

January 14, 2015

Flagstaff Remote Sensing Science Consortium (FRSSC) - Charter

FRSSC Vision and Relevance

The **Flagstaff Remote Sensing Science Consortium** (FRSSC, pronounced “Frisk”) includes scientists and other professionals at the USGS Flagstaff Science Campus (FSC) who develop and apply remote sensing techniques and methods in support of USGS science priorities and societal needs. The vision of the FRSSC is to 1) provide leadership in FSC remote sensing research including application and method development, and 2) encourage FSC interdisciplinary collaboration in addressing societal issues using remote sensing technology. A FSC-based committee leads the vision of FRSSC and includes USGS representatives from the Astrogeology Science Center, Western Geographic Science Center, the Arizona Water Science Center, the Southwest Biological Science Center, and Geology, Minerals, Energy, and Geophysics Science Center along with the National Park Service, Inventory and Monitoring Network who are also located at the FSC. FRSSC” aims to be the principal hub of USGS remote sensing expertise in the western US, and to support the USGS science mission in a role that is complementary and synergistic with the Earth Resources Observation and Science (EROS) Center in Sioux Falls, South Dakota, several NASA Research and Space Flight Centers, and other USGS Science Centers.

Objective of FRSSC

The primary objective of FRSSC is to: *Promote the unique concentration of remote sensing expertise and research excellence that is located at the USGS-FSC, and to facilitate interdisciplinary collaboration that builds upon the major contributions by USGS-FSC scientists to planetary (including earth) science with regional, national and international significance.*

FRSSC efficiently meets a goal of the USGS Science Center’s operational efficiencies described in the USGS ACES Report, Achieving Cost Efficiencies for Science Report for Improving Science Center Operational Efficiencies,

http://internal.usgs.gov/homepage_files/blogs/docs/aces_sci_ctr_efficiencies.pdf

(see: *Findings and Recommendations, Section III, p.15, Integration of Interdisciplinary Science*).

Organization

The USGS FSC Science Centers are organizationally aligned to USGS mission areas that have USGS program-specific funding (table 1). The mission areas are focused on scientific topics that are pertinent to societal needs and address environmental issues on our planet earth but also in other planetary research and exploration that is often used to better understand planet earth.

Table 1. Regional Offices, Science Centers, and USGS Mission Areas located at the FSC

USGS Region	FSC Science Center	Mission Area
Southwest	Arizona Water Science Center (AZWSC)	Water
Southwest	Astrogeology Science Center (ASC)	Natural Hazards
Pacific	Geology, Minerals, Energy and Geophysics Science Center (GMEGSC)	Core Science
Southwest	Southwest Biological Science Center (SBSC)	Ecosystems
Pacific	Western Geographic Science Center (WGSC)	Climate and Land-Use Change

FRSSC Leadership and Coordination Committee

The Scientist-in-Charge (SIC) for the FSC serves as the coordinating director for FRSSC and is the primary contact for general information and will directly work with the FRSSC Coordinating Committee. Maryilyn Flynn is the FSC Webmaster and is the primary point of contact for web development and management. FRSSC committee members serve as the primary point of contact for project specific information. The current Coordinating Committee members include:

- Bob Hart, SIC
- Dennis Dye, WGSC
- Ed Pfeiffer, WGSC
- Tim Titus, ASC
- Greg Vaughan, ASC
- Tracey Felger, GMEGSC
- Jamie Macy, AZWSC
- Joel Sankey, SBSC
- Jodi Norris, NPS

FRSSC Committee is charged with:

1. Identifying and planning activities that will promote the vision of FRSSC.
2. Identifying interdisciplinary opportunities where remote-sensing methods and tools can be applied to funding opportunities that address societal needs.
3. Leading proposal writing teams when opportunities are presented.

FRSSC committee members may elect to step down from serving on the committee but are responsible for finding a new committee member from their Science Center. Monthly committee meetings are planned for the 1st Monday at 1:30P.

Collaborating Organizations and Partnerships

FRSSC members are actively engaged in research collaborations and partnerships with numerous research organizations, including:

- 1) Northern Arizona University
- 2) Arizona State University
- 3) University of Arizona
- 4) USGS EROS Data Center
- 5) DOI Southwest Climate Science Center
- 6) NASA Ames Research Center
- 7) NASA Jet Propulsion Laboratory
- 8) Lowell Observatory
- 9) Other USGS Science Centers and National Programs

Expertise of the FRSSC in Remote Sensing Methods and Tools

FRSSC brings together FSC researchers with expertise in an array of state-of-the-art remote sensing methods and tools that are critical for advancing USGS science and applications, including:

- 1) Small, Unmanned Aircraft Vehicles (sUAV)
- 2) Laser scanning (LiDAR; airborne, terrestrial)
- 3) Hyperspectral imaging (spaceborne, airborne)
- 4) Swath sonar and acoustic imaging
- 5) Autonomous, remotely operating imaging systems
- 6) High dynamic range (HDR) imaging
- 7) Field spectroscopy
- 8) Radiative transfer modeling
- 9) Radiometric sensor calibration
- 10) Computer simulation of sensor systems and images
- 11) Thermal Infrared Spectroscopy and Remote Sensing
- 12) Infrared Thermography
- 13) Remote Sensing of Thermal Emission

Application Expertise with the FRSSC with Remote Sensing Methods and Tools

The FRSSC research activities address USGS science priorities through remote sensing applications related to:

- 1) Mapping and Change Detection
 - a. Vegetation
 - b. Agricultural croplands
 - c. Terrestrial biomass
 - d. Forest fire severity
 - e. Hydrographic mapping
 - f. Groundwater and surface-water
 - g. Bio-geomorphic disturbance and hazards (fires, floods, wind)
 - h. Lunar and planetary environments

- i. Spectro-lithologic mapping (or lithologic/mineral mapping)
 - j. Geothermal area exploration, assessment, and monitoring (or geothermal heat flux monitoring)
- 2) Process Modeling
- a. Agricultural water use and water productivity
 - b. Terrestrial primary production
 - c. Geomorphological processes (aolian, fluvial, hillslope)
- 3) Natural Hazards
- a. Landslides
 - b. Forest fires
 - c. Floods
 - d. Earthquakes
 - e. Volcanism
 - f. Meteor Impacts