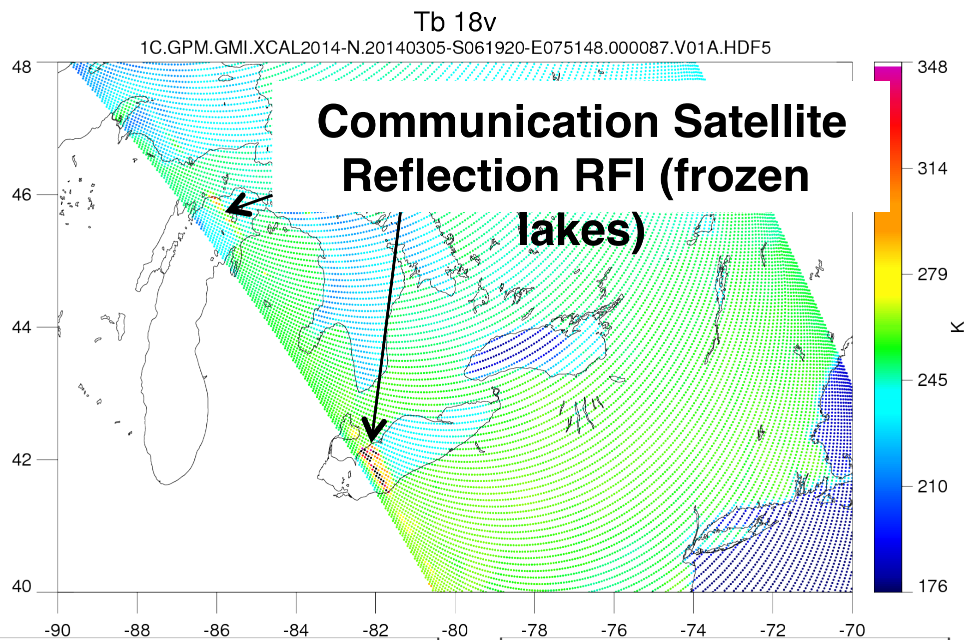
Frequency Allocations in Remote Sensing (FARS) Technical Committee

