

Contract: Hydrospheric and Biospheric Sciences Support Services (HBS)		Contract Num: NNG15HQ01C	Period: 12/01/2014 - 11/30/2019	
Task Num/Mod Num: 6129/1 (Technical)	Title: Ocean Biology Processing Group		Task Period: 10/24/2018 - 11/30/2019	
Parent Task	Lower Subtasks: 0			
Task Type: Code 600	Flight: Non-Flight	Process Stage: Fully_Awarded	Process Date: 03/13/2019	Awarded To: Science Systems and Application Inc (SSAI)
Current Mod. Est. Cost: [REDACTED]	Current Mod Max. Fee: [REDACTED]	Current Mod Cost(Mod Est Cost + Mod Max Fee): \$112,171.00		
Total Estimated Cost: [REDACTED]	Task Order Total Cost(Total Est Cost + Total Max Fee): \$3,609,257.00			
Prior Contract/Task: None				
Task Monitor (TM)				
<u>BRYAN A FRANZ</u>		Date 03/05/2019 11:31 AM	Org Code 6160	Phone 301.286.5429
BRYAN A FRANZ				
Project Resource Analyst (PRA)				
<u>Barbara L Conboy</u>		Date 03/05/2019 11:48 AM	Org Code 1571	Phone 301.286.3677
Barbara L Conboy				
Branch Head (BH)				
<u>Carlos E Del castillo</u>		Date 12/13/2018 03:22 PM	Org Code 6160	Phone 301.286.8787
Carlos E Del castillo				
Contract Resource Analyst (CRA)				
<u>Lisa M Grochola</u>		Date 03/05/2019 12:26 PM	Org Code 1571	Phone 301.286.5072
Lisa M Grochola				
I hereby verify that the government cost estimate accompanied with this PR complies with GPR-5100.5B.				
Contracting Officer Technical Rep. (COR)				
<u>John R Moisan</u>		Date 03/05/2019 12:31 PM	Org Code 610W	Phone (757)824-1312
John R Moisan				
Contract Specialist (CSp)				
<u>Alonda L Woodley</u>		Date 03/06/2019 05:16 PM	Org Code 210Y	Phone 301.286.5075
Alonda L Woodley				
Contracting Officer (CO)				
<u>MAKARA K NEVILS</u>		Date 03/13/2019 03:05 PM	Org Code 210Y	Phone 301.286.4909
MAKARA K NEVILS				
Gov. Cost Estimate: [REDACTED] Cost Estimate File Attached: Yes				Work Performed On-Site: All
Funding Information: 36538204.23.02(SCEX22019D),656052.04.06.01.02(SCEX22018D),656052.04.09.02.04(SCEX22018D),656052.04.04.02.03(SCEX22018D)				Government Furnished Property/Facilities: Yes
Task Background Attached: No				
Capital Asset Item: No				
Contractor will develop specification or statement of work under this task for a future procurement: No				
Deliver To: BRYAN A FRANZ, Code 616.2, Bldg 028, Room W107				

TECHNICAL WORK MAY NOT BEGIN PRIOR TO C.O. APPROVAL

NASA/GODDARD SPACE FLIGHT CENTER

REQUEST FOR TASK PLAN / TASK ORDER

CONTRACTOR	CONTRACT #	TASK #	REVISION #	JOB ORDER #	APPROP. FY
SSAI	NNG15HQ01C	6129	1		

TASK TITLE: (NTE 80 Characters; Include Project Name)

Ocean Biology Processing Group

APPROVALS: (Type or print name and sign)

ASSISTANT TECHNICAL REPRESENTATIVE (OR TASK MONITOR)	DATE	ORG CODE	PHONE
Bryan Franz		616	301.286.5429
BRANCH HEAD	DATE	ORG CODE	PHONE
Carlos Del Castillo		616	301.286.8787
RESOURCE ANALYST	DATE	ORG CODE	PHONE
Barbara Conboy		603	301.286.3677
CONTRACTING OFFICER'S REPRESENTATIVE (COTR)	DATE	ORG CODE	PHONE
John Moisan		610W	757.824.1312

FLIGHT HARDWARE, CRITICAL GSE OR SOFTWARE? (IF YES, NEED CODE 303 CONCURRENCE NEXT BLOCK)	CODE CONTRACTING OFFICER'S QUALITY REP.	DESIGNATED FAM:
<input checked="" type="checkbox"/> NO <input type="checkbox"/> YES		

Contractor will develop specification or statement of work under this task for a future procurement. NO YES

Flight hardware will be shipped to GSFC for testing prior to final delivery. NO YES NA

Government Furnished Property/Facilities: NO YES

Perform work on GSFC premises: NO YES

Surveillance Plan Attached: NO YES

Performance Spec Attached: NO YES

Highlighted Contract Clauses:

The Contractor shall perform in accordance with the attached Statement of Work and Task Plan at the CPFF amount:

PERIOD OF PERFORMANCE	START DATE:	10/24/2018	END DATE:	11/30/2019
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ESTIMATED COST:	\$	FIXED FEE:	\$	TOTAL COST PLUS FIXED FEE:	\$
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NOTES:
 Adding additional work associated with the SeaBASS element of this task to start on March 01, 2019.

AUTHORIZED SIGNATURE:

THIS TASK ASSIGNMENT IS ISSUED ACCORDING TO THE CONTRACT CLAUSE "TASK ASSIGNMENTS AND REPORTS"

SIGNATURE OF CONTRACTING OFFICER _____	DATE _____	TYPED NAME OF CONTRACTING OFFICER _____
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CONTRACTOR'S ACCEPTANCE:

SIGNATURE OF CONTRACTOR _____	DATE _____	TYPED NAME OF CONTRACTOR _____
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NASA/GODDARD SPACE FLIGHT CENTER

REQUEST FOR TASK PLAN / TASK ORDER

CONTRACTOR	CONTRACT	TASK #	REVISION #	JOB ORDER #	APPROP. FY
SSAI	NNG15HQ01	6129	1		

STATEMENT OF WORK:

Background

A major functional area within the Ocean Ecology Branch (OEB, 616) is the Ocean Biology Processing Group (OBPG). The OBPG includes support for the Ocean Science Investigation-led Processing System (Ocean SIPS) as well as the Ocean Biology Distributed Active Archive Center (OB.DAAC). NASA's overarching goal for the OBPG is to provide remotely-sensed global ocean biological, physical, and biogeochemical data products of the highest possible quality to the research community in a timely and efficient manner, and to ensure the continuity and consistency of the time-series over multiple missions to enable global change and carbon cycle research and marine ecosystem monitoring activities. The OBPG represents an integration of data acquisition, calibration and validation, data processing, data archival and distribution functions, and user tools and support within one co-located group. The OBPG is responsible for the production, distribution, and quality control of ocean color (OC) products from various spaceborne sensors.

