

CNES Research Announcement of Opportunity on

CFOSAT mission

Date of issue: April 25th, 2022

Proposals due: June 30th, 2022

1. Introduction

CNES, the French Space Agency (France), is launching this call for opportunities to continue supporting scientific research using CFOSAT (China France Oceanography SATellite) data. Investigators selected through this call will be part of the renewed CFO-ST (CFOSAT- Scientific Team) for the period 2023-2026.

CFOSAT, launched on the 29th October 2018 is an innovative mission, which carries two Ku-Band active instruments, SWIM dedicated to the measurement of directional of ocean surface waves, and SCAT dedicated to the measurement of ocean surface wind vectors. Radar cross-sections in Ku-Band are provided over all surfaces under a large range of incidence (0-50°) and azimuth angles (0-360°).

By providing wind and wave vectors at the same time and at a global scale, CFOSAT has already demonstrated its potential for contributing to important fields of research, especially in the following topics: atmosphere/ocean exchanges, ocean wave physics, sea-ice monitoring, atmospheric, wave and oceanic modeling or forecast, and climate monitoring of wind and wave fields. Thanks to the new types of observations (directional wave spectra), it is also a key element to prepare future oceanographic satellite missions such as those devoted to surface current measurements and new generation of altimetry concept.

CFOSAT was developed and is currently exploited under a Chinese-French cooperation as agreed through the Chinese-French Memorendum of Understanding (MOU).

In addition, a wider international scientific partnership is encouraged to foster the use of the innovative observations of CFOSAT by scientific community. The present call aims at encouraging scientists in the international scientific community to propose projects that will use CFOSAT data with at least one of the following objectives:

* to develop, assess methods, or carry out analyzes useful for the further improvements of the geophysical products: by using the CFOSAT products only, and/or through comparisons with in situ data, models, or other satellite observations;
* to propose complementary methods for the processing of CFOSAT observations;
* to develop new approaches to combine SWIM and SCAT observations products between SWIM and SCAT and/or alternative new products; topics such sea-ice and wind retrieval accounting for sea state dependency are highly encouraged;
* to develop the synergistic use of CFOSAT products with data from various missions and sensors (in particular HY-2, Jason 3, Sentinel-1 Sentinel-2, Sentinel 3, Sentinel-6, METOP, the upcoming SWOT mission) or in-situ measurements;
* to carry out scientific studies based on the products provided by the French data distribution centers AVISO+ managed by CNES and CERSAT managed by IFREMER. A list of topics of interest is provided below as an indication;
* to define and develop tools with potential operational application: data assimilation in numerical models, operational model validation, tools for sea users (marine and offshore industry, ship, oil spill mitigation, …);
* to propose technological and scientific basis for future missions that could follow on and inherit from CFOSAT.

Scientific topics of interest in the context of this call are in particular:

* ocean surface wave generation and evolution in various conditions,
* waves in sea ice,
* characterization of wave fields forcing coastal processes,
* wind and waves in extreme conditions,
* wave current/interaction, Stokes drift induced by waves
* impact of waves on the atmospheric or oceanic boundary layers,
* quantification or parametrization of air/sea fluxes,
* wave climatology with emphasis on wave spectral information,
* use of SWIM and SCAT for atmospheric, wave and ocean modeling, and coupled models,
* sea ice characterization.

In addition, secondary objectives which can benefit from the original observation configuration can be considered as:

* study of the continental ice shelf
* characterization of bare soil properties or vegetation.

For all these studies, the combined use of data from different sources is encouraged.

Scientists selected on the basis of their proposal will be part of the CFO-ST, which role is:

* to provide the scientific knowledge for the production of the best possible satellite-derived products from CFOSAT: ocean surface wind and waves as first priority but also sea-ice and products characterizing the continental surfaces (land, cryosphere);
* to conduct research activities on Earth science and applications based on the use of CFOSAT data (alone or combined with other satellite measurements, surface-based observations, or numerical models); it includes research in physical oceanography, meteorology, ice study, and related fields. It may also include studies devoted to the land surfaces;
* to increase the visibility of CFOSAT data through scientific publication and communications;
* to prepare definition of future missions that could follow CFOSAT and would inherit from CFOSAT experience and heritage.

