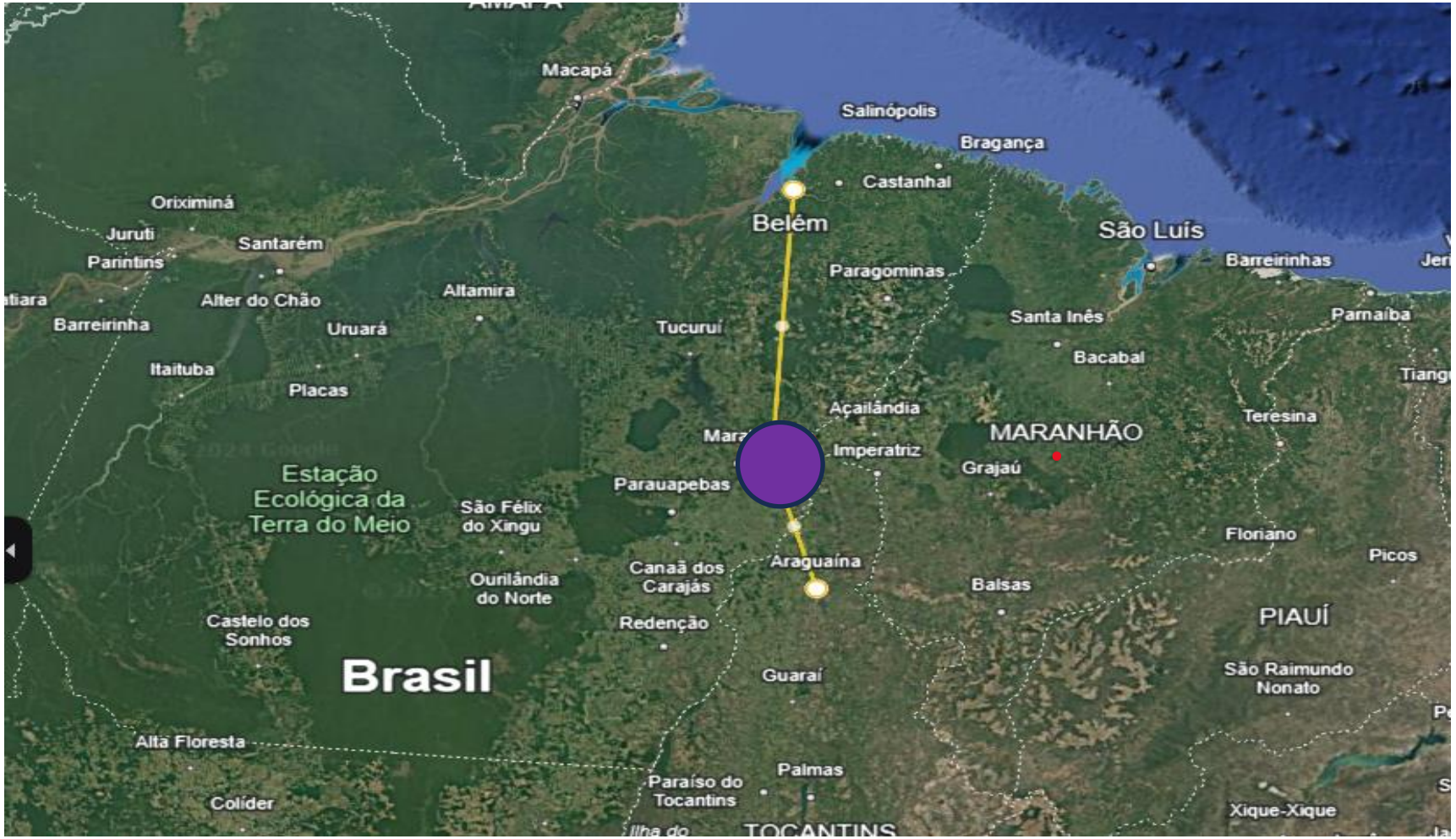
Bico do Papagaio climate monitoring field research station: a new Brazilian-Russian initiative in the Amazon region

BRAZILIAN-RUSSIAN CARBON SUPERSITE: Bico do Papagaio Climate Change Monitoring Field Research Station



