

Excursion «Water in the City of Zurich»

The excursion is available in German only!

The self-guided smartphone excursion «Water in the City of Zurich» is available for everybody with an interest in scientific, economical and social aspects of water in the city of Zurich.

For students visiting the excursion as part of a module, the rules may differ from the ones described here. Please review the information that was sent by the lecturers instead.

The routes given in the excursion are made for visitors doing the excursion on foot and by public transport. The corresponding stops and footpaths are given. Visiting the excursion with other means of transport as for example by bike is possible. However, no specific route descriptions are given. Alternative routes where public transport would be used and in driving bans need to be found independently.

Contents of the excursion

The excursion is divided into four sections:

- Section A
 - Streams in the city of Zurich
 - Discharge estimation using the “pooh-stick method”
 - Temporary streams at the foot of the Uetliberg
- Section B
 - Lake of Zurich
 - History of the Schanzengraben and Sihlkanal
 - Fish ladder and Surface Water Conservation Act
 - Importance of the river Sihl for Zurich
 - Flood protection
- Section C
 - Wells and fountains of Zurich and their stories
 - Roman bath culture in Turicum
 - Rathausbrücke
- Section D
 - Groundwater and drinking water
 - Hydrological measurements at the Limmat
 - Hydropower at the Letten powerplant
 - Specific discharge of the Sihl and the Limmat
 - Water level estimation with CrowdWater

The excursion can be visited without any hydrological pre-knowledge. If there are exercises that cause difficulties, they can be skipped.

The length of the whole excursion is about six hours. However, the excursion can be paused or cancelled at any time. If you visit the excursion using public transport, you need a day ticket of the ZVV zone 110 (no guarantee).

Access to the excursion

The excursion is accessed using a free app called *Actionbound* and one of the QR codes below. For students visiting the excursion as part of a module, there is a different QR code than for external visitors. The content for the two QR codes is the same, except that in the version for the students, the discharge estimation using the Manning formula is included. Two different QR codes are needed because the results of the students are checked. Therefore, students need to use a different QR code than visitors.

After downloading the app, one of the two QR codes below can be scanned for direct access to the excursion. Please be aware that only students are allowed to use the internal QR code. If you are visiting the excursion as an external person, please scan the public QR code.



Figure 1: Public QR code for the excursion.



Figure 2: Internal QR code for the excursion.

Alternatively, the search function in *Actionbound* can be used. Searching for “Wasser Zürich” leads to two almost identical looking excursions. Please select the public one if you visit the excursion as an external visitor and the internal one if you are a student visiting the excursion as part of a module.

It is possible to visit the excursion without having access to the internet. In this case, you need to download the media and map content of the excursion when you are still connected to the internet. The contents of the excursion are deleted from the smartphone after finishing the excursion. You need to be connected to the internet when handing in your results and photos at the end of the excursion. Free WiFi is available for example at Zurich main station and at the other larger train stations in Zürich as for example Hardbrücke, Oerlikon, Stadelhofen.

During the excursion, you need the *CrowdWater* app and an account for this app. With *CrowdWater*, valuable hydrological data can be collected without using any measurement instruments. You can find more information about the project on www.crowdwater.ch. If you will not be connected to the internet during the excursion, you need to add the spot at the Bahnhofbrücke, as well as the spot on the edge of the woods above the Triemli hospital to your offline spots (navigate to these positions in *CrowdWater*, click on the picture, click on the three dots and load them to your device).

Start and end of the excursion

You are free to choose with which part of the excursion you want to start. The excursion is based on the assumption that the sections are visited in alphabetical order afterwards. If you want, you can still visit the sections in an arbitrary order but logistically this is less optimal. You can also decide to only visit single sections or parts of the excursion. The start and end point of the sections are:

- Section A: The section starts at the SZU station Friesenberg and ends in the forest above the Hotel Atlantis. The closest SZU stations from there are Schweighof and Triemli. From there, you can easily go to Selnau using the SZU and to Bürkliplatz using the tram. There, section B starts.
- Section B: The section starts on the Bürkliplatz at the lake. The end of the section is at the Sigi-Feigel-Terrasse at the Sihl. From there you can walk to the start of section C in only a few minutes.
- Section C: The start of the section is at the Alfred-Escher-Brunnen in front of the main station; the end is at the Rathausbrücke, close to Hotel Storchen at the Limmat. To get to the start of section D, you need to walk to the Central and take the tram 6 in the direction Werdhölzli.
- Section D: The section starts directly at the station Hardhof (tram 6) and ends at the Bahnhofbrücke close to the main station. To get to the start of section A, you need to take the S10 service (track 21/22) in the direction Ringlikon/Triemli.

The map below shows an overview of the four starting points. The same map with flexible zoom options can be found here: <https://s.geo.admin.ch/8b17991907>.

In the app, route descriptions and maps with larger scales are available.

The excursion contains scavenger hunt elements: To get from one point to another, you will be led by a directional arrow that also indicates the remaining distance between you and the target. For this to work, *Actionbound* needs access on your position, so the GPS must be activated.