Global OC sensors fully supported by OBPG

- Ocean and Land Color Imager (OLCI) on ESA's Sentinel-3A
- Visible and Infrared Imager Radiometer Suite (VIIRS) on JPSS-1 (NOAA-20)
- Visible and Infrared Imager Radiometer Suite (VIIRS) on S-NPP
- Moderate Resolution Imaging Spectroradiometers on Terra (MODIST)
- Moderate Resolution Imaging Spectroradiometers on Aqua (MODISA)
- Sea-Viewing Wide Field-of-view Sensor (SeaWiFS) on OrbView-2
- Coastal Zone Color Scanner (CZCS) on NIMBUS-7
- Ocean Color and Temperature Scanner (OCTS) on JAXA's ADEOS
- Europe's MEdium Resolution Imaging Spectrometer (MERIS) on ESA's Envisat

Regional OC sensors fully supported by OBPG

- Hyperspectral Imager for Ocean Color (HICO)
- Geostationary Ocean Color Imager (GOCI)

Global/Regional OC sensors for which only processing software is supported

- Ocean Land Imager (OLI) on Landsat-8
- Multi-spectral Imager (MSI) on ESA's Sentinel-2A/B
- Second-generation Global Imager (SGLI) on Jaxa's GCOM-C

Global/Regional OC sensors anticipated to be supported by OBPG

- HawkEye on the SeaHawk Cubesat
- Geostationary Ocean Color Imager 2 (GOCI-2)

Ocean color products include, but are not limited to, water-leaving radiance or reflectance, chlorophyll concentration, particulate organic and inorganic carbon concentration, and photosynthetically active radiation. One of the most critical activities of the OBPG is to perform periodic reprocessing for the full suite of global ocean color sensors to incorporate advancements in algorithms, new products, or improved calibrations. See <https://oceancolor.gsfc.nasa.gov/reprocessing/> for a history of major reprocessing events.

The OBPG is also responsible for producing the SST products from MODIS and VIIRS.

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STATEMENT OF WORK:

The Contractor shall support the following activities associated with the OBPG:

1. **Science Software Development.** The Contractor shall maintain and enhance the science data processing software that converts raw satellite-sensor observations (Level-0 or Level-1A) to calibrated, geo-referenced observations (Level-1B), surface radiometry and derived geophysical products (Level-2), and multi-day binned and mapped global composites (Level-3). This chain of processing codes and related utilities, spanning over 100 compiled executables and 500000 lines of code in a mixed C, C++, and Fortran environment, is in a state of continuous evolution in response to changing NASA requirements.
 - 1.1. **Radiometric calibration software.** For all NASA OC sensors supported by the OBPG, the Contractor shall develop or modify and maintain calibration software that converts raw satellite-sensor observations (Level-0 or Level-1A) to calibrated, geo-referenced observations (Level-1B). For MODIS, this includes interfacing with the MODIS Science Data Support Team (SDST) to ensure that the OBPG is running the current version of the standard MODIS processing software. For VIIRS, the Contractor shall develop and maintain Level-0 to Level-1A/B and geolocation software, and interface with the VIIRS Calibration Support Team (VCST) and VIIRS Land SIPS.
 - 1.2. **Derived geophysical products.** The Contractor shall implement new algorithms and capabilities into the science data processing chain as directed by the task initiator to support changing NASA priorities, new missions, and new algorithms and products proposed by OBPG staff, the mission Science Teams, and the research community.
 - 1.3. **Software testing.** The Contractor shall develop and maintain a strict software test plan to ensure that algorithm changes perform as expected and software implementation errors are identified before they impact distributed products.
 - 1.4. **Software configuration management.** The Contractor shall develop and maintain a software configuration management plan to ensure that all modifications of software and processing parameters can be tracked and errors can be corrected or reverted.
2. **SeaDAS Development and Support.** The SeaWiFS Data Analysis System (SeaDAS) is a software package developed, distributed, and supported by the OBPG. SeaDAS is a tool for visualizing and analyzing all satellite data distributed by the OBPG, and it also provides users with the ability to process data from Level-0 through Level-3 using the same processing codes employed within the ODPS. The level conversion software is distributed as both compiled executables for Linux and Macintosh systems, as well as all source code and build support to allow external researchers to develop new algorithms and products. SeaDAS has hundreds of users at research institutions all over the world. The work to be performed under this task element is the continued development, maintenance, and training of the user community for the SeaDAS 7 interface, as well as the implementation of a method to allow data processing on Microsoft Windows operating systems.
 - 2.1. **SeaDAS maintenance.** The Contractor shall provide user support for SeaDAS distribution and installation, computer system configuration, update notices, and requests for information. Typically, about 40-50 user contacts (software "bug" reports, requests for help, questions, etc.) are received each month.
 - 2.2. **Processing software integration.** The Contractor shall work closely with the OEL science staff, science software development staff, and ODPS to ensure that satellite data processing capabilities are properly implemented and that the SeaDAS products are consistent with standard products and formats produced by the ODPS. This includes resolution of portability issues between different operating systems.
 - 2.3. **SeaDAS development.** The Contractor shall develop and maintain Java-based display and analysis capabilities for SeaDAS.
 - 2.4. **SeaDAS training.** The Contractor shall provide user-training services, e.g. system documentation, training workshops, and training media generation and distribution. It is expected that the Contractor will support training workshops in the Washington DC area and in US university settings outside the Washington area, with up to 20 participants in each workshop. The Contractor shall develop the workshop agenda, provide lectures on ocean color remote sensing, and lead hands-on computer laboratory training with SeaDAS. The Government will be responsible for all costs associated with the workshop venue and logistics of these sessions.
3. **Field Data Archival and Quality Control.** All researchers supported by the NASA Ocean Biology and Biogeochemistry Program (OBB) to collect in situ atmospheric and bio-optical data are required to submit the data to the OBPG for archival in the SeaWiFS Bio-optical Archive and Storage System (SeaBASS). SeaBASS currently includes data from several thousand cruises and hundreds of thousands of stations, and typically receives new submissions from one to ten investigators each month. SeaBASS utilizes a relational database and provides a user interface that allows users to query the database for very specific information (inherent and apparent optical properties, biological parameters, atmospheric properties, hydrographic variables, time, location, etc.).
 - 3.1. **SeaBASS maintenance.** The Contractor shall maintain the SeaBASS database, archive, website, search mechanism, and submission system to ensure continuous and efficient user access and data archive integrity.
 - 3.2. **SeaBASS user support.** The Contractor shall provide assistance to data providers and users to support data submission and exploitation of SeaBASS for NASA funded research. This level of user support is typically required no more than two times each month.

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STATEMENT OF WORK:

- 3.3. SeaBASS processing tools.** The Contractor shall modify existing tools and develop new software tools to process in situ profile and above water data submitted to the SeaBASS archive to allow these data to be used in satellite data product validation and algorithm development. This work includes developing and/or refining methodologies for associating co-incidently collected data within the SeaBASS archive into a searchable database.
- 3.4. SeaBASS/ESDIS Interface.** The Contractor shall develop tools to integrate the SeaBASS archive into the ESDIS/DAAC framework including ingestion of SeaBASS data into the Common Metadata Repository (CMR), ESDIS Metric System (EMS), and Digital Object Identifiers (DOIs)
- 4. Ancillary Data Support.** The Contractor shall produce ancillary data products to support the ocean color and SST data processing activities. Ancillary data are acquired from sources other than the primary satellite data stream, e.g., meteorological data centers such as the National Center for Environmental Prediction, and include information such as surface pressure and wind fields, atmospheric gas concentrations, and sea ice concentrations.

