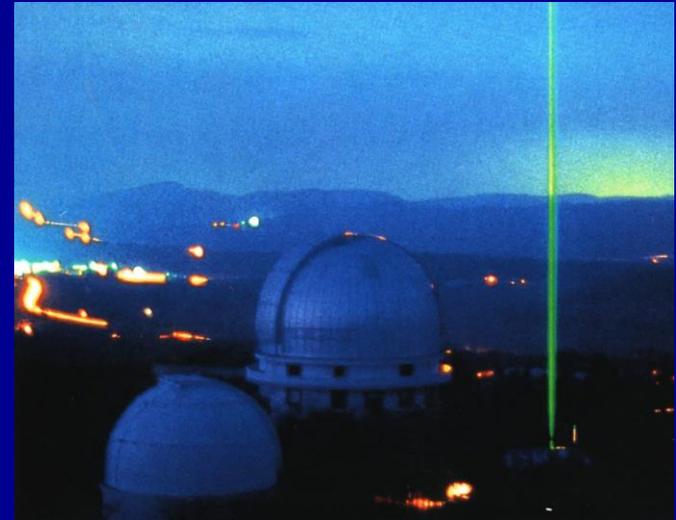


Temperature measurements using Rayleigh Lidar

- Required pure molecular scattering
- Density and pressure are relative measurements
- Temperature is absolute