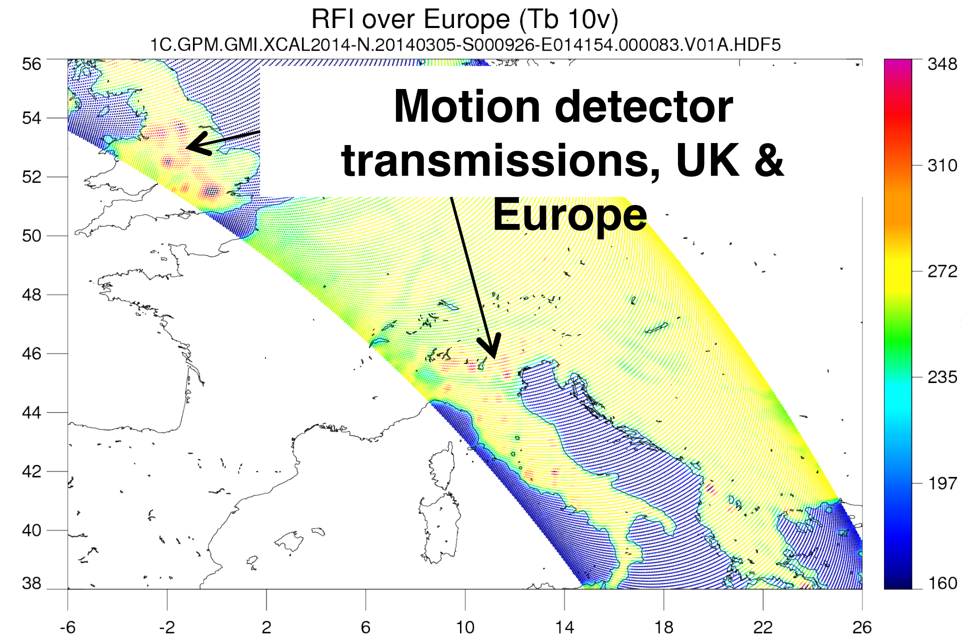
Annual Meeting

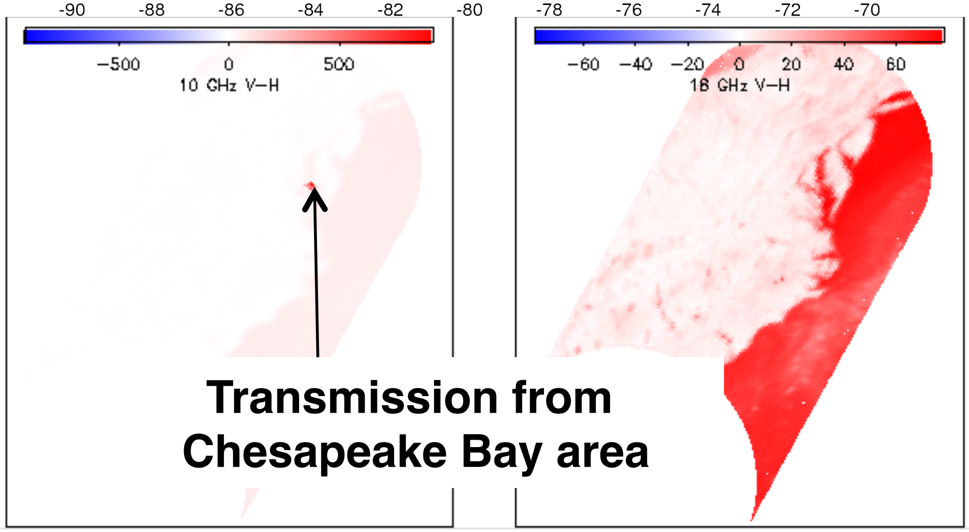
July 14, 2014

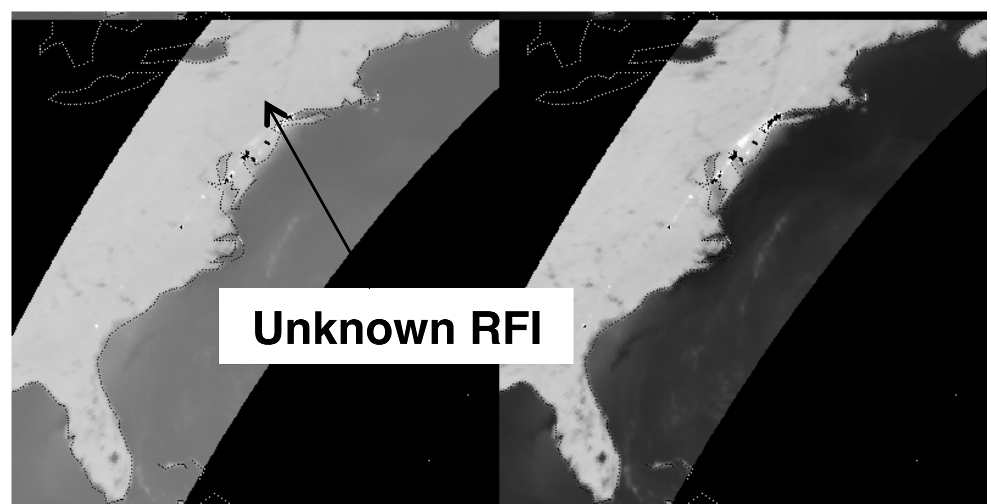
Sidharth Misra (Chair)
Paolo de Matthaeis (Co-chair)

GPM Microwave Imager RFI Examples









RSS and xcal derived algorithms will identify RFI & mitigate if possible

Agenda

- Update on membership
- Recent activities
- Update from CORF
- Update from NAS
  - Study on active scientific use of radio spectrum
- Future initiatives
- FARS input requested