CFOSAT products produced either in near real-time (NRT) or no- time critical (NTC) time are currently open to all users. The list of available products is presented in Section 4. SWIM products obtained by reprocessing with the latest processing chain are also made available when they are available (about once a year). In the future, members of the CFO-ST will have priority to access to new reprocessed data or new demonstration products in test by the French mission center. They will get expertise from CNES on the performances and data quality.

The CFO-ST functions as an international group of experts to provide advices on:

* product assessment,
* choice of operating modes,
* priorities of observations in case of partial failure,
* evolution of the processing chains and update with new products requested by expert users,
* reprocessing activities and connection to wave climate studies and international data services (in particular Copernicus Marine Service and ESA-CCI-sea state)
* links to be developed with other satellite missions or programs.

The results of this activity will be regularly presented in workshops, reports and publications.

1. Who can submit a proposal?

Proposals may by submitted by individuals or a group of scientists, academicians and research scholars belonging to recognized institutions belonging to government or non-government organizations.

Each proposal must be led by a principal investigator (PI) with eventually one or more Co-investigators (CoI) with a cover letter of the PI institution.

1. Information about CFOSAT

CFOSAT (the China France Oceanography Satellite) is a joint mission from the Chinese and French Space Agencies (CNSA, NSOAS, CNES), devoted to the observation of ocean surface wind and waves and related science and applications. Although designed for ocean surface studies, it also provides observations over continental surfaces.

CFOSAT carries two radar instruments, both of them being innovative in terms of geometry and design:

* SWIM (Surface Wave Investigation and Monitoring) a near-nadir (0 to 10° incidence) real-aperture Ku-Band azimuthally scanning radar designed for measuring the directional spectra of ocean waves;
* SCAT a wind scatterometer SCAT to measure the wind vector, radar in Ku-Band aiming at moderate incidence angles (26° to 46°) with a rotating fan-beam antenna.

With respect to existing satellite missions, the originality of CFOSAT is that it provides in a continuous way over the oceans, co-located wind vector fields and directional spectra of ocean waves for wavelengths in the range of about [30-500] m. It also provides the normalized radar cross-section in a multi-incidence and multi-azimuth geometry. This latter can be used on one hand to improve the inversion algorithms for estimating wind speed and significant wave height and on the other hand to characterize the small-scale roughness of all types of surfaces.

CFOSAT contributes to the global wind field observations in complement to existing scatterometer missions (e.g. ASCAT on METOP, SCAT on HY-2A, HY-2B), and to provisioning of wind speed and significant wave height in complement to other altimeter missions (like Jason or HY-2 series, Sentinel-3). Furthermore, it provides complementary information on wave properties with respect to SAR missions (like Sentinel-1), by giving access to directional spectra of ocean waves not only for the long swells but also for wind waves and mixed sea conditions whatever is the direction of these waves.

The system consists of a LEO polar sun-synchronous orbit system with local time ascending pass at the equator at 7:00 am. The orbit parameters are: altitude of about 519 km at the equator, inclination of 97.454°, repetition cycle of 13 days. With these parameters and accounting for the instrument geometry the system provides a global coverage within 3 days for wind fields (SCAT) and almost global for waves (SWIM) over the 13 day- cycle.

Data are transmitted to Mission Centers using several receiving stations. Thanks to a set of two polar stations, the system has the capability to achieve near-real time transmission (i.e. less than 3 hours after the acquisition) of the global set of observations in order to feed operational atmospheric or wave prediction systems for assimilation and forecast processes.

The Chinese Ground Segment is composed of a “Satellite Control Center” located in Xi’an (China), several telemetries, tracking and command ground stations, 3 X-band receiving stations located in China, and a Mission Center for data processing, distribution and archiving.