Distances to:
BELÉM - 434kM
ARAGUAÍNA - 207kM

Location:
Esperantina, Tocantins, Amazonia, Brazil

Pesquisar no Google Earth

Apresentação de slides

Voltar à lista

Recarregar

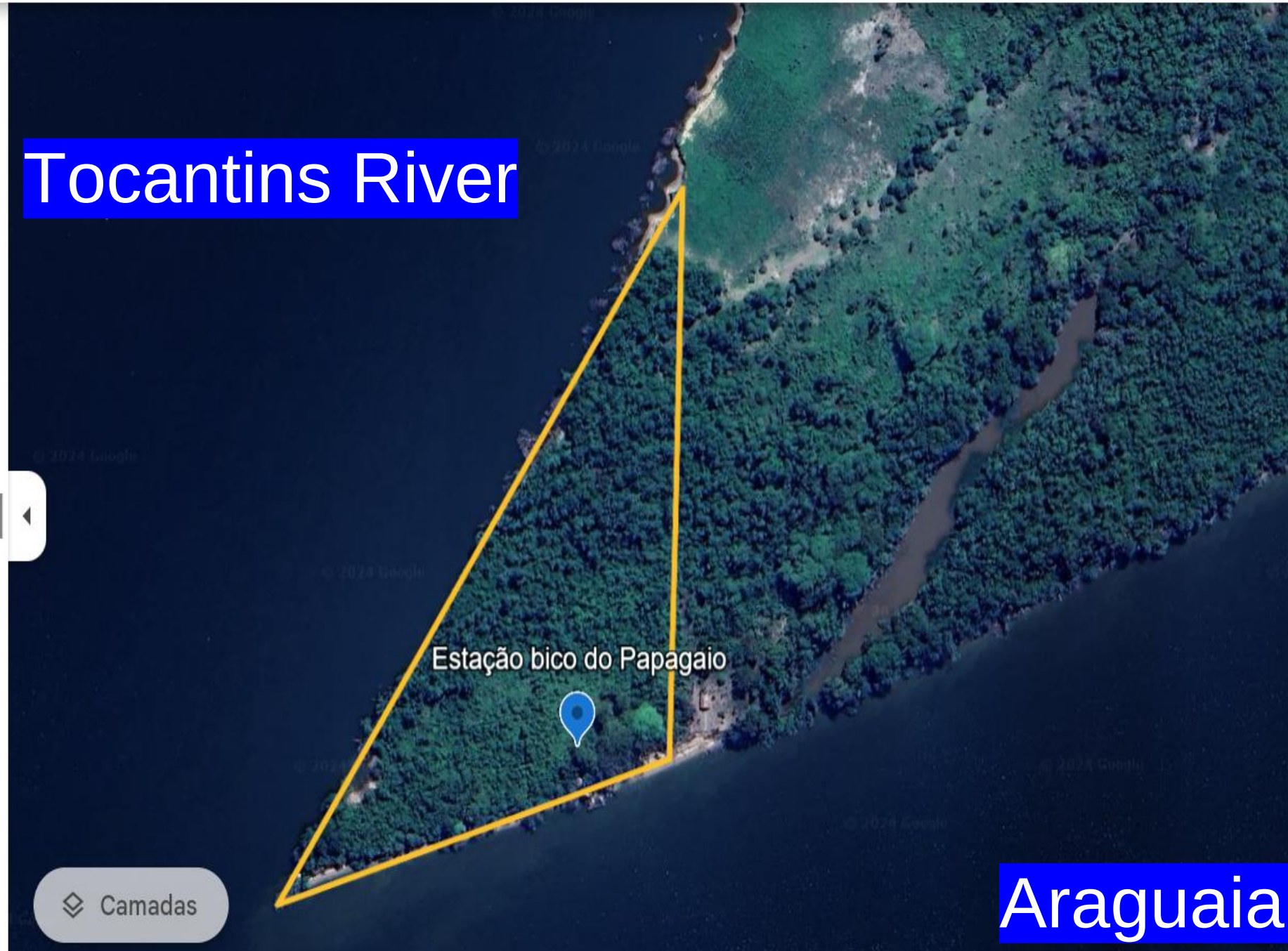
Estação de monitoramen...

Projeto Polígono do Carbono, Estação de monitoramento do carbono do Bico do Papagaio, Esperantina, Tocantins, Brasil.
Universidade Federal do Norte do Tocantins (UFNT)
Universidade Estatal de Tyumen (UTMN)
Área: 30.353,42m² - Perímetro: 868,77m
Altitude: 96m
Coordenadas: 05°22'05" S - 48°42'34" W