FARS membership

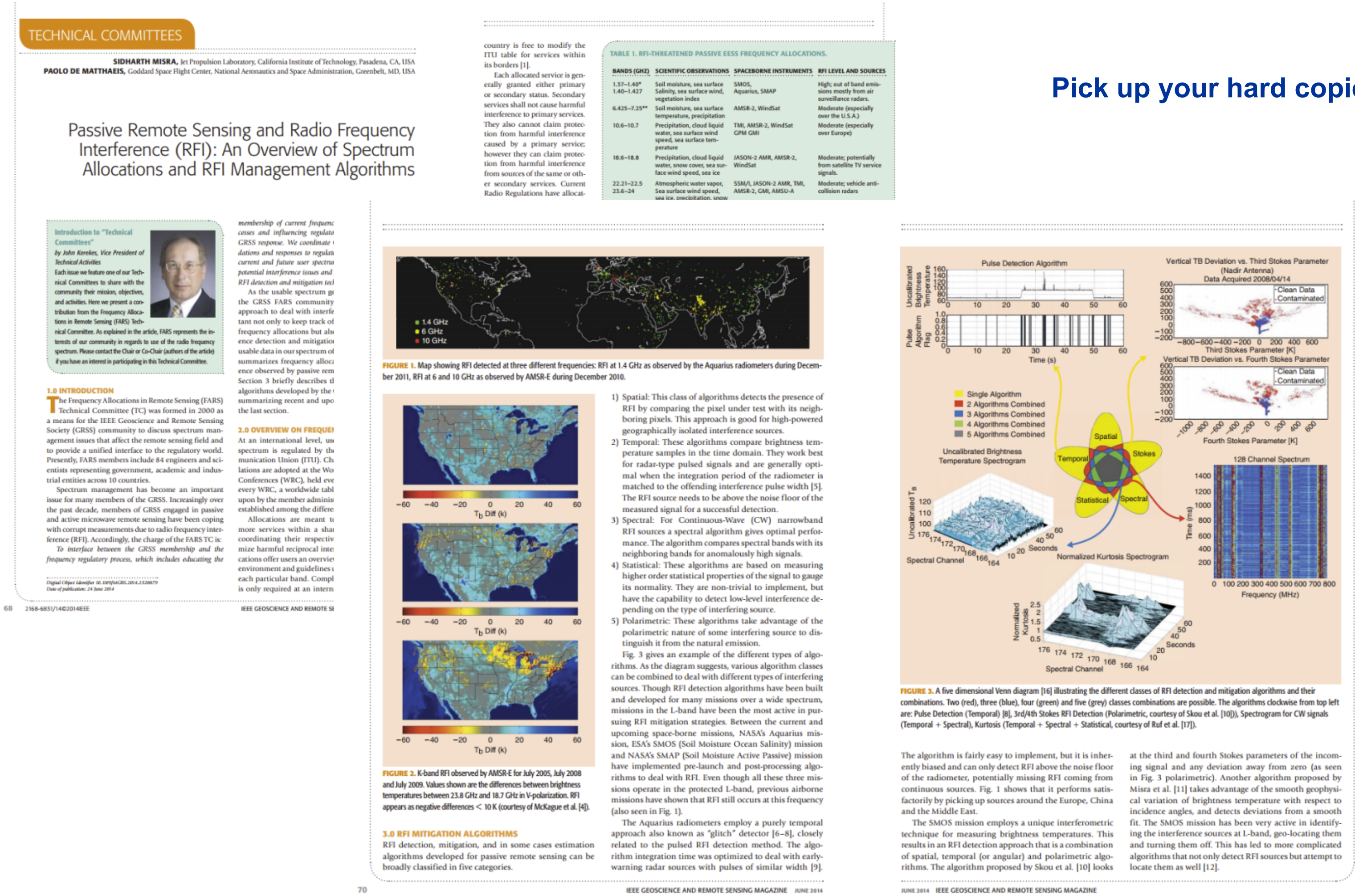
- Current membership
  - 86 members
  - Updated members list
  - By employment
    - Industry: 15
    - Government: 40
    - Academia: 31
  - By region
    - North America: 62
    - Europe: 17
    - Asia: 5
    - Other: 2

- Need to work towards increasing FARS membership from other regions, particularly:
  - India
  - China
  - Australia
  - Latin America
- Membership slightly "decreasing":
  - By-product of updating membership information

