Volunteer spring monitoring – what we learned during the first year?

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TALLINN UNIVERSITY

INSTITUTE OF ECOLOGY

Interreg Estonia-Latvia
European Regional Development Fund

EUROPEAN UNION

WaterAct

Joint actions for more efficient management of common groundwater resources

https://allikad.info/
https://avoti.info/

- **allikad.info/avoti.info is browser based map application for finding, describing, observing and measuring of the springs.**
- Support for the 5 language – English, Estonian, Latvian, Russian and French.
- All springs from government databases are already there. Users can check the correctness of information, upload pictures and make observations (describe, measure etc).
- Users can add new springs and information.
- New and revised spring will end up in governmental databases.

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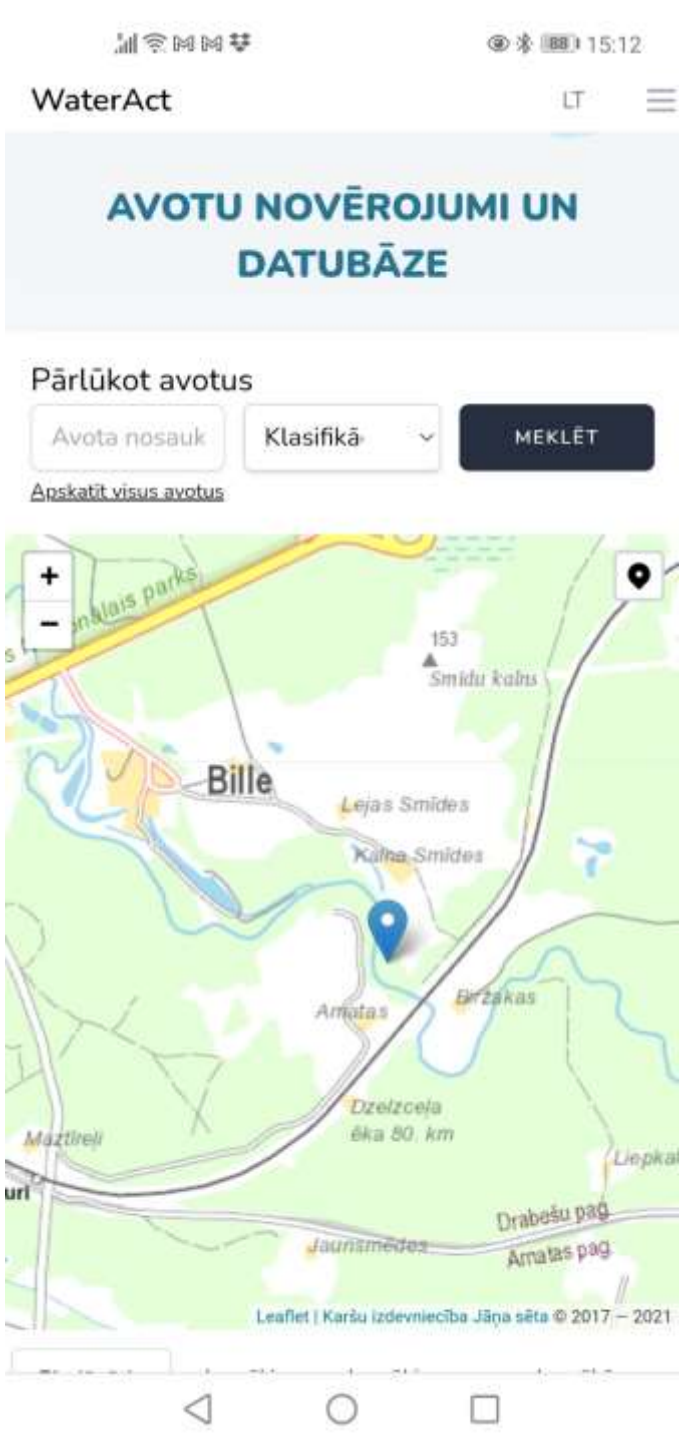

https://allikad.info/
https://avoti.info/

- Different maps for Estonia (Landborad) and Latvia (Jāņa sētas).
- In Estonia it is possible to use Orthophoto and Relief shaded map.
- When adding new spring, all location information (coordinates, country, local municipality) will come automatically from map.
- At first all springs will have status „Submitted“ („Kinnitamata“/„Iesniegts“) and will get status „Confirmed“ („Kinnitatud“/„Apstiprināts“) only after rechecking by other users or administrator.

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General principles of the allikad.info / avoti.info

1. Without user account you can see springs, add information and observations.

2. If you want to add springs or observations you have to register. Register Login

3. After the logging in you see buttons Create new spring and Add new observation .

3. After the logging in you have access to the dashboard, where you all springs and observations inserted by you.

4. Both new springs and observations can be saved as draft for editing or be submitted. SAVE AS DRAFT SUBMIT

5. After adding new spring it will go the editor dashboard for checking it over.

6. Under the button Leave Feedback you can leave feedback – suggest corrections of the location or other information.

Spring monitoring manual for volunteers

Authors: J. Terasmaa, M. Vainu, O. Koit,
K. Sisask, P. Abreldaal, L. Puusepp

Web application:
allikad.info

Contents

Download the spring monitoring manual for volunteers!

Lejupielādēt avotu monitoringa rokasgrāmatu!

Lae alla allikate vabatahtliku seire juhend!

LET'S MAP THE SPRINGS TOGETHER!
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KAARDISTAME ÜHESKOOS ALLIKAD!

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Why?

WP3 AT3.2 - Establishment of voluntary spring monitoring

- **Spring voluntary monitoring** will be introduced to general public as the overall awareness of groundwater protection is low.
- **Easy to understand guide how to carry out voluntary spring monitoring** will be developed.
- **Web application** will be developed by TU to gather the data online.
- Best cost-effective measures **how to carry out spring monitoring by non-experts** and **how to engage public** will be tested.

Why spring monitoring?

Advantages for springs being included into national groundwater monitoring networks:

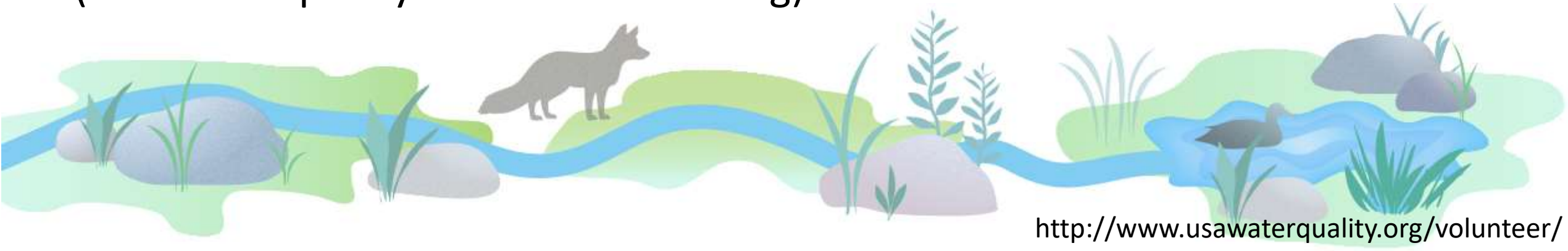
- there are no installation or maintenance costs
- sampling does not require time consuming water pumping compared to wells and boreholes.

Obstacles to use springs as representative monitoring points:

- Water quality can be seasonally changing, thus they need to be screened at least four times a year to identify appropriate sampling frequency

Why citizen science (volunteer monitoring)?