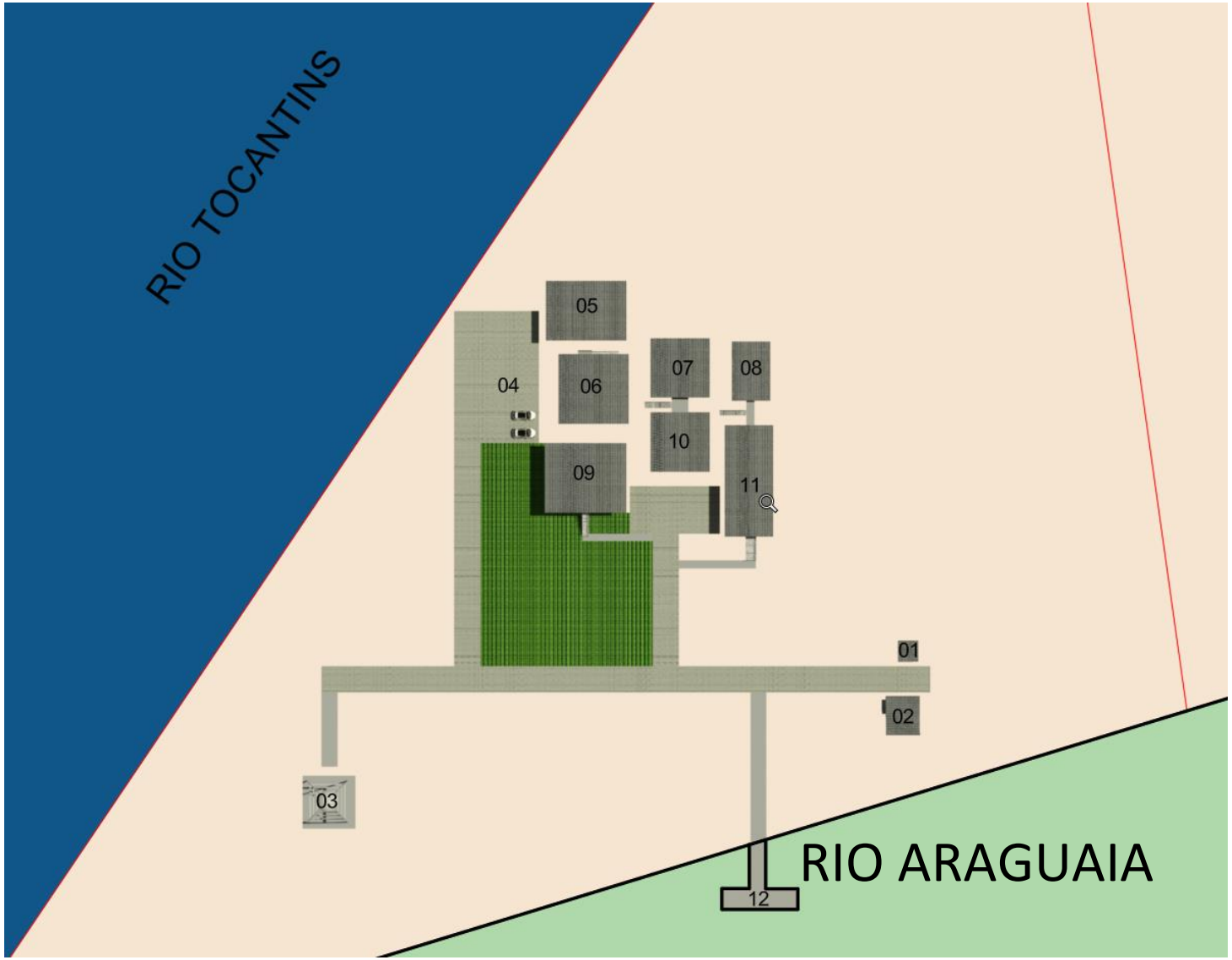
Salvo no Google Drive

Estação bico do Papagaio

Estção do Bico do Papagaio

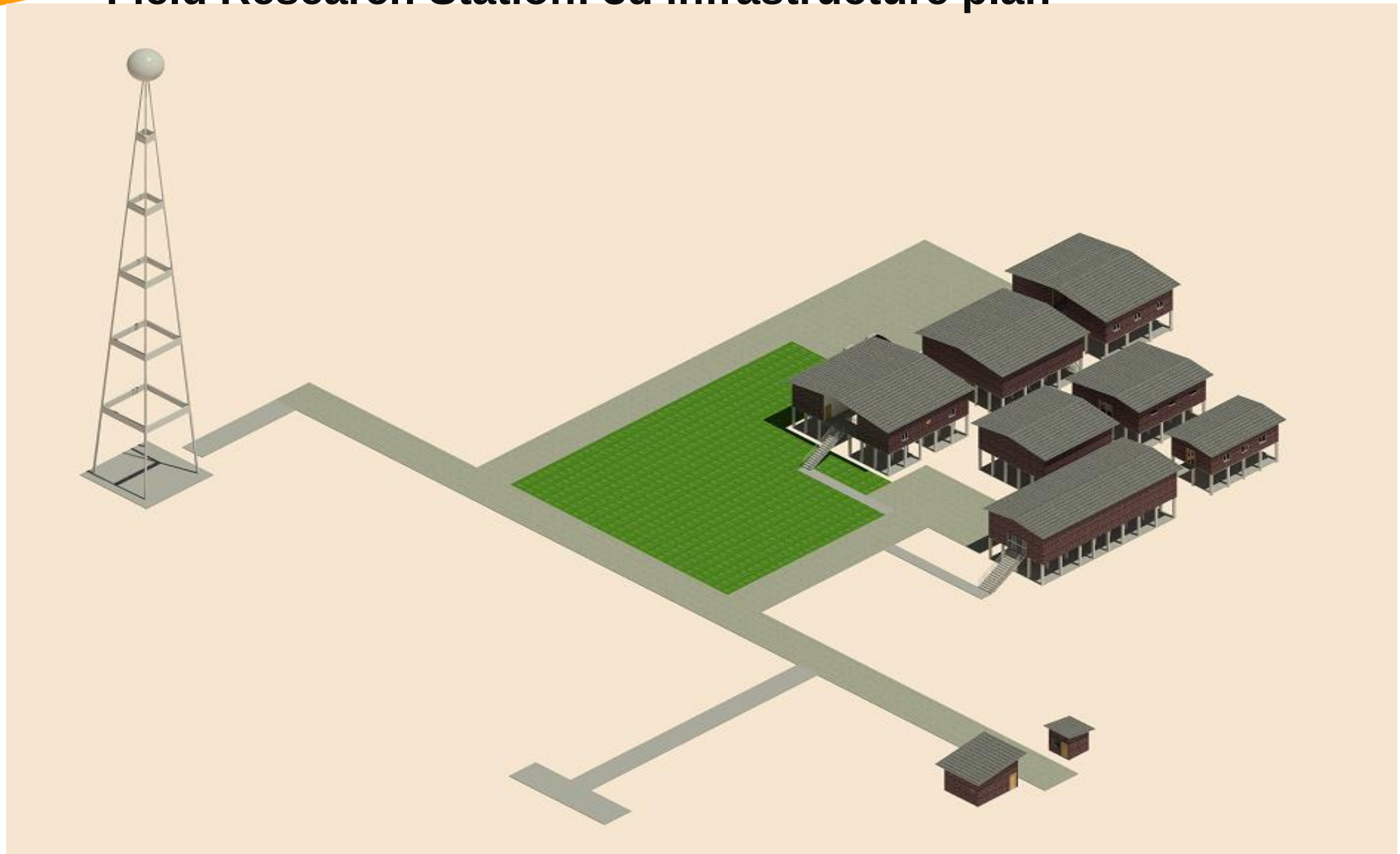


Bico do Papagaio Climate Change Monitoring Field Research Station: infrastructure plan



01 – Security Post
02 – Residence
03 – Observation Tower
04 – Parking Lot
05 – Accommodation for Researchers
06 – Multipurpose Laboratory
07 – Dining Hall and Laundry
08 – Technical Room
09 – Student Quarters
10 – Lecture and Study Rooms
11 – Administrative and Logistical Support
12 – Pier