The French CFOSAT Ground Segment is composed of two X-band Stations, located in Kiruna (Sweden) and Inuvik (Canada), and two mission centers:

* CWWIC operated by CNES in Toulouse (France) for Near-Real Time processing, up to the Level2 products. CWWIC is also in charge of upgrading the level 2 processing chain when this is necessary, and of producing reprocessed SWIM data sets when major release is implemented (about once a year). The products generated by CWWIC are distributed by the data portal AVISO+ (https://www.aviso.altimetry.fr/en/missions/current-missions/cfosat/access-to-data.html). All files corresponding to these products contain “OPxx” in their name (xx is the version number). See section 4 for details. CWWIC also distributes the SWIM products within 3 hours after acquisition to EUMETSAT who makes these data available through the meteorological network system (EUMETCast) to agreed meteorological centers (EUMETSAT member states and ECMWF).
* IWWOC operated by Ifremer in Brest (France) for differed-time data processing, distribution and archiving (alternative L2 products-called L2S, L3 and L4). The products are detailed and distributed on CERSAT portal (<https://wwz.ifremer.fr/cersat/Projects/Recent-and-ongoing-projects/IWWOC>) or accessible from the ODATIS French oceanic data center (<https://www.odatis-ocean.fr/donnees-et-services/acces-aux-donnees/catalogue-complet/#/search?from=1&to=30&sortBy=resourceTitleObject.default.keyword&languageStrategy=searchInDetectedLanguage&any=IWWOC>). The data are available in a free and open manner through FTP or HTTPS. They are fully reprocessed upon each new major release.

In addition, SWIM products (called “L2P”) are generated to feed the European Copernicus Marine Service and made available through the data portal AVISO+ (https://www.aviso.altimetry.fr/en/missions/current-missions/cfosat/access-to-data.html). These products are also described in Section 4.

For more details on the mission, the reader can refer to references [1, 2, 3] described in Section 9. Details on the SWIM instrument data processing and first analysis of the geophysical performances are available in [4-8]. Details on SCAT instrument are in [10].

**4. Products available in the frame of the Call for opportunity**

***4.1 Data product***

Details on the SWIM and SCAT observations and data processing may be found in the references [4-8]. Details on data products can be found in [9-11] Here below is a summary on the main types of products from the French mission centers.

The following products are available from the French data centres:

* from the AVISO+ portal:
  + SWIM products from the operational chain named “OPxx”, where xx is the version number of the processing. Current available version is V5.1.2 and the files are name (CFO\_OP05\_SWI\*). This processing version 5.2.0 is applied since July 27th 2021. The reprocessed data set with version 5.1.2 is available for observations from April 25th 2019 to 26th July 2022. See details in the product user guides [11, 12];
  + SWIM products called “L2P” products: sub-sample of the CFO\_OPxx products with additional data quality control and selection of the main and best variables (when redundancy exists). These products are those which feed the Copernicus Marine Service for their multi-satellite products. See details in <https://www.aviso.altimetry.fr/fileadmin/documents/data/tools/SWH_CFOSAT_L2P_Nadir_handbook_SALP.pdf> and <https://www.aviso.altimetry.fr/fileadmin/documents/data/tools/CFOSAT_L2PBOX_handbook_SALP.pdf>;
  + SCAT products called from the NSOAS processing chain implemented at CWWIC: in the global attribute “product version” of CFO\_OPER\_SCA\* products.

For each if these products the data are organized with one product (one file) per orbit.

* from the IFREMER/CERSAT portal
  + An alternative SWIM L2 processing, called L2S, providing along-track directional wave spectra measures, as well as the integrated parameters of the associated wave systems (wave length, significant wave height, direction), over the global ocean;
  + sea ice backscatter maps generated daily from SCAT scatterometer over Arctic and Antarctic poles allowing discrimination between sea ice and water but also first-year and multi-year ice;
  + a combined product between SWIM and SCAT collocating the measurements of both instruments over the SCAT geometry, with multiple auxiliary fields. This product is especially intended to explore new topics by combining observations from both instruments;
  + systematic colocations between CWWIC SWIM L2 and IWWOC SWIM L2S wave measurements and wave spectra estimated from WaveWatch3 model.

