

# SBG TIR Community Update: Applications

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# Science and Applications Integration

## NASA Earth Science to Action

Driving impact from \$1.5 B in NASA observations and research Delivering impact (including meeting the needs of Federal agencies, state, local, and tribal governments)



SBG has demonstrated capability to support all proposed Earth Science to Action Themes and Needs

- Greenhouse gas monitoring
- Wildland fire risk & recovery
- Health & air quality
- Sea level & coastal risk
- Energy & sustainable infrastructure
- Agriculture
- Disasters & Extreme Events
- Water Resources
- Biodiversity & Ecosystem Change

# Applications Objectives and Priorities



## AGRICULTURE, FOOD SECURITY AND SURFACE WATER MANAGEMENT

Improve "crop per drop" by assessing vegetation water stress over irrigated agriculture

Improve water supply management through better characterization of snow properties and estimated reservoir inflows

Reduce the impacts of drought, such as crop loss and famine, on global scales



## WATER QUALITY AND COASTAL ZONES

Support early detection of and response to harmful algal bloom formation

Protect sensitive aquatic habitats by monitoring/reducing water pollutant loading, particular in coral reefs and other sensitive ecosystems

Water surface temperature and impacts on marine biodiversity



## CONSERVATION

Support biodiversity understanding and protections by mapping invasive species composition, structure, distribution; support removal and restoration efforts

Monitoring of endangered species habitat; provide alerts of disease mortality of impacted vegetation, including insect infestation

Biodiversity hotspots and priority conservation areas, 30 x 30 plans



## WILDFIRE RISK AND RECOVERY

Fuel mapping (cover type, extent, status) for wildfire danger management

Post fire severity assessment and recovery, including prediction of areas with higher likelihood of debris flows



## DISASTERS AND NATURAL HAZARDS

Detect and track oil spill events and

Support active fire mapping and response

Improve mitigation of heat wave events for vulnerable populations



## GEOLOGY APPLICATIONS












Mineral mapping for exploration efforts and reduction of environmental hazards

Forecast aviation hazards and support emergency response for volcanic eruptions

Landslide risk assessment with improved substrate map land cover maps

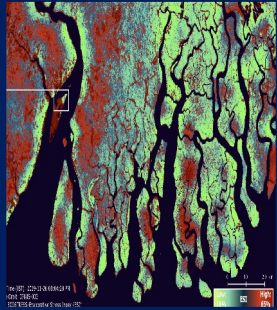


# SBG applications community assessment (RTI)

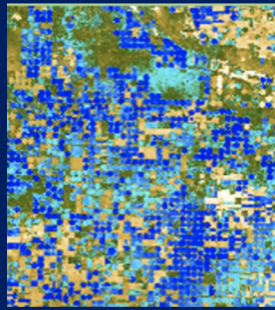
Primary Application and Other Communities Studied	
September 2020	December 2021
 Fire Ecology and Risk	 Urban Heat and Health
 Agriculture and Water Resources	 Forest Management
 Algal Bloom and Water Quality Mapping	 Coral Reef Ecosystems
 Mineral Resource Mapping	 Global Food Security
 VASPs	 Conservation and Biodiversity
	 VASPs

- 560+ individuals surveyed regarding SBG capability needs
- 94 interviews in total across all 11 thematic areas
- SBG will be able to provide benefit to most application areas studied when considering spatial and temporal decision scales
- ~65% interviews from sectors that are not commonly engaged

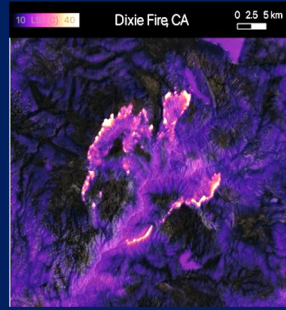
SBG community will build on precursors, including ECOSTRESS and EMIT applications activities, comprised of a community of practice with 500+ members



