ALMA Band 2 quick guide:

We here provide a quick guide to the expected capabilities of ALMA observations in Band 2.

Band 2 covers the frequency 67-90GHz (3.3-4.5mm in wavelength). It is proposed that a future band 2 receiver would be created to be a combined Band 2 and 3 receiver, also covering the existing Band 3 frequency range of 84-116GHz.

ALMA, when complete (expected late 2013), will comprise 50 12m antennas moving from a compact array configuration with baselines up to ~160m to an extended configuration of maximum baseline ~16km.

ν [GHz]	λ [mm]	**ΔS [mJy]**** *at spectral resolution*		**T_b [K]***** *at spectral resolution*		**FOV [arcsec]**	**Resolution [arcsec]**	
		1.0km/s Channel	Full Continuum (7.5GHz)	1.0km/s Channel	Full Continuum (7.5GHz)		Compact Config. *(B_{max} = 160m)*	Extended Config. *(B_{max}=16km)*
67-90	3.3-4.5	~12.0	0.067	~1.70	0.0095	70-94	5.2-7.0	0.052-0.070
84-116	2.6-3.6	~9.97	0.063	~1.22	0.0081	54-75	4.1-5.6	0.041-0.056

Table 1. *Presents some key observing characteristics* of ALMA at the proposed Band 2 frequencies and the current ALMA Band 3.* **Resolution and FOV derived using $\theta=1.22\lambda / D$. With $D= B_{max}$ and dish diameter respectively. ** For a 60 second integration, in PWV octile 7 (5.186mm) with 50 12m antennas. At 79 and 100 GHz for Band 2 and 3 respectively. *** As for ** with a 1 arcsecond beam.*

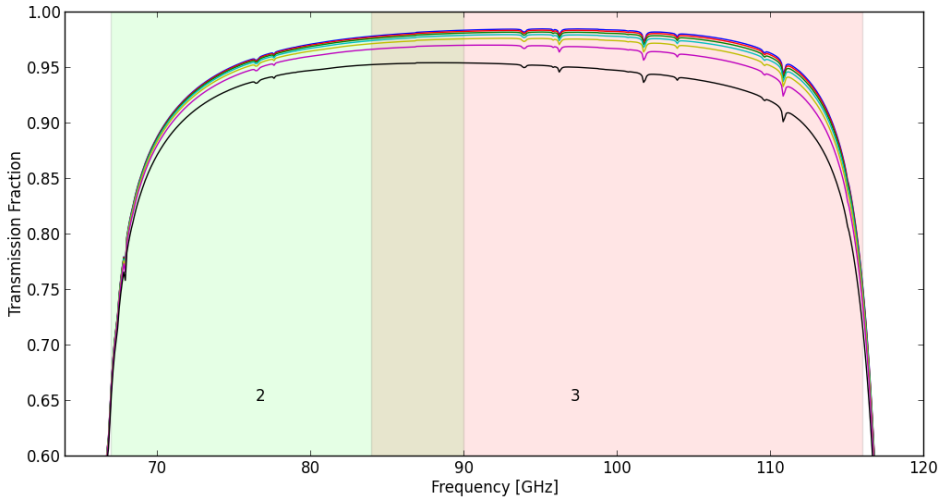


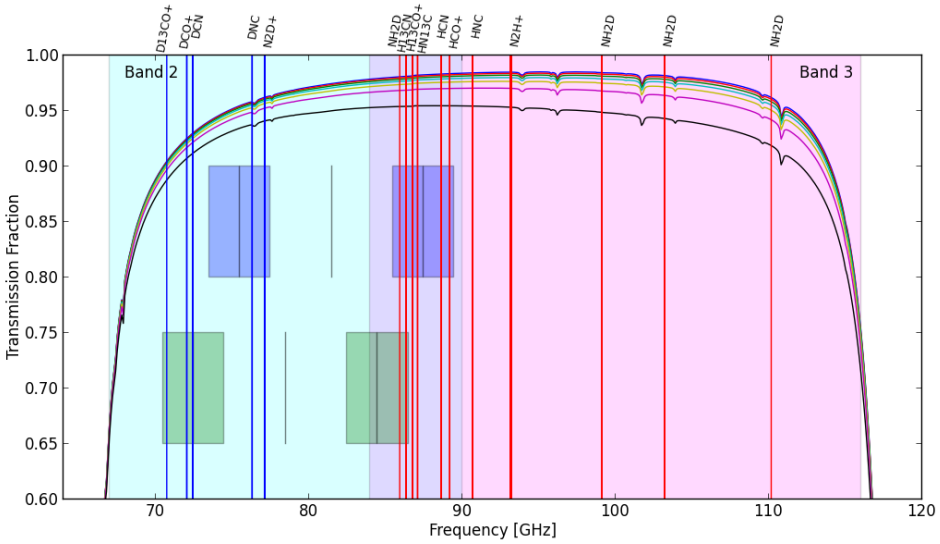
Figure 1. *Atmospheric transmission across the ALMA Band 2 and 3 frequency range. The transmission curves show the differing transmissions in each ALMA PWV octile from 0.475mm to 5.186mm.*

For the ALMA Band 2 workshop in Bologna May 27th – 28th there will be an ALMA Band 2 capable version of the ALMA Observation Support Tool. See http://arocat.jb.man.ac.uk/beta/

Potential Observing Spectral Setups

Current ALMA capabilities:
~8GHz total bandwidth, 4 x 2GHz basebands assuming a combined Band 2 & 3 receiver.

Setup 1 (green): LO freq. 78.5GHz covering $D^{13}CO+$, DCO+, DCN, NH_2D and $H^{13}CN$.
Setup 2 (blue): LO freq. 81.5GHz covering DNC, N_2D+, NH_2D, $H^{13}CN$, $H^{13}CO+$, $HN^{13}C$, HCN and HCO+.



Potential Future ALMA capabilities:
~16GHz total bandwidth, 4 x 4GHz basebands assuming a combined Band 2 & 3 receiver.

Setup 1 (green): LO freq. 82.0GHz covering $D^{13}CO+$, DCO+, DCN, DNC, N_2D+, NH_2D, $H^{13}CN$, $H^{13}CO+$, $HN^{13}C$, HCN, HCO+, HNC, N_2H+
Setup 2 (blue): LO freq. 88.0GHz covering DNC, N_2D+, N_2H+ and NH_2D.