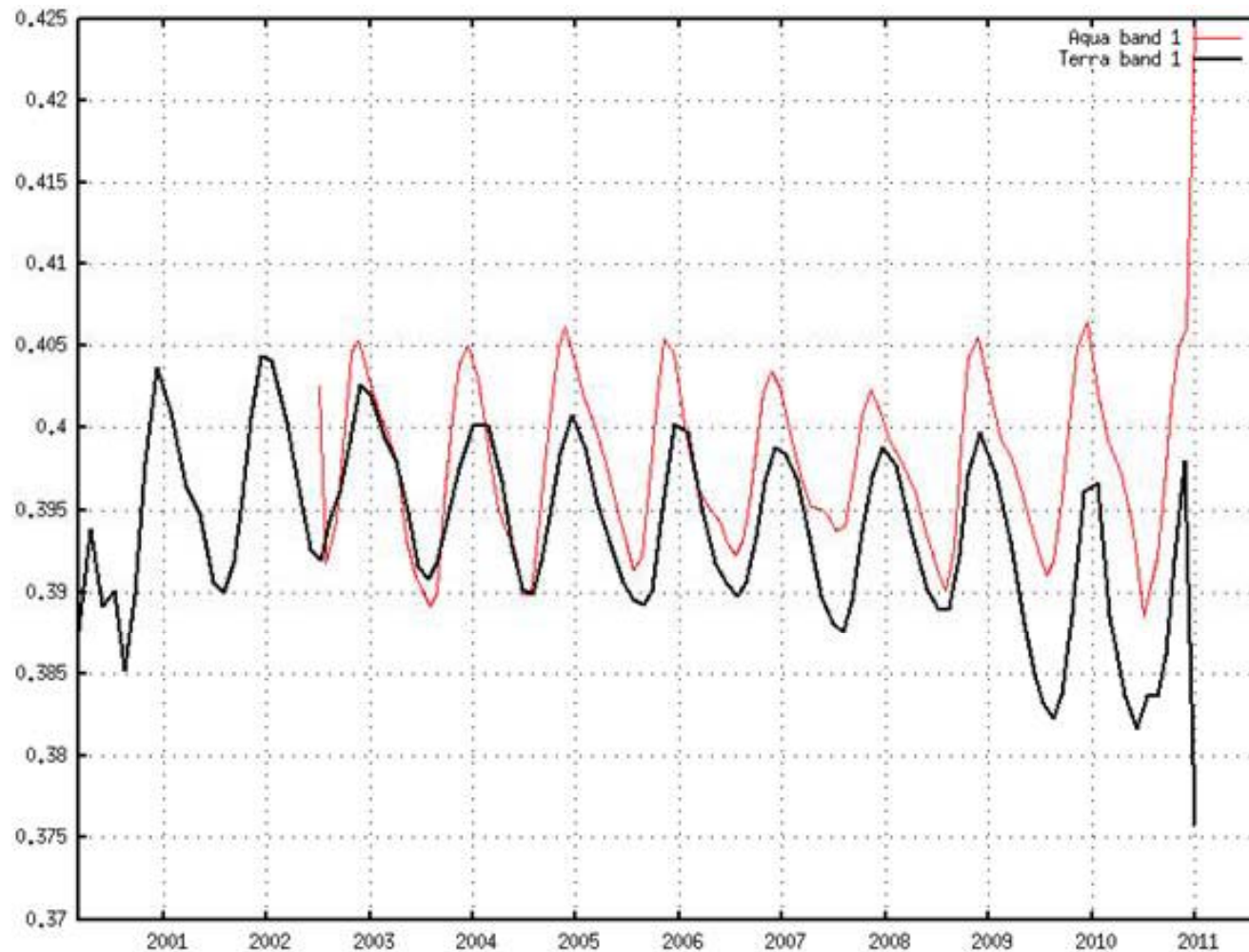


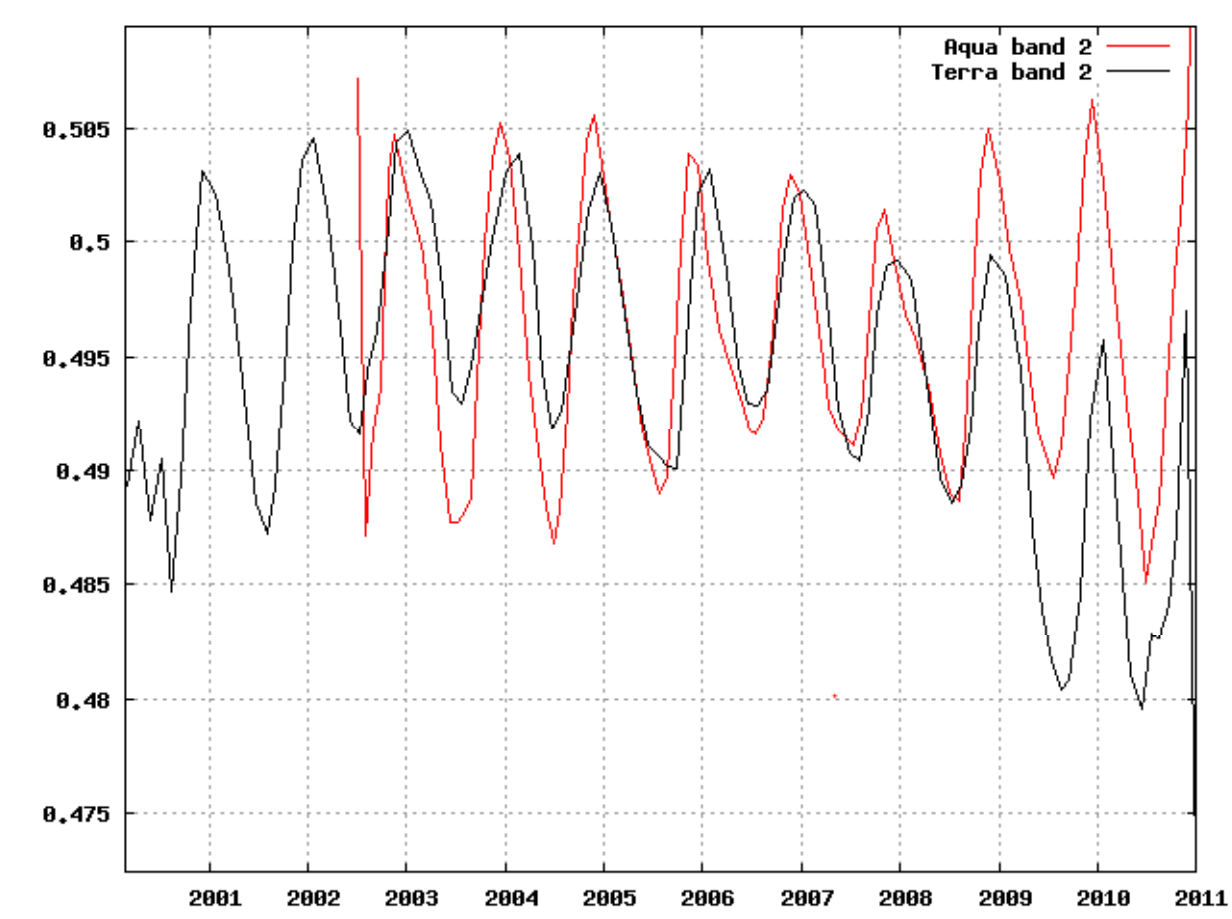
# Calibration assessment over desert site

Eric Vermote

# Surface Reflectance (smoothed) observed over desert site –band 1



# Surface Reflectance (smoothed) observed over desert site –band 2



# Method for monitoring degradation

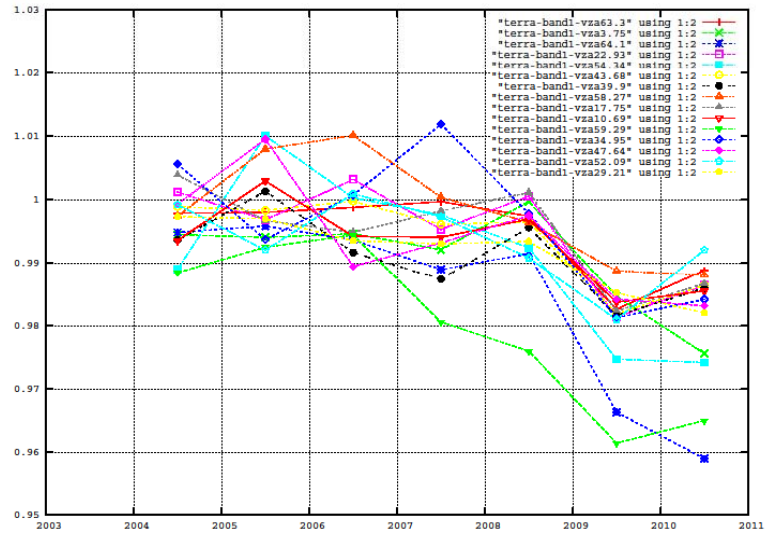
$$\textit{Degradation Ratio}(\textit{day}, \textit{year}) = \frac{\textit{Reflectance}(\textit{day}, \textit{year})}{\textit{Reflectance}(\textit{day} \pm \textit{offset}, 2003)}$$