 - 4.1. Identification of sources.** The Contractor shall identify the optimal sources of ancillary data as needed to support the ocean color and SST processing activities, with the goal of maximizing accuracy while minimizing discontinuities or data gaps. These sources may change over time as requirements change, current sources are discontinued, or new sources become available. The Contractor shall provide recommendation as to the best single source for each ancillary data field, and document the rationale for the decision as well as the specifications required to access the data source.
 - 4.2. Ingest and processing.** The Contractor shall develop, maintain, and operate software to ingest the ancillary data sources and perform time and space interpolation of the ancillary fields to coincide with each satellite observation. The Contractor shall develop strategies for filling missing data, including spatial or temporal gaps, to maximize continuity and consistency over time and space, incorporate these strategies into the processing software, and document the basis for the decisions.
 - 4.3. Quality control.** The Contractor shall perform routine analysis of the ancillary sources and processed ancillary fields to ensure that quality is maintained, and implement immediate remedies (e.g., switch to alternate sources) when primary data sources become unreliable or non-optimal.
- 5. Data Acquisition, Processing and Distribution.** The data processing activities of the ODPG are performed by an automated database-controlled processing system that minimizes operator interaction and automates as many functions as possible. The system is known as the Ocean Data Processing System (ODPS). The ODPS is also employed to support testing of algorithm modifications and complete mission reprocessing efforts.

 - 5.1. ODPS management.** The Contractor shall maintain and enhance the ODPS processing control software. This task requires the integration of level conversion and quality control routines and procedures into an end-to-end processing stream. It also requires the development and maintenance of multiple relational databases (currently implemented using SyBASE) involved in all aspects of the processing. The Contractor shall integrate new sensor and product support as needed, and develop and implement improvements to enhance processing efficiency and reliability.
 - 5.2. Data acquisition and ingest.** The Contractor shall provide timely and reliable acquisition and ingest into ODPS for all currently active satellite missions, and provide routine, online reporting of data completeness for each instrument. For Hawkeye, which is anticipated to launch in late 2018, the Contractor shall develop tools and provide support for routine scheduling of instrument data collection.
 - 5.3. Data processing.** The Contractor shall operate the ODPS for routine processing and reprocessing of satellite data to higher-level science products. This includes oversight of multiple, simultaneous processing streams that handle real-time, reprocessed, and special evaluation processing, with careful attention to configuration control of the multiple software versions and proper allocation of system resources. , e.g., data acquisition from the ground stations, tracking of data granules through the level-0 through level-3 processing steps, reprocessing of data granules that fail processing steps, population of the data browse system, etc.
 - 5.4. Data distribution.** The ODPG data products are distributed through the OB.DAAC: a web-based data browse, search, and order system, as well as a web-based direct-access system. The Contractor shall maintain the OB.DAAC distribution web pages to ensure that the available data holdings are current, and shall also monitor data delivery and distribution statistics to ensure prompt filling of all ordered data products. The Contractor shall also investigate and implement new technologies to enhance the efficiency and utility of the data distribution system.
 - 5.5. ESDIS liaison.** The contractor shall interact with various entities within ESDIS to ensure the OB.DAAC is meeting requirements for data distribution statistics (ESDIS Metrics System), metadata systems (CMR, Common Metadata Repository), Digital Object Identifiers.

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SSAI	NNG15HQ01	6129	1		

STATEMENT OF WORK:

6. **Documentation and User Support.** The Contractor shall document all methods and analysis results and communicate regularly with OBPG staff and the user community.
 - 6.1. **Staff meetings.** The Contractor will present status of OBPG activities at staff meetings, which will be held at least monthly.
 - 6.2. **Website management.** The Contractor shall maintain the existing ocean color website (<http://oceancolor.gsfc.nasa.gov/>) and associated content management system. The Contractor shall ensure that the website is current and all links are fully functional. The Contractor shall understand, interpret and implement all NASA/Goddard Space Flight Center requirements for website security and accessibility.
 - 6.3. **Processing documentation.** The Contractor shall maintain a documentation tree on the ocean color website that details the methods used in satellite ocean data processing and sensor calibrations performed by the OBPG.
 - 6.4. **User support forum.** The Contractor shall maintain and monitor the Ocean Color Forum (http://oceancolor.gsfc.nasa.gov/forum/oceancolor/forum_show.pl). The Forum is the primary vehicle for interaction between the OBPG and the general user community, and it receives roughly 100 posts per month. The Contractor shall answer user questions within one business day of posting, and resolve issues within one week.
 - 6.5. **Meeting support and travel.** The Contractor shall give presentations as requested by NASA at domestic and international science team meetings and conferences.

7. **Systems Engineering Support.** This task element provides computer and network systems engineering support for all government-provided equipment used by the OBPG to support data processing, data distribution, and analysis (excluding systems managed through ACES).
 - 7.1. **Network security.** The Contractor shall understand, interpret and implement all the required network and system security procedures required by NASA/Goddard Space Flight Center.
 - 7.2. **System maintenance.** The Contractor shall provide routine maintenance, data integrity, system upgrades, and problem resolution. The Contractor shall maintain all shared and non-shared computer resources and provide all required security and operating system upgrades in a timely fashion. Routine data acquisition and processing is a 24/7 automated operation, though the OEB is staffed only during daytime hours. The Contractor must be prepared to respond to off-hours situations that could result in the loss of data or lack of user access to the data distribution system.
 - 7.3. **Vendor interface.** The Contractor shall work closely with hardware and software providers to quickly resolve issues that are covered under system maintenance agreements. The Contractor is responsible for the tracking of all hardware maintenance and software licenses to ensure the agreements are current and cover all the production systems and peripherals (e.g., printers) and that the renewals for any agreements are done in a timely fashion so as to prevent any break in coverage.
 - 7.4. **Facilities interface.** The Contractor shall work with GSFC facilities personnel on system requirements such as space, power air conditioning in the main computer facility, and networking.
 - 7.5. **Technology refresh.** The Contractor shall provide findings to the Government for upgrades (or technical refreshment) for all shared system categories (main processing system, desktop systems, printers, conference room systems, etc.) by researching the capabilities and costs of current technologies, exploring evolving technologies, evaluating improved performance versus cost of maintenance and current performance, gathering quotations from vendors, and presenting findings to the requestor. The Government will evaluate the recommendations of the Contractor regarding this trade-off and establish the procurement action required.
 - 7.6. **Property management.** The Contractor shall maintain an inventory of all OEB computer system property, including tagged property numbers, location, and assigned user. This inventory is to be made available to GSFC property management upon request (usually annually). The Contractor shall also coordinate the excessing of unneeded equipment through GSFC property management.

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CONTRACTOR	CONTRACT #	TASK #	REVISION #	JOB ORDER #	APPROP. FY
SSAI	NNG15HQ01	6129	1		

TRAVEL SCHEDULE:

Int. Ocean Color Science Meeting; Busan South Korea; April 2019; 5 days; 2 people
Cornell Remote Sensing Workshop; Ithaca NY; June 2019; 5 days; 2 people.

