



Long term prospects for the SMA

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The coming of ALMA

- ALMA plans to begin early science 2011
- Initially expect to have up to 16 antennas
- Frequency coverage will be similar to SMA
- Site offers better transmission than Mauna Kea
- With ~ six antennas ALMA would appear competitive
- SMA has three years with no competition at 690 GHz and little at 345 GHz. However, IRAM plan 345 GHz capability ~ 1 year from now
- IRAM + CARMA currently operate also at 230 GHz
- ALMA may suffer delays
- Do little - SMA will probably be viable as is for five years



Long term prospects

- Options for the SMA
 - Idea is not to decide what to do today, but rather to solicit input given the impending arrival of ALMA
 - Need to define science and make plans accordingly
 - Intend to settle on a few options (~ two) and work through the details



Long term prospects

- Options for the SMA – Northern Hemisphere
 - Exploit the northern hemisphere with substantial investment on Mauna Kea. This could include more antennas, better receivers, arrays of receivers, additional frequency bands, wider bandwidth, e-SMA, etc.
 - Will have competition from IRAM and CARMA at 230 GHz, possibly even 345 GHz
 - SMA site better than IRAM and CARMA sites
 - But IRAM and CARMA are both further north than the SMA
 - Also, ALMA will reach much of the northern sky
 - What investment needs to be made to remain viable from Mauna Kea in the long term?



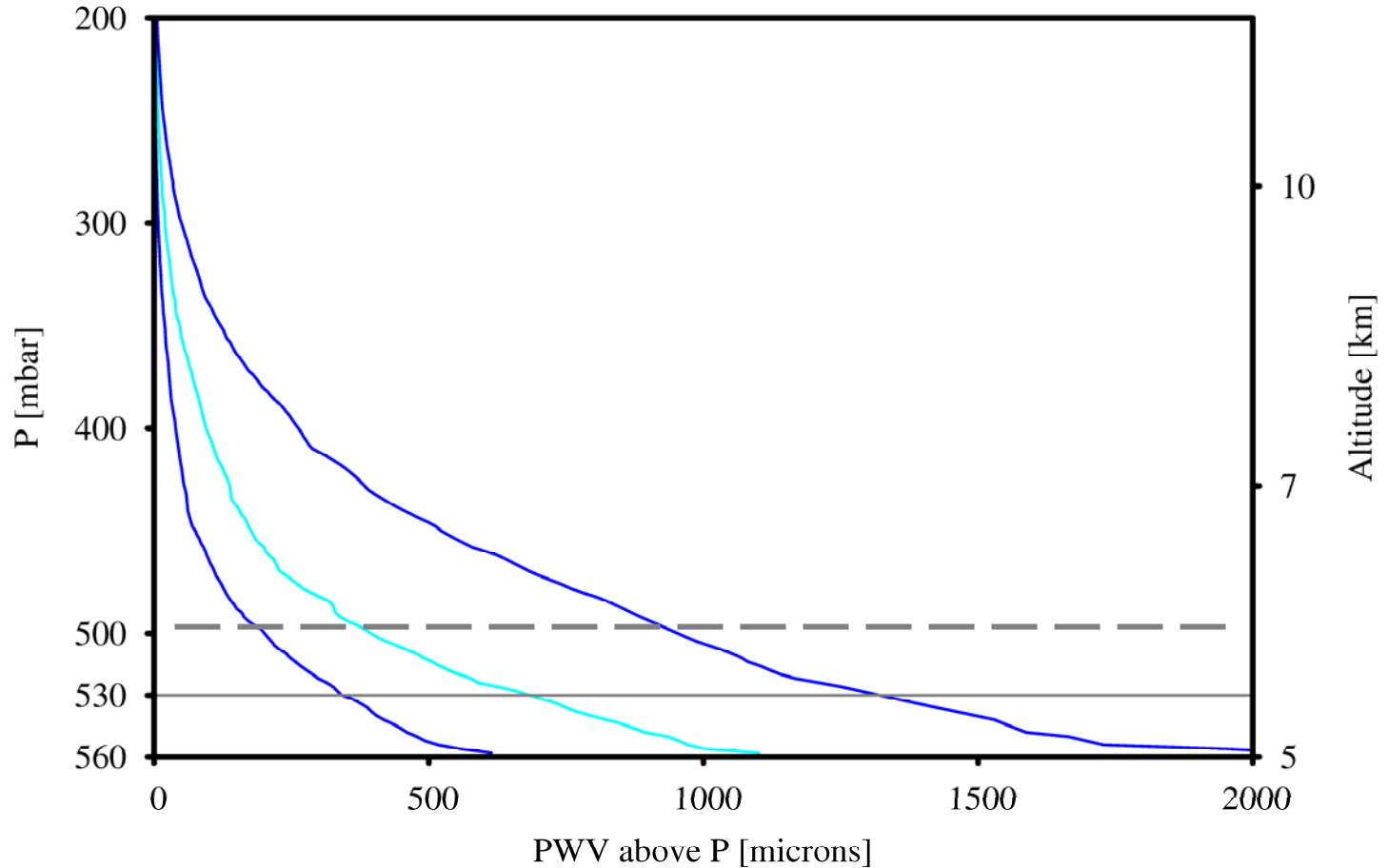
Long term prospects

- Options for the SMA – High site in Chile
 - Continue to be a path-finding instrument
 - Pioneer higher frequency interferometry from 6000 m altitude in northern Chile
 - Conduct high resolution follow-on studies to Herschel and SOFIA, both of which will have a 3.5 m diameter telescope and operate at frequencies above those planned, or even viable, for ALMA
 - Could spend 20% of the time at 200 microns, up to 50% of the time at 350 microns, and add short spacing information to ALMA observations, or make independent observations at lower frequencies