Bico do Papagaio Climate Change Monitoring Field Research Station: 3d infrastructure plan



INFRASTRUCTURAL DEVELOPMENT INVESTMENTS

Total area of infrastructural development: 2500 m²

Project infrastructure investments: R$ 15 million (USD $ 2.6 million)

Existing UFNT valuable infrastructure includes:

- **Biosecurity Research Center**
- **University Hospital for Tropical Diseases**

Contribution of the University of Tyumen to Brazilian-Russian partnership

Experience of creating climate monitoring stations (carbon supersites)

Министерство науки и высшего образования
Российской Федерации

Федеральное государственное автономное образовательное учреждение высшего образования
«ТЮМЕНСКИЙ ГОСУДАРСТВЕННЫЙ УНИВЕРСИТЕТ»
(ТюмГУ)

ПРИКАЗ

24.02.2021 г. Тюмень № 530-1

Об открытии
карбонового полигона

В соответствии с приказом Минобрнауки России от 05.02.2021 № 74 «О полигонах для разработки и испытаний технологии контроля углеродного баланса»

ПРИКАЗЫВАЮ:

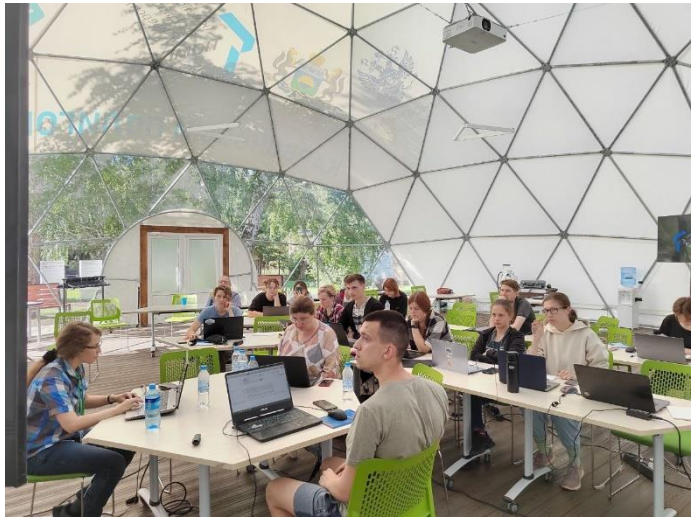
1. Организовать и провести торжественное открытие карбонового полигона Западно-Сибирского научно-образовательного центра мирового уровня Тюменской области на биостанции Тюменского государственного университета на оз. Кучак 30 - 31 августа 2021.
2. Толстикову А.В., первому проректору, совместно с Латышевым А.С., проректором, разработать, согласовать и утвердить программу торжественного открытия карбонового полигона с Министерством науки и высшего образования РФ, ПАО «СИБУР Холдинг», Правительством Тюменской области не позднее 25 августа 2021.
3. Толстикову А.В., первому проректору, совместно с Латышевым А.С., проректором, организовать проведение I Международной научно-практической конференции «Экосистемы будущего» 31 августа 2021.
4. Сеченовой Е.Г., проректору по международным связям, организовать синхронный перевод для иностранных делегаций – участников открытия карбонового полигона и I Международной научно-практической конференции «Экосистемы будущего 30 – 31 августа 2021.
5. Мальцану О.С., директору по развитию имущественного комплекса, обеспечить подготовку необходимой инфраструктуры к открытию карбонового полигона, трансфер сотрудников Тюменского государственного университета и гостей мероприятия до карбонового полигона на оз. Кучак в соответствии с программой мероприятия 30 – 31 августа 2021.