OTHER DIRECT COSTS:

N/A

MILESTONES/DELIVERABLES AND DATES:

N/A

FINAL DELIVERY DESTINATION (Name, Code, Extension, Building, Room):

N/A

Contract: Hydrospheric and Biospheric Sciences Support Services (HBS)		Contract Num: NNG15HQ01C	Period: 12/01/2014 - 11/30/2019	
Task Num/Mod Num: 6130/1 (Technical)	Title: PACE Science Data Segment		Task Period: 10/24/2018 - 11/30/2019	
Parent Task	Lower Subtasks: 0			
Task Type: Code 600	Flight: Non-Flight	Process Stage: Fully_Awarded	Process Date: 02/21/2019	Awarded To: Science Systems and Application Inc (SSAI)
Current Mod. Est. Cost: [REDACTED]	Current Mod Max. Fee: [REDACTED]	Current Mod Cost (Mod Est Cost + Mod Max Fee): \$110,341.00		
Total Estimated Cost: [REDACTED]	Total Maximum Fee: [REDACTED]	Task Order Total Cost (Total Est Cost + Total Max Fee): \$1,143,279.00		
Prior Contract/Task: None				
Task Monitor (TM) <u>BRYAN A FRANZ</u> BRYAN A FRANZ		Date 11/30/2018 04:10 PM	Org Code 6160	Phone 301.286.5429
Project Resource Analyst (PRA) <u>Barbara L Conboy</u> Barbara L Conboy		Date 12/04/2018 10:53 AM	Org Code 1571	Phone 301.286.3677
Branch Head (BH) <u>Carlos E Del castillo</u> Carlos E Del castillo		Date 11/05/2018 09:19 AM	Org Code 6160	Phone 301.286.8787
Contract Resource Analyst (CRA) <u>Lisa M Grochola</u> Lisa M Grochola I hereby verify that the government cost estimate accompanied with this PR complies with GPR-5100.5B.		Date 12/04/2018 12:30 PM	Org Code 1571	Phone 301.286.5072
Contracting Officer Technical Rep. (COR) <u>John R Moisan</u> John R Moisan		Date 12/06/2018 09:30 AM	Org Code 610W	Phone (757)824-1312
Contract Specialist (CSp) <u>Alonda L Woodley</u> Alonda L Woodley		Date 02/19/2019 04:42 PM	Org Code 210Y	Phone 301.286.5075
Contracting Officer (CO) <u>MAKARA K NEVILS</u> MAKARA K NEVILS		Date 02/21/2019 03:50 PM	Org Code 210Y	Phone 301.286.4909
Gov. Cost Estimate: [REDACTED] Cost Estimate File		Work Performed On-Site: All		
Attached: Yes		Government Furnished Property/Facilities: Yes		
Funding Information: 564349.04.02.01.30(SCEX22018D)				
Task Background Attached: No				
Capital Asset Item: No				
Contractor will develop specification or statement of work under this task for a future procurement: No				
Deliver To: BRYAN A FRANZ, Code 616.2, Bldg 028, Room W107				

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SSAI	NNG15HQ01C	6130	1		

TASK TITLE: (NTE 80 Characters; Include Project Name)

PACE Science Data Segment

APPROVALS: (Type or print name and sign)

ASSISTANT TECHNICAL REPRESENTATIVE (OR TASK MONITOR)	DATE	ORG CODE	PHONE
Bryan Franz		616	301.286.5429
BRANCH HEAD	DATE	ORG CODE	PHONE
Carlos Del Castillo		616	301.286.8787
RESOURCE ANALYST	DATE	ORG CODE	PHONE
Barbara Conboy		603	301.286.3677
CONTRACTING OFFICER'S REPRESENTATIVE (COTR)	DATE	ORG CODE	PHONE
John Moisan		610W	757.824.1312

FLIGHT HARDWARE, CRITICAL GSE OR SOFTWARE? (IF YES, NEED CODE 303 CONCURRENCE NEXT BLOCK) <input checked="" type="checkbox"/> NO <input type="checkbox"/> YES	CODE CONTRACTING OFFICER'S QUALITY REP.	DESIGNATED FAM:
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Contractor will develop specification or statement of work under this task for a future procurement.	<input checked="" type="checkbox"/> NO	<input type="checkbox"/> YES
Flight hardware will be shipped to GSFC for testing prior to final delivery.	<input type="checkbox"/> NO	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NA
Government Furnished Property/Facilities:	<input type="checkbox"/> NO	<input checked="" type="checkbox"/> YES
Perform work on GSFC premises:	<input type="checkbox"/> NO	<input checked="" type="checkbox"/> YES
Surveillance Plan Attached:	<input checked="" type="checkbox"/> NO	<input type="checkbox"/> YES
Performance Spec Attached:	<input checked="" type="checkbox"/> NO	<input type="checkbox"/> YES

Highlighted Contract Clauses:

The Contractor shall perform in accordance with the attached Statement of Work and Task Plan at the CPFF amount:

PERIOD OF PERFORMANCE	START DATE:	10/24/2018	END DATE:	11/30/2019
ESTIMATED COST:	\$	FIXED FEE:	\$	TOTAL COST PLUS FIXED FEE:
				\$

NOTES:

Rev 1 Period of Performance: 1/7/19 – 11/30/19

AUTHORIZED SIGNATURE:

THIS TASK ASSIGNMENT IS ISSUED ACCORDING TO THE CONTRACT CLAUSE "TASK ASSIGNMENTS AND REPORTS"

SIGNATURE OF CONTRACTING OFFICER	DATE	TYPED NAME OF CONTRACTING OFFICER
CONTRACTOR'S ACCEPTANCE:		
SIGNATURE OF CONTRACTOR	DATE	TYPED NAME OF CONTRACTOR

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STATEMENT OF WORK:

Background

The NASA Plankton, Aerosol, Cloud, ocean Ecosystem (PACE) mission is currently in Mission Development Phase B and is likely to transition to Phase C in early 2019. PACE is expected to include a hyperspectral ocean color instrument (OCI), and two polarimeters (HARP-2 and SPEXone). NASA requires Contractor support for the development of the PACE Science Data Segment (SDS), which is the functional element of the PACE mission that will perform science data acquisition, processing, and quality assessment, as well as instrument activity scheduling and telemetry monitoring.

