IOCG 25/11/2013

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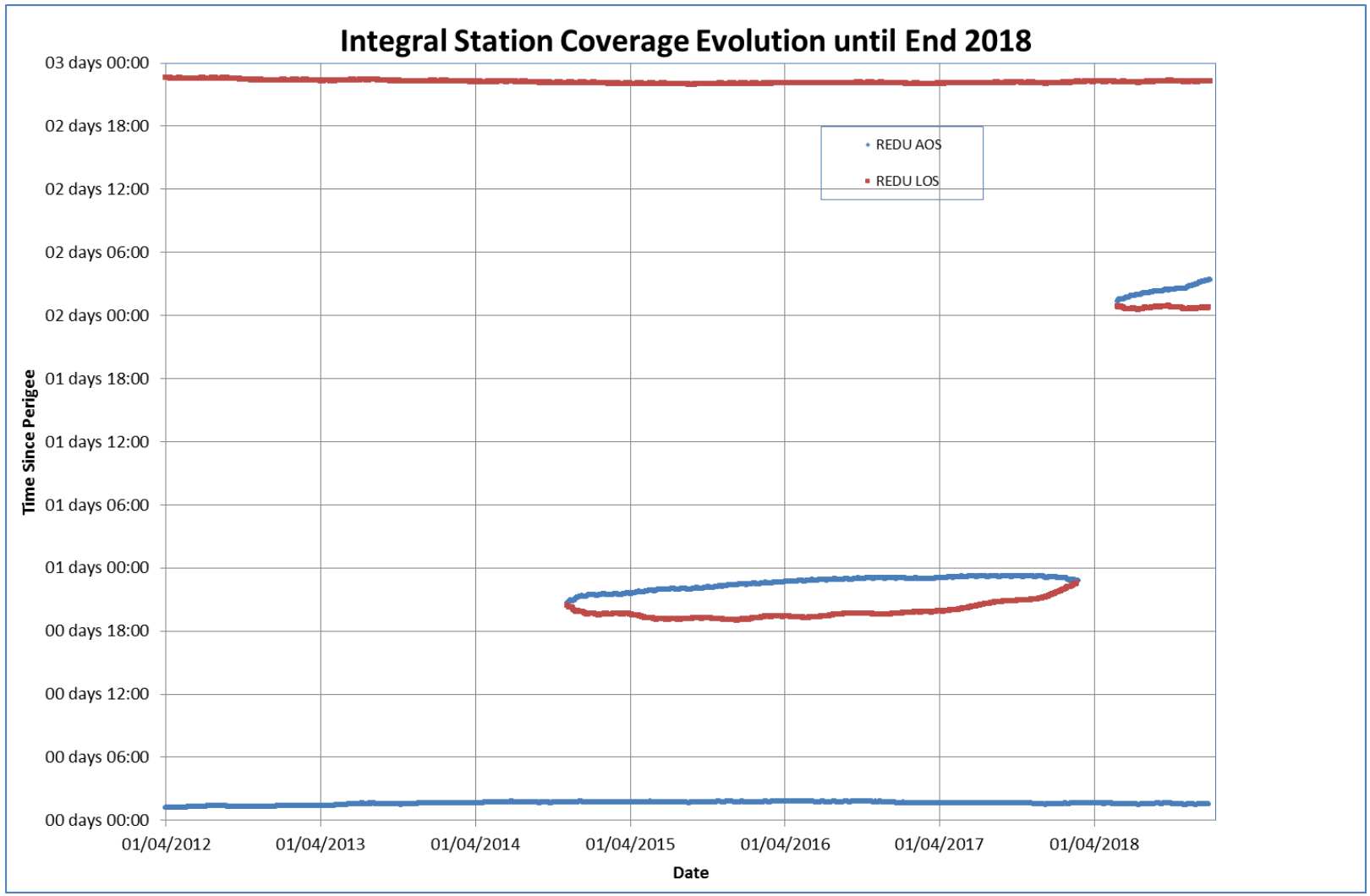
Integral Operations Co-ordination Meeting (25/11/2013)