ТюмГУ Казанский федеральный университет

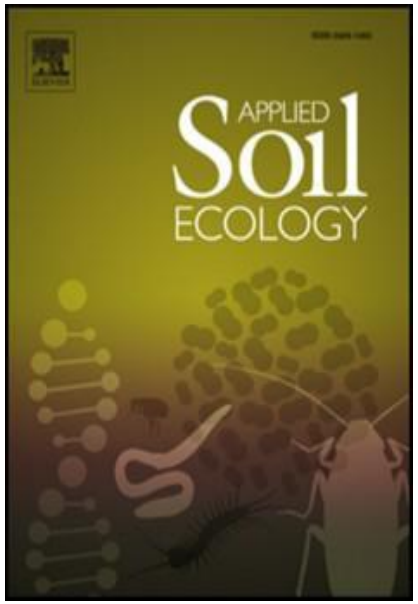
Программа

Методы оценки углеродного баланса репрезентативных экосистем Западной Сибири

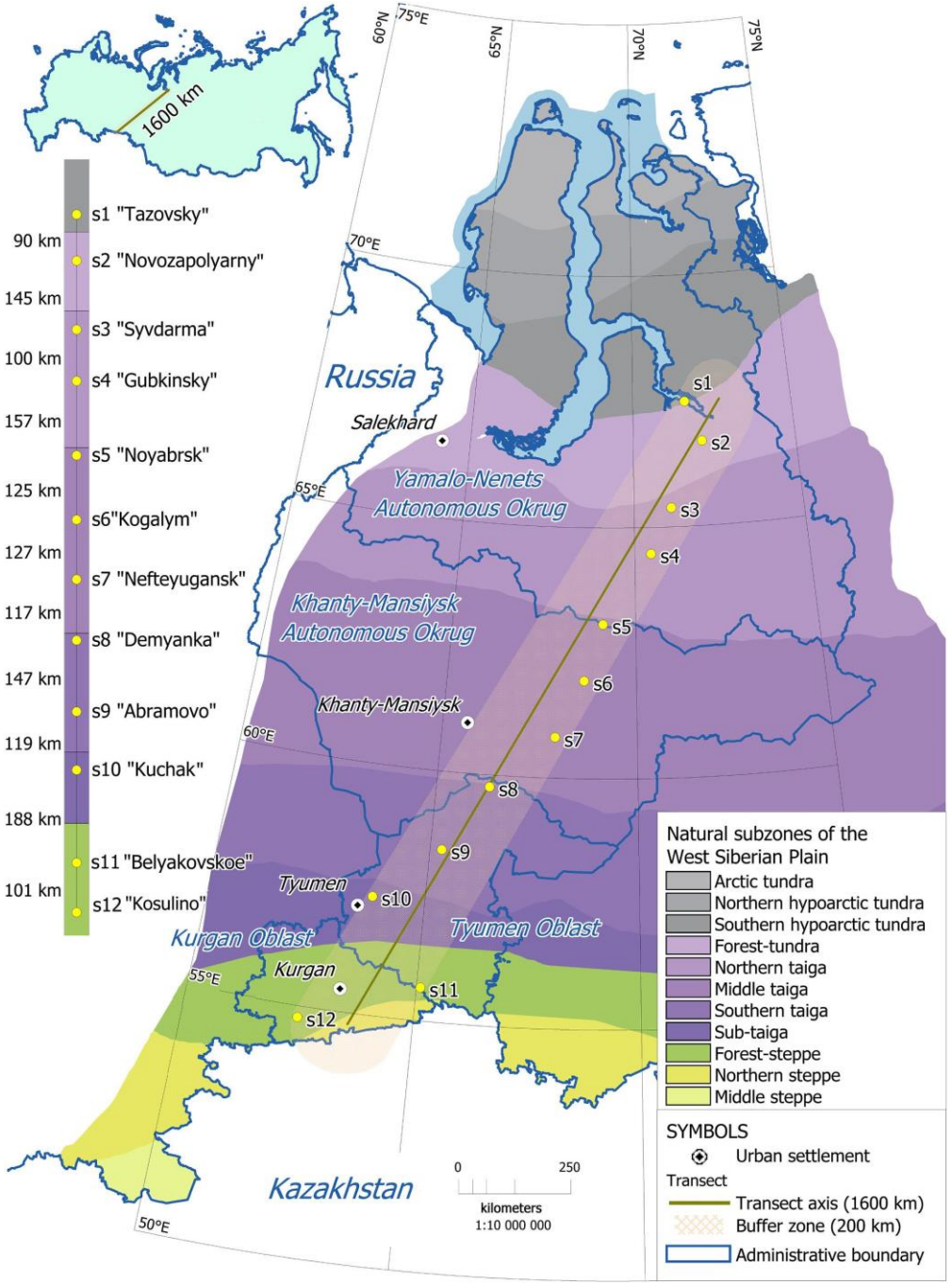
Стратегический проект «Экосистемы будущего»



Experience in large-scale transect research



Minor M.A.,… Landscape gradients in Sphagnum peatlands: Nutrients, trace elements and diversity of free-living mites (Arthropoda: Acari) along a **1600 km transect** on the West Siberian Plain // **Applied Soil Ecology. 2024.** 203. 105641.



Large International Interdisciplinary Projects

BMBF's **SASCHA** Project (2011-2016).

PI: Prof. Dr. Norbert Hoelzel, University of Muenster, Germany. https://www.uni-muenster.de/SASCHA/en/

Ministry of Science and HI of Russia's **CarboRUS** project (2021-2023).

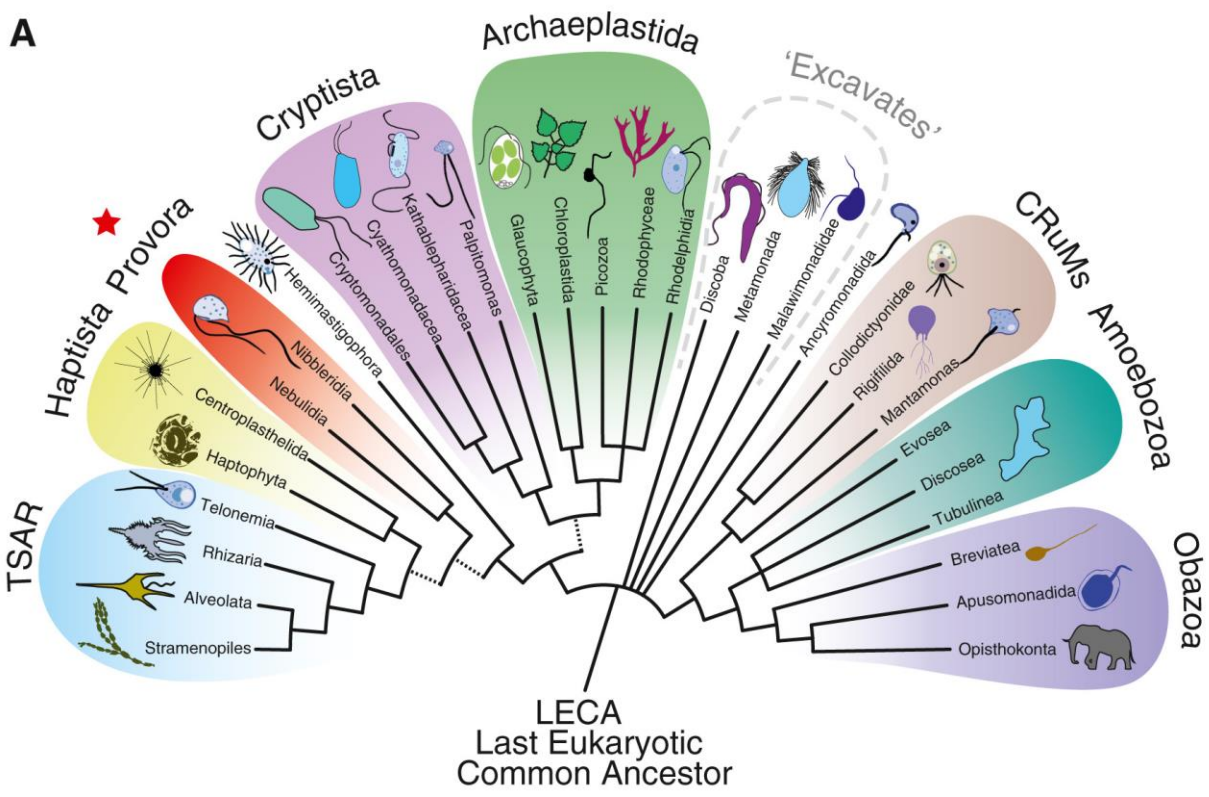
PI: Prof. Dr. Yakov Kuzyakov (Gottingen University)

