivity.