HyspIRI Application TM

Application Question	Application Concept	Application Measurement Goals	Applied Sciences Category	Potential Host Agency	Mission Data Product	Projected Mission Performance	ARL	Ancillary Measurements
How do we schedule water releases & determine availability for irrigation use?	The major pathway of water transport in the hydrologic cycle is evapotranspiration(ET). ET is difficult to measure directly for large areas and determination of ET relies on a combination of models and surface parameterizations. Accurate determination of surface temperatures is critical in model parameterizations.	Spatial variability of landscape elements necessaite fine spacial resolution measurements ~ 60m. Repeat measurements of approximately 5 days are required to constrain ET models.	Water Management Agriculture	Western Governors Association 1600 Broadway Suite 1700 Denver, CO 80202 303 623-9378 Sebal North America 1772 Picasso Avenue Suite E Davis, California Phone: (530) 757 9200	Surface temperature	Measure surface temperature within 0.5 K , 60 m resolution and 5 day repeat cycle.	9	SEBAL, other ET models, agricultural crop indentification/management info, stream flow, ppt, soils
What is the species diversity and habitat of key water resources. Focused studies at specific locations e.g. Comprehensive Everglades Restoration Plan (CERP)	Characterize ET patterns and functional classification of ecosytems (carbon binding& storage, species diversity), and land-use/type	30-60m spatial resolution, 3-5 day thermal measurements (0.5K)	Water Management Ecological Forecasting	Barry Rosen (Vice Chair) Biologist U.S. Geological Survey Office of the Regional Executive – SE Area 12703 Research Parkway Orlando, Florida 32826	Surface temperature Hyperspectral radiance measurements	Measure surface temperature within 0.5 K , 60 m resolution and 5 day repeat cycle. Provide hyperspectral radiance measurements at 60 m resolution on a 19 day repeat cycle.	6	ppt, stream flow, weather stations, ecosystem structural studies, physiological measurments
What is the extent and the condition of coral reefs ecosystems ?	Characterize the physical, chemical, and biological status of coastal and estuarine environments and ecosystems worldwide.	Hyperspectral measurements of coastal areas to provide spacial & spectral information for models & management.	Ecological Forcasting Oceans	NOAA's Center for Coastal Monitoring and Assessment	Hyperspectral radiance measurements	Provide hyperspectral radiance measurements at 60 m resolution on a 19 day repeat cycle.	6	Historical & current habitat mapping data from NOAA's Center for Coastal Monitoring and Assessment
What are the abiotic environmental factors are important in determining the distribution of disease-causing vectors and their life-cycles? Monitoring targeted tropical diseases for elimination-rpogress & indicators. Generate disease risk maps reliable to the date when the epidemiological survey occurs and to only the areas covered with the survey	HyspIRI observations can be merged through a Land Data Assimilation System (LDAS) be used to drive spatially-explicit ecological models of NTD vectors distribution & life cycles. Assimilations will be driven by observational data LDAS and satellite-derived meteorological forcing data, parameter datasets, and assimilation observations.	Spatial variability of landscape elements necessaite fine spacial resolution measurements ~ 60m. Repeat measurements of approximately 5 days are required for enviromental measurements. 19 days for hyperspectral vegetation mapping/physological status	Public Health-vector born diseases	PanAmerican Health Organization (PAHO),Steven Ault,(202 974 3896, autlstev@paho.org) Swiss Tropical Institute (Penelope Vountasu,penelope.vounatsou@unibas.ch) Interamerican Development Bank	Hyperspectral radiance measurements & surface temperatures	Measure surface temperature within 0.5 K , 60 m resolution and 5 day repeat cycle. Provide hyperspectral radiance measurements at 60 m resolution on a 19 day repeat cycle.	6	Assimilations will be driven by observational data LDAS and satellite-derived meteorological forcing data, parameter datasets, and assimilation observations, including:Precipitation from TRMM, and GPM Land Cover Type from HyspIRI Soil Moisture from AMSR-E (where applicable), SMAP and HyspIRI. Terrestrial Water Storage from GRACE and GRACE II Surface temperature, Vegetation Fraction/ Leaf Area Index, and canopy physiology from HyspIRI. Topography from SRTM.