Where the offset (between -8 and 8) is chosen to match viewing geometry (or AOI)

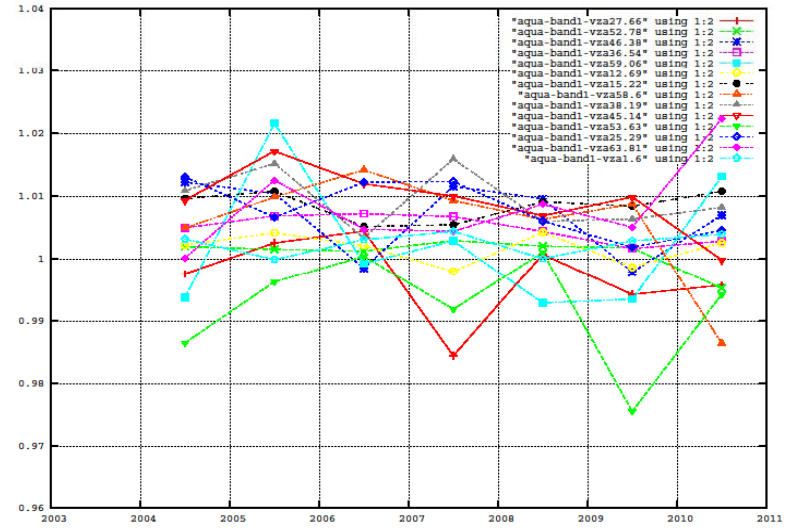
$$\textit{Degradation Ratio}(\textit{year}, \textit{AOI}_i) = \frac{1}{n} \sum_{s=0}^n \textit{Degradation Ratio}(16s + i, \textit{year})$$