- **Increases the awareness** of and interest in local water quality issues.
- **Helps to educate** - through monitoring, volunteers learn how the quality of water is affected by our actions and how we can protect water resources.
- Volunteer water quality monitoring is a **great tool for youth environmental education.**
- Obtains **long-term data or new data** on waterbodies that otherwise may go unmonitored.
- Water quality data collection by volunteers is **time and cost efficient**.
- **Research shows, that volunteer water quality monitoring data is credible** (but needs quality control and training).



http://www.usawaterquality.org/volunteer/

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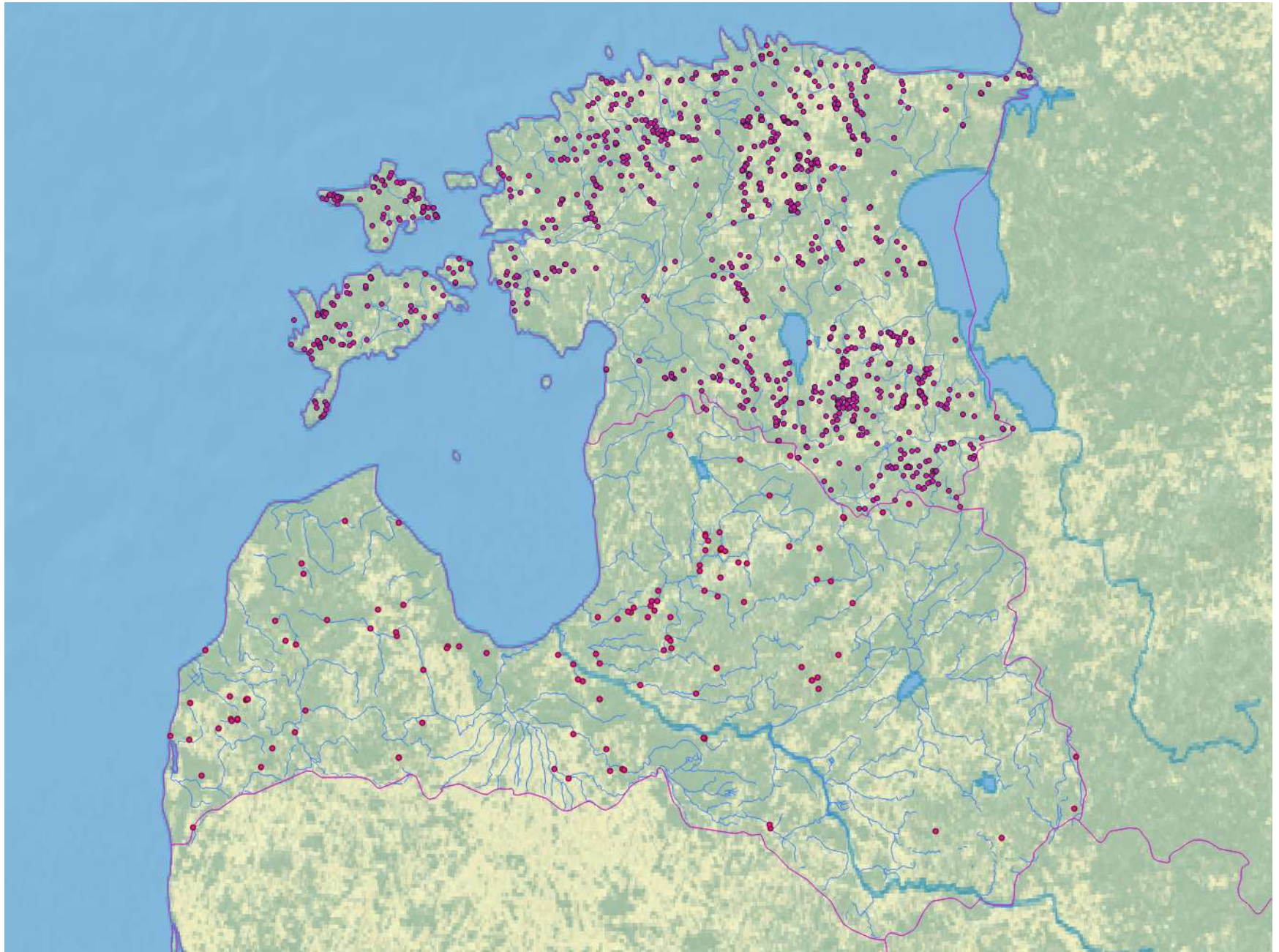
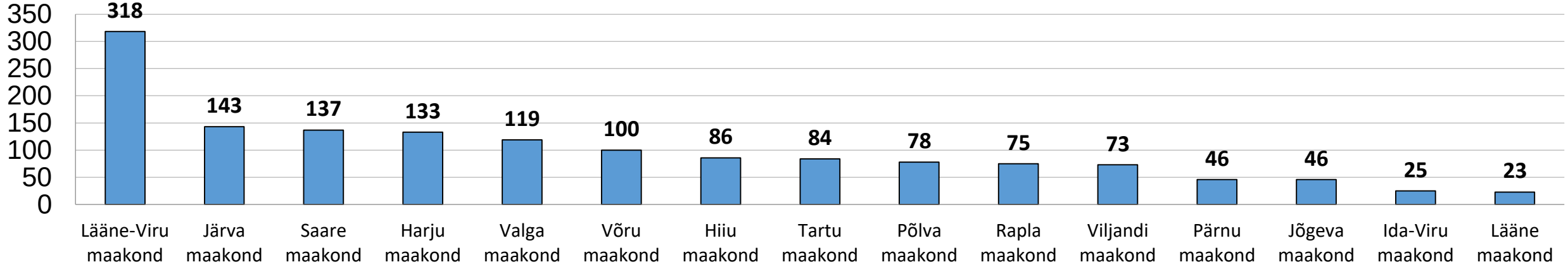
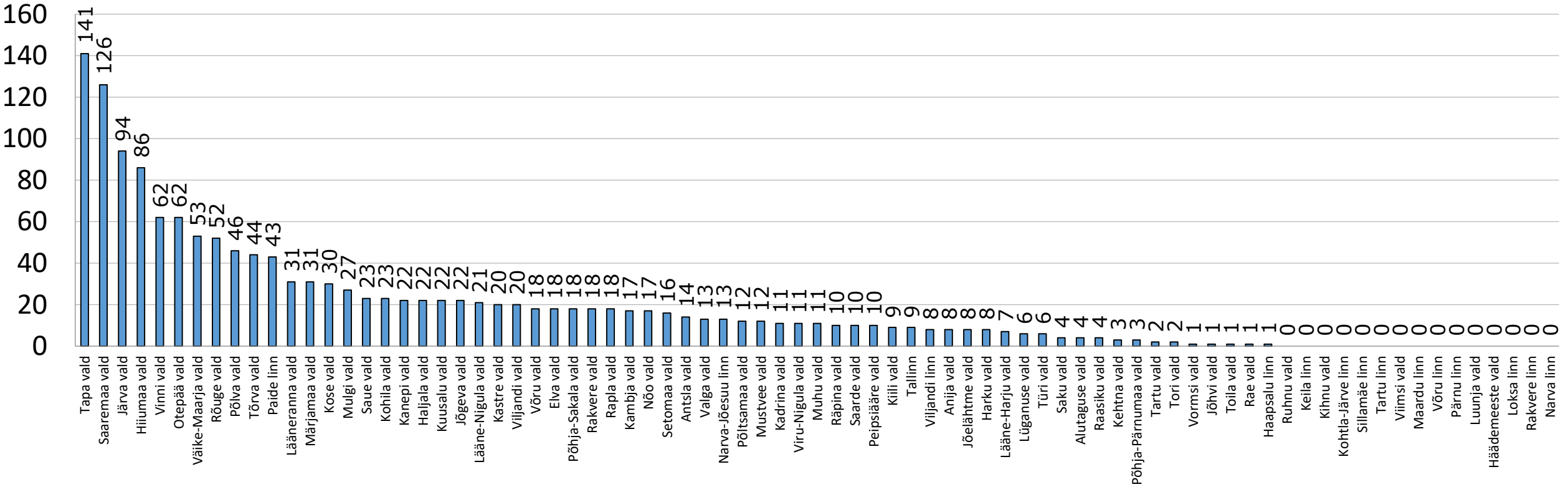
Starting point

Initial database – 1486 springs from Estonia, 123 springs from Latvia



Distribution of Estonian springs (n=1486) by municipalities





Outcome and dissemination

Results so far (as of 07.04.2022)

https://allikad.info/

Users: 193
Springs: 2107(498 new springs!)
Observations: 883
Photos: 2297

+ Five schools from Koiva are joined
+ GLOBE network
+ At least three school project about local springs
+ Several student thesis will focus on springs

- In november we gave to the Land-Board 217 new spring locations, 48 locations corrections and 10 spring locations which are not springs.
- 04.12.2021 8 springs were already corrected and 2 new one added.