1. **Proxy and Simulated Data Development.** The Contractor shall develop simulated and proxy datasets for testing of ocean color, aerosol, and cloud retrieval algorithms. Proxy data sources may include existing hyperspectral satellite sensors (e.g., HICO) and suborbital sensors (e.g., AVIRIS, PRISM), and existing satellite and suborbital polarimeters (e.g., POLDER, PARASOL, airSPEX, airHARP). These data will be modified and reformatted to resemble the datasets expected to be generated by the PACE sensors. Simulated data may be high fidelity datasets capable of supporting algorithm testing, or low fidelity datasets sufficient for data flow and low-level processing (raw to calibrated radiances, Level-1B).
2. **Science Software Development.** The Contractor shall develop the science data processing software to convert proxy/simulated PACE Level-1B calibrated radiance data to derived geophysical products (Level-2), and multi-day binned and mapped global composites (Level-3).
 - 2.1. **Ocean Color from OCI.** The Contractor shall implement new algorithms and capabilities into the existing ocean color science data processing chain to enable the production of hyperspectral ocean color radiometry and derived geophysical ocean products.
 - 2.2. **Atmospheric Products from OCI.** The Contractor shall develop cloud and aerosol retrieval software based on heritage retrieval algorithms and software used for MODIS and VIIRS, and adapt these codes to work with the OCI proxy/simulated data.
 - 2.3. **Polarimetry.** The Contractor shall support the development of Level-0 to Level-1C software for the PACE polarimeters (HARP-2 and SPEXone), based on input from the instrument providers. The Contractor shall implement Level-2 product retrieval software based on heritage retrieval algorithms and software developed for existing spaceborne and airborne polarimeters (e.g., airHARP and airSPEX) and algorithms developed within the PACE Project Science Team.
 - 2.4. **Advanced Algorithms.** The Contractor shall support the development and implementation of advanced geophysical retrieval algorithms that combine vector radiative transfer calculations with remotely-sensed observations from the PACE polarimeters and PACE OCI.
 - 2.5. **Software testing.** The Contractor shall develop and maintain a strict software test plan to ensure that algorithm changes perform as expected and software implementation errors are identified before they impact distributed products.
 - 2.6. **Software configuration management.** The Contractor shall develop and maintain a software configuration management plan to ensure that all modifications of software and processing parameters can be tracked and errors can be corrected or reverted.
3. **Ancillary Data Support.** The Contractor shall produce ancillary data products required for the processing of PACE science data. Ancillary data are those acquired from sources other than the primary satellite data stream, e.g., meteorological data centers such as the National Center for Environmental Prediction, and include information such as surface pressure and wind fields, atmospheric gas concentrations, and sea ice concentrations.
 - 3.1. **Identification of sources.** The Contractor shall identify the optimal sources of ancillary data as needed to support the PACE algorithms for ocean color, aerosol, and cloud processing, with the goal of maximizing accuracy while minimizing discontinuities or data gaps. These sources may change over time as requirements change, current sources are discontinued, or new sources become available. The Contractor shall provide recommendation as to the best single source for each ancillary data field, and document the rationale for the decision as well as the specifications required to access the data source.
 - 3.2. **Ingest and processing.** The Contractor shall develop, maintain, and operate software to ingest the ancillary data sources and perform time and space interpolation of the ancillary fields to coincide with each satellite observation. The Contractor shall develop strategies for filling missing data, including spatial or temporal gaps, to maximize continuity and consistency over time and space, incorporate these strategies into the processing software, and document the basis for the decisions.
 - 3.3. **Quality control.** The Contractor shall perform routine analysis of the ancillary sources and processed ancillary fields to ensure that quality is maintained, and implement immediate remedies (e.g., switch to alternate sources) when primary data sources become unreliable or non-optimal.

TECHNICAL WORK MAY NOT BEGIN PRIOR TO C.O. APPROVAL

NASA/GODDARD SPACE FLIGHT CENTER

REQUEST FOR TASK PLAN / TASK ORDER

CONTRACTOR	CONTRACT #	TASK #	REVISION #	JOB ORDER #	APPROP. FY
SSAI	NNG15HQ01	6130	1		

STATEMENT OF WORK:

4. **Science Instrument Operations Support.** The Contractor shall develop the tools for scheduling and monitoring the science instruments on the PACE Mission.
 - 4.1. **Instrument Scheduling.** The Contractor shall develop the software to generate and deconflict the instrument activity schedules for the three PACE instruments: OCI, SPEXone, HARP-2.
 - 4.2. **Telemetry Monitoring.** The Contractor shall develop the tools to acquire, unpack, threshold test, and trend the state of health telemetry from the PACE science instruments and related spacecraft telemetry, to enable the monitoring of instrument status for potential impacts to science data quality.
5. **Documentation and User Support.** The Contractor shall document all methods and analysis results and communicate regularly with PACE SDS Staff.
 - 5.1. **Staff meetings.** The Contractor shall present status of SDS development activities at staff meetings, which will be held at least monthly.
 - 5.2. **Processing documentation.** The Contractor shall maintain a documentation tree on the ocean color website that details the algorithms and methods employed for PACE science data processing.
 - 5.3. **Meeting support and travel.** The Contractor shall give presentations as requested by NASA at domestic and international science team meetings and conferences.

TRAVEL SCHEDULE:

ASLO 2019 Aquatic Sciences Meeting; San Juan Puerto Rico; Feb 2019; 5 days, 2 people.
Int. Ocean Color Science Meeting; Busan South Korea; April 2019; 5 days; 2 people

OTHER DIRECT COSTS:

N/A

MILESTONES/DELIVERABLES AND DATES:

N/A

FINAL DELIVERY DESTINATION (Name, Code, Extension, Building, Room):

N/A

Contract: Hydrospheric and Biospheric Sciences Support Services (HBS)		Contract Num: NNG15HQ01C		Period: 12/01/2014 - 11/30/2019	
Task Num/Mod Num: 6131/0 (Technical)	Title: Ocean Color Research and Applications		Task Period: 10/24/2018 - 11/30/2019		
Parent Task	Lower Subtasks: 0				
Task Type: Code 600	Flight: Non-Flight	Process Stage: Fully_Awarded	Process Date: 10/11/2018	Awarded To: Science Systems and Application Inc (SSAI)	
Current Mod. Est. Cost: [REDACTED]	Current Mod Max. Fee: [REDACTED]	Current Mod Cost(Mod Est Cost + Mod Max Fee): \$1,341,872.00			
Total Estimated Cost: [REDACTED]	Total Maximum Fee: [REDACTED]	Task Order Total Cost(Total Est Cost + Total Max Fee): \$1,341,872.00			
Prior Contract/Task: None					
Task Monitor (TM) <u>BRYAN A FRANZ</u>		Date 08/22/2018 01:08 PM	Org Code 6160	Phone 301.286.5429	
BRYAN A FRANZ					
Project Resource Analyst (PRA) <u>Barbara L Conboy</u>		Date 08/22/2018 01:12 PM	Org Code 1571	Phone 301.286.3677	
Barbara L Conboy					
Branch Head (BH) <u>Carlos E Del castillo</u>		Date 08/02/2018 12:43 PM	Org Code 6160	Phone 301.286.8787	
John R Moisan					
Contract Resource Analyst (CRA) <u>Lisa M Grochola</u>		Date 09/25/2018 02:07 PM	Org Code 1571	Phone 301.286.5072	
Lisa M Grochola					
I hereby verify that the government cost estimate accompanied with this PR complies with GPR-5100.5B.					
Contracting Officer Technical Rep. (COR) <u>John R Moisan</u>		Date 09/27/2018 10:45 AM	Org Code 610W	Phone (757)824-1312	
John R Moisan					
Contract Specialist (CSp) <u>Alonda L Woodley</u>		Date 10/04/2018 12:38 PM	Org Code 210Y	Phone 301.286.5075	
Alonda L Woodley					
Contracting Officer (CO) <u>MAKARA K NEVILS</u>		Date 10/11/2018 04:49 PM	Org Code 210Y	Phone 301.286.4909	
MAKARA K NEVILS					
Gov. Cost Estimate: [REDACTED] Cost Estimate File Attached: Yes				Work Performed On-Site: All	
Funding Information: 437949.02.01.02.70(SCEX22018D),509496.02.08.07.62(SCEX22018D),720817.04.14.01.04(SCEX22018D),388982.05.03.03.09.01(SCEX22018D),437949.02.01.02.87(SCEX22018D),444491.02.01.03.99(SCEX22018D),509496.02.08.06.32(SCEX22018D),437949.02.01.02.70(SCEX22019D)				Government Furnished Property/Facilities: Yes	
Task Background Attached: No					

Capital Asset Item: **No**

Contractor will develop specification or statement of work under this task for a future procurement: **No**

Deliver To: **BRYAN A FRANZ, Code 616.2, Bldg 028, Room W107**

TECHNICAL WORK MAY NOT BEGIN PRIOR TO C.O. APPROVAL

NASA/GODDARD SPACE FLIGHT CENTER

REQUEST FOR TASK PLAN / TASK ORDER

CONTRACTOR	CONTRACT #	TASK #	REVISION #	JOB ORDER #	APPROP. FY
SSAI	NNG15HQ01C	6131	0		

TASK TITLE: (NTE 80 Characters; Include Project Name)