What is the composition of dust sources globaly and what role does surface mineralogy and biotic crusts play in accessing the impact of dust in human health.	Global transport of dust is well documented. The health impacts from microrganisms and minerallogy are just now beginning to be understood. The source of the dust is significant in determining its possible health affects. HyspIRI hyperspectral measurements would provide global measurements of surface mineralogy and biotic crusts. HyspIRI surface thermal measurements would also help identify the variability of dust sources due to surface moisture conditions and map mineralogy.	Spatial variability of landscape elements necessaite fine spacial resolution measurements ~ 60m. Repeat measurements of approximately 5 days are required for enviromental measurements (soil moisture). 19 days for hyperspectral mineral mapping.	Public Health-Air Quality	US Department of Defense, Corps of Engineers, Public health agencies, World metorological Organizaton (WMO) Sand and Dust Storm Warning Advisory and Assessment System (Bill Sprigg (714) 289-204,sprigg@chapman.edu)	Hyperspectral radiance measurements & surface temperatures	Provide hyperspectral radiance measurements at 60 m resolution on a 19 day repeat cycle.	6	Detailed chemical & biological analysis of source samples. Particlle size distributions, ground based samplers.
What is the land-use and productivity of the intercoastal waters & barrier islands, e.g. Monitoring Gulf Mexico - spawning cycles, migration, land-use, productivity.	Characterize the physical, chemical, and biological status of coastal and estuarine environments and ecosystems.	Spatial variability of landscape elements necessaite fine spacial resolution measurements ~ 60m. Repeat measurements of approximately 5 days are required for enviromental measurements. 19 days for hyperspectral vegetation mapping/physological status.	Ecological Forcasting	National Park Service, Gulf Islands national Seashore Maththew Johnson, matthew_w_johnson@nps.gov (228) 230 4139.	Hyperspectral radiance measurements & surface temperatures	Measure surface temperature within 0.5 K , 60 m resolution and 5 day repeat cycle. Provide hyperspectral radiance measurements at 60 m resolution on a 19 day repeat cycle.	6	Ecosystem structural & functional measurments, hydrolab water chemistry measurements,
How does surface water temperature affect manatee migration	Characterize patterns and trends in fine spacial scale river, estuarine, and near coastal water temperatures.	30-60m spatial resolution, 3-5 day thermal measurements (0.5K). At least 1 nightime measurement within the 3-5 dya window.	Ecological Forcasting	Dauphin Island Sea Lab Ruth Carmichael rcarmichael@disl.org. (251) 861 7555	Surface temperature	Measure surface temperature within 0.5 K , 60 m resolution and 5 day repeat cycle	6	Bouy temperatures
What are the abiotic environmental factors are important in determining the distribution of disease-causing vectors and their life-cycles?	Research!America's global health program advocates for funding and policies that spur research to develop vitally important global health technologies.	Spatial variability of landscape elements necessaite fine spacial resolution measurements ~ 60m. Repeat measurements of approximately 5 days are required for enviromental measurements. 19 days for hyperspectral vegetation mapping/physological status	Public Health	Alexandra FrankAlexandra Frank Senior Program Manager, Global Health R&D Advocacy Research!America 703-739-2577 (main) 571-482-2707 (direct)	Hyperspectral radiance measurements & surface temperatures	Measure surface temperature within 0.5 K , 60 m resolution and 5 day repeat cycle. Provide hyperspectral radiance measurements at 60 m resolution on a 19 day repeat cycle.	6	Assimilations driven by observational data LDAS and satellite-derived meteorological forcing data, parameter datasets, and assimilation observations, including:Precipitation from TRMM, and GPM Land Cover Type from HyspIRI Soil Moisture from AMSR-E (where applicable), SMAP and HyspIRI. Terrestrial Water Storage from GRACE and GRACE II Surface temperature, Vegetation Fraction/ Leaf Area Index, and canopy physiology from HyspIRI. Topography from SRTM. Epidemiological surveys of targed diseases. Vector population sampling & testing for disease organism.