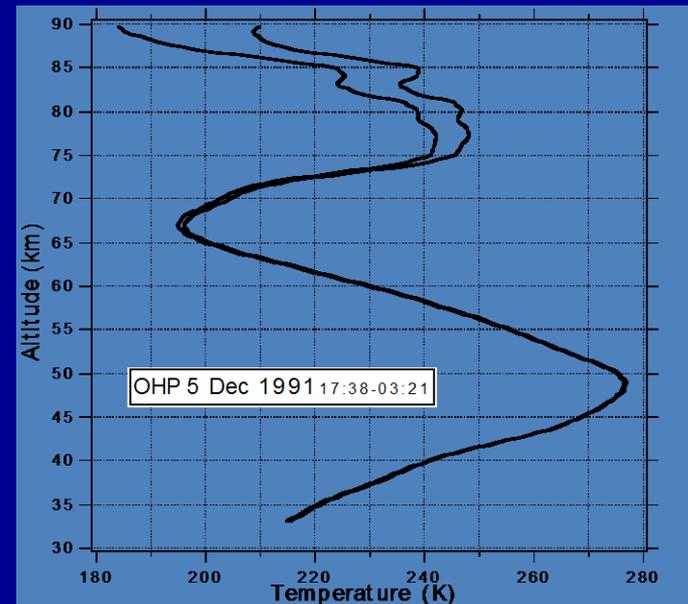


$$r(z) = f(N(z))$$

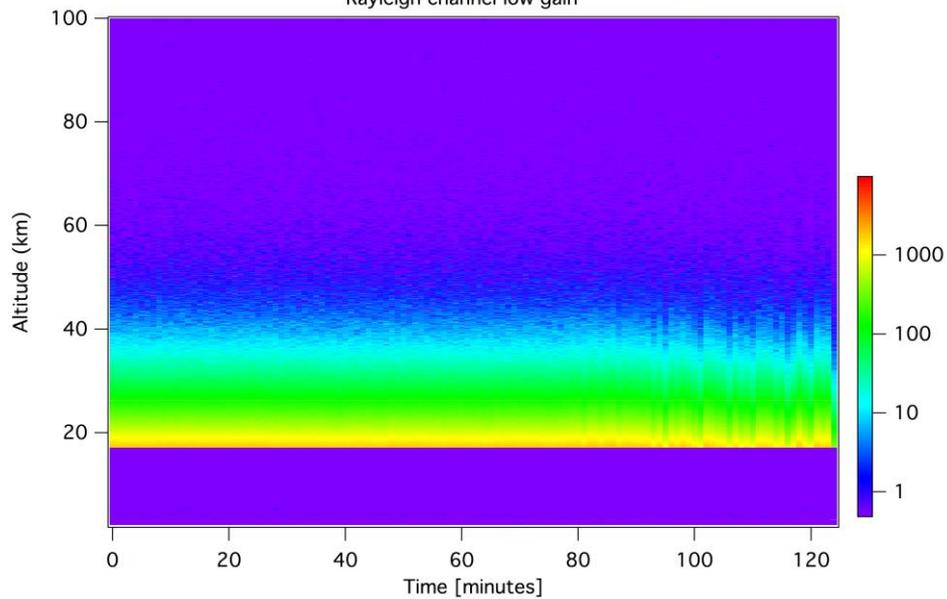
$$dP(z) = -g(z)r(z)dz$$

$$T(z) = \frac{MP(z)}{Rr(z)}$$

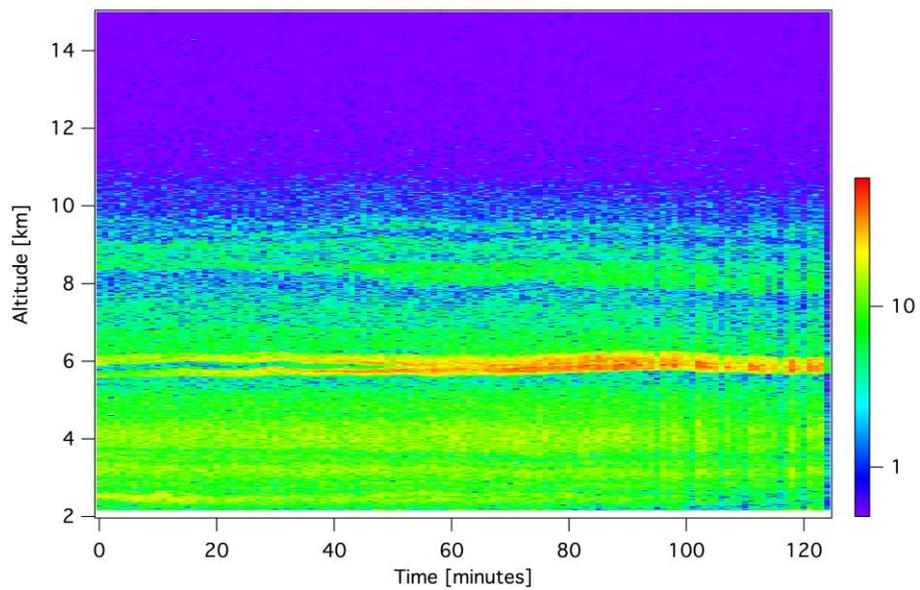
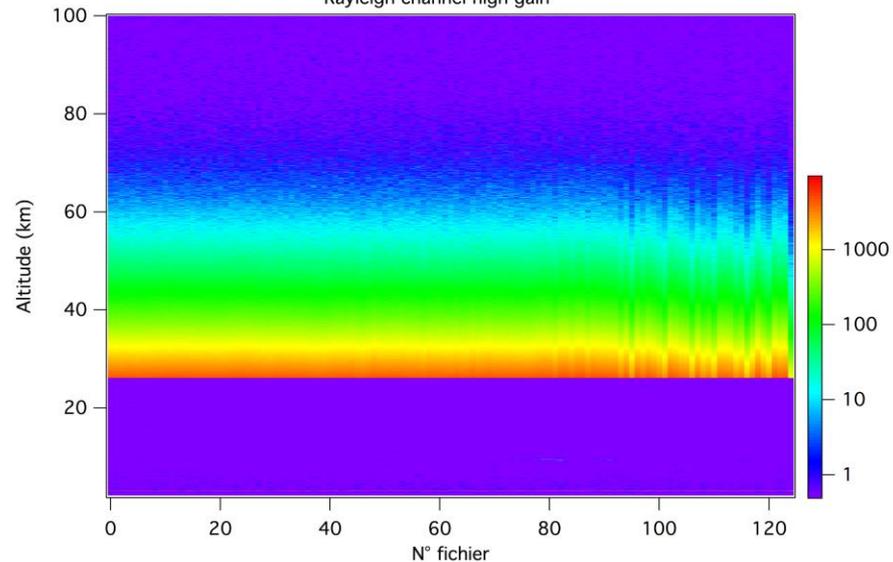
$$T(z) = \frac{M \int_0^z gr(z')dz'}{R r(z)} = \frac{Mg(z) \int_0^{\text{top}} N(z')dz'}{R N(z)}$$