Where  $i$  is between 0 and 15

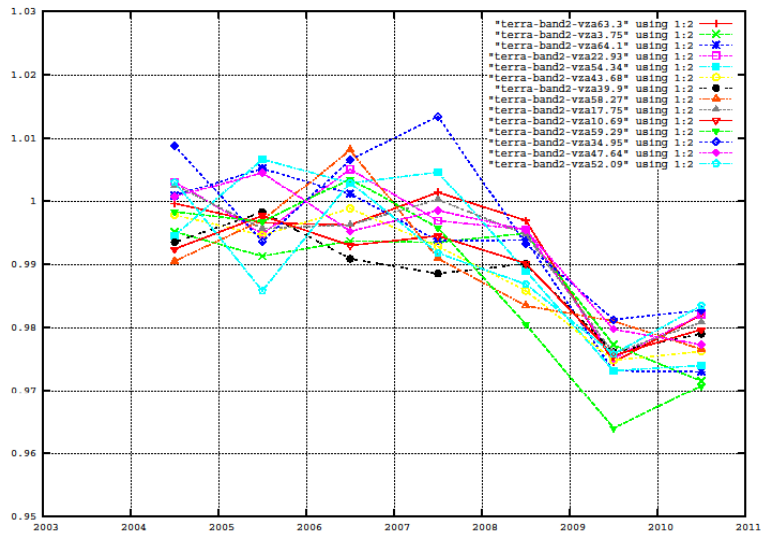
### Terra band 1



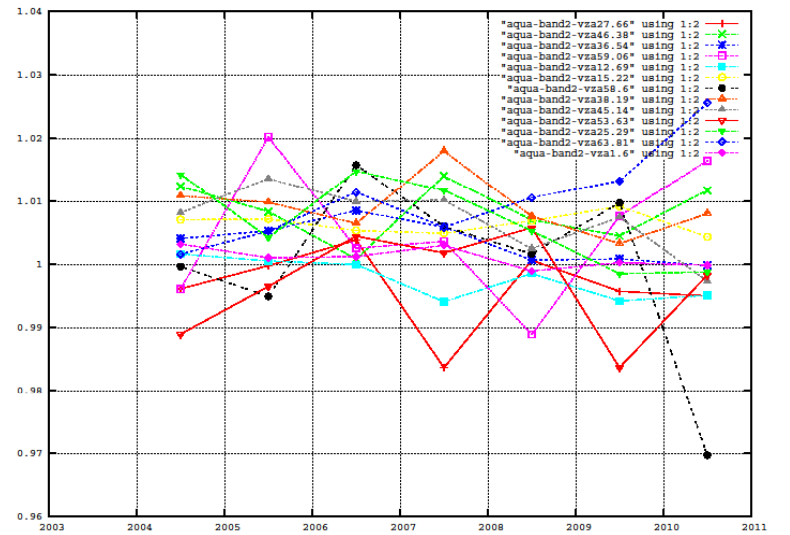
### Aqua band 1



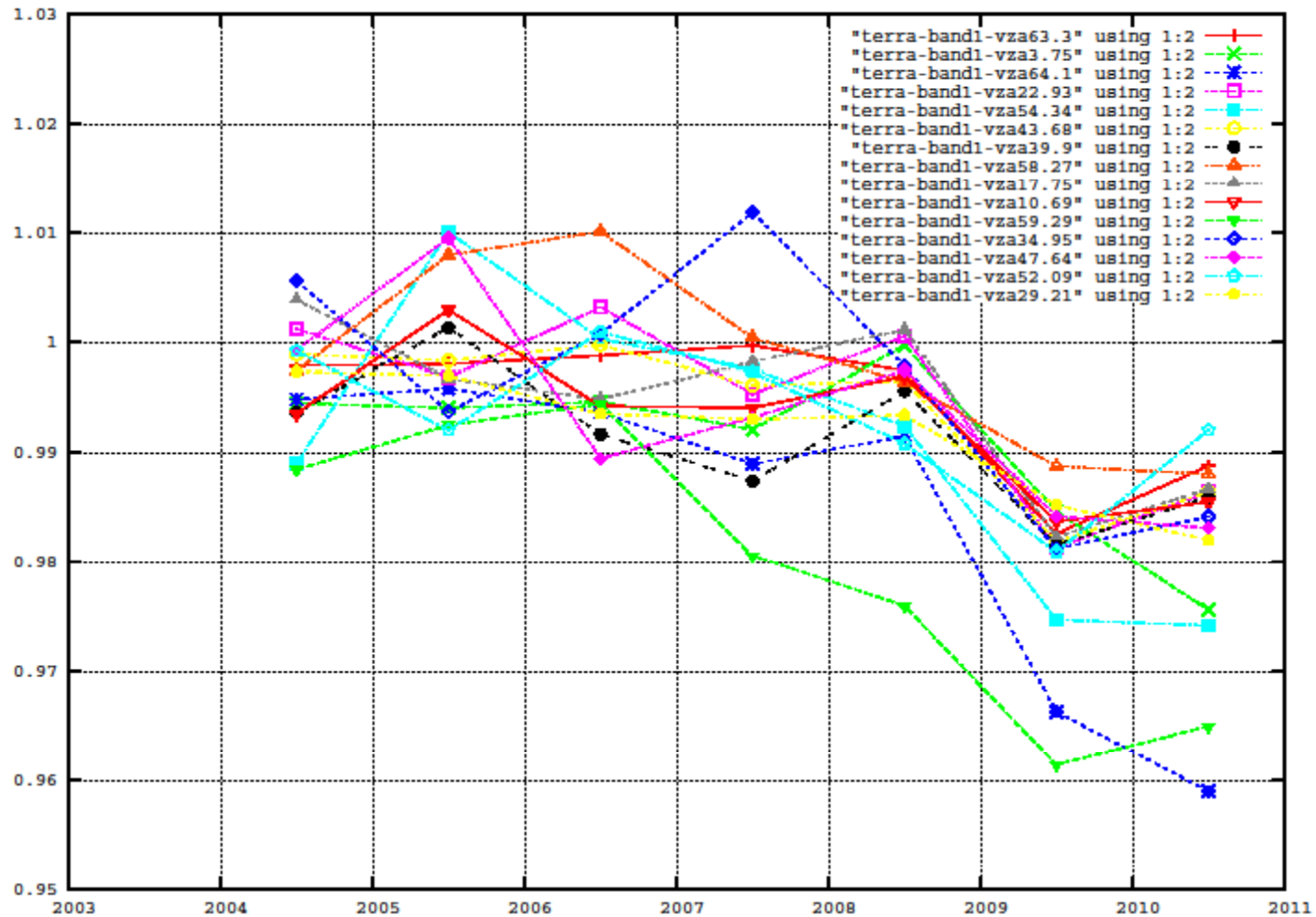