Ground Segment status

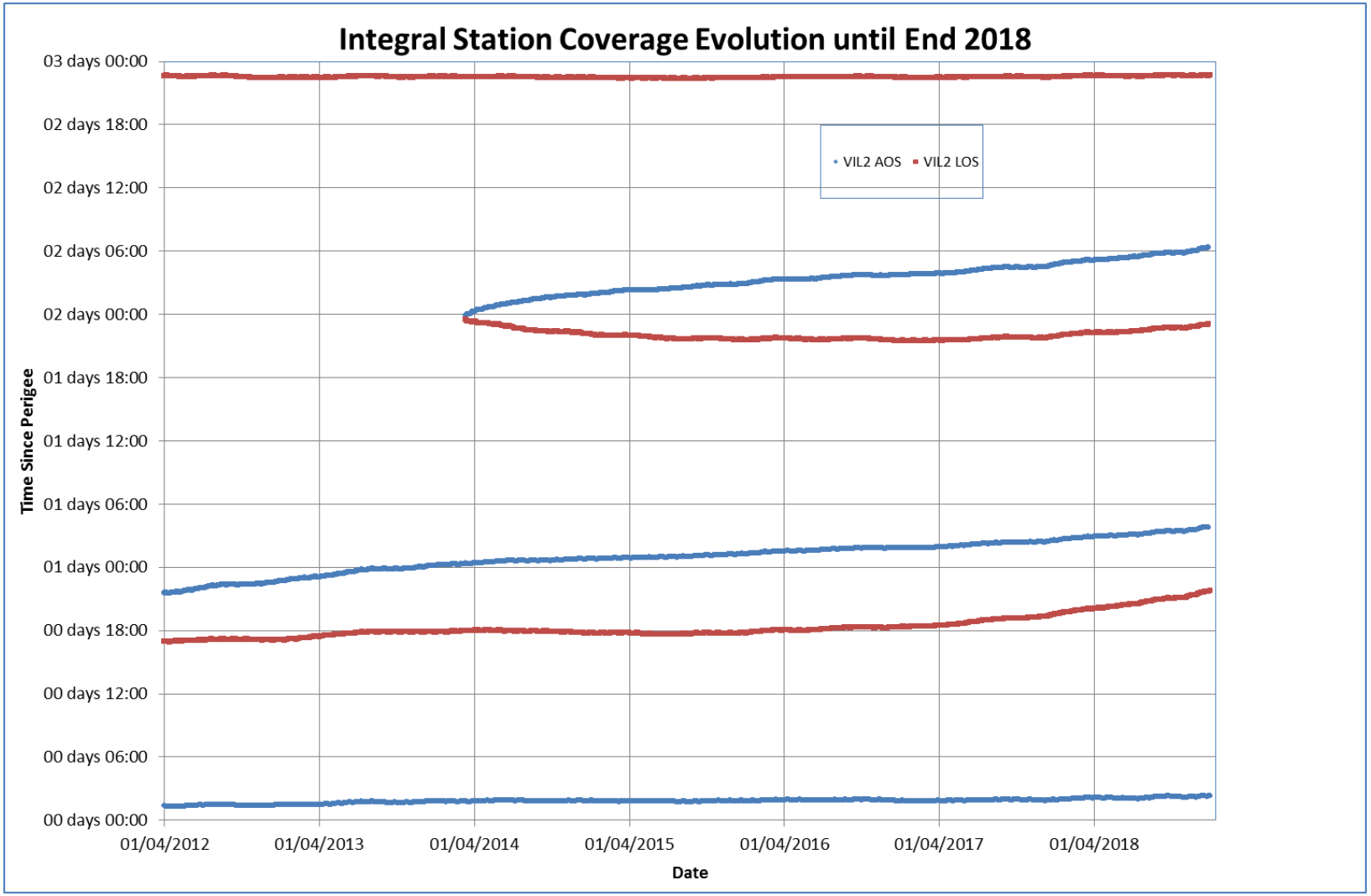
Ground Stations

- From 1/12/2013 REDU will no longer be available to Integral for routine operations
- Prime station will be Kiruna 1
  - EO missions will use external stations or Kiruna
  - Kiruna has excellent Integral visibility + performance and has been fully validated
- Other stations available as back up are: VIL2, Maspalomas, Perth, Weilheim
- Strong dependence on one station due to visibility constraints
  - Following plots show visibility
  - Actual usability is even worse since mask is quite limiting at VIL2 and Weilheim in particular

