10 Years of Water Vapor and Ozone Soundings at Costa Rica

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Different regions in the tropics

From Vömel et al., 2002
Stratospheric water vapor stations
Water Vapor and Ozone Sounding (Costa Rica)
Launch statistics at Costa Rica
Water Vapor Climatology at Costa Rica

Water Vapor Mixing Ratio

Altitude [km]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

[ppmv]
Water vapor during summer

From Selkirk et al. JGR (2010)
RH (ice) Climatology at Costa Rica

Relative Humidity over San Jose, Costa Rica

Altitude [km]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

[0] [25] [50] [75] [100]
RH (ice) Climatology at Costa Rica
Relative to Tropopause

Relative Humidity over San Jose, Costa Rica

Altitude relative to mean tropopause [km]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

[°]
Seasonal Cycle: Temperature

- Manus GRUAN RS92 (2011–2014)
- Tibetan Plateau CFH (Jul–Sep, 2010–2014)
- Western Pacific (January only)
Seasonal Cycle: Water Vapor

- Tibetan Plateau CFH (Jul–Sep, 2010–2014)
- Western Pacific (January only)
Seasonal Cycle: RH Ice

The diagram shows the seasonal cycle of relative humidity (RH) over ice for different locations and periods:
- Tibetan Plateau CFH (Jul–Sep, 2010–2014)
- Western Pacific (January only)

The x-axis represents the months of the year, from January to December, while the y-axis represents the relative humidity over ice in percent (%). The data points and lines indicate the fluctuation of RH over ice throughout the year for each location.
Summary

• 10 years of simultaneous water vapor and ozone profiles over Costa Rica

• Tropopause temperature
  Monthly mean shows strong seasonal cycle

• Tropopause water vapor mixing ratio
  Monthly mean shows strong seasonal cycle (tape recorder)

• Tropopause relative humidity over ice
  Monthly mean nearly constant at 100%