

# Opportunities & Challenges for Remote Sensing Research

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# Remote Sensing

- Recognition of its value is increasing!!
  - Producers
  - USDA agencies
  - Policy makers
  - Scientists
- Needs and requests for information increasing!!
  - Spatial scales
  - Time scales

# *Information for Decision Support*

- Retrieve information “directly”
- Infer information from data
  - “observable” as a “surrogate indicator”
- Parameterize models
- Data assimilation
- Indices

“Tactical”  
“Strategic”

# Research

- Evolutionary approaches.....
  - Refine existing techniques, forms, error bars
  - Add additional information
- Revolutionary approaches....
  - Explore potential for new information content
  - New sensor systems
  - Algorithms

*“One person’s signal is another person’s noise.....”*

# Community

- Long history of ARS remote sensing research
  - Across National Programs, disciplines, locations
- USDA Remote Sensing
- Continuum of researcher experience in ARS
  - *ASK* for insights, suggestions, directions.....
  - Visit & invite visits
- Trained specialists.....
- Radiative Transfer Models
  - Test hypothesis
  - On-line, easy to use (SAIL)

# NASA

- Expertise
- Technologies
- Collaborations
- Funding
  - ROSES
- History of collaborations
- USDA & satellite systems
- Data sharing
- Calibration
- MOU

# Customers

- Talk, listen, seek to understand.....
  - Problems
  - Decision support requirements
  - Nature of the information
  - Infrastructure/systems of practice/context
  - “phenomenology”
- Solution forms? Data sources?

**Time consuming.....**



**Spatial**

**Spectral**

**Temporal**

**Bidirectional**

**Polarization**

**Phase**