**Contract for the Open access to the FLIS Infrastructure**

**2206**

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**User**

|  |  |
| --- | --- |
| Name | **University of Zurich** |
| Registered office | Department of Geography | Winterthurerstrasse 190 | 8057 Zurich | Switzerland |
| VAT No. | CHE-115.665.634 |
|  |  |

**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 (hereinafter the “FLIS Sensors”), 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 “HyPlant Data Acquisition 2022 - UZH” (hereinafter the ”Project”) to the Provider. The Project forms an annex to this Contract. The User will provide a sensor (via a third party) for the Project (hereinafter the “HyPlant Sensor”).
  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.

1. **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 support the Provider (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 20 days may not be conducted.
2. **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.
3. **Access to the Infrastructure**
   1. The data will be collected between 01/06/2022 and 30/09/2022.
   2. The outcomes shall be accessible to both Parties by 30/10/2022 at the latest.
   3. The outcome means raw non-georeferenced data captured with the FLIS Sensors listed in paragraph 3 of the Preamble over the User’s interest area defined in the Project. The outcome does on include data acquired with the HyPlant Sensor (hereinafter “HyPlant Data”). HyPlant Data shall be owned by the User and its use by the User shall not be affected by this Agreement.
   4. The intended 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.
4. **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. Results derived from further processing of the outcomes by the User can be published so that open access publishing following FAIR principles is possible.
   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.
   7. For avoidance of doubt, outcomes does not include HyPlant Data.
5. **Representatives of the Parties**
   1. The Provider’s representative is 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. Dr. Alexander Damm-Reiser. This User’s representative may act on behalf of the User in association with this Contract, but may not modify or terminate the Contract.
6. **Contractual Penalties and Liability for Damage**

Neither of the Parties gives any warranties concerning the accuracy and completeness of information disclosed and of objects transferred or concerning the non-existence of rights of third parties. The Parties mutually waive any claims, to the extent permitted by law, for themselves and their staff members in respect of any damage resulting from the performance of the Project. The respective liability for their interactions with third parties shall not be affected by this waiver.

The limitations of liability defined herein shall not apply when the damage is caused wilfully or by gross negligence.

1. **Contract Termination**
   1. The Contract may be terminated by mutual written agreement.
   2. If the data are not collected by 30/09/2022 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 automatically be terminated in its entirety.
      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 by User.
      2. The User may withdraw from the Contract in cases stipulated by law.
2. **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:
      * 1. Annex No. 1: Calculation Units for the Quantification of Direct Costs
        2. Annex No. 2: Project of “HyPlant Data Acquisition 2022 - UZH”
   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 commencing on the date that it is executed by both Parties.

|  |  |
| --- | --- |
| In Zurich on | In Brno on |
|  |  |
| Prof. Dr. Alexander Damm-Reiser | Prof. RNDr. Ing. Michal V. Marek, DrSc., dr. h. c. |
| Head | Director |
| Remote Sensing of Water Systems, Department of Geography, University of Zurich | Global Change Research Institute AS CR, public research institute |

**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) |
| **Aircraft lease and operation** |  |  |  |
| FLIS lease | 0 EUR | 10 | 0 EUR |
|  |  |  |  |
| **Direct operational costs** |  |  |  |
| Direct operational costs of the aircraft per 1 hour of flight | 1 630 EUR | 15 | 24 450 EUR |
| Direct operational costs of the aircraft crew per 1 day standby | 200 EUR | 10 | 2 000 EUR |
|  |  |  |  |
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| **Total estimated costs of Open Access** |  |  | **26 450 EUR** |

**Annex No. 2: Project of “HyPlant Data Acquisition 2022 - UZH”**

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

**Part 1 : General Information**

|  |  |
| --- | --- |
| **Project title** (characterising the scope of application) | **HyPlant Data Acquisition 2022 - UZH** |
| **Project acronym** (optional) | **HyPlant UZH** |
| **Start date** (expected) | **1.6.2022** |
| **End date** (expected) | **30.09.2022** |

**Project leader**

|  |  |
| --- | --- |
| **Title** | Prof. Dr. |
| **First name** | Alexander |
| **Last name** | Damm-Reiser |
| **Job title** | Professor |
| **Organisation name** | University of Zurich |
| **Department** | Department of Geography |
| **E-mail** | xxxxxxxxxxxxxxxxxxxxx |
| **Phone number** | xxxxxxxxxxxxxxxxxxxxx |
| **Address** | Winterthurerstrasse 190 |
| **City** | Zurich |
| **Postal code** | 8057 |
| **Country** | Switzerland |
| **WWW** | www.geo.uzh.ch/rsws |

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

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

**Collaborators (if different)**

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

**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: Cessna 208B

**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).*

*None*

**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/.

*None*

**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 entitled “HyPlant Data Acquisition 2022 - UZH” aims to collect relevant remote sensing data in accordance with in situ measurements. Collected data will facilitate scientific activities that aim to develop new information retrieval methods and to advance understanding of spatio-temporal ecosystem process dynamics under environmental change. At diverse test sites in Switzerland (i.e. including agricultural, forest, glacier, urban and water sites), HyPlant imaging spectroscopy data are collected together with thermal and structural data. State-of-the-art and new approaches will be applied to retrieve surface information. Obtained information will be exploited to characterize current ecosystem conditions and will be linked with mechanistic models to assess ecosystem process dynamics.

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

The project “HyPlant Data Acquisition 2022 - UZH” project aims to collect remote sensing data in correspondence with in situ measurements. Data will facilitate the development of new information retrieval methods and the assessment of ecosystem properties and process dynamics along environmental gradients. **Sites:** Eight test sites will be investigate within the project, including a temperate mixed forest (Hölstein), an alpine spruce forest (Davos), an agricultural site (Oensingen), three glacier sites (Plain Morte, Rhone glacier, Corvatsch glacier), one aquatic site (Greifensee), and one urban area (Bern). All sites are well investigated by different Swiss research projects and activities. **Data:** Airborne data acquisitions with HyPlant are foreseen once per site. Additional acquisitions with a thermal camera and a LiDAR system (if available via the FLIS infrastructure) is foreseen. It is planned to collect various in situ data close to the time of airborne observations. For few sites, continuous measurement systems are in place and collect in situ radiometric data (Oeningen, Davos, Greifensee). Campaign based in situ measurements are foreseen to complement above measurements and include the collection field spectroscopic and thermal data. **Methods:** HyPlant imaging spectroscopy data will be pre-processed (atmospheric, geometric correction) by an external partner. Retrieved surface reflectance’s and radiances will be used to extract standard surface information using state-of the art retrieval schemes. It is also planned to enrich the optical (HyPlant) data with other data measured during data acquisitions (i.e. thermal and LiDAR data of the FLIS system) and ingest al data in mechanistic models to assess data dynamics and model ecosystem processes. **Outcome:** The outcome of the data analysis can be i) new surface information retrieval schemes, ii) assessments of data characteristics and dynamics (e.g. directionality), or iii) the characterization of spatial and temporal ecosystem properties and processes. Results are intended to facilitate analysis and interpretation of upcoming satellite mission data, for example ESA’s FLEX mission or the French-Indian Trishna mission.

**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:**

Combining Fluorescence Spectroscopy and Mechanistic Modelling for Advanced Assessments of Ecosystem Photosynthesis (Fluo4Eco), funded by Swiss National Science Foundation

Trishna T-SEC project, funded by the European Space Agency

**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:**