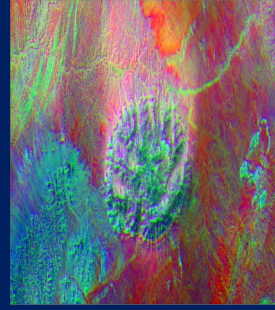
Natural Ecosystems



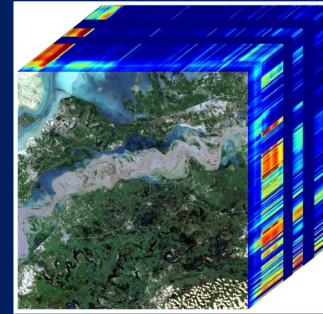
Agriculture



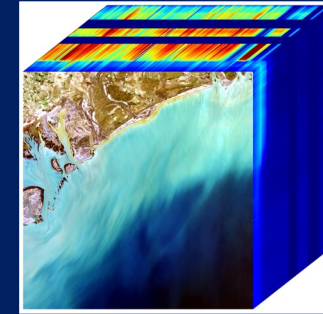
Wildfires



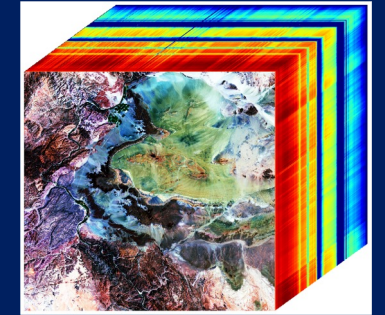
Mineralogy



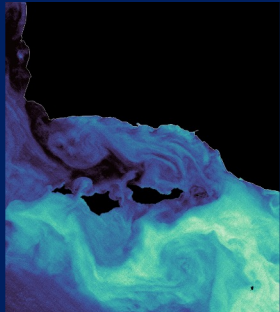
Natural Hazards



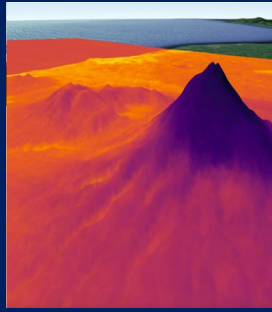
Aquatic Ecosystems



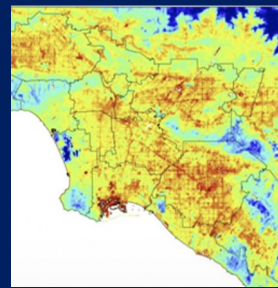
Mineral mapping



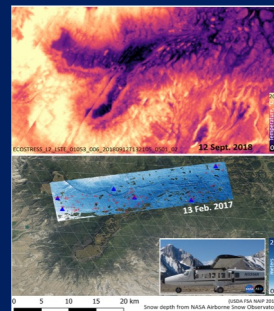
Coastal Ecosystems



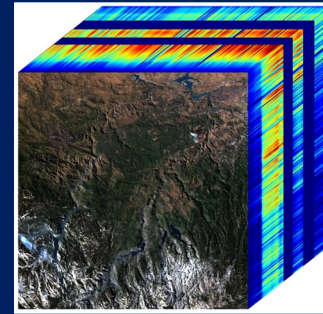
Volcanoes



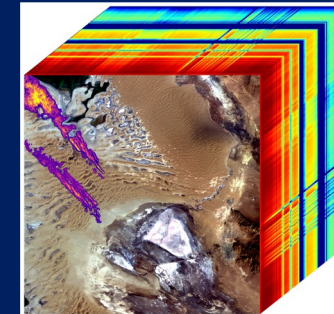
Urban Heat and Public Health



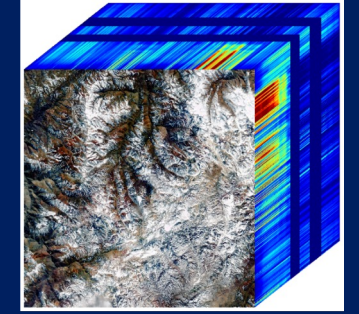
Cryosphere and Water Resources



Forest Management and Wildfires



Greenhouse Gas Emissions



Cryosphere and Water Resources

ECOSTRESS

EMIT