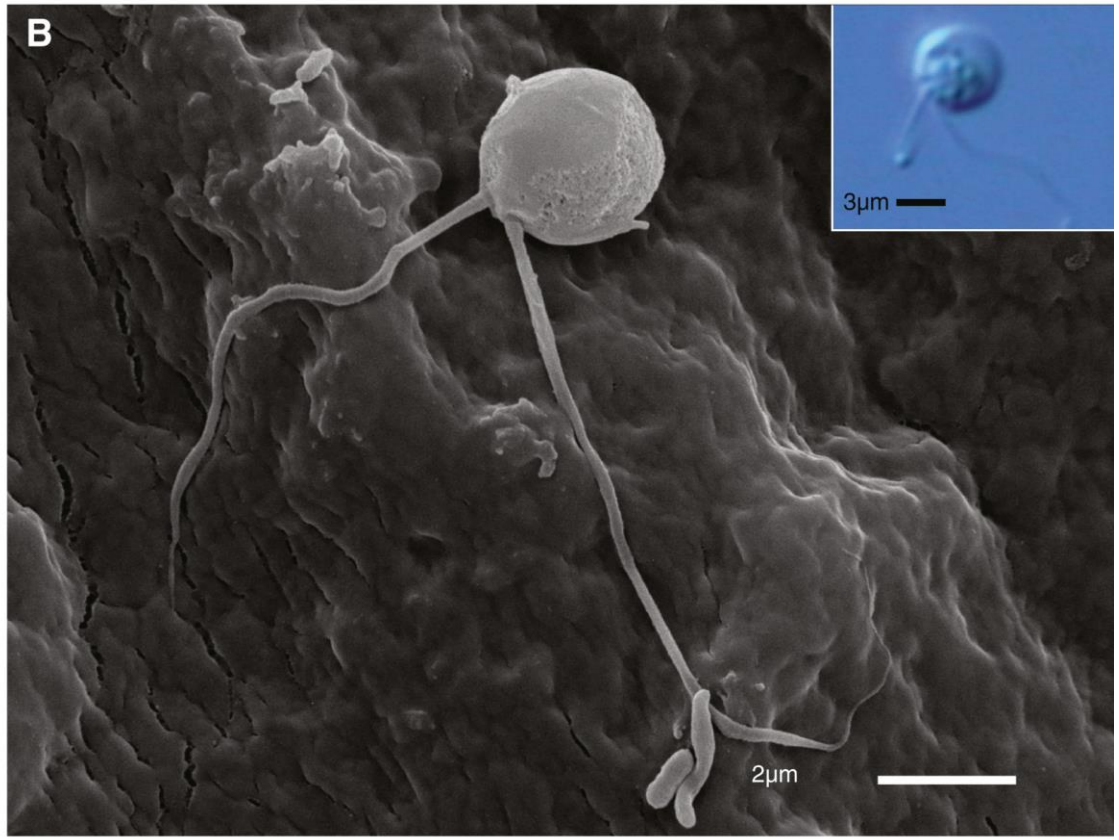
Tyumen Province Government's **TerrArctic** project (2020-2024).

PIs: Prof. Dr. Yakov Kuzakov, presently Prof. Dr. Orhan Ince (Istanbul Technical University).