Ocean Color Research and Applications

APPROVALS: (Type or print name and sign)

ASSISTANT TECHNICAL REPRESENTATIVE (OR TASK MONITOR)	DATE	ORG CODE	PHONE
Bryan Franz		616	301.286.5429
BRANCH HEAD	DATE	ORG CODE	PHONE
Carlos Del Castillo		616	301.286.8787
RESOURCE ANALYST	DATE	ORG CODE	PHONE
Barbara Conboy		603	301.286.3677
CONTRACTING OFFICER'S REPRESENTATIVE (COTR)	DATE	ORG CODE	PHONE
John Moisan		610W	757.824.1312

FLIGHT HARDWARE, CRITICAL GSE OR SOFTWARE? (IF YES, NEED CODE 303 CONCURRENCE NEXT BLOCK)	CODE CONTRACTING OFFICER'S QUALITY REP.	DESIGNATED FAM:
<input checked="" type="checkbox"/> NO <input type="checkbox"/> YES		

Contractor will develop specification or statement of work under this task for a future procurement. NO YES

Flight hardware will be shipped to GSFC for testing prior to final delivery. NO YES NA

Government Furnished Property/Facilities: NO YES

Perform work on GSFC premises: NO YES

Surveillance Plan Attached: NO YES

Performance Spec Attached: NO YES

Highlighted Contract Clauses:

The Contractor shall perform in accordance with the attached Statement of Work and Task Plan at the CPFF amount:

PERIOD OF PERFORMANCE	START DATE:	10/24/2018	END DATE:	11/30/2019
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ESTIMATED COST:	\$	FIXED FEE:	\$	TOTAL COST PLUS FIXED FEE:	\$
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NOTES:

AUTHORIZED SIGNATURE:

THIS TASK ASSIGNMENT IS ISSUED ACCORDING TO THE CONTRACT CLAUSE "TASK ASSIGNMENTS AND REPORTS"

SIGNATURE OF CONTRACTING OFFICER _____ DATE _____ TYPED NAME OF CONTRACTING OFFICER _____

CONTRACTOR'S ACCEPTANCE:

SIGNATURE OF CONTRACTOR _____ DATE _____ TYPED NAME OF CONTRACTOR _____

NASA/GODDARD SPACE FLIGHT CENTER

REQUEST FOR TASK PLAN / TASK ORDER

CONTRACTOR	CONTRACT	TASK #	REVISION #	JOB ORDER #	APPROP. FY
SSAI	NNG15HQ01	6131	0		

STATEMENT OF WORK:

Background

This task supports research and analysis in ocean color (OC) algorithms and instrument calibration for a variety of current and heritage spaceborne OC sensors, including those associated with both NASA missions and non-NASA missions as listed below:

NASA sensors:

- Visible and Infrared Imager Radiometer Suite (VIIRS) on S-NPP
- Visible and Infrared Imager Radiometer Suite (VIIRS) on JPSS-1
- Moderate Resolution Imaging Spectroradiometers on Terra (MODIST)
- Moderate Resolution Imaging Spectroradiometers on Aqua (MODISA)
- Sea-Viewing Wide Field-of-view Sensor (SeaWiFS)
- Coastal Zone Color Scanner (CZCS)

non-NASA sensors:

- Japan's Ocean Color and Temperature Scanner (OCTS)
- Europe's MEdium Resolution Imaging Spectrometer (MERIS)
- Europe's Ocean Land Color Imager (OLCI) on Sentinel-3A/B
- Europe's Multi-spectral Imager (MSI) on Sentinel-2A/B
- Japan's Second-generation Global Imager (SGLI)
- Korea's Geostationary Ocean Color Imager (GOCI) and GOCI-2
- USN's Hyperspectral Imager for Ocean Color (HICO)
- USGS's Operational Land Imager (OLI) on Landsat-8

The Contractor shall support the following activities associated with the OBPG:

1. **Sensor Calibration.** The Contractor shall provide algorithms, coefficient updates, and guidance as needed to ensure accurate radiometric calibration of all supported NASA sensors over mission lifespans. This will include interfacing with mission-specific calibration teams such as, but not limited to, the MODIS Calibration Support Team (MCST), NASA VIIRS Calibration Support Team (VCST), and other agencies such as the National Institute of Standards and Technology (NIST) to share information and advance the state of the art. The Contractor shall also maintain a working knowledge of the methods used by non-NASA missions, and contribute to international collaborations as directed.
 - 1.1. **Prelaunch calibration and characterization.** The Contractor shall maintain a full understanding of the radiometric calibration and laboratory characterization results and procedures employed for all NASA sensors, and provide guidance as to potential error sources related to sensor design and performance and the quality of prelaunch analyses. Knowledge gained from prelaunch characterization, in combination with on-orbit calibration data, shall be used to improve on-orbit radiometric calibration.
 - 1.2. **On-orbit calibration.** The Contractor shall maintain the calibration of all NASA sensors over time and space, based on analysis of on-board calibration measurements (e.g., lunar and/or solar calibration data). The Contractor shall investigate alternative interpretations of the on-board calibration data, and propose new strategies for improving sensor calibration stability. For all sensors, the Contractor shall re-evaluate the temporal calibration prior to any major reprocessing, document findings, and incorporate any new insights into a revised calibration strategy.
 - 1.3. **Cross-calibration.** In some cases, the on-board calibration data has been shown to be insufficient to fully characterize changes in radiometric performance (e.g., for MODIS), and methods must be developed to augment the on-board calibration with earth observation data (e.g., flat fielding or cross-calibration techniques). The Contractor shall investigate alternative approaches to maintain the temporal and spatial (cross-scan) calibration and polarization sensitivity knowledge of all supported ocean color sensors, and develop methods for operational use that can maintain the consistency of the ocean color time-series into the foreseeable future.
 - 1.4. **Calibration software.** The Robotic Lunar Observatory (ROLO) model, which was developed and is maintained by the US Geological Survey (USGS), is used in the analysis and interpretation of the satellite lunar calibration data. The Contractor shall interface with USGS to maintain the model, and apply it in support of ocean color calibration activities. The Contractor shall also provide input and review support for the development of international standards in lunar calibration and modeling, including participation in the GSICS Research and Data working group on Lunar calibration.

TECHNICAL WORK MAY NOT BEGIN PRIOR TO C.O. APPROVAL

NASA/GODDARD SPACE FLIGHT CENTER

REQUEST FOR TASK PLAN / TASK ORDER

CONTRACTOR	CONTRACT #	TASK #	REVISION #	JOB ORDER #	APPROP. FY
SSAI	NNG15HQ01	6131	0		

STATEMENT OF WORK:

- 1.5. Calibration software.** The Robotic Lunar Observatory (ROLO) model, which was developed and is maintained by the US Geological Survey (USGS), is used in the analysis and interpretation of the satellite lunar calibration data. The Contractor shall interface with USGS to maintain the model, and apply it in support of ocean color calibration activities. The Contractor shall also provide input and review support for the development of international standards in lunar calibration and modeling, including participation in the GSICS Research and Data working group on Lunar calibration.
- 2. Algorithm Development.** The Contractor shall develop scientific software and implement and evaluate algorithms for the derivation of geophysical products from satellite radiometric observations of the Earth.