The following products are available from both the Chinese data centres:

* SCAT products with 12.5 km resolution generated in NSOAS, which optimize coastal wind inversion and named “CFO\_EXPR\_SCA\_C\*\_coa\*\_”.

Table 1: List of products accessible to CFOSAT users from the French data centers

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ***Product type*** | ***Product latency*** | ***Product level and content*** | ***Portal \**** | ***Directory if ftp access*** |
| ***SWIM nadir measurements*** | Near Real Time | **SWIM\_L1A**: altimeter waveform, normalized radar cross-section sigma0  **SWIM\_L2**:  significant wave height Hs (1-5Hz), wind speed (1-5Hz).  **SWIM L2P\_SWH\_1Hz\_Nadir\_NRT**:  same processing as for SWIM\_L2 but with edited and cross-calibrated (according to JASON3) significant wave height 1Hz | AVISO+ | NA (only on-line file request)  cfosat/swim\_l2\_op05  cfosat/swim\_l2p\_nadir\_nrt |
| Non Time Critical | **SWIM L2P\_SWH\_1Hz\_Nadir\_NTC**:  Climate series of low resolution (1Hz) significant wave heights  **SWIM L2P SWH 5Hz\_Nadir\_NTC**:  Climate series of high resolution (5Hz) significant wave heights | AVISO+ | cfosat/swim\_l2p\_nadir\_1hz\_ntc  cfosat/swim\_l2p\_nadir\_5hz\_ntc |
| ***SWIM off-nadir measurements*** | Near Real Time | **SWIM\_L1a**: sigma0 values following the original sampling and geometry of the instrument, geolocalized on the surface  **SWIM\_L1b**: only for ocean scenes and observations from incidence beams of 6, 8, 10°: signal modulations within each scene, and associated density spectrum  **SWIM\_L2** all scenes: mean profiles of sigma0 versus incidence and azimuth, representative of areas of 70 km x 90 km on each side of the nadir track.  **SWIM\_L2**for ocean scenes and observations from incidence beams of 6, 8, 10° only: directional spectra of ocean waves representative of areas of 70 km x 90 km on each side of the nadir track, and associated wave partitions, main parameters of the total spectra and their partition (significant wave height Hs, dominant direction, dominant wavelength), ECMWF wind and wave parameters from the forecast model gridded at the scale of the L2 product  **SWIM L2P\_SWH\_Box\_Off\_Nadir\_NRT**: same processing as SWIM\_L2 (except wave spectral partitioning) but the files contain a sub-set of variables (for the wave spectra and wave parameters, they come from the SWIM beam 10° only), and spectra over land, ice and incomplete spectra are rejected | AVISO+ | NA (only on-line file request)  cfosat/swim\_l1b\_op05  cfosat/swim\_l2\_op05    cfosat/swim\_l2\_op05    cfosat/swim\_l2p\_box\_nrt |
| Non Time Critical | **SWIM\_L2S**: 2D wave spectra with associated partitioning (alternative sampling method including a priori information),  **SWIM/WW3 model colocations** : SWIM L2/WW3 and SWIM-L2S/WW3 collocated spectra  **SWISCA\_L2S**: synergy product between SWIM and SCAT collocated sigma0 measurements of both instruments over SCAT geometry, with multiple auxiliary fields.  **SWIM\_L3**: statistical products on waves (issued on a 3 months basis)  **SWIM\_ L4**: Swell fields combined with ancillary data (satellites or model) on a global grid | CERSAT | /projects/iwwoc/swi\_l2s  /projects/iwwoc/colocations/swim/model/ww3  /projects/iwwoc/swisca\_l2s\_\_\_  in preparation, not available yet  in preparation, not available yet |
| **SWIM\_ICEL1A** : on coming prototype product : geolocalized ice flag, mean sea-ice probability, mean normalized radar cross-section from SWIM given by beam and macrocycle. GMF used for processing. ECMWF information: sea-coverage, land-sea mask, wind speed, wave height.    **SWIM\_ICEL2** : on coming prototype product : geolocalized ice flag , ice probability and likelihood over the swath, by beam and macrocycles. GMF used for processing. | AVISO+ | in preparation, not available yet    in preparation, not available yet |
| ***SCAT*** | Near Real Time | **SCAT\_L1B**: geocoded sigma0 along the swath (NSOAS processors)  **SCAT\_L2A**: geocoded sigma0 on 25 km gridded resolution cell  (NSOAS processor)  **SCAT\_NRT**: wind vectors on 25 km gridded resolution cell (NSOAS processor) | AVISO+ | NA  (only on-line file request) |
| Non Time Critical | **SCAT\_L3ICE** : daily sea ice backscatter maps at 12.5 km resolution over Arctic and Antarctic polar stereographic projection | CERSAT | /projects/iwwoc/sca\_l3ice\_/ |
| Twice per day | SCAT product: wind vectors on 12.5 km gridded resolution cell (NSOAS processor) | NSOAS  and AVISO+ | http://osdds.nsoas.org.cn |
| ***SCAT products with Collocated SWIM*** | Non Time Critical | SWISCA\_L2S: synergy product between SWIM and SCAT collocated sigma0 measurements of both instruments over SCAT geometry, with multiple auxiliary fields. | CERSAT | /projects/iwwoc/swisca\_l2s\_\_\_ |