Dissemination

- Spring semester 2021: TLU student project „Päästame Eesti allikad!“
- Autumn semester 2021. TLU student project „Päästame Eesti allikad v2.0“
- Discussions and meetings: Land-Board, Environmental Agency, Commitee of Natural Sanctuaries, Globe, schools etc
- Articles in local newspapers, novaator.ee, journal „Eesti Loodus“, etc
- Radio interviews: Raadio4, Kuku, Raadio Kadi, Raadio Elmar, Vikerraadio.
- Facebooki grupp “Allikainfo”: https://www.facebook.com/groups/allikainfo (606 members)
- Facebook group “Kaardistame üheskoos allikad”: https://www.facebook.com/allikad.info (650 followers)
- Instagram “know.your.water“: https://www.instagram.com/know.your.water/ (182 followers)
- Youtube channel: https://www.youtube.com/channel/UCT28j3eISSLrJPpm_uANg-g

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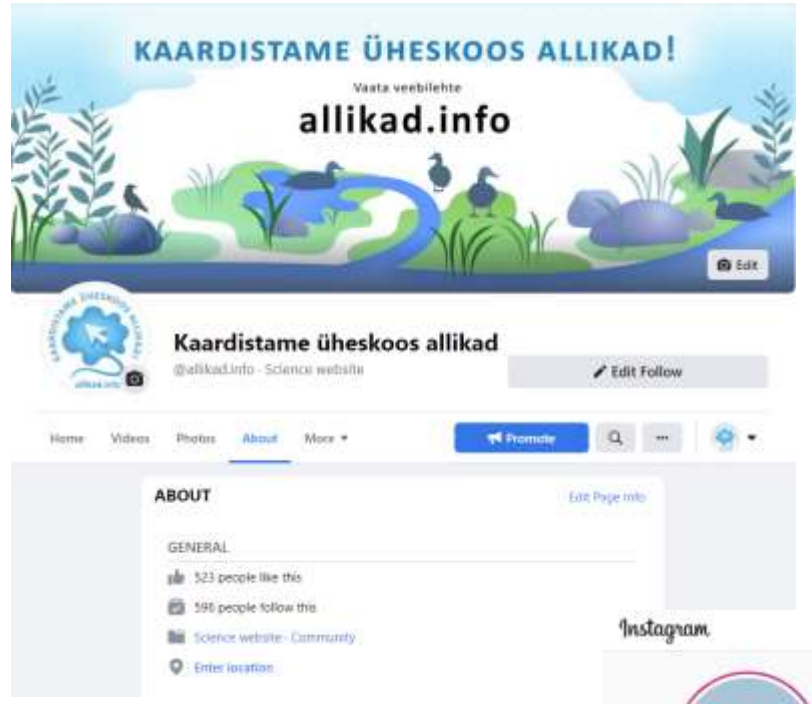
Kaardistame üheskoos
ALLIKAD!
1. Mine lehele allikad.info ja registreeri ennast kasutajaks. Vaata lehel olevat allikate kaardil ringi ja otsi külastamiseks sobiv allikas.
2. Tutvu allikad.info lehel olevate juhenditega „Kuidas allikaid kirjeldada?", „Kuidas allikaid pildistada?" ja „Kuidas hinnata allikavee kvaliteeti?"
3. Kui võimalik, siis võta allikale kaasa vee mõõtmiseks sobiv termomeeter ja veeproovi võtmiseks väike klaaspurk või mõni muu läbipaistev anum.
4. Mine allikale, tuleta meelde, mida juhendites kirjutati ja tee allikast pilti, mõõda temperatuuri, kirjelda allika ümbrust, vee värvust, maitset ning lõhna.
5. Lisa enda poolt kogutud uued andmed ja kirjeldused allikad.info lehele (nupp „Lisa uus vaatlus") kohapeal nutiseadme abil või hiljem kodus arvutis.


Lisa augustis allikad.info andmebaasi vähemalt kolme allika kohta uus vaatlus ja osale allikasõbra T-särgi loosis!
Iga täiendav allikas annab ühe osahääle loosikastis!
OSALEMINE ON VÄGA LIHTNE:
1. Registreeru allikad.info lehel. Otsi kaardilt külastamiseks sobivad allikad.
2. Mine allikale ja teosta vaatlus - piisab sellest, kui kirjeldad allikat ja teed pilti.
3. Lisa vaatlus allikad.info andmebaasi ja jaga seda Allikainfo Facebooki grupis teistega.
Liitu allikasõpradega ja võida T-särk!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Vaata veebilehte
allikad.info
Edit
Kaardistame üheskoos allikad
@allikad.info · Science website
Edit Follow
Home
Videos
Photos
About
More
Promote
ABOUT
Edit Page Info
GENERAL
523 people like this
596 people follow this
Science website · Community
Enter location


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Group by TLÜ LTI Ökoloogia keskus
Allikainfo
Private group · 557 members
Joined
Invite
About
Discussion
Topics
Members
Events
Media
Guides


#tuleminugaallikale
allikad.info
THURS, 2 DEC
Tule minuga allikale
50 went · 242 interested
Set Up Live Video
260
People reached
63
Engagements
Boost a post