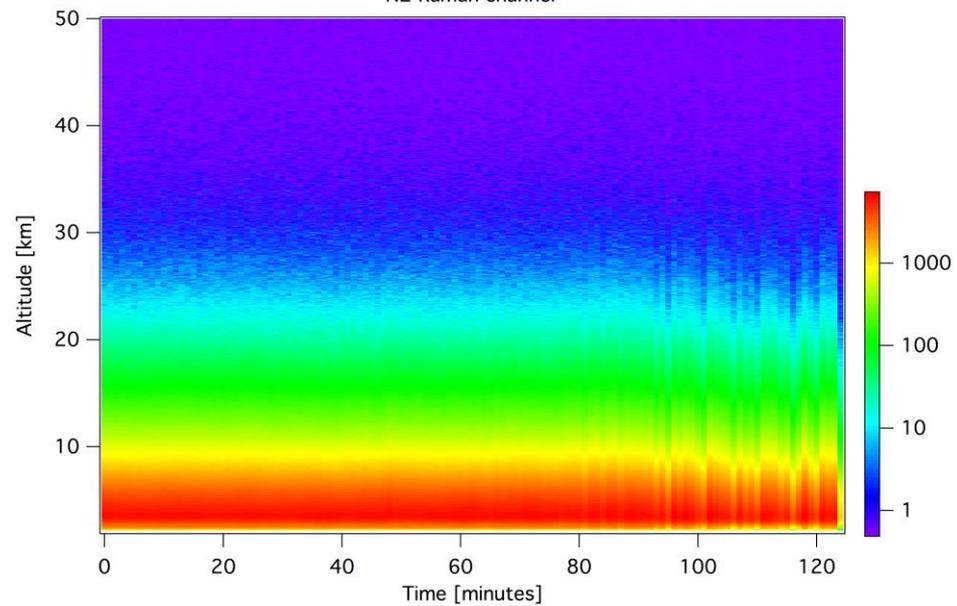
Rayleigh channel low gain

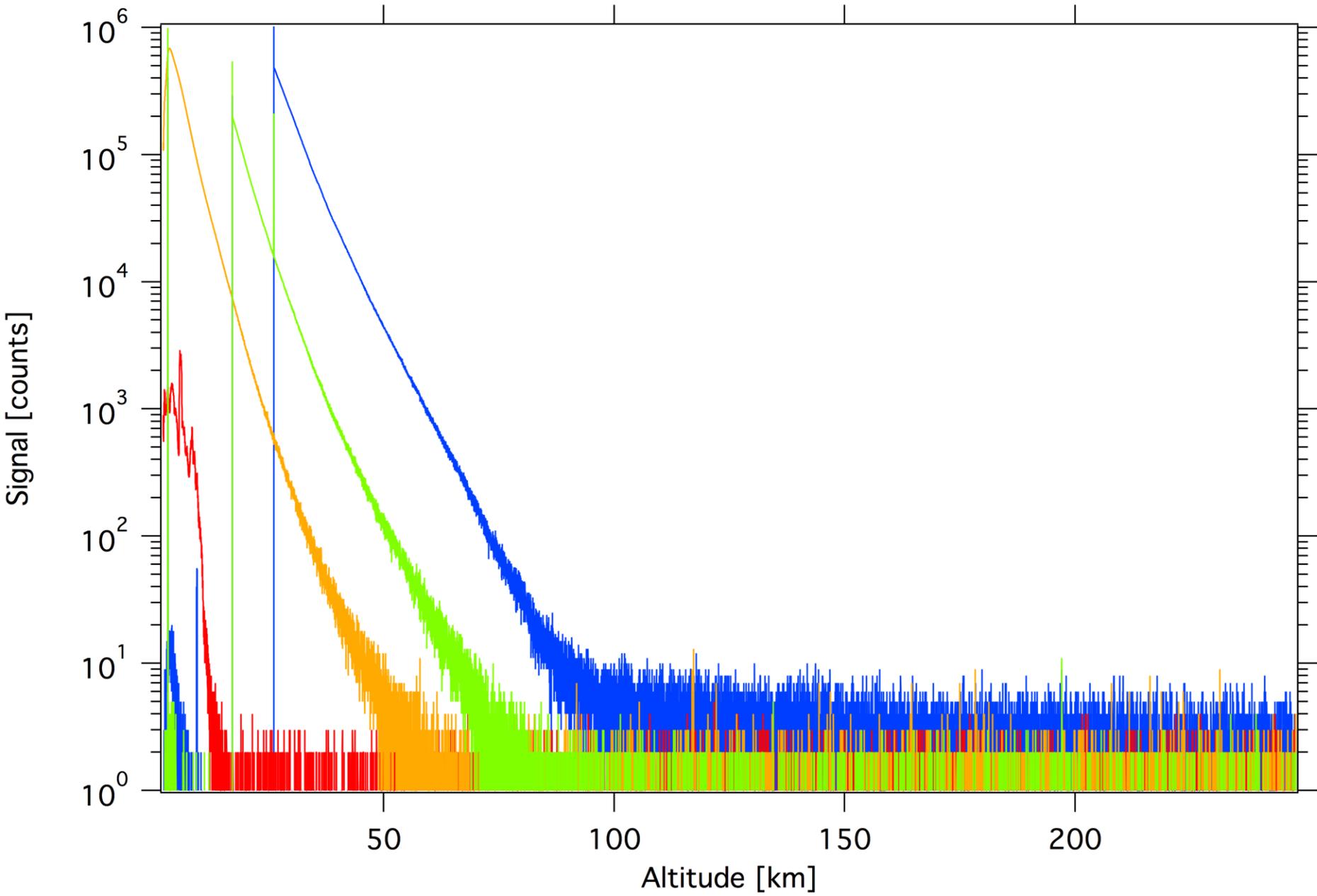