***4.2 Data provisioning***

The distribution modalities are:

* From the AVISO+ portal: <https://www.aviso.altimetry.fr/en/missions/current-missions/cfosat/access-to-data.html> :
* on an ftp server for the products in Table 1 mentioned as accessible with ftp;
* through on demand request from the archive for all SWIM products (except L2P SWH 1Hz and 5Hz Nadir) and all SCAT products.
* From the Ifremer/Cersat portal: without registration, on an FTP (ftp ://ftp.ifremer.fr/ifremer/cersat/projects/iwwoc ) or HTTPS (<https://data-cersat.ifremer.fr/projects/iwwoc/>) server in differed time (delay depending on the kinds of products)

1. Functioning of the Science Team

Each team selected will conduct its research project and will interact with mission management teams from CFOSAT space Agencies. These interactions will take place in particular during CFO-ST meetings that will gather representatives of the teams selected through this call and through the Chinese selection.

During these meetings the status of the mission will be presented, scientific investigators will be invited to present poster or oral contributions and to discuss about results of their research and topics to be addressed to provide advisory to the CFOSAT project teams.

1. Proposal requirements

Interested scientific teams must propose projects in relation with the objectives detailed in section 1. If the proposal is a continuation of the work selected for the first Science Team period (2019-2022), a summary of the results will be presented.

They must detail the experience and qualification of the Principal and Co Investigators in their related field. The description of work should cover a period of up to four-years.

The main expected outcomes of the proposed work should be described (algorithm and/or product assessment, new product definition, scientific publications, use of data for science and applications, ...).

Each proposal should follow the guidelines indicated in Appendix 1.

Each proposal must be forwarded through the Head of the Institution, with appropriate assurance for providing necessary facilities for carrying out the proposed work.

Final selection to join the CFO-ST will require that an adequate support be obtained by these teams.

1. Proposal selection

For European proposals, evaluation will be organized by CNES which will rely on the scientific committee TOSCA to conduct the evaluation and propose the selection. Coordination between France and Chinese partners will be setup for the selection of non-European proposals.

The PIs will be selected for an anticipated period of four years. A new announcement of opportunity may be organized before or at the end of this period to extend the work of this selected team.

