

## **REQUEST FOR INFORMATION (RFI)**

### **Pre-Aerosol, Clouds and Oceans Ecosystem (PACE) mission**

THIS IS \*NOT\* A REQUEST FOR PROPOSAL OR INVITATION TO BID NOTICE.

The Pre-Aerosol, Clouds and Oceans Ecosystem (PACE) Project is considering the purchase of multi-band high spatial resolution camera to complement its primary ocean color instrument. The PACE mission is primarily being conducted to collect global measurements of ocean color. These measurements will extend contemporary data records of ocean ecological and marine biogeochemical parameters. The multi-band high spatial resolution camera will collect additional data at high spatial resolution when the PACE observatory is in sight of coastal regions. This data will be combined with hyperspectral data from the primary ocean color instrument with lower spatial resolution.

PACE will enable advanced research on:

- Plankton Stocks – Distinguish living phytoplankton from other optically-active water column constituents, such as re-suspended sediments and dissolved carbon;
- Plankton Diversity – Identify phytoplankton community structure;
- Ocean Carbon – Assess changes in carbon stocks, primary production, net community production, and carbon export to the deep sea;
- Human Impacts – Evaluate changes in land-ocean interactions and water quality;
- Forecasting Futures – Resolve mechanistic linkages between biology and environmental physical forcings to support of process-based predictive modeling.

The purpose of this RFI is to identify potential interest in providing a multi-band high spatial resolution camera for the PACE Project. This is for information and planning purposes and to allow industry the opportunity to verify reasonableness and feasibility of the requirements and to promote competition.

While our intent may be to team with industrial partner(s), we are not bound by this RFI to do so. This is not a Request for Proposal, nor a Request for Quotation, nor an Invitation to Bid. Therefore, this RFI is not to be construed as a commitment by the Government to enter into a contract nor will the Government pay for information provided in response to this RFI.

The desired characteristics for the multi-band high spatial resolution camera are the following:

Orbit: 650 km, ~98 degree inclination polar, sun synchronous orbit with a local equator crossing time close to noon. (Note, the sun will always stay on the same side of the spacecraft. Additionally, the beta angle is nearly always close to zero)

Mission Life: 3 years

Spatial resolution: in the range of 50 to 150 m

**Spectral Range:** The camera should cover the VIS-NIR range and include two NIR bands for atmospheric correction, for example 748 nm and 865 nm. Coverage of the VIS-NIR range can be accomplished with either a spectrograph design or with the selection of 8 to 12 spectral bands as preferred by the vendor. Coverage in the UV range is desirable, but optional to help keep cost down.

To aid in the design of the camera the following information is provided in the table below.

- 1)  $L_{typ}$ , the expected open ocean cloud free radiance per spectral band
- 2)  $L_{max}$ , the maximum expected radiance – typically for cloud cover. Note, the camera should not saturate at  $L_{max}$

The swath width should be on the order of 400 to 600 km.

	Band Width (nm)	$L_{typ}^*$ mW/(cm <sup>2</sup> μm sr)	$L_{max}^{**}$ mW/(cm <sup>2</sup> μm sr)	Purpose
350 (optional)	15	7.46	35.6	Atmospheric Correction, Ocean color science
360 (optional)	15	7.22	37.6	Ocean color science
385 (optional)	15	6.11	38.1	Ocean color science
412	15	7.86	60.2	Ocean color science
425	15	6.95	58.2	Ocean color science
443	15	7.02	66.4	Ocean color science
460	15	6.83	72.4	Ocean color science
475	15	6.19	72.2	Ocean color science
490	15	5.31	68.6	Ocean color science
510	15	4.58	66.3	Ocean color science
532	15	3.92	65.1	Ocean color science
555	15	3.39	64.3	Ocean color science
583	15	2.81	62.4	Ocean color science
617	15	2.19	58.2	Ocean color science
640	10	1.90	56.4	Ocean color science
655	15	1.67	53.5	Ocean color science
665	10	1.60	53.6	Ocean color science
678	10	1.45	51.9	Ocean color science
710	15	1.19	48.9	Ocean color science
748	10	0.93	44.7	Ocean color science
820	15	0.59	39.3	Ocean color science
865	40	0.45	33.3	Ocean color atmospheric correction
940	30	0.78	21	Cloud and aerosol science

This RFI is to solicit specific capability information from industry and promote competition. For planning purposes, we are requesting that the responses to this RFI include the following information:

- 1) A brief description of the technical capabilities, key interfaces, and heritage of the camera.

- 2) Provide the expected Signal to Noise Ratios that can be achieved with the camera.
- 3) The approximate mass, power and volume requirements for a single camera.  
How do these requirements change with the addition of a second and/or third camera?
- 4) A brief description of company capabilities, applicable facilities, and experience designing and building cameras.
- 5) Notional schedule for instrument implementation through delivery to the project.  
The vendor should assume an authority to proceed data of April 2017.
- 6) The approximate cost of a single camera design and the cost of adding a second and/or possibly a third camera. Costs should be in real year dollars.
- 7) Description of key technical, schedule, and price drivers and options to mitigate risks and/or reduce schedule.

To consolidate our planning, responses from industry are requested by August 8, 2015, in the form of written and illustrated concepts, estimates for development costs and schedule, assumptions used for cost and schedule estimates including interface and design assumptions, and descriptions of capabilities. Responses can be submitted via email. The subject line of the submission should be "RFI for Multi-band Camera," and attachments should be in Microsoft WORD, POWERPOINT, or PDF format. The email text must give a point-of-contact and provide his/her name, address, telephone/fax numbers, and email address. The information is requested for planning purposes only, subject to FAR Clause 52.215-3, entitled "Solicitation for Information for Planning Purposes."

It is not NASA's intent to publicly disclose vendor proprietary information obtained during this solicitation. To the full extent that it is protected pursuant to the Freedom of Information Act and other laws and regulations, information identified by a respondent as "Proprietary or Confidential" will be kept confidential.

It is emphasized that this RFI is for planning and information purposes only and is NOT to be construed as a commitment by the Government to enter into a contractual agreement, nor will the Government pay for information solicited.

No solicitation exists; therefore, do not request a copy of the solicitation. If a solicitation is released, it will be synopsisized in FedBizOpps and on the NASA Acquisition Internet Service. It is the potential offeror's responsibility to monitor these sites for the release of any solicitation or synopsis.

Questions should be directed, in writing to: Ayana Briscoe at [Ayana.A.Briscoe@nasa.gov](mailto:Ayana.A.Briscoe@nasa.gov).