 - 2.1. Atmospheric Radiative Transfer Modeling.** The Contractor shall perform the radiative transfer calculations required to generate look-up tables that model the effects of molecular and aerosol scattering in the atmosphere, including polarizing effects of the atmosphere and surface on the at-sensor radiances, for the spectral bands and radiant path geometries encountered by the satellite sensors.
 - 2.2. Atmospheric correction algorithm development.** For all sensors, the Contractor shall maintain and advance the current atmospheric correction algorithm, maintain a comprehensive knowledge of methods and enhancements proposed in the scientific literature, and lead international research in this field. This includes development of corrections for scattering and absorption by aerosols, scattering by air molecules, and absorption by atmospheric gases. This also includes development of methods to normalize the water-leaving radiances for variations in solar path geometry and atmospheric attenuation of the solar irradiance, with emphasis on both open-ocean and coastal environments.
 - 2.3. Bio-optical algorithm development.** For all sensors, the Contractor shall adapt and maintain the current suite of standard algorithms for chlorophyll concentration and marine diffuse attenuation and inherent optical properties. The Contractor shall maintain a comprehensive knowledge of alternative algorithms proposed in the scientific literature, and lead international research in this field.
 - 2.4. Product uncertainties.** The contractor shall support the development of per-pixel product uncertainties for the retrieved water-leaving radiances and the bio-optical products derived from those remotely-sensed radiances.
- 3. Product Quality Assessment.** The Contractor shall perform quality assessment on all ocean color products produced by the Ocean Biology Processing Group (OBPG) immediately prior to any reprocessing (typically every 2 years per sensor), and inform the science community as to any change in quality prior to distribution. These analyses will also be performed to support the evaluation of proposed new products and algorithms (typically 5 to 20 times per year) or proposed modifications of sensor calibration (typically 5 to 20 times per year). The Contractor shall also perform and report results for routine analyses of the operational product stream (on a monthly basis) to assess the quality of the time-series as new data is acquired and processed. Methods of assessment include match-up analyses, regional time-series analyses, sensor stability assessment, and sensor to sensor comparative analyses as described below.

 - 3.1. Match-up analyses.** The Contractor shall perform match-up analyses to assess agreement between satellite products and in situ measurements. The Contractor shall maintain the match-up validation website that provides public access to the match-up results with user-specifiable filters to collate those results.
 - 3.2. Regional time-series analyses.** The Contractor shall utilize in situ bio-optical time-series to characterize regional variations in bio-optical properties and assess temporal and absolute consistency between satellite products and measured trends.
 - 3.3. Sensor stability assessment.** The Contractor shall perform time-series analyses of the ocean color products on regional and global scales to assess temporal stability and identify potential instrument calibration artifacts.
 - 3.4. Sensor to sensor comparative analyses.** The Contractor shall produce comparative analyses of ocean color time-series derived from different sensors to assess consistency, provide insight to direct sensor calibration and algorithm improvement efforts, and guide data merging activities aimed at producing global, multi-decadal-scale climate data records.
 - 3.5. Method development.** The Contractor shall develop and implement methods for estimating accuracy, precision, and stability of the ocean color products and assigning uncertainty.
 - 3.6. Algorithm and Product Evaluation.** The Contractor shall provide evaluations of improved or alternative atmospheric correction or bio-optical algorithms and provide recommendations as to the inclusion into routine data production.

TECHNICAL WORK MAY NOT BEGIN PRIOR TO C.O. APPROVAL

NASA/GODDARD SPACE FLIGHT CENTER

REQUEST FOR TASK PLAN / TASK ORDER

CONTRACTOR	CONTRACT #	TASK #	REVISION #	JOB ORDER #	APPROP. FY
SSAI	NNG15HQ01	6131	0		

STATEMENT OF WORK:

4. **Science Analysis and Research Support.** The contractor shall utilize NASA and non-NASA satellite data and models to support research directed at understanding marine biogeochemistry and ecosystem dynamics and temporal and spatial variability on regional and global scales.
 - 4.1. **Refine and Validate Satellite Algorithms.** The Contractor shall organize oceanographic data from various sources. The Contractor shall utilize the available field data and coincident ocean color satellite data to validate and refine existing satellite algorithms for coastal regions and global oceans.
 - 4.2. **Process Satellite Data.** The contractor shall process ocean color satellite data to generate ocean biogeochemical.
 - 4.3. **Analyze Carbon Fluxes.** The contractor shall apply satellite data products to study carbon fluxes.
 - 4.4. **Carbon Cycle Modeling.** The Contractor shall develop and/or modify existing coupled physical-biogeochemical models and compare the model output with field and satellite observations according to both mean states and variability.
5. **Documentation.** The Contractor shall document and communicate all methods and analysis results associated with this task.
 - 5.1. **Staff meetings.** The Contractor will present results of calibration, validation, and algorithm development and evaluation at staff meetings, which will be held at least monthly.
 - 5.2. **Product documentation.** The Contractor shall maintain documentation on the ocean color website that details the algorithm approach for all ocean color products distributed by the OBPB.
 - 5.3. **Analysis documentation.** The Contractor shall present results of Product Validation and Quality Control analyses for all standard and evaluation products on the ocean color website within one week from the time that new results are obtained. The Contractor shall provide analysis results for all proposed reprocessing changes prior to initiation of a reprocessing, and report any significant degradation in sensor calibration as needed to inform the user community of potential impacts to distributed products.
 - 5.4. **Journal publication.** The Contractor shall publish descriptions of innovative methods and analyses developed (e.g., calibration methods, algorithm advancements, changes in product quality due to reprocessing) in the refereed literature (e.g., Applied Optics, Remote Sensing of Environment).
 - 5.5. **Meeting support and travel.** The Contractor shall give presentations as requested by NASA at domestic and international science team meetings and conferences.

TRAVEL SCHEDULE:

ASLO 2019 Aquatic Sciences Meeting; San Juan Puerto Rico; Feb 2019; 5 days, 2 people.
Int. Ocean Color Science Meeting; Busan South Korea; April 2019; 5 days; 2 people

OTHER DIRECT COSTS:

N/A

MILESTONES/DELIVERABLES AND DATES:

N/A

FINAL DELIVERY DESTINATION (Name, Code, Extension, Building, Room):