CNES seek to maximize the scientific output of the CFOSAT-ST through a strong partnership with international investigators and agencies. CNES also encourages proposals that are coordinated with other related and ongoing international programs (among which the joint program DRAGON of ESA and of the Chinese Ministry of Science and Technology).

For non-French and non-Chinese proposals, proposers will have to seek and to secure appropriate sources of funding from appropriate national, European or international authorities. It is essential for proposers to document the funding sources required to enable their proposed CFOSAT-ST investigations.

1. Proposal Submission and Selection Schedule

Scientist may submit their proposal through mail sent to the following email address : [oceano@cnes.fr](mailto:oceano@cnes.fr).

All proposals must be written in English. The proposal must not exceed 20 pages (single space) including figures, tables and references in accordance with the guidance provided in Appendix 1 and cover letters provided in Appendix 2. Additional information such as curriculum vitae and other relevant information may be attached as an appendix.

French proposals when selected may be directly funded by CNES under this solicitation. The funding available for French investigators will come from CNES national program budget appropriations, in accordance with TOSCA rules and procedures, for scientific and Cal/Val investigations. French researches will be encouraged to promote their data or products via ODATIS portal.

The complete proposal schedule is:

* Release of joint research announcement: **April 25th, 2022**,
* Reception of Notices Of Intent, by mail at oceano@cnes.fr address (strongly encouraged, not mandatory but it will allow to optimize the peer review process, see Appendix 3): **May 31st, 2022**,
* Proposals reception at [oceano@cnes.fr](mailto:oceano@cnes.fr) : **June 30th, 2022,**
* Communication of the final selections will be made before November 30th, 2022.

Late proposals (received after the deadline of June 30th, 2022) will not be considered for review.

1. References

[1] “CFOSAT mission requirements document “, Hauser D., Liu Jianqiang and C. Tison; CNES document CF-SYMI-SP-20-CNES

[2 ] Hauser D., Dong Xiaolong, L. Aouf , C. Tison, P. Castillan, Overview if the CFOSAT mission, proceedings of IGARSS 2016

[3] Hauser D. , C. Tison , T. Amiot , L. Delaye , A. Mouche , G. Guitton , L. Aouf , P.

Castillan, “CFOSAT: A new Chinese-French satellite for joint observations of ocean

wind vector and directional spectra of ocean waves,” Proc. SPIE 9878, Remote Sensing

of the Oceans and Inland Waters: Techniques, Applications, and Challenges, 98780T

(May 7, 2016); doi:10.1117/12.2225619,http://dx.doi.org/10.1117/12.2225619

[4] “Description of the SWIM instrument for the CFOSAT CDR”, C. Tison and T. Amiot, CNES document CF-SCPLSW-NT-2441-CNES

[5] SWIM Products Users Guide, CNES document CF-GSFR-MU-2530-CNES

[6] Hauser D., C. Tison, T. Amiot, L. Delaye, N. Corcoral et al, SWIM: the first spaceborne wave scatterometer, IEEE Trans. on Geoscience and Remote Sensing, 10.1109/TGRS.2017.2658672, VOL 55, 5, May 2017

[7] Hauser D., Cedric Tourain, Laura Hermozo, Dunya Alraddawi, Lotfi Aouf, et al.,

New observations from the SWIM radar on board CFOSAT: instrument validation and ocean wave measurement assessment, IEEE Transactions on Geoscience and Remote Sensing, 2021, 59 (1), pp.5-26. doi: 10.1109/TGRS.2020.2994372, available on <https://hal-insu.archives-ouvertes.fr/insu-02324383v2/document>

[8] Tourain C., F. Piras, A. Ollivier, D. Hauser, F. Poisson, F. Boy, P. Thibault, L. Hermozo, , C. Tison, Benefits of the Adaptive algorithm for retracking altimeter nadir echoes: results from simulations and CFOSAT/SWIM observations, 2021, IEEE Transactions on Geoscience and Remote Sensing, doi: 10.1109/TGRS.2021.3064236, doi: [10.1109/TGRS.2021.3064236](https://doi.org/10.1109/TGRS.2021.3064236)

