REAPER Calibration Monitoring Quality Assessment Results
QUALITY ASSESSMENT OF TWO MAIN CALIBRATION CHAINS:

- REAPER ERS1 & ERS2 IF-mask Quality Assessment
- REAPER ERS1 & ERS2 PTR Quality Assessment
• **REAPER IF-mask** Quality Assessment:
  
  – Total number of IF masks analyzed:
    
    • ERS1: 265
    • ERS2: 1978
  
  – Period: Whole mission
  
  – Parameters monitored:
    
    • Number of PTRs used for IF-mask reconstruction
    • Time gaps between IF-masks
    • IF mask slope
    • De-sloped IF mask standard deviation
    • Sample by sample variation
• **REAPER IF-mask** Quality Assessment: Number of PTRs
  - Number of PTRs used for IF-mask reconstruction

**ERS1: Number of PTRs used for generating the IF mask**

**ERS2: Number of PTRs used for generating the IF mask**

**Minimum Number of PTRs for building an IF-mask**
• **REAPER IF-mask** Quality Assessment: Time gaps
  - Time gaps between IF-masks
• **REAPER IF-mask** Quality Assessment: Time gaps
  
  • Time gaps between IF-masks

ERS1: Time gaps of IF-mask generation

ERS2: Time gaps of IF-mask generation

ZOOM
• REAPER IF-mask Quality Assessment: General IF Shape
- **REAPER IF-mask** Quality Assessment: General IF Shape
- **REAPER IF-mask** Quality Assessment: De-sloped IF-mask for stdev
  - First interpolate DC-offset range bins
• **REAPER IF-mask** Quality Assessment: De-sloped IF-mask for stdev
  - Second: linear regression and de-slope
• **REAPER IF-mask** Quality Assessment: De-sloped IF-mask for stdev
  
  - Third: Statistical Analysis

  • **ERS1** results:

  ![ERS1: Standard Deviation of the de-sloped IF mask along the mission](image1)

  ![ERS1: Standard Deviation of each sample along the mission](image2)
• **REAPER IF-mask** Quality Assessment: De-sloped IF-mask for stdev
  
  – Third: Statistical Analysis

  • **ERS1** results:

![Graphs showing standard deviation of the desloped IF mask along the mission and standard deviation of each sample along the mission.](image)
- **REAPER IF-mask** Quality Assessment: De-sloped IF-mask for stdev
  - Third: Statistical Analysis
    - **ERS2** results:
• **REAPER IF-mask** Quality Assessment: De-sloped IF-mask for stdev
  
  Third: Statistical Analysis
  
  • **ERS2** results:
• **REAPER ERS1 PTR** Quality Assessment:
  
  – Cycles analyzed: Cycle 2 to Cycle 156
  – Total number of products analyzed: 24463
  – Period: 19910803 to 19960602
  – Two parameters monitored: PTR delay and PTR AGC
  – From them, two modes: Tracking OCEAN and Tracking ICE
  – Statistical analysis: mean, max, min, p2p, stdev
• **REAPER ERS1 PTR AGC** Quality Assessment, OCEAN (blue) and ICE (red)
• REAPER ERS1 PTR AGC Quality Assessment, OCEAN (blue) and ICE (red)

  - ERS1 PTR AGC OCEAN, per product:
    • Mean from 0 to 0.45 dB : 99.56%
    • P2P < 0.2 dB: 99.09%
    • Stdev < 0.06 dB: 99.11%

  - ERS1 PTR AGC ICE, per product:
    • Mean from 0 to 0.45 dB : 99.56%
    • P2P < 0.2 dB: 99.27%
    • Stdev < 0.06 dB: 99.32%
• REAPER ERS1 PTR delay Quality Assessment, OCEAN (blue) and ICE (red)
REAPER ERS1 PTR delay Quality Assessment, OCEAN (blue) and ICE (red)

- ERS1 PTR delay OCEAN, per product:
  - Mean from 0 to 30cm: 99.62%
  - P2P < 2 cm: 99.61%
  - Stdev < 1 cm: 99.68%

- ERS1 PTR delay ICE, per product:
  - Mean from 0 to 30cm: 99.19%
  - P2P < 2 cm: 94.14%
  - Stdev < 1 cm: 99.64%
- **REAPER ERS1 PTR delay** Quality Assessment, OCEAN (blue) and ICE (red)

  - **ERS1 PTR delay OCEAN**, per product:
    - Mean from 0 to 30cm: 99.62%
    - P2P < 2 cm: 99.61%
    - Stdev < 1 cm: 99.68%

  - **ERS1 PTR delay ICE**, per product:
    - Mean from 0 to 30cm: 99.19%
    - P2P < 2 cm: 94.14%
    - Stdev < 1 cm: 99.64%
• **REAPER ERS2 PTR Quality Assessment**:
  - Cycles analyzed: Cycle 0 to Cycle 85
  - Total number of products analyzed: 43059
  - Period: 19950514 to 20030702
  - Two parameters monitored: PTR delay and PTR AGC
  - From them, two modes: Tracking OCEAN and Tracking ICE
  - Statistical analysis: mean, max, min, p2p, stdev
• **REAPER ERS2 PTR AGC** Quality Assessment, OCEAN (blue) and ICE (red)
- **REAPER ERS2 PTR AGC** Quality Assessment, OCEAN (blue) and ICE (red)

  - **ERS2 PTR AGC OCEAN**, per product:
    - Mean from 0 to 1.25 dB : 99.98%
    - \(P2P < 0.2\) dB: 99.92%
    - Stdev < 0.06 dB: 99.94%

  - **ERS2 PTR AGC ICE**, per product:
    - Mean from 0 to 1.25 dB : 99.99%
    - \(P2P < 0.2\) dB: 99.93%
    - Stdev < 0.06 dB: 99.93%
• **REAPER ERS2 PTR delay** Quality Assessment, OCEAN (blue) and ICE (red)
- **ERS2 PTR delay** OCEAN, per product:
  - Mean from 0 to 20cm: 99.91 %
  - P2P < 2 cm: 99.81 %
  - Stdev < 1 cm: 99.87 %

- **ERS2 PTR delay** ICE, per product:
  - Mean from 0 to 20cm: 99.67 %
  - P2P < 2 cm: 99.83 %
  - Stdev < 1 cm: 99.90 %