



# Tropospheric Turbulence Measurements

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SPDO

Given that:

- observation frequencies to 10 GHz,
- two relative low-land sites,

the tropospheric stability must be investigated.

Will be done through:

- Climate and cloud cover information
- Tropospheric phase interferometer monitoring

- Joint (JPL) effort to duplicate a recent, proven system:
  - CfA's new instrumentation for the SMA on MK
    - Single baseline (~300m) interferometer
    - Direct-broadcast tv geostationary satellite signal, 11.7-12.2 GHz lin, 12.2-12.7 GHz circ.
    - 0.84m reflector with modified Inb converter
    - LO generation, distribution via fibre
    - IF brought to central rack via fibre

- Wide bw interferometer, 200MHz bw
- Analog complex correlator produces amplitude and phase at 4kHz rate
- After Walsh demodulation, integration produces  $0.02^\circ$  resolution phases at 10Hz.
- Postprocessing performs phase unwrapping and removes gross (diurnal) phase drifts
- Data products to be read out remotely after buffering

- Status:
  - Two systems being built, to be completed mid November 2010, shipment 3 December
  - SPDO acceptance, mid November
  - Shipment to sites
  - Installation at sites

- Plans:
  - Start as soon as possible, will likely not be before 1-1-2011
  - Carry out measurements during hot season
  - Data collection and processing by SPDO
  - Carry out measurements for at least one year
  - SPDO to report on results in an interim report (after ~4 months) and a final report (after >1 year)
  - Sites will provide support (power, network connection, shielded environment, overseeing, maintenance)











At Goldstone

End