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ID 1097805-3

**CONTRACT FOR THE OPEN ACCESS TO THE FLIS  
INFRASTRUCTURE  
1903**

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**USER**

Name **Aalto University Foundation sr, Department of build environment**  
Registered office PO BOX 11000, FI-00076 AALTO, FINLAND  
VAT No. FI22283574  
Represented by Riku Vahala, Head of Department

**AND**

**PROVIDER**

Name **Ústav výzkumu globální změny AV ČR, v. v. i. (Global Change Research Institute, public research institute)**  
Registered office Bělidla 986/4a, 603 00 Brno  
ID No. 86652079 VAT No. CZ86652079  
Registered in Register of Public Research Institutes  
Represented by Prof. RNDr. Ing. Michal V. Marek, DrSc., dr. h. c., Director

Pursuant to Section 1746 (2) of the Civil Code, conclude a contract as follows:

**PREAMBLE**

1. The Provider has obtained funds from the Operational Programme of Research and Development for Innovations (hereinafter only as the "OP RDI"), Priority Axis 1 – European Centres of Excellence for Project Implementation CZ.1.05/1.1.00/02.0073, CzechGlobe – Centre for the Study of Global Climate Impact (hereinafter only as the "CG Project").
2. Using the funds of the OP RDI, the Provider, among other things, has purchased elements of specialised infrastructure. One element is FLIS – Flying laboratory of imaging systems (hereinafter only as the "FLIS").
3. The FLIS includes the following equipment: hyperspectral imaging spectroradiometers CASI 1500, SASI 600 and TASI 600, laser scanner Riegl Q780, air carrier Cessna C208B, and additional equipment required for data collection and processing (IMU/GNSS units, gyrostabilization platform, navigation system, etc.).

4. According to Chapter 5.3 of the technical description of the CzechGlobe Project, the specialised infrastructure may be used at three basic levels: a) Open access, b) Project cooperation, and c) Cooperation in contractual research.
5. The Provider has published an Open Access Call for Submitting Projects on its website. The User has submitted the project entitled "Data Acquisition over the Territory of Hyytiala and Jarvselja" (project) to the Provider. The Project forms an annex to this Contract.
6. Due to the nature of the Provider (a legal entity governed by public law whose main purpose is research) and the User (a legal entity governed by public law whose main purpose is research and dissemination of knowledge) and due to the research nature of the Project, the Provider has decided to make the FLIS available for the Project purposes.
7. CzechGlobe performs regular maintenance and repairs of the FLIS according to plans, conditions of the manufacturers of infrastructure elements, and as needed.

#### **I. PURPOSE AND THE FACILITY OF THE CONTRACT**

1. The purpose of the Contract is to use the FLIS for Open Access science and research needs.
2. The facility of this Contract is the Provider's obligation to provide access to the FLIS infrastructure, including its service. The facility of this Contract is the User's obligation to provide the Provider with cooperation (e.g. in obtaining the necessary permits, etc.) and to comply with the conditions for handling the access outputs specified in this Contract.
3. Under this Contract, flights of a total duration exceeding 30 hours may not be conducted.
4. Under this contract, total duration of campaign (data acquisition for project purposes) exceeding 12 days may not be conducted.

#### **II. FINANCIAL ARRANGEMENTS ON THE ACCESS COSTS**

1. No price or remuneration shall be paid in return for the access to the infrastructure. The User shall pay only the direct costs of the access to the infrastructure according to the actual scope of access on the basis of the calculation units specified in Annex No. 1 hereto.
2. The direct costs will be paid on the basis of an invoice.
3. VAT at statutory rate will be added to the direct costs.
4. Bank fees related to payments shall be paid by the User.
5. The invoice shall comply with the requirements of a tax document; the maturity will be 30 days from the date of issuing the invoice.

#### **III. ACCESS TO THE INFRASTRUCTURE**

1. The data will be collected between 01/07/2019 and 31/07/2019.
2. The outcomes shall be accessible to both Parties by 31/10/2019 at the latest.
3. The outcome means raw non-georeferenced data captured over the User's interest area defined in the Project.
4. The scope of the outcomes is determined in the Project.
5. The minimum accuracy of the outcomes necessary to fulfil the purpose of this Contract is specified in the Project.
6. The User shall receive the data in the form and quality in which they will be collected.