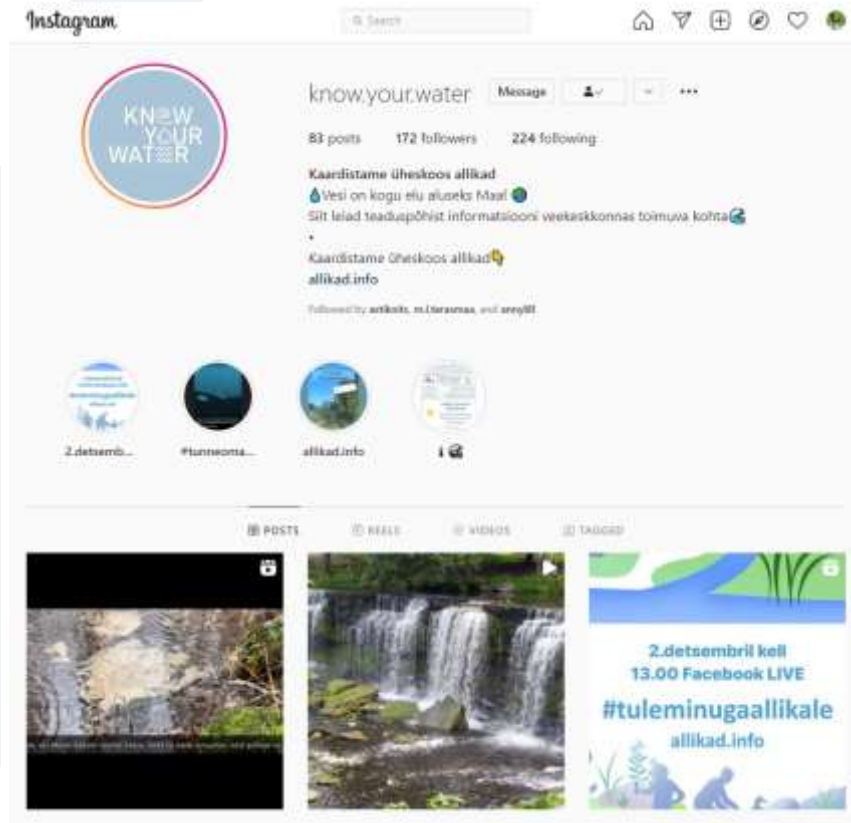

Instagram
know.your.water
Message
83 posts
172 followers
224 following
Kaardistame üheskoos allikad
Vesi on kogu elu aluseks Maal
Siit leiad teaduspõhist informatsiooni veekeskkonnas toimuva kohta
Kaardistame üheskoos allikad
allikad.info
2.detsembril kell
13.00 Facebook LIVE
#tuleminugaallikale
allikad.info

Foto: Helje Laasik

Loodusesõpradele on hästi teada Järvamaal Norra külas asuv Oostriku Suurallikas, sellest saab alguse Oostriku jõgi. Vähem tuntud allikad saab nüüd uue veebirakenduse abil kaardile lisada

Kanname

Eesti allikad kaardile!

Eestis on riiklikes registrites kirjas pisut üle 1400 allika. Möödunud sajandi esimesel poolel loendati ja kirjeldati 4500 allikat, kuid enamik neist pole kaardile jõudnud. Hilisemal ajal on meie allikate arvuks pakutud isegi kuni 15 000. Seega on meie teadmised allikatest ja nende asukohtadest üsna lünklikud. Veel vähem on teada Eesti allikavee kvaliteedi kohta.

2020. aastal alanud Eesti ja Läti ühisprojekti WaterAct raames on loodud veebipõhine allikavaatluste kaardirakendus allikad.info. Kui teate mõnd allikat, mis pole tähistatud ega hästi tuntud, siis on võimalik sellest teada anda. Selleks et lisada allikate andmebaasi uus läte või uued vaatlused, peab esmalt tegema endale kasutajakonto ja sisse logima. Samalt lehelt saab lugeda allikate kohta ja head nõu, mismoodi allikaid pildistada, hinnata allikavee omadusi ja mõõta vooluhulka.

Tallinna ülikooli ökoloogia keskus / Loodusajakiri

Kohila lätted kaardile

Kaardistame üheskoos allikad!

Allikad saab nautida kõikjal, ka Mustamäel

Давайте вместе отмечать родники на карте!

Kaardistame üheskoos allikad

Allikates on algus, meie elujõud ja lootus

Eesti Geoloog

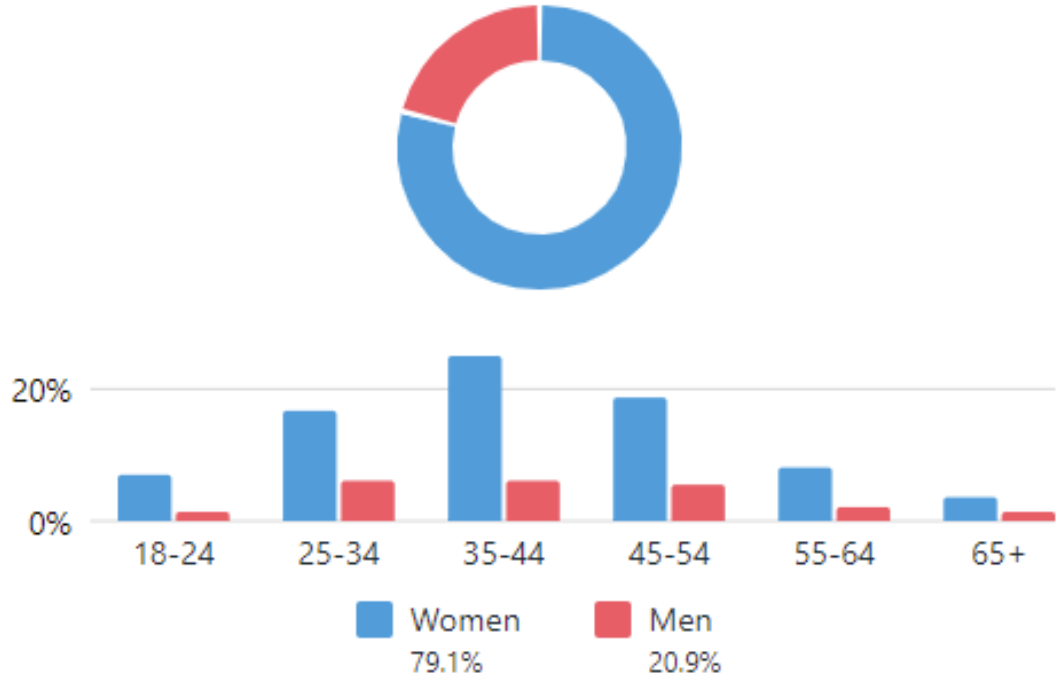
Igaühest võib saada allikauurija!

Who visits us?