Biodiversity studies

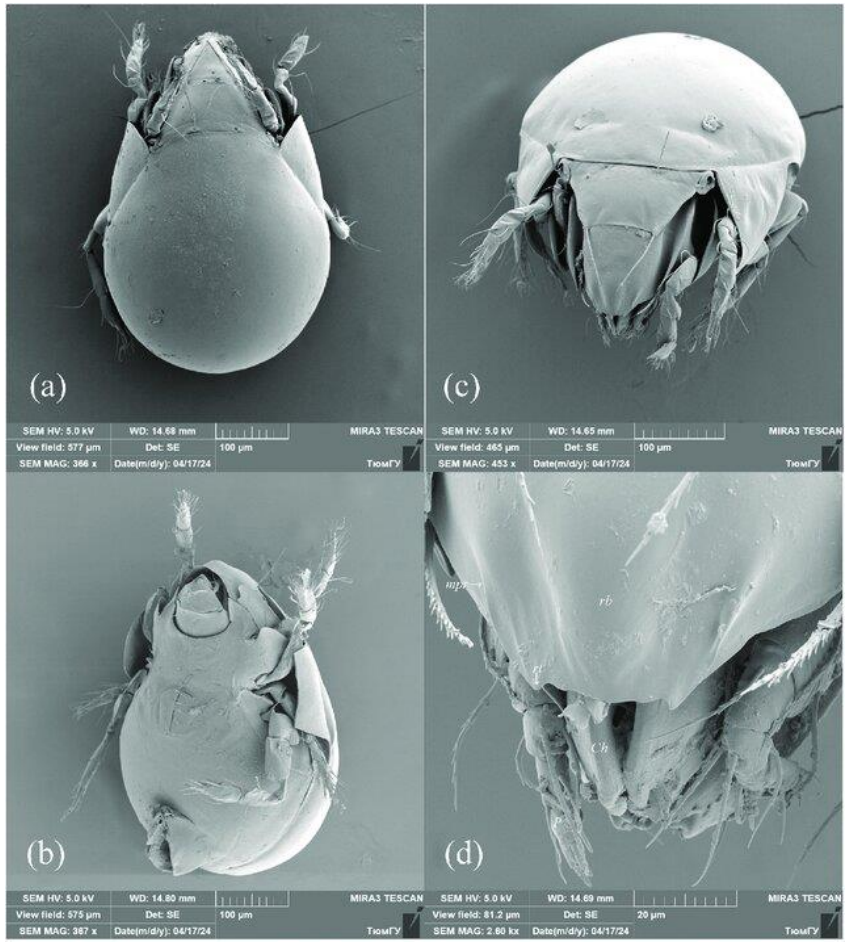
A new kingdom, *Provora*, was proposed: *Nature. 2022.* 612 (7941): 714–719. Tikhonenkov et al.





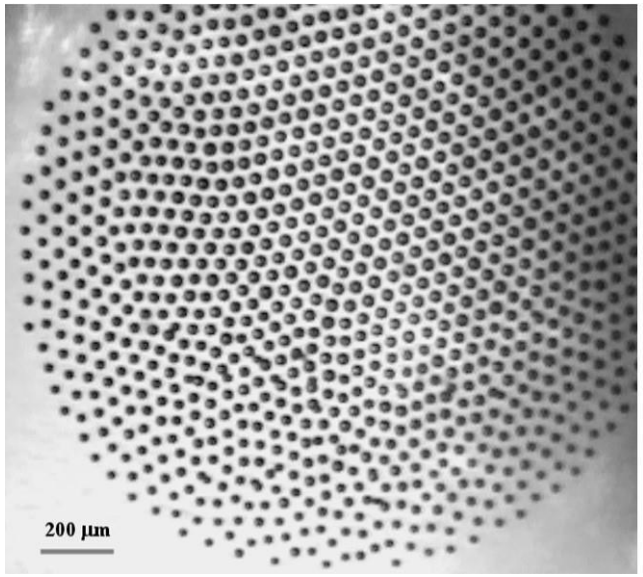
Current Biology

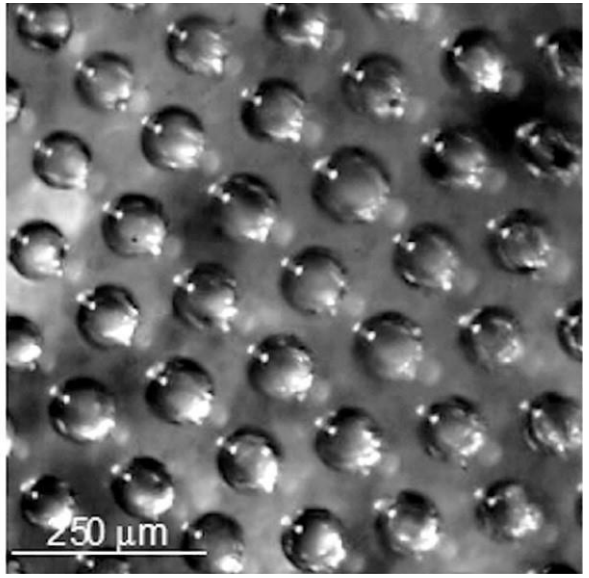
More than 1000 new species of mites and beetles were described in the past 10 years, predominantly from the tropical regions

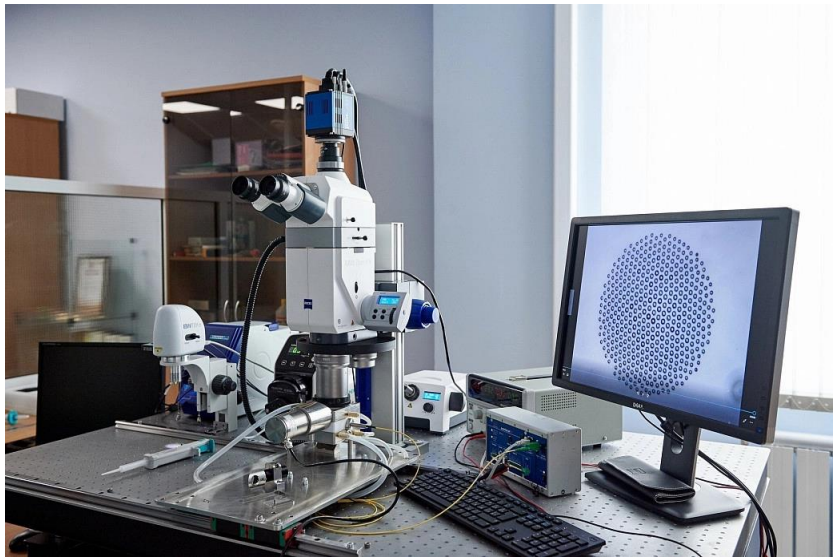


University of Tyumen
UTMN

Novel aerosol research based on 2d aerosol (droplet cluster) studies







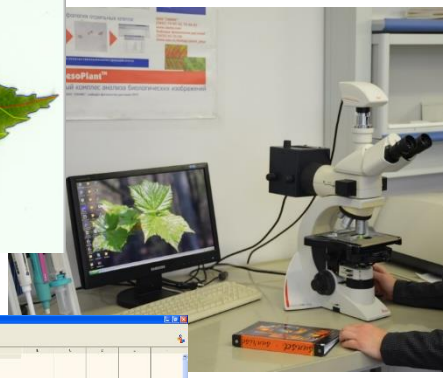
Development of methodology of determination of sequestration potential of photosynthetic organs of plants using novel approaches