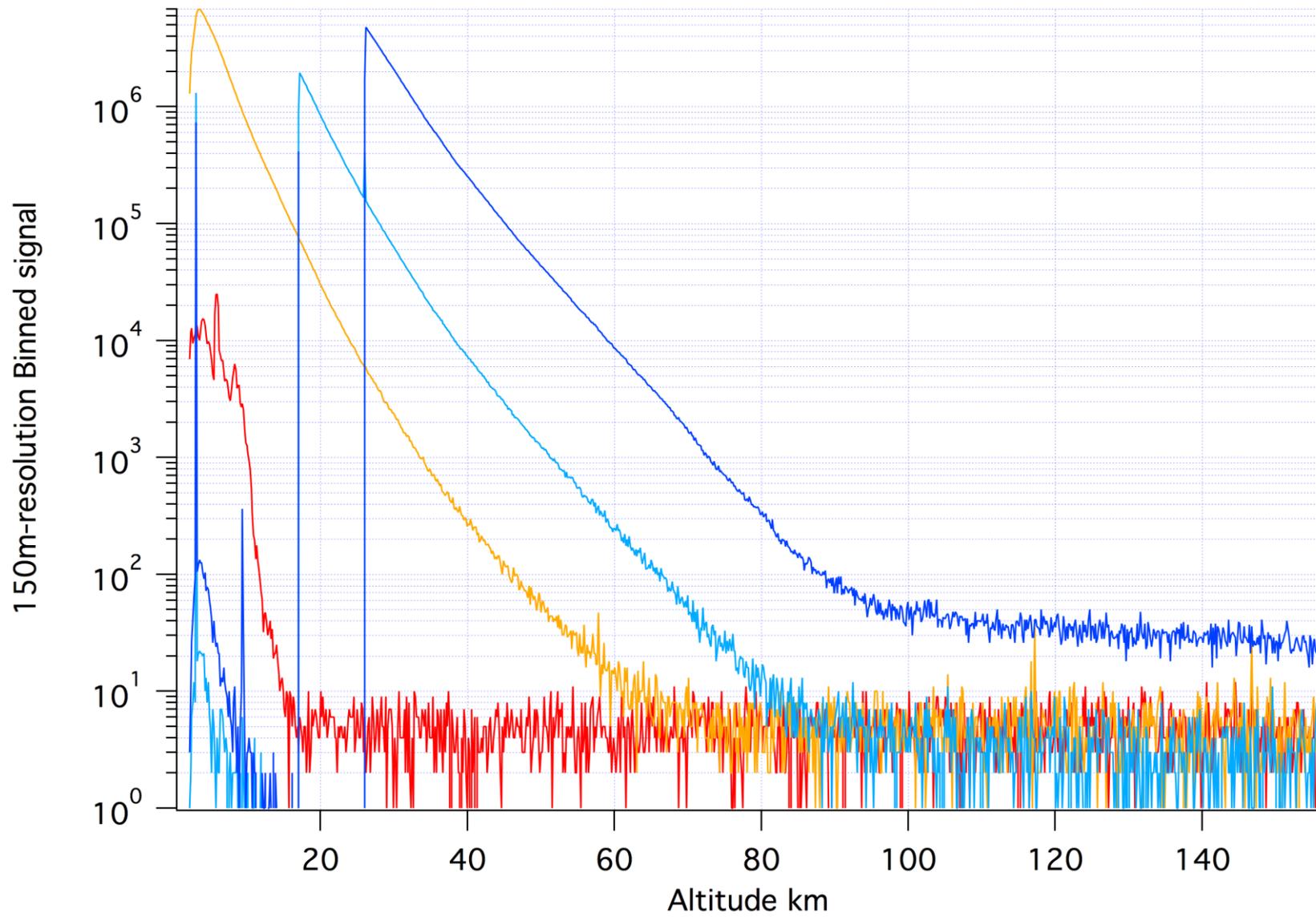
Rayleigh channel high gain



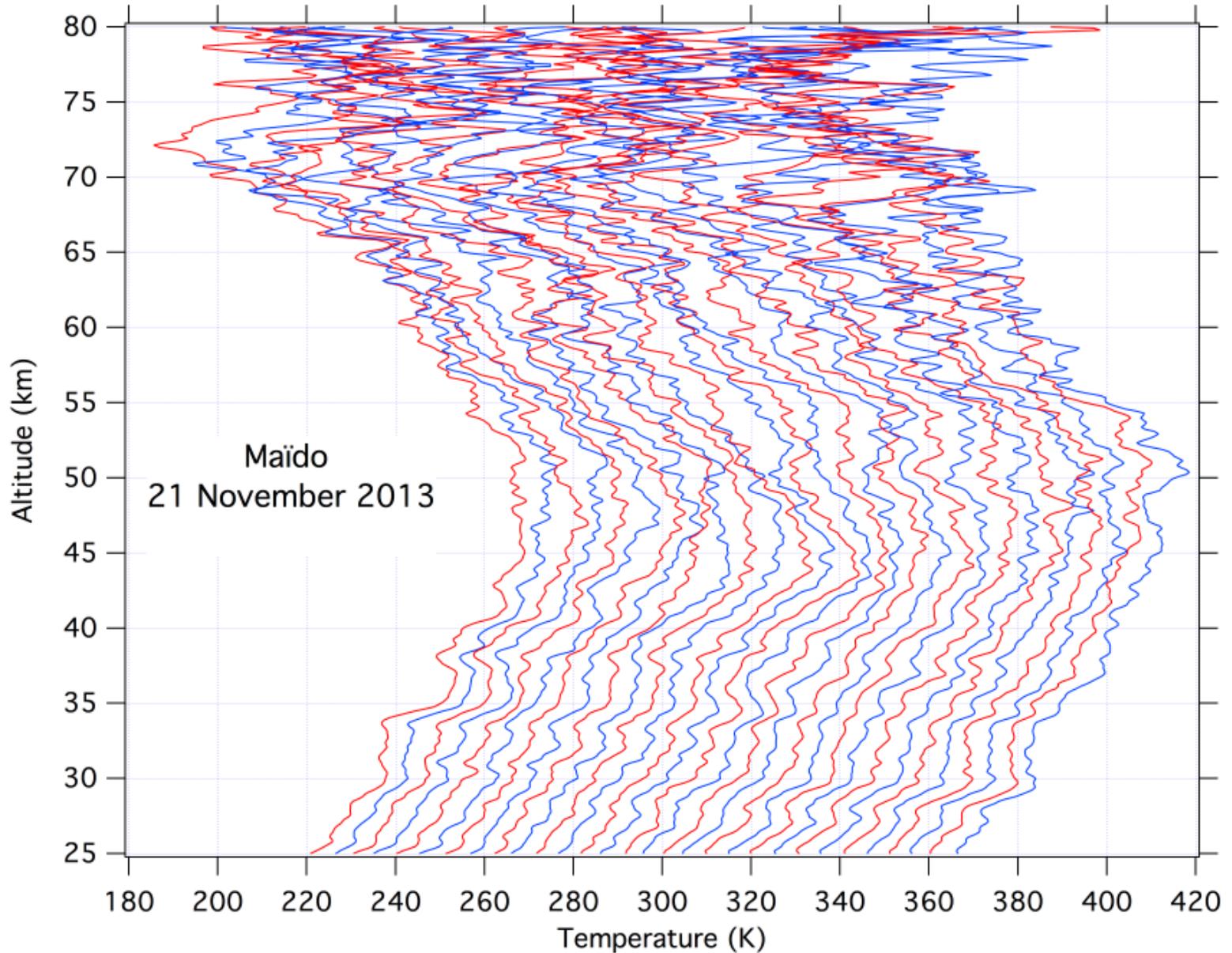