Facebook Page likes

568

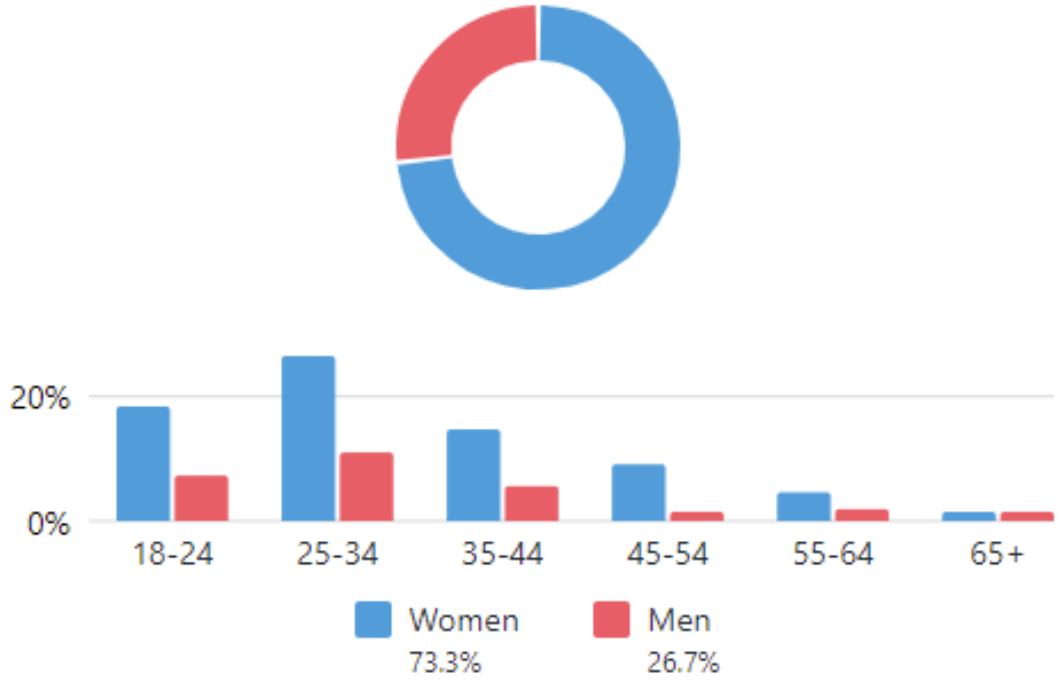
Age & gender



Instagram followers

182

Age & gender



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Fieldworks












Meeting with schools

Fieldworks in Koiva – water sampling

Fieldworks in Koiva – discharge measurements

Fieldworks in Koiva – lunchbreak

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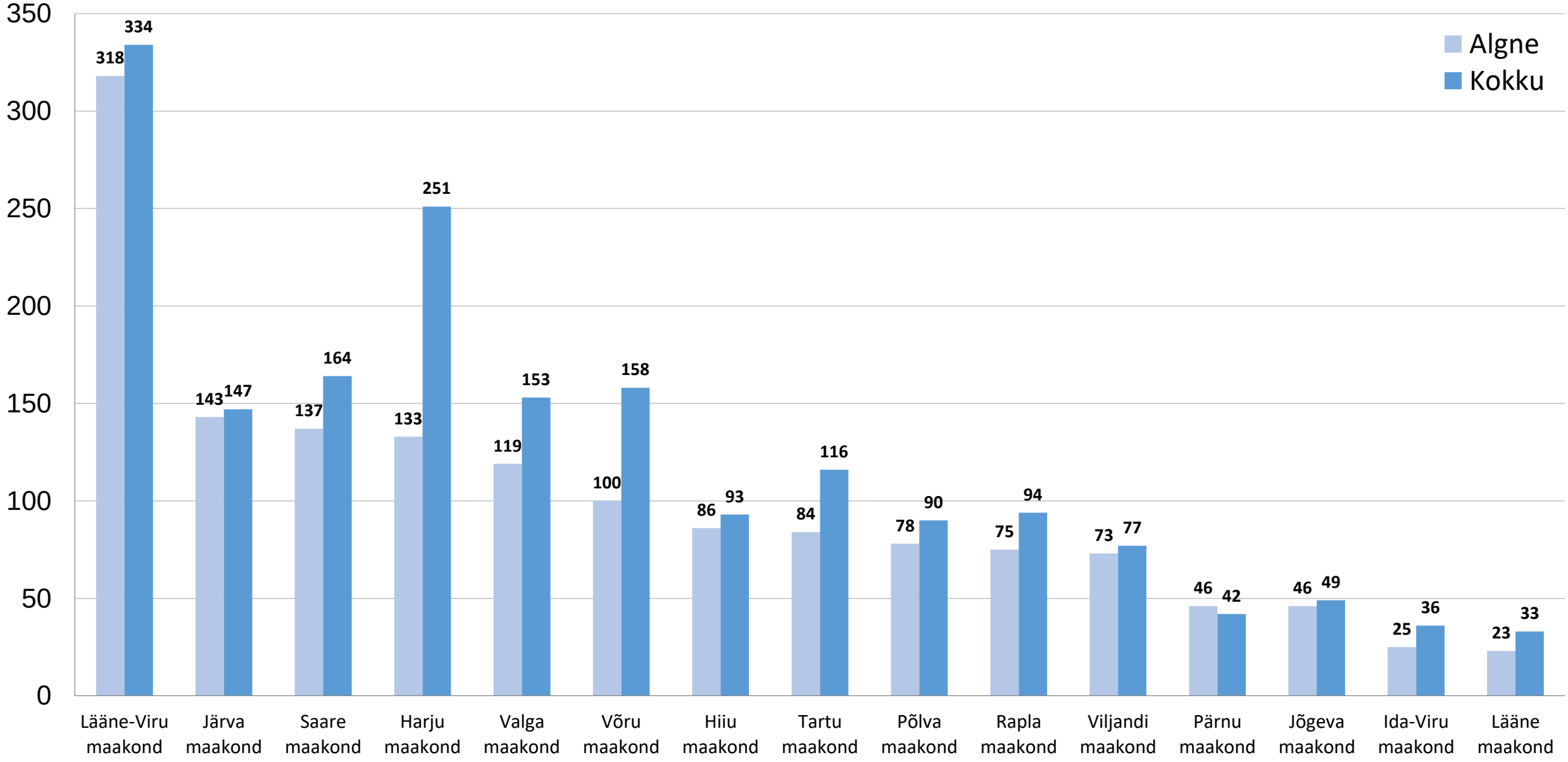
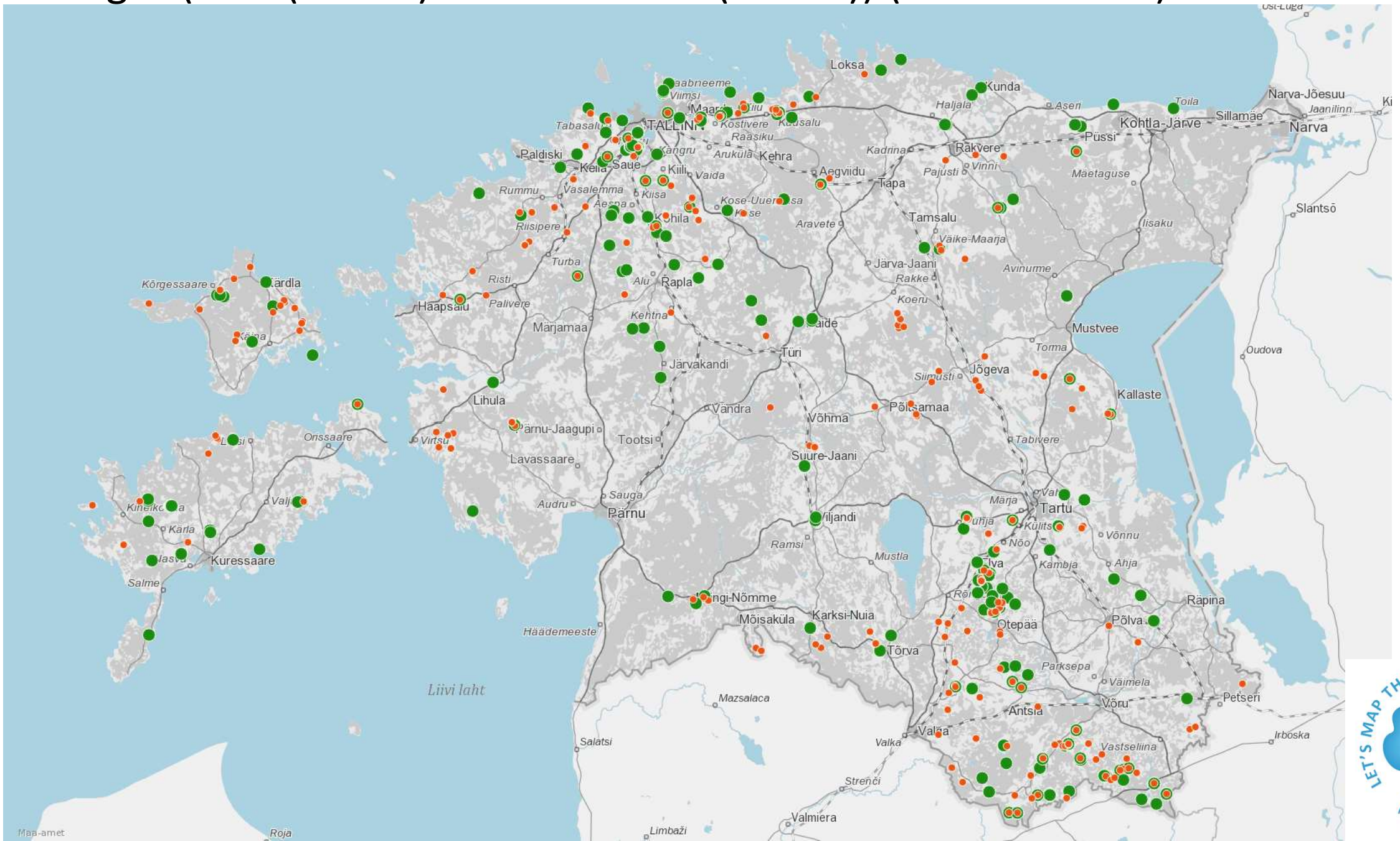
Results

