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Ray-tracing

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Troposphere modeling

- Tropospheric delay usually modeled with delays in zenith direction and mapping functions:
  - Dependence on elevation:

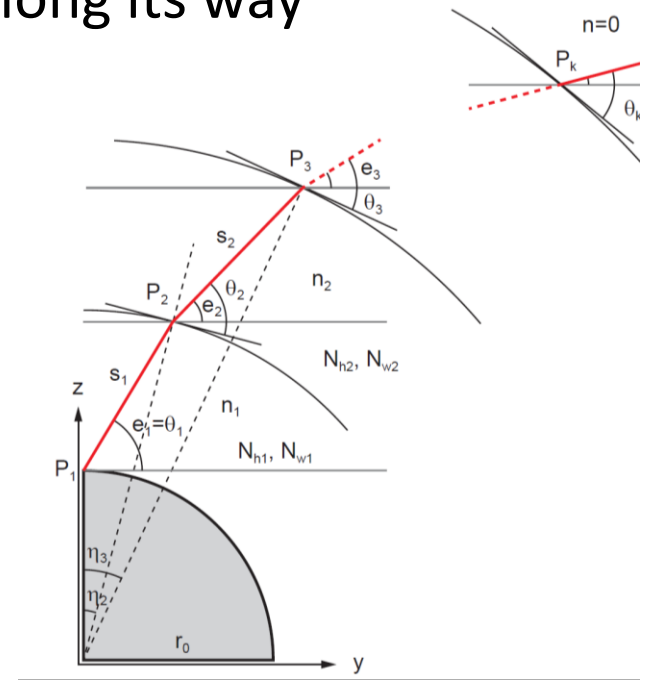
$$\Delta L_0(e) = \Delta L_h^z * mf_h(e) + \Delta L_w^z * mf_w(e)$$

  - Dependence on azimuth:

$$\Delta L(a,e) = \Delta L_0(e) + mf_g(e) * [G_N \cos(a) + G_E \sin(a)]$$

Ray-tracing

- Ray-tracing through Numerical Weather Models (NWMs) determines the exact tropospheric delay along a certain ray path
- Ray path dependent on refractivity along its way
- NWMs by ECMWF:
  - Operational, Forecast, Reanalysis
  - 6 h resolution
  - 1°x1° horizontal resolution
  - 25 pressure levels



Usage of ray-traced delays in VieVS

- Download desired ray-traced delays from: http://vmf.geo.tuwien.ac.at/trop_products/VLBI/RAYTR/RADIATE/
- Move them into the */TRP/RAYTRACING_DATA/* directory
  - Yearly subdivision is optional
- In *Models – Troposphere* set the radio button to *from ray-tracing*
- Run VieVS