N/A

Contract: Hydrospheric and Biospheric Sciences Support Services (HBS)		Contract Num: NNG15HQ01C	Period: 12/01/2014 - 11/30/2019	
Task Num/Mod Num: 6132/0 (Technical)	Title: PACE Project Science Support		Task Period: 10/24/2018 - 11/30/2019	
Parent Task	Lower Subtasks: 0			
Task Type: Code 600	Flight: Non-Flight	Process Stage: Fully_Awarded	Process Date: 10/11/2018	Awarded To: Science Systems and Application Inc (SSAI)
Current Mod. Est. Cost: [REDACTED]	Current Mod Max. Fee: [REDACTED]	Current Mod Cost(Mod Est Cost + Mod Max Fee): \$896,958.00		
Total Estimated Cost: [REDACTED]	Total Maximum Fee: [REDACTED]	Task Order Total Cost(Total Est Cost + Total Max Fee): \$896,958.00		
Prior Contract/Task: None				
Task Monitor (TM) <u>BRYAN A FRANZ</u>				
BRYAN A FRANZ		Date: 08/22/2018 01:16 PM	Org Code: 6160	Phone: 301.286.5429
Project Resource Analyst (PRA) <u>Barbara L Conboy</u>				
Barbara L Conboy		Date: 08/22/2018 01:18 PM	Org Code: 1571	Phone: 301.286.3677
Branch Head (BH) <u>Carlos E Del castillo</u>				
Carlos E Del castillo		Date: 08/06/2018 01:19 PM	Org Code: 6160	Phone: 301.286.8787
Contract Resource Analyst (CRA) <u>Lisa M Grochola</u>				
Lisa M Grochola		Date: 09/25/2018 02:14 PM	Org Code: 1571	Phone: 301.286.5072
I hereby verify that the government cost estimate accompanied with this PR complies with GPR-5100.5B.				
Contracting Officer Technical Rep. (COR) <u>John R Moisan</u>				
John R Moisan		Date: 09/27/2018 10:41 AM	Org Code: 610W	Phone: (757)824-1312
Contract Specialist (CSp) <u>Alonda L Woodley</u>				
Alonda L Woodley		Date: 10/05/2018 11:29 AM	Org Code: 210Y	Phone: 301.286.5075
Contracting Officer (CO) <u>MAKARA K NEVILS</u>				
MAKARA K NEVILS		Date: 10/11/2018 04:48 PM	Org Code: 210Y	Phone: 301.286.4909
Gov. Cost Estimate: [REDACTED] Cost Estimate File Attached: Yes				Work Performed On-Site: All
Funding Information: 564349.04.01.02.01(SCEX22019D),564349.04.01.02.01(SCEX22018D),564349.05.01.04.01(SCEX22019D)				Government Furnished Property/Facilities: Yes
Task Background Attached: No				
Capital Asset Item: No				
Contractor will develop specification or statement of work under this task for a future procurement: No				
Deliver To: BRYAN A FRANZ, Code 616.2, Bldg 028, Room W107				

TECHNICAL WORK MAY NOT BEGIN PRIOR TO C.O. APPROVAL

NASA/GODDARD SPACE FLIGHT CENTER

REQUEST FOR TASK PLAN / TASK ORDER

CONTRACTOR	CONTRACT #	TASK #	REVISION #	JOB ORDER #	APPROP. FY
SSAI	NNG15HQ01C	6132	0		

TASK TITLE: (NTE 80 Characters; Include Project Name)

PACE Project Science Support

APPROVALS: (Type or print name and sign)

ASSISTANT TECHNICAL REPRESENTATIVE (OR TASK MONITOR)	DATE	ORG CODE	PHONE
Bryan Franz		616	301.286.5429
BRANCH HEAD	DATE	ORG CODE	PHONE
Carlos Del Castillo		616	301.286.8787
RESOURCE ANALYST	DATE	ORG CODE	PHONE
Barbara Conboy		603	301.286.3677
CONTRACTING OFFICER'S REPRESENTATIVE (COTR)	DATE	ORG CODE	PHONE
John Moisan		610W	757.824.1312

FLIGHT HARDWARE, CRITICAL GSE OR SOFTWARE? (IF YES, NEED CODE 303 CONCURRENCE NEXT BLOCK) <input checked="" type="checkbox"/> NO <input type="checkbox"/> YES	CODE CONTRACTING OFFICER'S QUALITY REP.	DESIGNATED FAM:
--	--	------------------------

Contractor will develop specification or statement of work under this task for a future procurement. NO YES

Flight hardware will be shipped to GSFC for testing prior to final delivery. NO YES NA

Government Furnished Property/Facilities: NO YES

Perform work on GSFC premises: NO YES

Surveillance Plan Attached: NO YES

Performance Spec Attached: NO YES

Highlighted Contract Clauses:

The Contractor shall perform in accordance with the attached Statement of Work and Task Plan at the CPFF amount:

PERIOD OF PERFORMANCE	START DATE:	10/24/2018	END DATE:	11/30/2019	
ESTIMATED COST:	\$	FIXED FEE:	\$	TOTAL COST PLUS FIXED FEE:	\$

NOTES:

AUTHORIZED SIGNATURE:

THIS TASK ASSIGNMENT IS ISSUED ACCORDING TO THE CONTRACT CLAUSE "TASK ASSIGNMENTS AND REPORTS"

SIGNATURE OF CONTRACTING OFFICER

DATE

TYPED NAME OF CONTRACTING OFFICER

CONTRACTOR'S ACCEPTANCE:

SIGNATURE OF CONTRACTOR

DATE

TYPED NAME OF CONTRACTOR

TECHNICAL WORK MAY NOT BEGIN PRIOR TO C.O. APPROVAL

NASA/GODDARD SPACE FLIGHT CENTER

REQUEST FOR TASK PLAN / TASK ORDER

CONTRACTOR	CONTRACT #	TASK #	REVISION #	JOB ORDER #	APPROP. FY
SSAI	NNG15HQ01	6132	0		

STATEMENT OF WORK:

Background

The NASA Plankton, Aerosol, Cloud, ocean Ecosystem (PACE) mission is expected to include a hyperspectral ocean color instrument (OCI), and two polarimeters (HARP-2 and SPEXone). The mission is currently in Phase B and will likely transition to Phase C in early 2019. NASA requires Contractor support for activities associated mission development trade studies, mission reviews, and science algorithm development and assessment, under the direction of the PACE Project Scientist and Deputy Project Scientists.

The Contractor shall support the following activities:

- Mission Analyses.** The Contractor shall utilize radiative transfer simulations, in situ data, and models to assess impact and expected performance of the proposed PACE OCI and polarimeter configurations on ocean color retrievals. This may include effects of spectral band selection, radiometric performance (e.g., signal to noise), and observational geometry as directed by the Project Scientist. Specific analyses anticipated for this task period include:
 - Assessment of signal to noise and other instrument performance requirements.
 - Assessment of bio-optical and atmospheric algorithms.
 - Assessment of spectral range and resolution requirements.
 - Assessment of variable spatial resolutions.
- Instrument Calibration Support.** The Contractor shall support the analysis of prelaunch test results for the PACE OCI instrument Engineering Test Unit (ETU), as directed by the PACE Instrument Scientist. The Contractor shall support the development of PACE OCI calibration plans, including prelaunch and on-orbit (solar/lunar/spectral) calibration activities.
- Mission reviews.** The Contractor shall assist Project Science in the development of presentations and documentation needed for mission and instrument reviews, as directed by the Project Scientist.
- Mission Documentation.** The Contractor shall assist Project Science in the development of presentations, online material, technical reports, and peer-reviewed literature needed to document and publicize the mission, as directed by the Project Scientist.
- Meeting support and travel.** The Contractor shall give presentations as requested by NASA at domestic and international science team meetings and conferences.

TRAVEL SCHEDULE:

ASLO 2019 Aquatic Sciences Meeting; San Juan Puerto Rico; Feb 2019; 5 days, 2 people.
Int. Ocean Color Science Meeting; Busan South Korea; April 2019; 5 days; 2 people
PACE Project Science Meeting; Greenbelt, MD, USA (from Australia); 5 days; 1 person

OTHER DIRECT COSTS:

N/A

MILESTONES/DELIVERABLES AND DATES:

N/A

FINAL DELIVERY DESTINATION (Name, Code, Extension, Building, Room):

N/A