

**A review of scintillations events and probabilities  
as observed from measurements for satellite to earth radio links**

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A radio signal traversing the ionosphere can encounter fluctuations (scintillations) both in its phase and amplitude caused by irregularities in the electron density distribution mainly located in the F region. The scintillation activity is generally depending on helio-geophysical activity, local time at the receiver and position of the receiver. The irregularities in electron density distribution can be linked to instability phenomena like the Kelvin type and ExB gradients.

Three regions may be considered for different scintillation activity: equatorial ( up to 20° geomagnetic latitude), mid-latitudes and polar ( > 55° geomagnetic latitude). The equatorial and polar regions are mainly concerned to the equatorial anomaly for the first case and to the auroral precipitation effect for the second case.

The aim of this paper is to present a review of scintillation characteristics as deduced by measurements. Will be investigated more precisely :

- The latitudinal dependency,
- The seasonal dependency,
- The local time dependency,
  
- The relation with neutral wind velocities
- The correlation distances
- The time correlation
  
- The correlation between phase and amplitude scintillations
- ....

Modelling aspects as compared to measurements will also be presented.