Changes in the Estonian database (n=1486 -> n=1837) (as of 11.2021)



Changes (new (n=351) and corrected (n=265)) (as of 11.2021)



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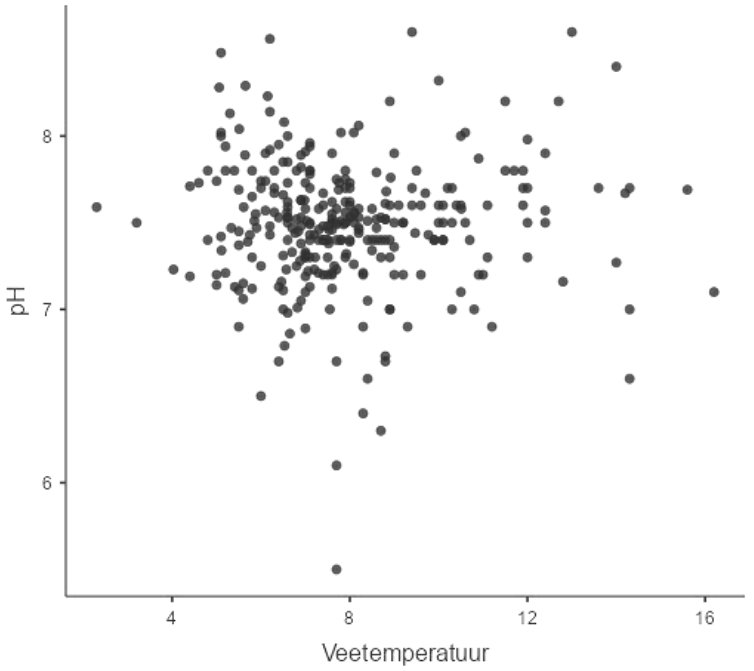
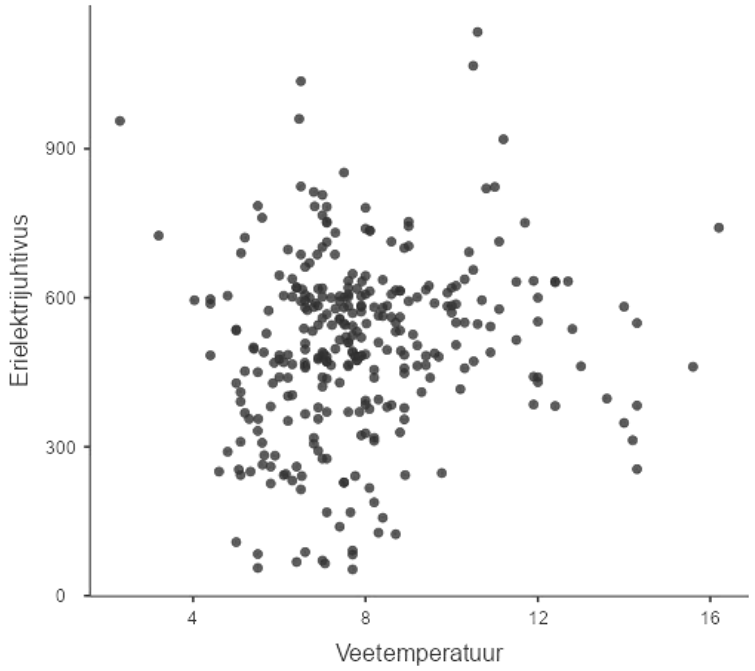
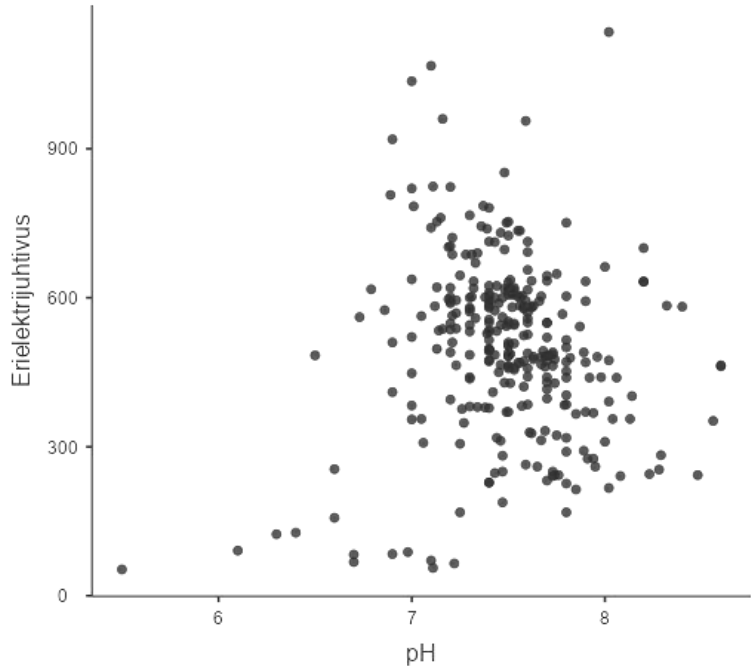
Observations (11.2021)

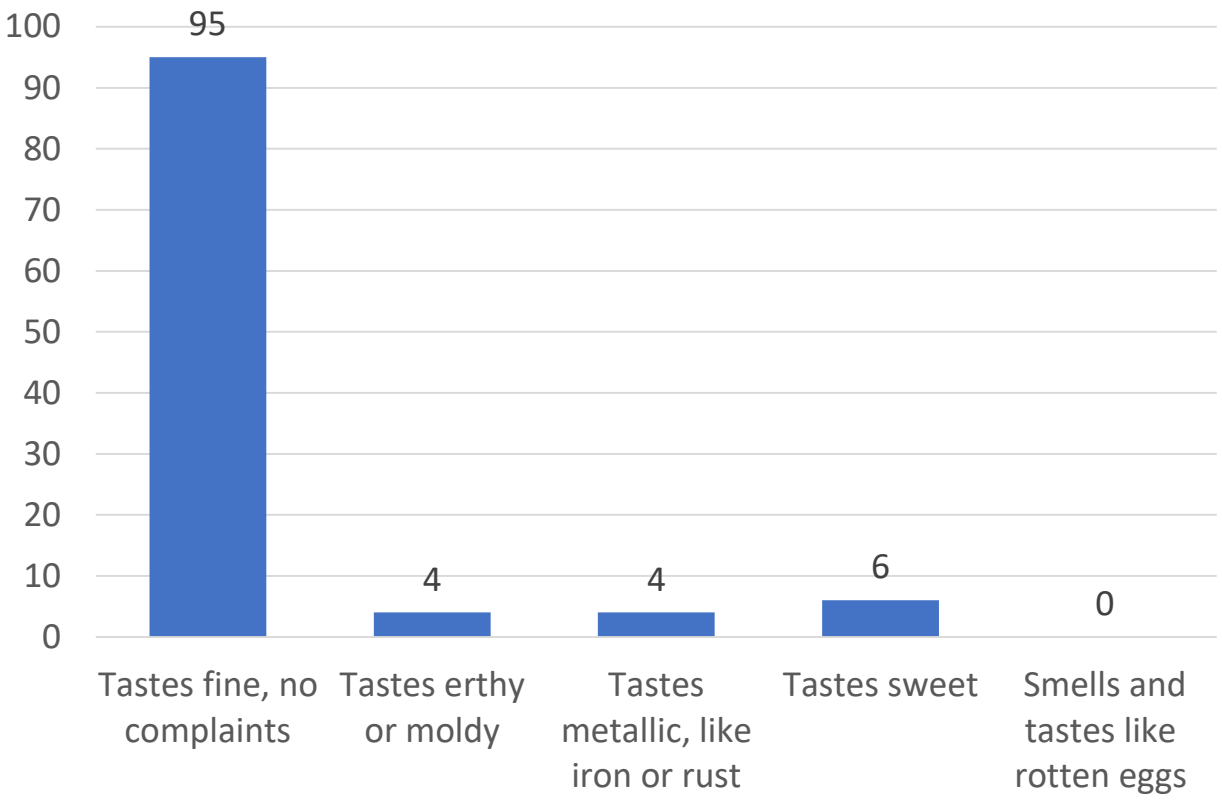
	Water temp. (C)	Air temp. (C)	pH	SEC	TDS	NO3	HCO3	Redox pot.	O2 (%)	O2 (ppm)	V (l/s)
Mean	7.7	11.6	7.5	503.4	297.8	4.8	286.6	143.2	44.4	5.8	2.13
Standard Error	0.1	0.8	0.0	10.1	6.7	1.2	16.4	17.7	5.0	1.1	0.61
Median	7.5	11.0	7.5	515.0	305.0	2.8	300.0	146.0	39.7	4.3	0.37
Mode	7.0	18.0	7.4	584.0	285.0	0.1	300.0	147.0	28.4	4.3	0.10
Standard Deviation	2.2	9.0	0.4	179.3	113.1	6.9	102.3	121.5	26.9	6.6	4.85
Range	14.2	43.0	3.1	1082.0	660.0	31.5	461.0	458.3	109.5	40.9	28.99
Minimum	2.0	-12.0	5.5	53.0	34.0	0.1	134.0	-98.3	0.5	0.1	0.01
Maximum	16.2	31.0	8.6	1135.0	694.0	31.6	595.0	360.0	110.0	41.0	29.00
Count	353	143	309	313	281	36	39	47	29	38	64