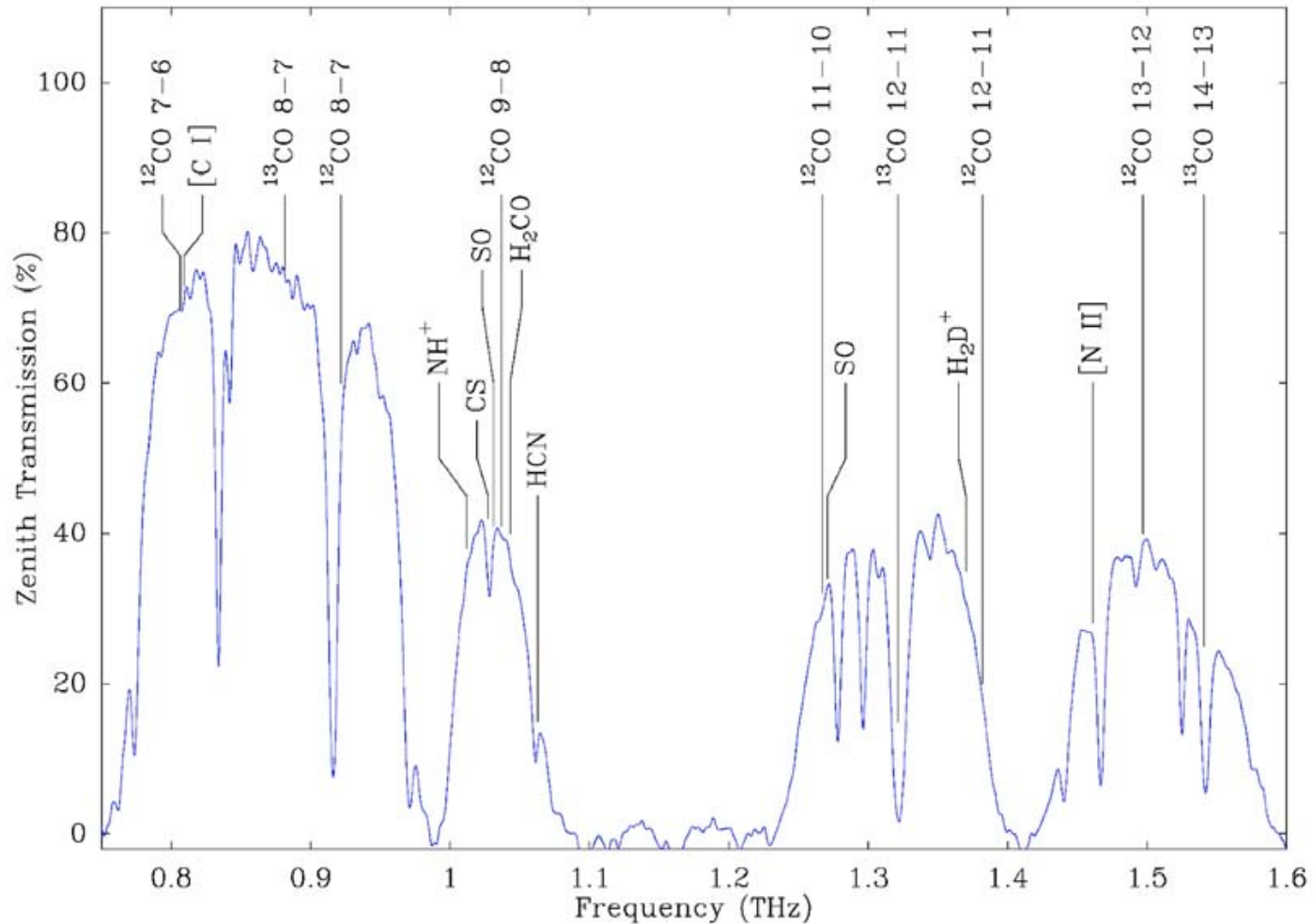
PWV quartiles at 5,000 and 6000 m

PWV quartiles from 187 Chajnantor radiosondes





Zenith transmission for 200 μm PWV





Long term prospects

- Other options exist
 - SMA scientists will be immediate users of ALMA
 - CfA/ASIAA will be in a good position to exploit ALMA
 - Indeed ASIAA is already partner to ALMA and ALMA-J
 - Could become an educational instrument (after-all, the scientists who will eventually use ALMA would benefit from a solid understanding of interferometry)
 - Something else, for example eight single dish instruments pursuing some other type of science?
- Currently working towards identifying scientists to form a committee to help provide scientific guidance for the future