#### **IV. HANDLING THE OUTCOMES**

1. The outcomes may only be used for scientific and teaching purposes. Under no circumstances may the outcomes be used for commercial use. Under no circumstances may the outcomes be used for the User's economic activity.
2. The outcomes may be further processed using any method.
3. The User shall not publish the outcomes in a form allowing further processing.
4. The User may transmit the outcomes to a third party within the scope of the licence referred to in paragraph 1 of this Article.
5. If the User publishes the outputs, the User shall indicate that the outcomes were made owing to the Provider.
6. Both the User and the Provider shall receive the outcomes.

#### **V. REPRESENTATIVES OF THE PARTIES**

1. The Provider's representative is Ing. Jan Hanuš. This Provider's representative may act on behalf of the Provider in association with this Contract, but may not modify or terminate the Contract.
2. The User's representative is Prof. Miina Rautiainen. This User's representative may act on behalf of the User in association with this Contract, but may not modify or terminate the Contract.

#### **VI. CONTRACTUAL PENALTIES AND LIABILITY FOR DAMAGE**

1. The Provider shall claim the User to pay **a contractual penalty of EUR 1,000** for each case of breach of this Contract by the User.
2. A separate invoice with a maturity of 30 days will be issued for the contractual penalty; the day of taxable supply shall be deemed to be the date of issue of the invoice.
3. The obligation to pay the contractual penalty shall not exclude the right to compensation for damage in the amount exceeding the contractual penalty. If the contractual penalty is reduced by the court, the right to compensation for damage shall remain in the amount in which the damage exceeds the amount determined by the court as reasonable without any further limitation.
4. In association with the possible amount of potential future damage, the User acknowledges that the damage in association with unauthorized handling of the outcomes may reach up to twice the acquisition price of the FLIS.
5. The aggregate liability of User shall in all cases be restricted to the amount paid by it under the Contract, however, it shall not in any event exceed fifty thousand euro (EUR 50,000). The parties shall not be liable for indirect or consequential damages or losses.
6. The limitations of liability defined herein shall not apply when the damage is caused wilfully or by gross negligence.

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## **VII. CONTRACT TERMINATION**

1. The Contract may be terminated by written agreement.
2. Unless the data are not collected by 31/07/2019 due to the unfavourable weather conditions, due to safety reasons, due to the aircraft failure, or failure to obtain the required permits, the Contract shall set aside in its entirety.
  - 2.1. The Contract may be terminated by withdrawal from the Contract. The withdrawal shall be made in writing and efficiently served onto the other party. The Provider may withdraw from the Contract in cases stipulated by law and in the case of breach of the terms of this Contract.
  - 2.2. The User may withdraw from the Contract in cases stipulated by law.

## **VIII. COMMON AND FINAL PROVISIONS**

1. Neither Party may assign a claim or debt from this Contract or this Contract to a third party without the written consent of the other Party.
2. Should any of the provisions of this Contract prove to be unenforceable (non-existent), the effect of this defect on other provisions of the Contract shall be assessed by analogy with Section 576 of the Civil Code.
3. This Contract shall be governed by German law, with the exception of conflict of laws. All discussions about the Work and its performance shall take place in English.
4. This Contract may only be amended in writing, by means of a mutually signed numbered amendment to this Contract.
5. The following annexes form an integral part of this Contract:
  - a) Annex No. 1: Calculation Units for the Quantification of Direct Costs
  - b) Annex No. 2: Project of "Data Acquisition over the Territory of Hyytiala and Jarvselja"
6. This Contract has been drawn up in 4 copies, out of which each Party shall receive 2 copies.
7. The Parties agree unconditionally to the publication of the full wording of the Contract so that this Contract may be the subject of the information provided in accordance with Act No. 106/1999 Coll., on Free Access to Information, as amended, and Act No. 340/2015 Coll., on Special Conditions for the Effectiveness of Certain Contracts, Publication of these Contracts and on the Register of Contracts (Act on Register of Contracts), as amended
8. The Parties hereby declare that prior to its signature, they have read the Contract and agree with its content without reservation. The Contract is an expression of their true, actual, free and serious will, in witness whereof the authorised representatives of the Parties attach their own signatures.
9. This Contract becomes effective upon its publication in the Register of Contracts.