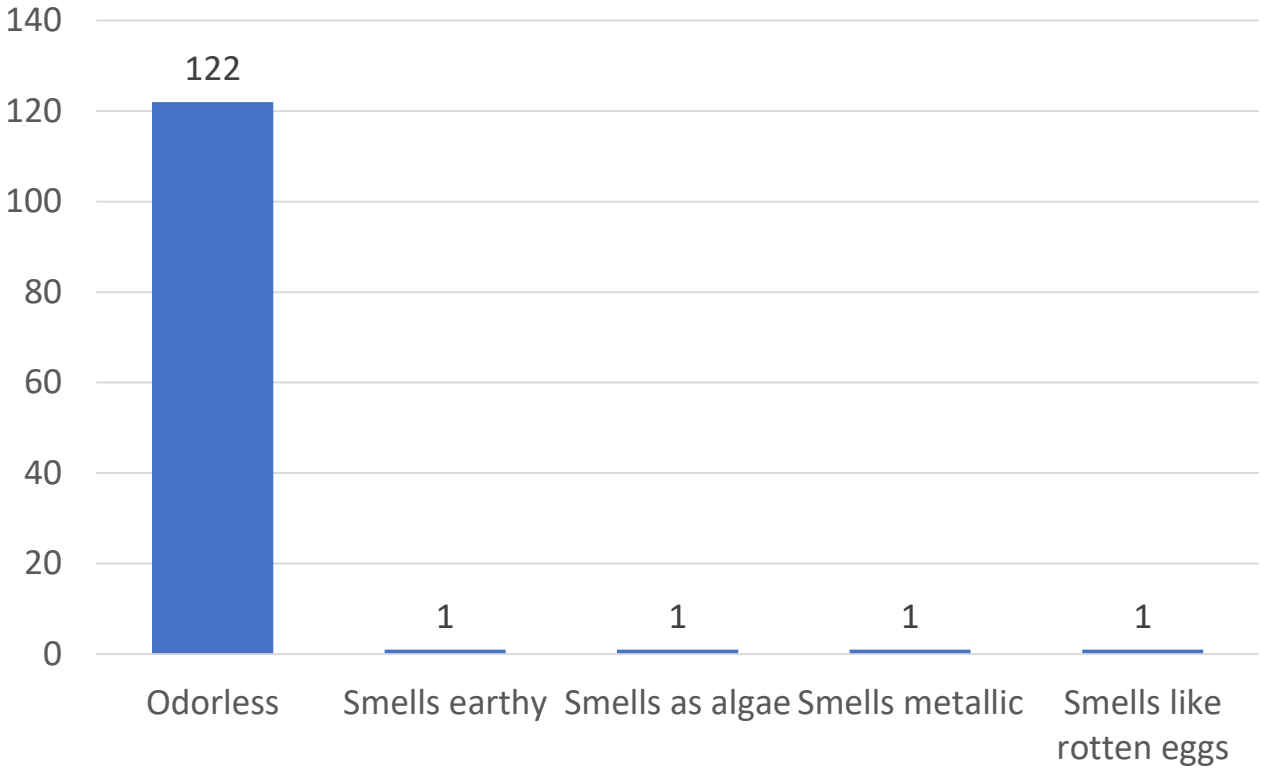






Water odor and taste (EE)





- In 81 cases water is described as odorless and with good taste
- In 6 cases water is described as odorless and taste sweet
- In 3 cases water is described as odorless and taste earthy or moldy
- In 1 case water is described as odorless and taste metallic
- In 1 case water is described smell as algae and taste fine
- In all other case only taste or smell is described

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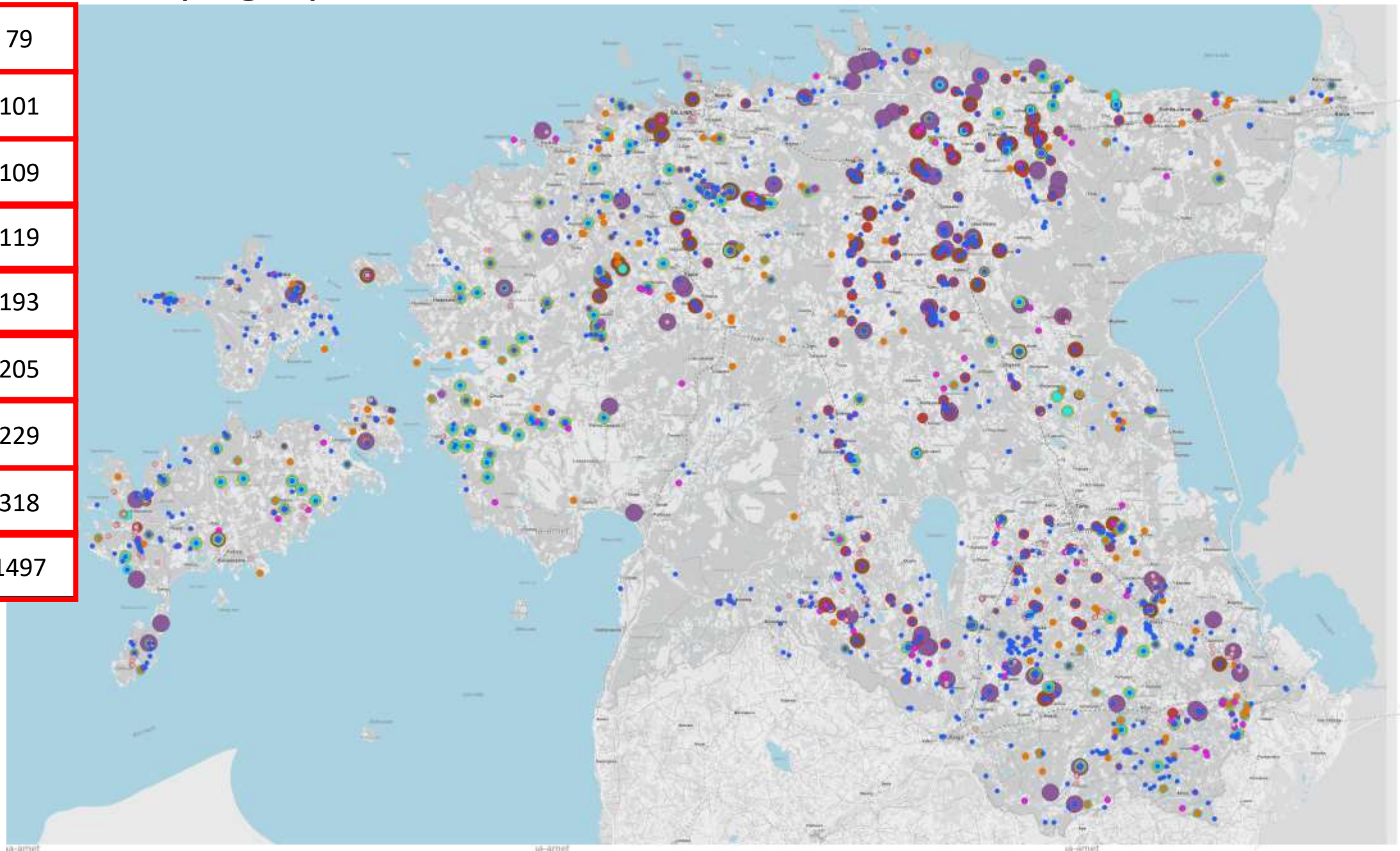
What’s new?