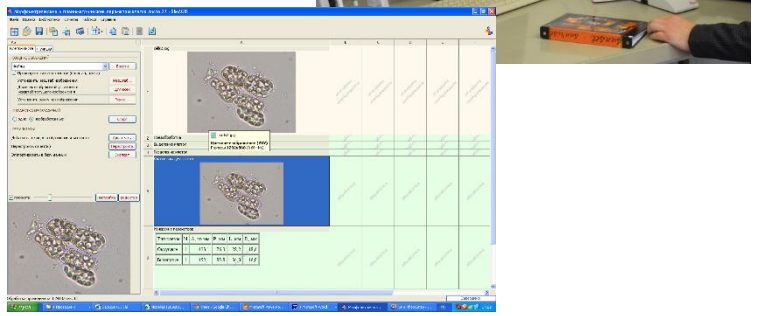
Direct CO2 measurement for individual plant leaves

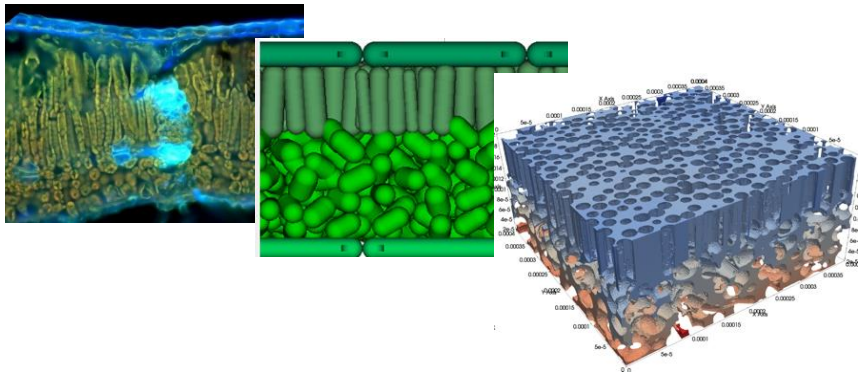
Integration and scaling of data

Direct quantitative measurements of the species role in the community

New software to measure carbon-sequestratin potential of plants, at the level of individual leaves







- Quantitative analysis of structure of carbon-assimilated organs and tissues of plants
- Creating banks of data and images of model carbon-assibilated cells from various types of tissues and leaves of plants
- Algorith of automatic analysis of photosynthetic cells based on neuron networks
- 3D-modeling of cell structure and CO2 fluxes in leaves of plants with the usage of field experimental data
- Creating specialized software to calculate diffuse flow of CO2 in leaves and leave canopy of plants

In partnership with SIAMS Technological Company, Yekaterinburg

B I O C H A R

Technologies being developed to produce carbon ameliorants, sorbents, smokeless fuels, etc. from organic mass to reduce carbon foot-print for energetics and metallurgy

Samples of granulated biomass and biochar

FOCI OF JOINT RESEARCH:

- comparative research on ecotones in Eurasia and South America (West Siberian mega-transect and Cerrado-Amazon ecotone) under global changes;
- GHG balances: carbon emission, sequestration and depos;
- biodiversity inventory and monitoring both for terrestrial and aquatic habitats;
- biosecurity of plants, animals and humans in the Amazon with focus on vectors and natural reservoires in the framework of One Health approach;
- indigenous communities bioeconomics and land use.

Educational Activities

- ✓ **Academic Exchange of Students**
- ✓ **Joint courses / study programs; PhD and Master thesis co-advising**
- ✓ **Russian language study program launch at UFNT**
- ✓ **Modernization of Portuguese language study program at UTMN**
- ✓ **Zero Carbon Summer Schools**

Partnerships within Amazonia

MUSEU GOELDI
UNIDADE DE PESQUISA DO MCTI

INPA
INSTITUTO NACIONAL DE PESQUISAS DA AMAZÔNIA

Instituto de Desenvolvimento Sustentável Mamirauá

Goeldi Museum: Biodiversity (extensive collections), Data on Amazon biodiversity and ecosystems, anthropological research

INPA: Experience in climate monitoring research in Amazonia

Mamiraua Institute: Bioeconomics, sustainable development of Amazonia based on biodiversity

Russian Academic Partners



Severtsov Institute of Ecology and Evolution, R.A.S.

Papanin Institute of Inland Waters, R.A.S.

Timiryazev State Agricultural Academy

Museum of Zoology, Moscow Lomonosov State University

Zoological Institute, R.A.S.

Proposed Industrial Partners

¼ of mineral fertilizers imported by Brazil originate from Russia.

PhosAgro's products have earned an "Environmental Quality Label" from the Brazilian Association of Technical Standards (ABNT), 2022.

Vale (formely known as Companhia Vale do Rio Doce) is the largest producer of iron ore and nickel in the world. It also produces manganese, ferroalloys, copper, bauxite, potash, kaolin, and cobalt.

**** UFNT has on-going negotiations with Vale S.A.***

In October 2024 the Agreement of Cooperation was signed in the city of Tyumen with the endorsement to establish jointly a new Brazilian-Russian climate monitoring field research station (“mirror” carbon supersite) in Amazonia