In Espoo on

Riku Vahala  
Head of Department  
Aalto University

In Brno on

Prof. RNDr. Ing. Michal V. Marek, DrSc., dr. h. c.  
Director  
Global Change Research Institute AS CR, public  
research institute

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**ANNEX No. 1:      CALCULATION UNITS FOR THE QUANTIFICATION OF DIRECT COSTS**

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|   | Unit price | Estimated number of units per OA | Estimated price per OA (excl. VAT) |
|---|------------|----------------------------------|------------------------------------|
| <b>Aircraft lease and operation</b>                             |            |                                  |                                    |
| FLIS lease  | 0 EUR      | 19                               | 0 EUR                              |
|   |            |                                  |                                    |
| <b>Direct operational costs</b>                                 |            |                                  |                                    |
| Direct operational costs of the aircraft per 1 hour of flight   | 1 210 EUR  | 19                               | 22 990 EUR                         |
| Direct operational costs of the aircraft crew per 1 day standby | 260 EUR    | 12                               | 3 120 EUR                          |
|   |            |                                  |                                    |
|   |            |                                  |                                    |
|   |            |                                  |                                    |
| <b>Total estimated costs of Open Access</b>                     |            |                                  | <b>26 110 EUR</b>                  |

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**ANNEX No. 2: PROJECT OF “DATA ACQUISITION OVER THE TERRITORY OF HYYTIALA AND JARVSELJA”**

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**Application Form for Flying Laboratory of Imaging Systems (FLIS)**

**Part 1 : General Information**

|  |  |
|--|--|
| <b>Project title</b> (characterising the scope of application) | <b>Data Acquisition over the Territory of Hyytiala and Jarvselja</b> |
| <b>Project acronym</b> (optional)                              | <b>Hyytiala</b>  |
| <b>Start date</b> (expected)                                   | <b>15.6.2019</b>   |
| <b>End date</b> (expected)                                     | <b>31.7.2019</b>   |

**Project leader**

|                          |   |
|--------------------------|---|
| <b>Title</b>             | Prof.   |
| <b>First name</b>        | Miina   |
| <b>Last name</b>         | Rautiainen  |
| <b>Job title</b>         | Professor   |
| <b>Organisation name</b> | Aalto University  |
| <b>Department</b>        | Department of Built Environment   |
| <b>E-mail</b>            | miina.a.rautiainen@aalto.fi   |
| <b>Phone number</b>      | +358504010780   |
| <b>Address</b>           | Otakaari 4  |
| <b>City</b>              | Espoo   |
| <b>Postal code</b>       | 02150   |
| <b>Country</b>           | Finland   |
| <b>WWW</b>               | <a href="https://people.aalto.fi/miina.a.rautiainen#contact">https://people.aalto.fi/miina.a.rautiainen#contact</a> |

**Contact person for all correspondence (if different)**

|                          |  |
|--------------------------|--|
| <b>Title</b>             |  |
| <b>First name</b>        |  |
| <b>Last name</b>         |  |
| <b>Job title</b>         |  |
| <b>Organisation name</b> |  |
| <b>Department</b>        |  |
| <b>E-mail</b>            |  |
| <b>Phone number</b>      |  |
| <b>Address</b>           |  |
| <b>City</b>              |  |
| <b>Postal code</b>       |  |
| <b>Country</b>           |  |
| <b>WWW</b>               |  |

**Collaborators (if different)**

|                          |  |
|--------------------------|--|
| <b>Title</b>             |  |
| <b>First name</b>        |  |
| <b>Last name</b>         |  |
| <b>Job title</b>         |  |
| <b>Organisation name</b> |  |
| <b>Department</b>        |  |
| <b>E-mail</b>            |  |
| <b>Phone number</b>      |  |
| <b>Address</b>           |  |
| <b>City</b>              |  |
| <b>Postal code</b>       |  |
| <b>Country</b>           |  |
| <b>WWW</b>               |  |

## **Part 2: Instrument**

### **1) What type of instrument would you like to use for data acquisition?**

(In case of more types of instruments please copy the following paragraph)