Recent Activities

- National Academy of Sciences (NAS) meeting:
  - At the suggestion of the AdCom, Paolo represented FARS at the NAS meeting on the Active Scientific Use of Radio Spectrum
  - Prof. Al Gasiewski from the study will be presenting at the FARS TC annual meeting
- IUCAF 4th School on Spectrum Management (Chile)
  - FARS TC member present
- Committee on Radio Frequencies (CORF) meeting:
  - Both Paolo and I were invited by the CORF to join in their spectrum management related discussions in D.C.
  - Prof. Jasmeet Judge from CORF will be presenting at the FARS TC annual meeting
- Space Frequency Coordination Group (SFCG) meeting:
  - SFCG is an advisory organization with members from Space Agencies and related national and international organizations
  - SFCG is concerned with the effective use and management of radio frequency bands allocated to Space Research, Space Operations, Earth Exploration Satellite, and Meteorological Satellite services
  - FARS might have a greater involvement in the coming years as the role of observers is being expanded
  - FARS member input was requested on a few issues
- Website updated
- FARS article in the June 2014 issue of GRSM

FARS Article in the June 2014 Issue of the Geoscience and Remote Sensing Magazine



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Update from the Committee on Radio Frequencies (CORF) of the National Academy of Science (NAS)

presented by Albin J. Gasiewski

Upcoming Meetings

- World Radiocommunication Conference (WRC-15), November 2015
  - A month-long meeting where international spectrum allocations are decided
  - Most responses are already compiled but there is still room to provide input
- Space Frequency Coordination Group (SFCG-35), July 2015
  - Expanded FARS role expected over the next few years
- Committee on Radio Frequencies (CORF), Fall 2014
  - Concentrates mostly on radio science with overlapping interests

Future Strategic Initiatives

- 3% of GRSS reserves and 50% of past years surplus available to the society for strategic initiatives
  - Approximately 300K USD
  - Ideas are welcome!!
- Examples:
  - Sub-committees (depends on volunteers) to prepare comments to ITU Radio Regulations
  - Enable RFI source identification
    - Reporting tool on FARS website for observed RFI
    - FARS forwards findings to appropriate agencies
  - Potential partnership with Signal Processing Society
    - Engage TC in their societies
    - Invited talks in FARS session

Requested FARS Input

- Proposed sharing of 5350-5470 MHz band between telecommunication services RLAN (Radio Local Area Networks including Wi-Fi) and active Earth Exploration Satellite Service (EESS) systems
- SAR systems such as ESA's Sentinel-1 and Canada's RadarSat operate at this frequency and would be negatively affected
- An SFCG study shows that a single outdoor RLAN operated within the whole 5350-5470 MHz band is sufficient to exceed the EESS (active) protection criteria and that a RLAN deployment consistent with RLAN industry expectations would create harmful interference exceeding protection criteria
- RLAN supporters contend that mitigation techniques would eliminate the problem (article will be on website)
- FARS TC input is requested

Definition of Acceptable Interference Level

- Input requested by Thomas VanDeak for changes to Recommendation ITU-R RS.1166-4 "Performance and interference criteria for active spaceborne sensors"
  - document establishes the interference and data availability criteria be applied for instruments used for active sensing of the Earth's land, oceans and atmosphere
  - studies defining protection levels should
    - reflect state of the art in active sensing
    - align protection criteria with analysis methods
    - expand material to include sensor mechanics
  - we will provide material via email

SFCG Outcomes Relevant to GRSS

Some Reports, Resolutions and Recommendations Relevant to IEEE GRSS

- NASA interest in EESS (active) allocations in frequency bands lower than the 432-438 MHz band (particularly 40-50 MHz)
- preliminary analysis of potential L-band RFI from Aeronautical Radio Navigation Service (ARNS) and Radiolocation Service (RLS) systems in the 1215-1300 MHz band
- Out-of-Band (OoB) Emission Limits for proposed 7235 to 7250 MHz allocation to EESS
- analysis of worst case interference from mainlobe-to-mainlobe antenna coupling oF EESS active sensor receivers in the 35.5-36.0 GHz band