N2 Raman channel





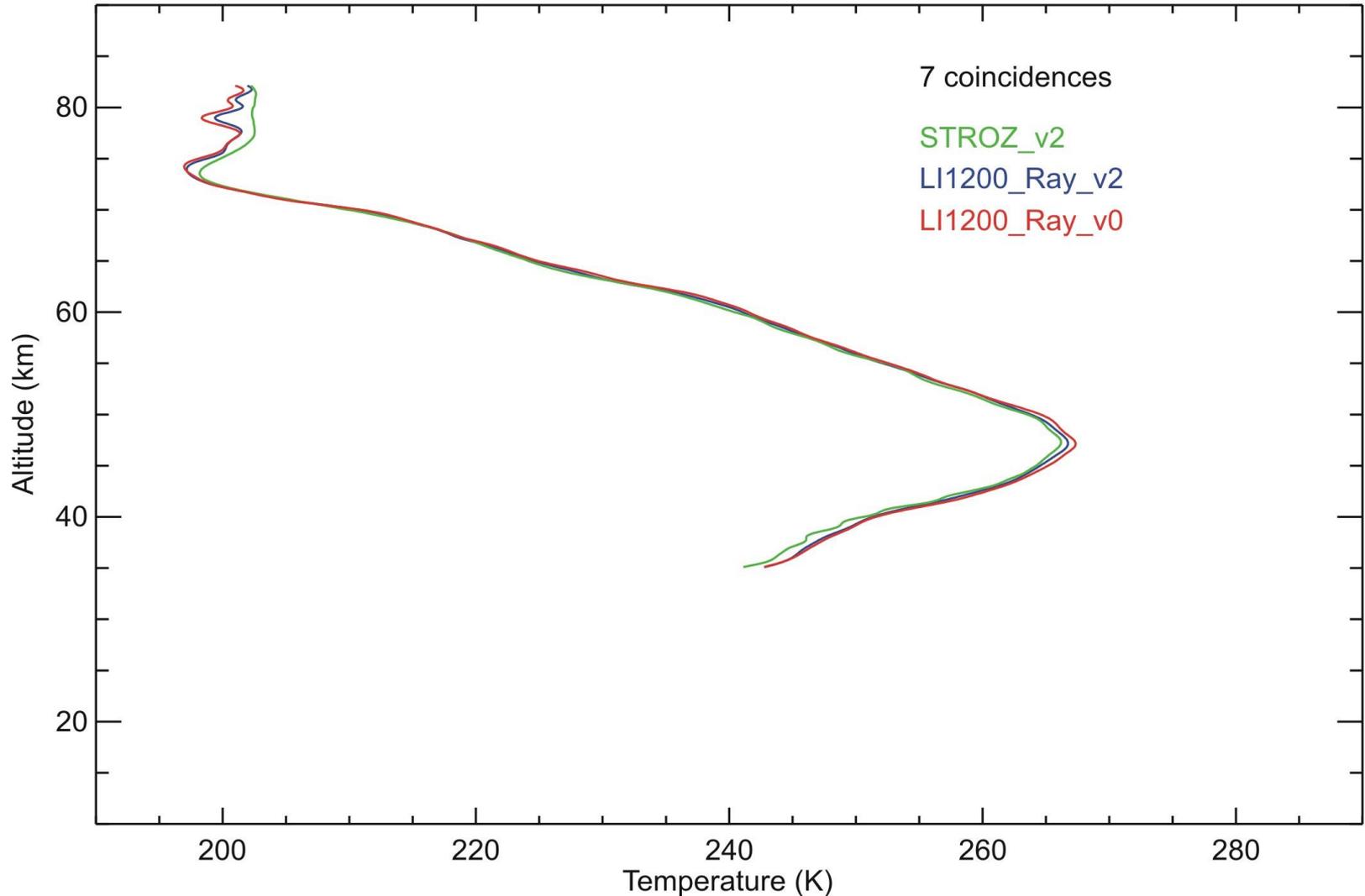


Temperature profile evolution during one night