Specify the instrument: CASI-1500; SASI-600; TASI-600; LMS Q780

Specify desired spatial resolution: 0,5m; up to 2,5m; up to 2,5m; at least 6 point per m2

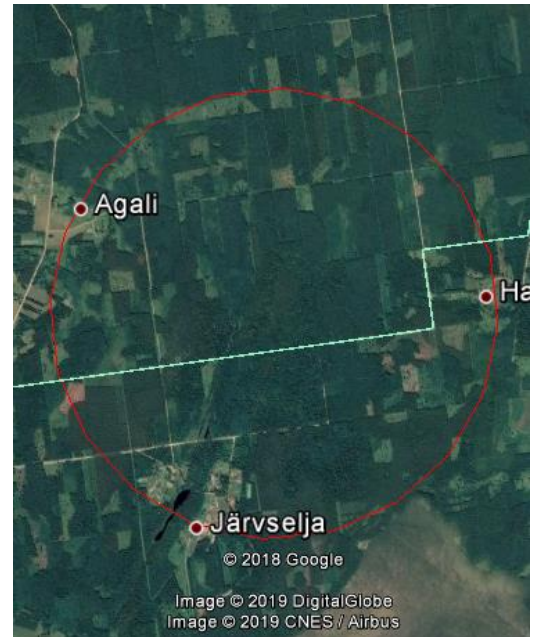
Specify desired spectral resolution: 15nm; 15nm; 110nm; n.a.

Specify area for data acquisition:

- 1) Hyytiala (Finland) – rounded area of interest with diameter approx.. 3,6km
- 2) Jarvselja (Estonia) – rounded area of interest with diameter approx.. 3,5km



*Hyytiälä research site*



*Jarvselja research site*

**2) What kind of assistance by technical staff of CzechGlobe or related services (e.g. additional corrections) is needed? Data are not georeferenced and pre-processed to level of at-sensor radiance (L1). (Please specify not only technical features but outline also the financial aspects).**

- 1) Radiometric corrections
- 2) Atmospheric corrections
- 3) Georeferencing

## **Part 3: Access to Data**

**If you need any CzechGlobe data acquired previously by FLIS, please specify** (e.g. area, type of data). Basic information about already acquired data is available on <http://mapserver.czechglobe.cz/>.



## **Part 4: Project description (narrative)**

- 4.1 Abstract of the project:** *If the project is accepted, it will be published on the CzechGlobe website. Please make this summary understandable to a general and non-scientific audience. (max. 400 words)*

The project is called "From needles to landscapes: a novel approach to scaling forest spectra" (FREEDLES, 2018-2023) and is based at Aalto University (Finland). The project sets out to develop a universal method for quantifying clumping of foliage in forests based on detailed 3D structure and spectral reflectance data. Clumping will be linked to photon recollision probability, an exciting new development in the field of photon transport modelling. Photon recollision probability will, in turn, be used to develop a spectral scaling algorithm which will connect the spectra of vegetation at all hierarchical levels from needles and leaves to crowns, stands and landscapes. The spectral scaling algorithm will be validated with detailed reference measurements in both laboratory and natural conditions, and applied to interpret forest variables from airborne and satellite data at different spatial resolutions. This project receives funding from the European Research Council (ERC) under the European Union's Horizon 2020 research and innovation programme (grant agreement No 771049).

- 4.2 Description of the project** (aims, methodology, outcomes; max. 1000 words):

Structural and spectral data from different types of forests is collected using a range of techniques, including lab and field spectroscopy, terrestrial laser scanning, forest inventory measurements, and airborne and satelliteborne data. The collected data are used to develop and validate a forest reflectance model.

- 4.3 Is the project connected with / (co-)financed from a grant** (e.g. EU grant, public subsidy)?

Yes / No

**4.3.1. Name of the grant and funding body:** This project receives funding from the European Research

Council (ERC) under the European Union's Horizon 2020 research and innovation programme (grant

agreement No 771049).

- 4.4 Do you see a potential for financing this proposed research cooperation from any research or similar funding and would you be interested in this kind of project cooperation with CzechGlobe?**

Yes / No

**4.4.1 If yes, please specify:**

- 4.5 Is any part of the project covered by confidentiality?**

Yes / No

**4.5.1 If yes, please specify and give the reasons for confidentiality:**