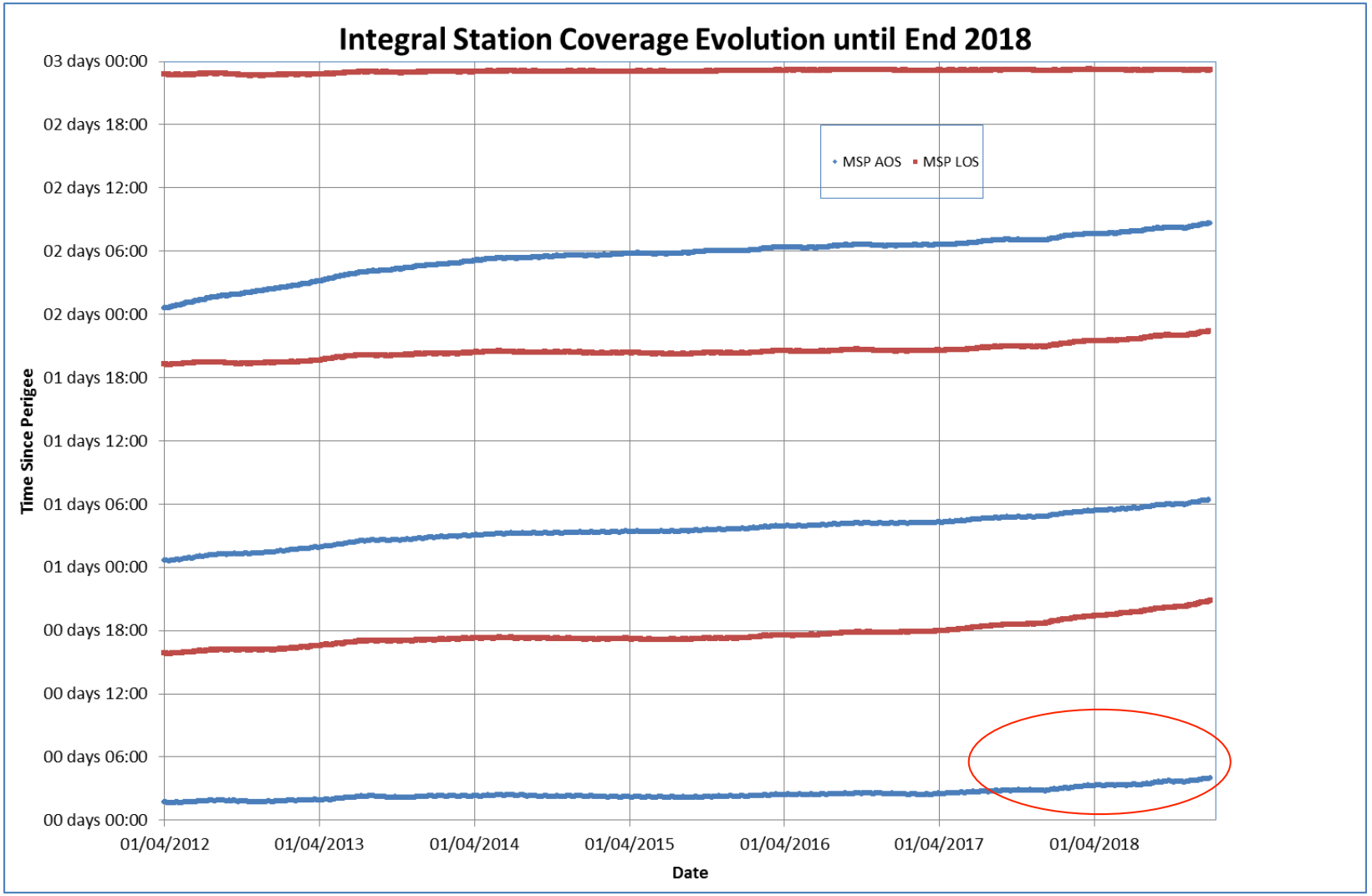
REDU Visibility



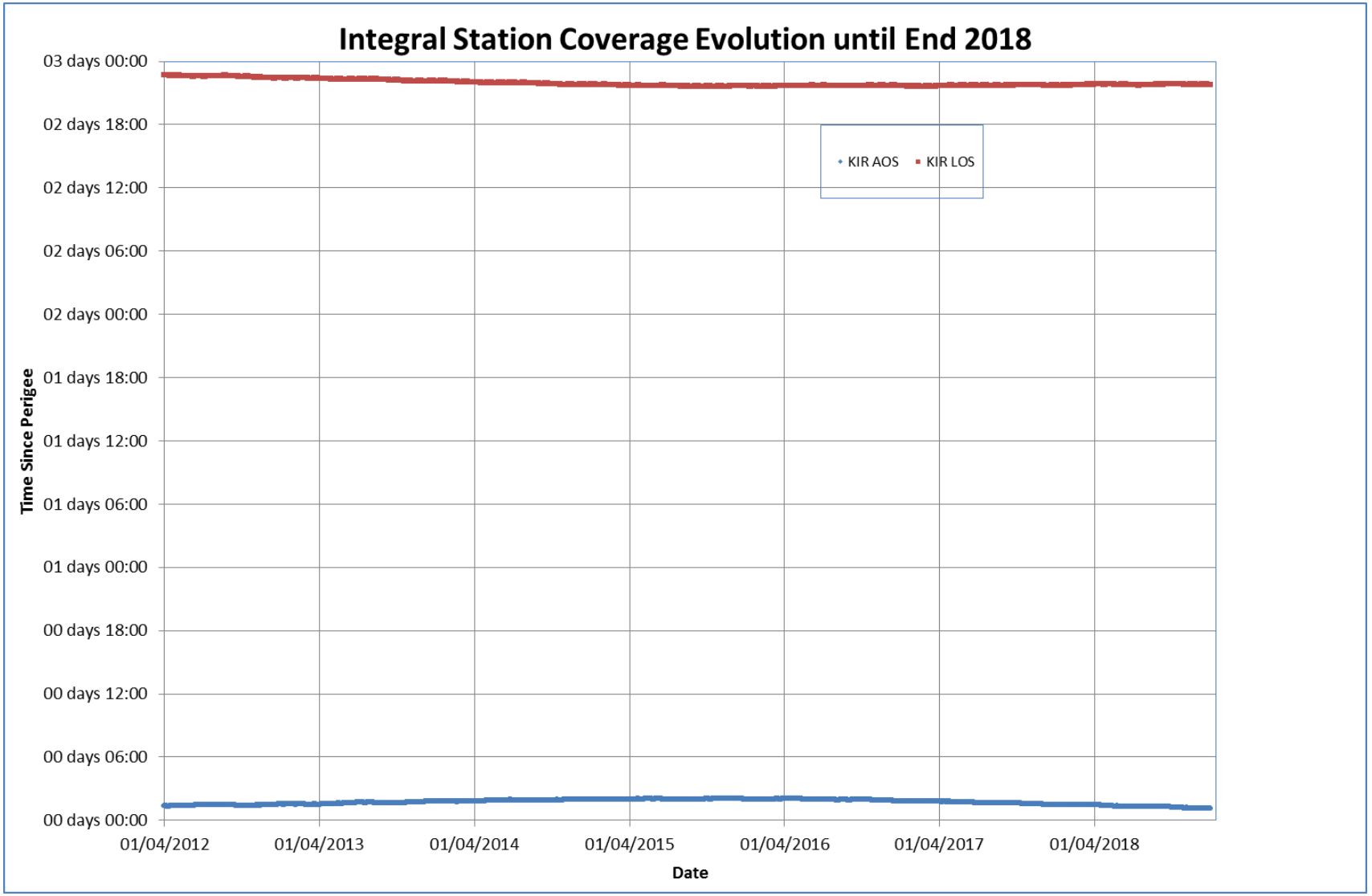
VIL2 Visibility



Maspalomas Visibility



Kiruna Visibility

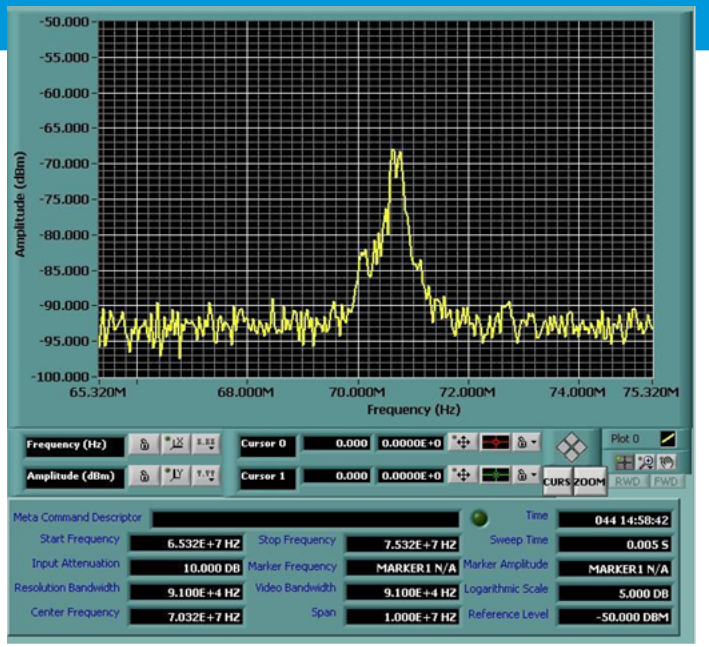


RF Interference

- Integral suffers from RFI regularly
  - Average about once every 2 days
  - Irregularly spaced
- Short TM loss or corruption of up to 30s.
  - Can cause significant interruption if it coincides with slew commanding
- Rather marginal Link Budget (XMM Design)
  - Higher apogee (155000km vs 100000km)
  - Higher Bit rate (131kbps vs 80kbps)

RF Interference

- Many identified sources:
  - SMOS < 5%
  - JASON-1 < 10%
  - GRACE < 1%
  - GLONASS-M ~ 30%
  - COMPASS-M (BEIDOU) ~ 30%



- Filter has tested and is effective against in-band interference
  - SMOS, JASON-1
  - Out of band sources are so powerful they swamp our signal
  - Filter will be installed on both chains in Kiruna
- ESOC Frequency Office is negotiating with other agencies
  - Sum of interference time is less than the 0.1% ITU coordination trigger