

# Some Thoughts on GRWG-I

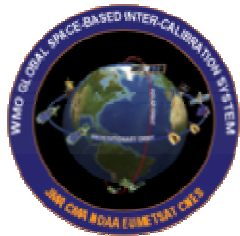
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**NOAA/NESDIS/STAR**



# Remain Focused

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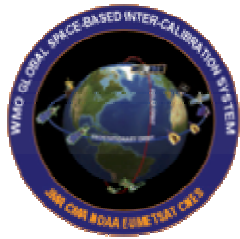
- ❖ A major expected outcome of the GRWG-I is a consensus algorithm for GEO-LEO inter-calibration in the IR spectrum
- ❖ Things to ponder on while presenting, listening, and deliberating about the existing and proposed algorithms



# End-to-End System

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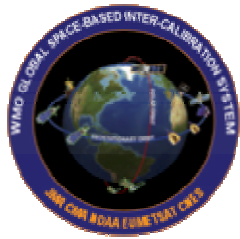
- ❖ Think about the end at the start
- ❖ Say GEO and LEO are different. Then what?
  - Are we sure?
  - Why?
  - What to do?
- ❖ Answers to these questions depend in part on the algorithm adopted
- ❖ Which depends in part on the characteristics of the instruments in consideration



# Goal of GEO-LEO Inter-Calibration

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- ❖ **Correct** measurements – Identify one perfect instrument and use it to calibrate the rest
  - There exists one instrument that, if not perfect, is always the best by any means
  - Is there, or will there ever be?
- ❖ **Consistent** measurements – Identify one reference instrument and use it to calibrate the rest
  - Trend is all that matters
  - Is “relative calibration” all we need?
- ❖ **Improved** measurements – Identify which instrument performs better/worse under what circumstances
  - No instrument is perfect, in fact every instrument may contribute some
  - Measurements are increasingly redundant in some way
  - Is there an end for this?



# Radiance Sources

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- ❖ Temporal
  - Measurement time
  - Diurnal and seasonal sampling
- ❖ Spatial
  - Navigation error
  - MTF/PSF
- ❖ Spectral
  - Reconcile difference among broad bands
  - Convert hyperspectral to broad band
  - Spectral gap
- ❖ Geometric
  - Line-of-sight or area average
  - “Nadir” only off-nadir as well



# Instrument Calibration

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## ❖ Stabilized

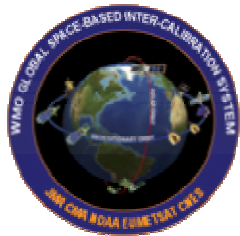
- Scan mirror emissivity
- Temperature variation

## ❖ Spin-scan

- Vicarious calibration

## ❖ LEO

- Imaging instruments (AVHRR, MODIS)
- Sounding instruments (HIRS, AIRS, IASI)



# Operational Issues

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## ❖ Benchmark

- Code (or pseudo-code)
- Test data
- Test results

## ❖ Common Content and Format for Data

- Input
- Result