[9] RFSCAT Products Users Guide

[10] Tison and Hauser, SWIM products users guide (Product description and Algorithm Theoretical Baseline Description), CNES document CF-GSFR-MU-2530-CNES, 2019, accessible on line <https://www.aviso.altimetry.fr/fileadmin/documents/data/tools/SWIM_ProductUserGuide.pdf>

[11] SWIM product simplified Handbook, CNES document CF-GSFR-MU-3581-CNES, 2020, available on

https://www.aviso.altimetry.fr/fileadmin/documents/data/tools/SWIM\_simplified\_handbook.pdf

Appendix 1

Guidelines for responding to the CFOSAT announcement

Each proposal should be written in English,

Each proposal should be composed of

- one or several cover letters provided in Appendix 2.

- the main document which must not exceed 20 pages (single space) including figures, tables,

- appendices with at least the PI curriculum and publication list

The main document must contain the following sections:

**Principal Investigator**

Surname, First name

Title

Affiliation (laboratory, institution, ...):

Address

E-mail, telephone

**Title of the project:**  a short descriptive title, a acronym (max 10 letters) is also appreciated

**Summary**

A simple, concise statement about the investigation, its conduct and the anticipated results. This summary should not exceed one single-spaced, typewritten pages.

**State of the art in the context of the proposal:** within the proposing team, at the national and international level. If the proposal is a continuation of the work selected for the first Science Team period (2019-2022), a summary of the results will be presented.

**Work plan and project Schedule**

**Type of CFOSAT data requested for the proposal**

**Main expected outcomes of the project**

Choose one or several in the following list.

* + - * algorithm and/or product assessment,
      * new product definition,
      * scientific publications,
      * other (precise).

**Ressources**

- Ressources brought by the team and its institution

- personal (CoIs, Other personal)

- functioning budget

- existing data, models, …

- ressources requested in the context of this project (specify the frame considered to cover the need)

French teams seeking CNES financial support should in addition use the TOSCA “APR 2023” excel form to indicate requested funding. This form will be part of the document package. If this form missed don’t hesitate to request it by sending an email to [oceano@cnes.fr](mailto:oceano@cnes.fr).

**Considered collaborations**

**References**

**Appendices**

- PI curriculum vitae including a list of representative publications

- CoIs curriculum vitae including a list of representative publications

- Any other information if necessary for the reviewing process

Appendix 2

Model of cover letter

We have carefully read the terms and conditions of the CFOSAT announcement and agree to abide with them.

We certify that if our proposal is accepted and supported by ………………., the facilities and support identified in our proposal and available at our institution will be extended to the Principal Investigator and Co\_I of the proposal.

Budget requested (only for French Investigators (PI or Co-I))

1st Year \_\_\_\_\_\_\_\_\_\_\_\_ 2nd Year \_\_\_\_\_\_\_\_\_\_\_\_ 3rd Year \_\_\_\_\_\_\_\_\_\_\_\_\_4th Year

Total: \_\_\_\_\_\_\_\_

Signature of PI with name and designation

Signature of Institution Head with Name and signature

Date

Appendix 3

Notice Of Intent to propose

In order to plan for a timely and efficient peer review process, Notices of Intent (NOI’s) to propose, are strongly encouraged by the date given in this Research Announcement. The submission of a NOI is not a commitment to submit a proposal, nor is information contained therein considered binding on the submitter. NOI’s are to be submitted electronically by sending the requested information at: [oceano@cnes.fr](mailto:oceano@cnes.fr)

At a minimum, the following information will be requested:

- the Principal Investigator’s name, mailing address, phone number, and E-mail address,

- the name(s) of any Co-Investigator(s) and institution(s) known by the NOI due date,

- a descriptive title of the intended investigation; and,

- a brief description of the investigation to be proposed.

In addition, a list of up to four names may be suggested as peer reviewers by the Investigator.

A separate NOI must be submitted for each intended proposal.