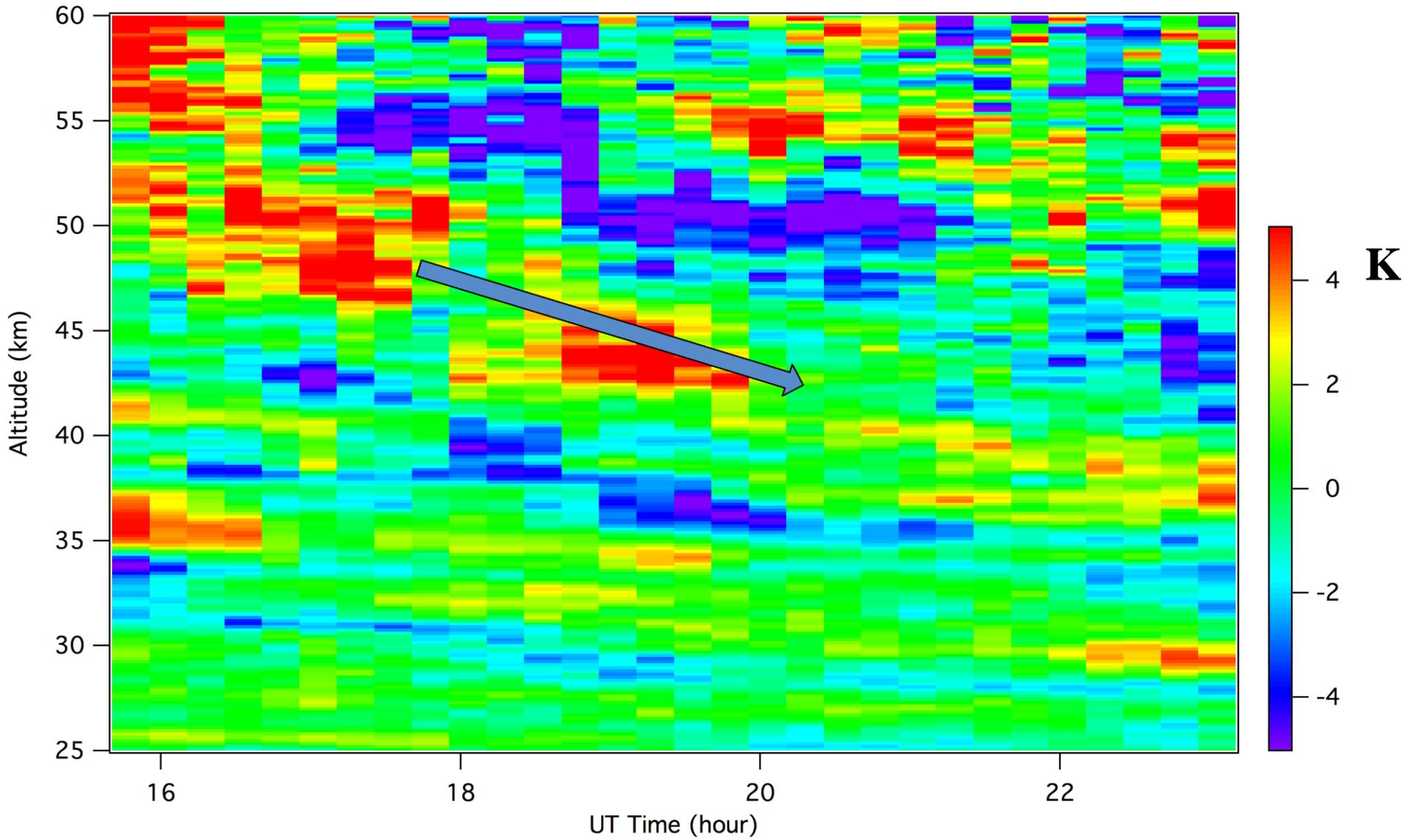


NDACC Morgane campaign

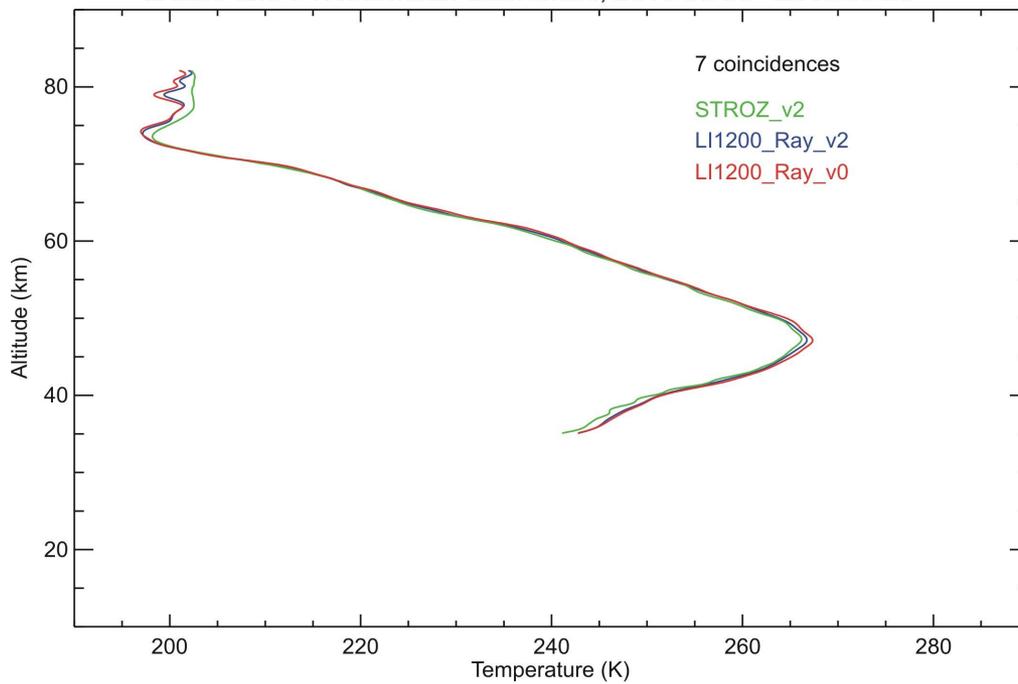
LI1200 and STROZ mean differences, 2015/05/05 - 2015/05/29



Temperature anomaly: gravity wave propagation



LI1200 and STROZ mean differences, 2015/05/05 - 2015/05/29



LI1200_Ray - STROZ_v2 Mean difference