### Terra band 2



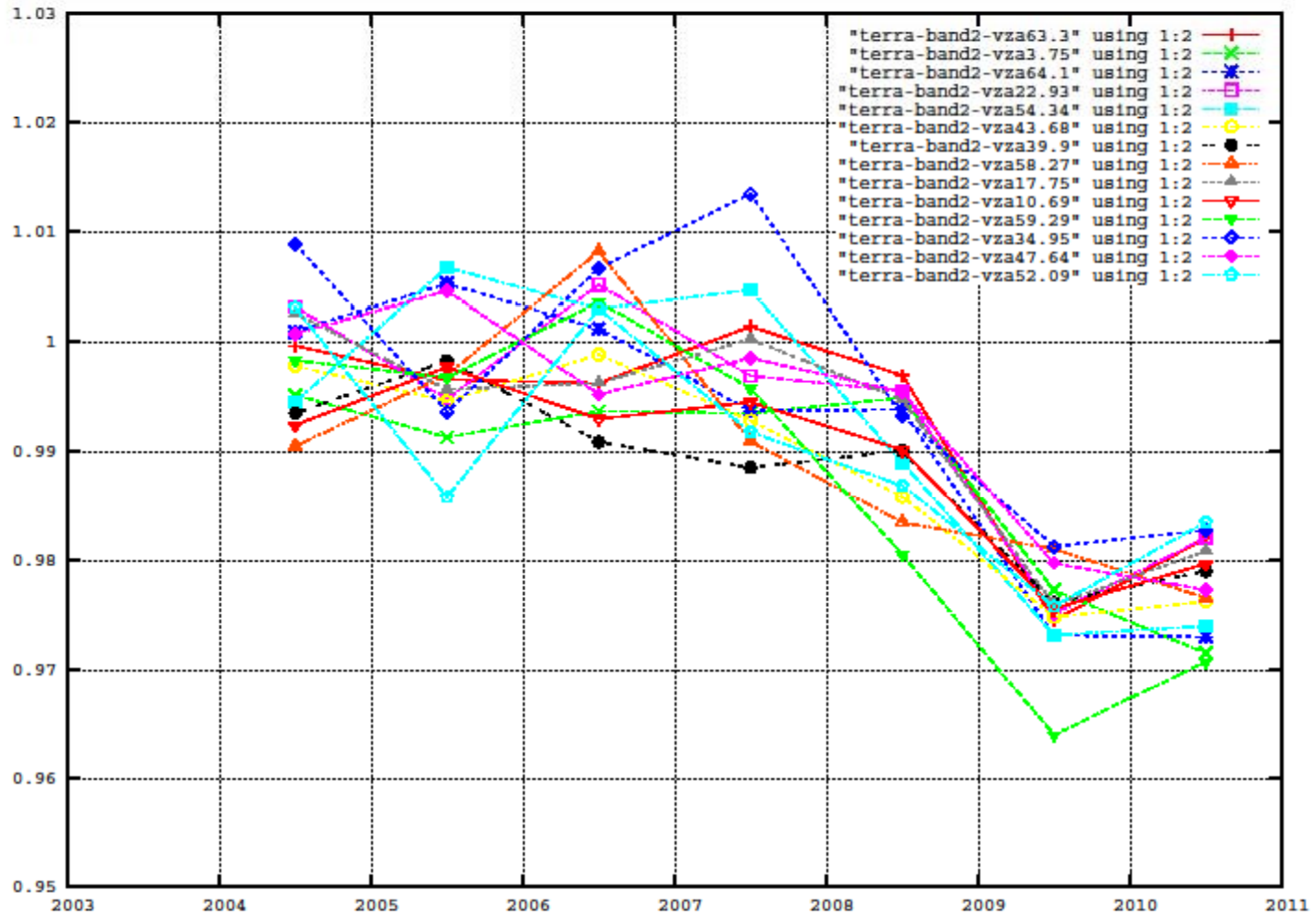
### Aqua band 2



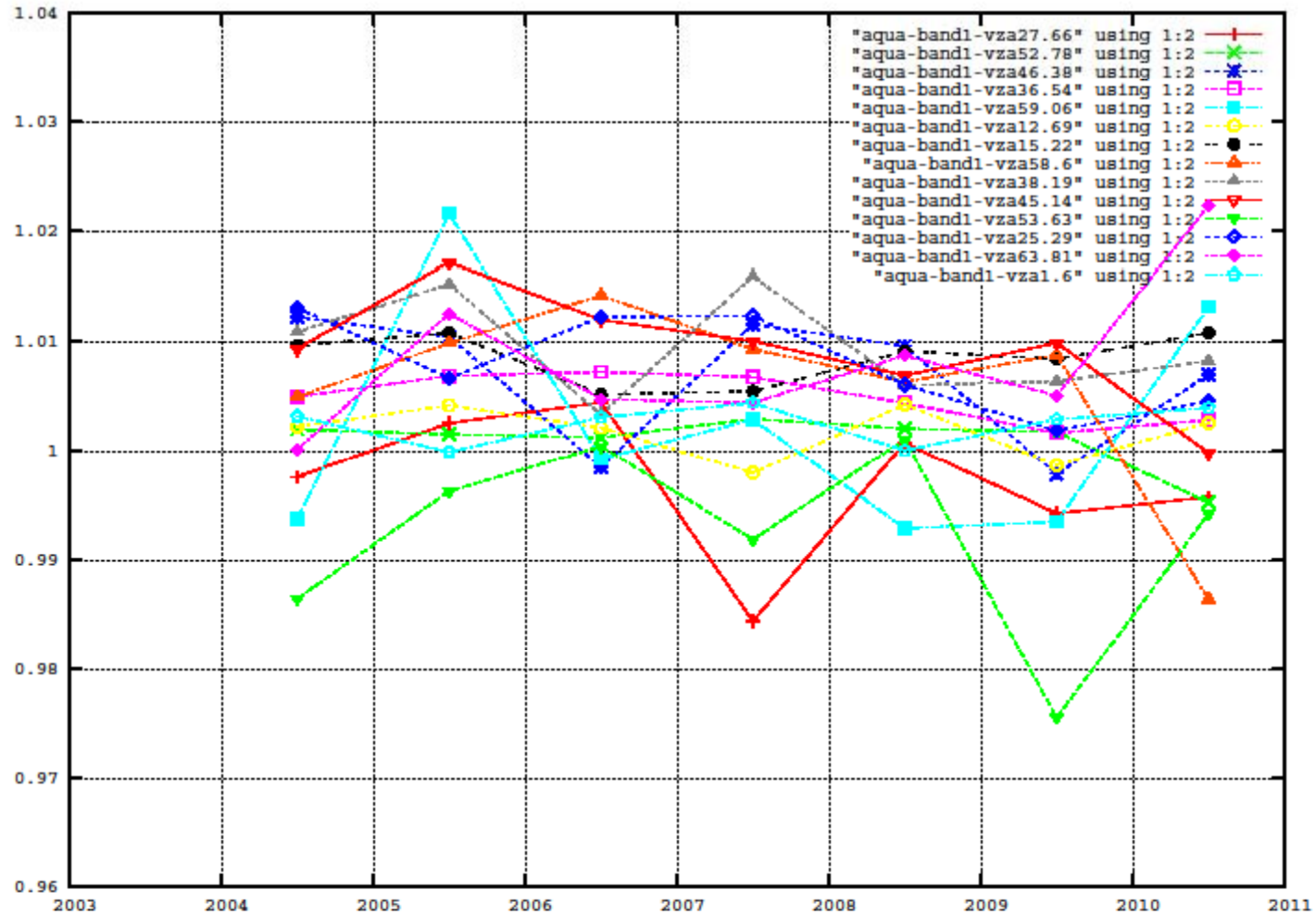
# Terra Band 1



# Terra Band 2

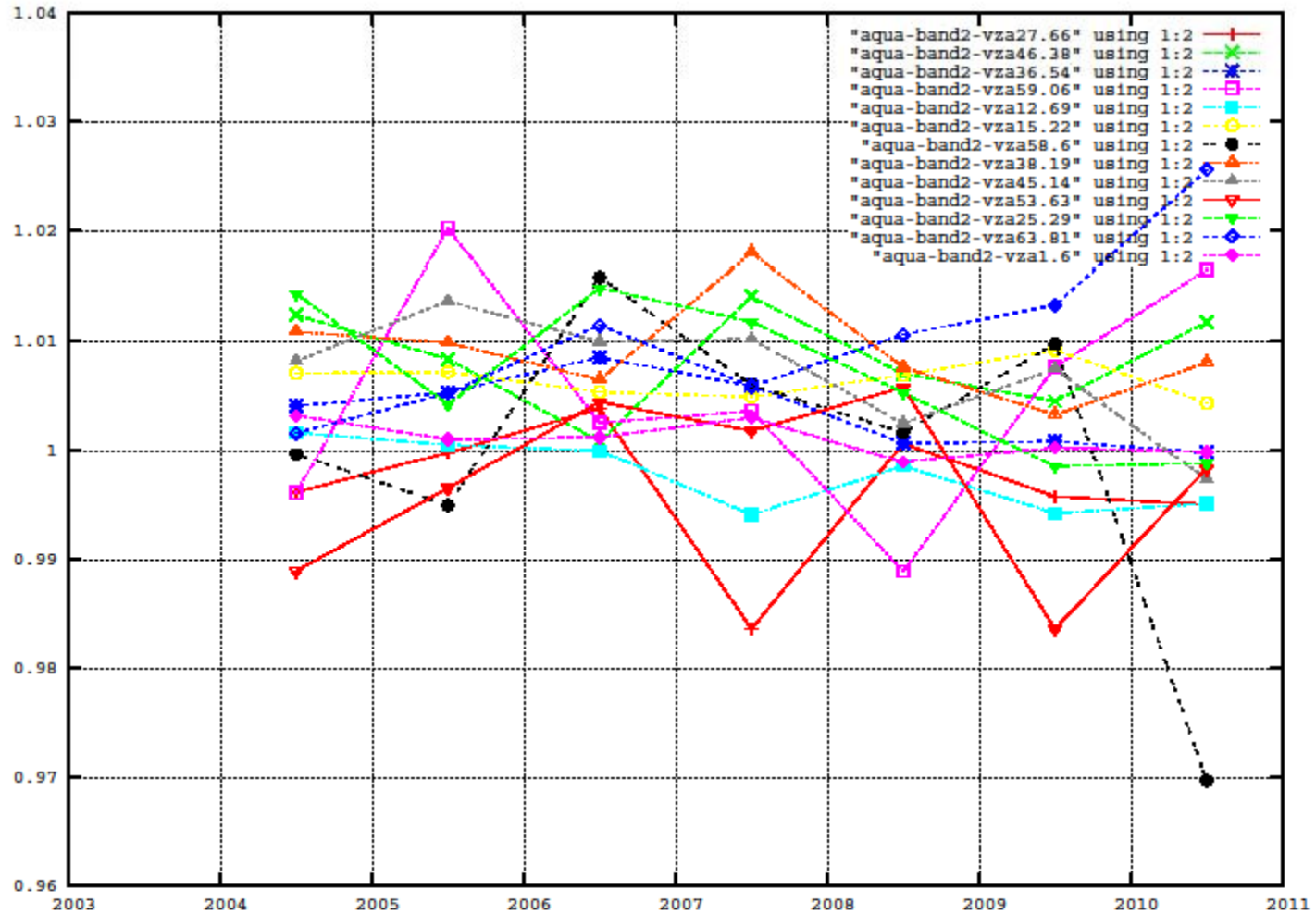


# Aqua Band 1





# Aqua Band 2



# Conclusion

- The jump observed in Terra band 1 and 2 surface reflectance is in part of fully due to degradation not accounted for in collection 5 Level 1B due to introduction of extra solar diffuser degradation in April 2009 for almost all bands (1 to 4 and 8 – 19) 1.3% decrease in m1 -> 1.3% decrease in TOA reflectance