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2D mapping of ice species in molecular cores*

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Abstract. We present data from our ice mapping program IMAPE on the AKARI satellite. Initial results show a correlation between the abundance of $CO_{2(s)}$ and $H_2O_{(s)}$, consistent with previous studies. We can trace abundances of molecules across a core using a single observation.

Keywords. astrochemistry, ISM: clouds, ISM: molecules, techniques: spectroscopic

1. Introduction

In dense cores, much of the molecular material is frozen on the surface of dust grains. AKARI allows the simultaneous observation of multiple lines of site (*los*) through a core. We observed a 1'x1' region towards 20 cores, between 2.5–5.0 μm. Data was reduced using our own pipeline (Noble *et al.* in prep.), producing spectra for 31 *los*.

2. Results and Conclusions

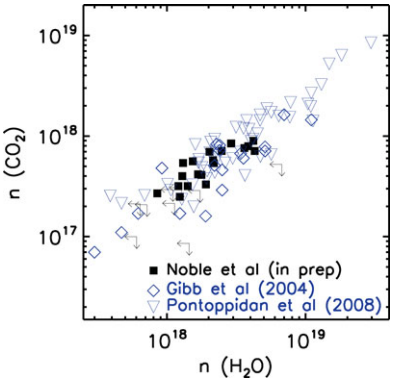

Figure 1. Correlation plot of $n(CO_2)$ vs $n(H_2O)$ for 31 *los* in the AKARI IMAPE program.

The abundance of H_2O and CO_2 was calculated for each *los* using laboratory data, and is presented in Figure 1. Abundances agree with previous studies (as shown in Figure 1) and a clear correlation is seen between $n(H_2O)$ and $n(CO_2)$ in the cores observed.

References

Gibb, E. L. *et al.* 2004, *ApJS*, 151, 35
Pontoppidan, K. M. *et al.* 2008, *ApJ*, 678, 1005

*Based on observations with AKARI, a JAXA project with the participation of ESA.