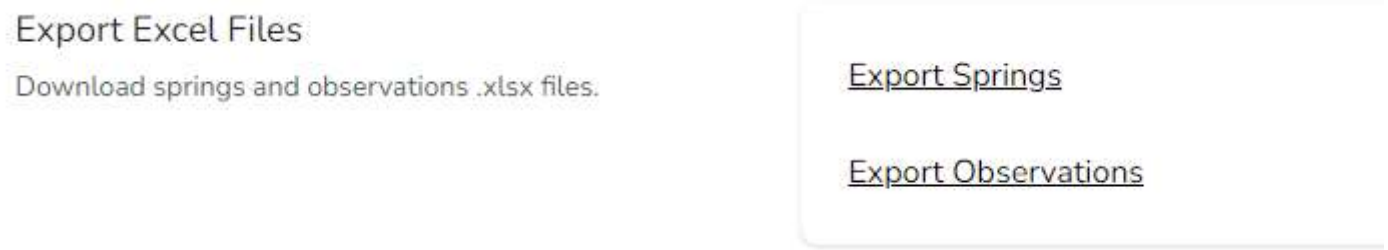
Estonian Topographic Database VS other databases

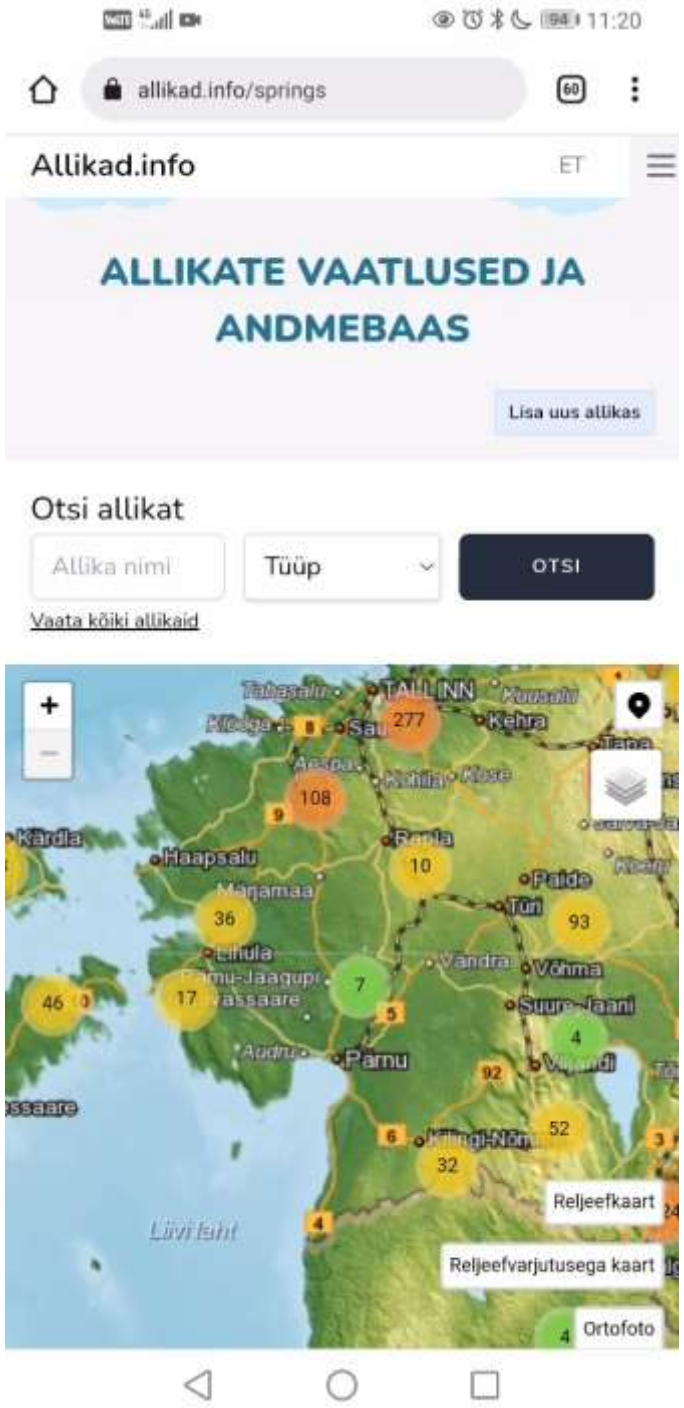
Allikaline vääriselupaik	79
Üksikobjektina kaitstud allikas	101
Muinsuskaitse-alune allikas	109
Seireallikas	119
Looduslik pühapaik	193
Pärandkultuuri allikas	205
Ürglooduse raamatu allikas	229
Loodusdirektiivi allikaelupaik	318
KKR/ETAK	1497



New functions in allikad.info

- Static map layers with all know spring location in other databases.
- Navigation! You cand send spring location to the navigation app.
- Better maps in Estonia – higher zoom-level in DEM and ortophoto.
- Spring markers have color coding:
  - Blue – controlled and confirmed spring
  - Orange – known spring, needs confirmation
  - Red – new submitted spring, needs confirmation
  - Gray – not a spring
- In the bottom of the dashboard you can download springs and observations databases as xlsx-files.





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Thank you!

Now share your experinece!

bit.ly/WaterAct-project

bit.ly/WaterAct-Researchgate

JOIN -> https://www.facebook.com/groups/197231101712583/

LATVIJAS VIDES, ĢEOLOĢIJAS UN METEOROLOĢIJAS CENTRS

REPUBLIC OF ESTONIA MINISTRY OF THE ENVIRONMENT

Nature Conservation Agency Republic of Latvia

TALLINN UNIVERSITY

REPUBLIC OF ESTONIA ENVIRONMENT AGENCY

UNIVERSITY OF LATVIA

GEOLOGICAL SURVEY OF ESTONIA

VIDZEME THE ONLY WAY IS UP!

Interreg Estonia-Latvia European Regional Development Fund

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