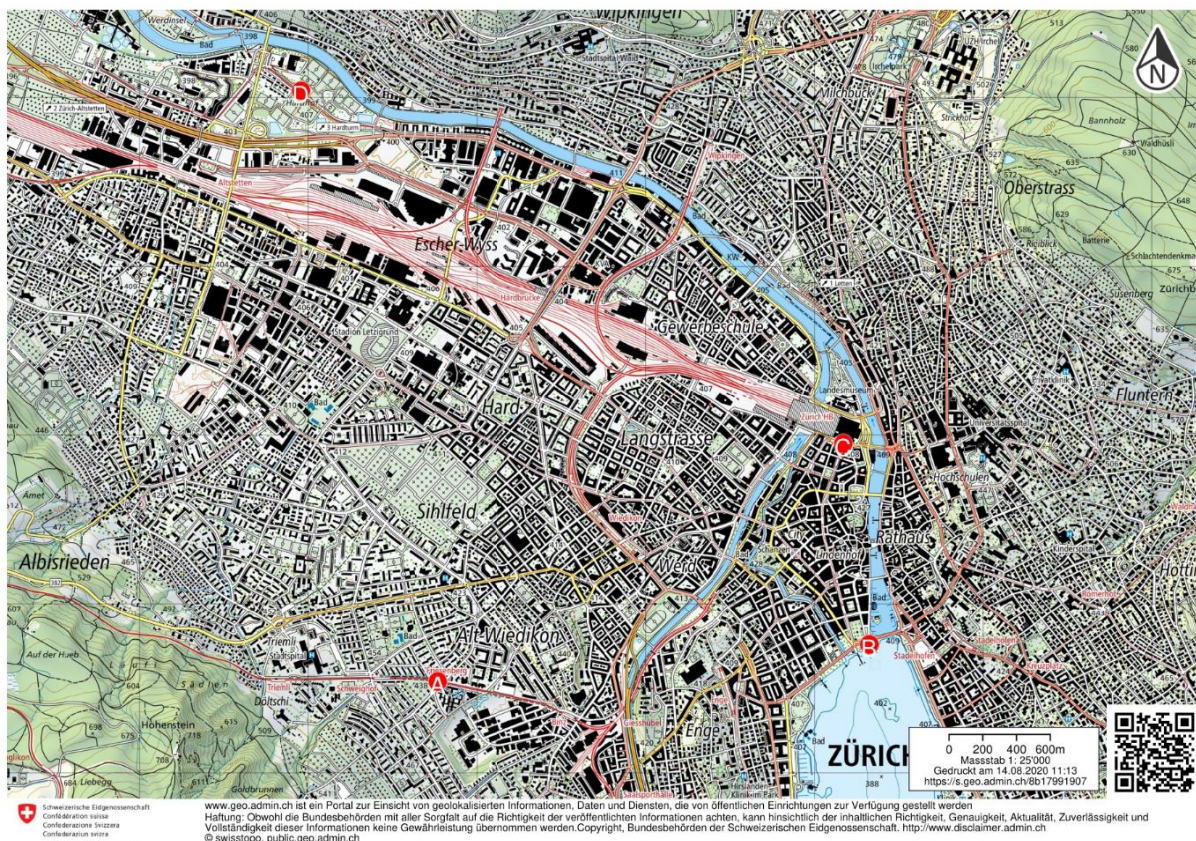


Figure 3: Starting points of the excursion “Water in the City of Zurich”. Basemap from Swisstopo (map.geo.admin).

List of literature used in the excursion

BAFU Bundesamt für Umwelt (2012): Hochwasserschutz für die Stadt Zürich. Damit die Sihl das Zentrum nicht flutet. Heft Umwelt, Nr. 2, S. 50-53.

BAFU Bundesamt für Umwelt (2014): Regulierung Zürichsee. Faktenblätter zur Seeregulierung. (PDF: https://www.bafu.admin.ch/dam/bafu/de/dokumente/naturgefahren/fachinfo-daten/seeregulierung_zuerichsee.pdf.download.pdf/seeregulierung_zuerichsee.pdf).

BAFU Bundesamt für Umwelt (2015): Pegel-Abfluss-Beziehung für die Messstation Zürich Unterhard. (Datensatz nicht mehr verfügbar).

BAFU Bundesamt für Umwelt (2016): Die fünf Gefahrenstufen für Hochwasser. (Webseite: <https://www.hydrodaten.admin.ch/de/die-5-gefahrenstufen-fur-hochwasser.html>).

Baumann W. (1993): Zürcher Brunnen. Hrsg. Wasserversorgung Stadt Zürich, Zürich, 159 S.

Birchler, F. (2018): Porträt eines Meilensteins. In: Wipkinger Zeitung, 28.3.2018. (Artikel: <https://wipkinger-zeitung.ch/portraet-eines-meilensteins/>).

Davie, T. (2008): Fundamentals of hydrology. 2. Auflage, Routledge, New York, 200 S.

Energie Schweiz (2019): Energieverbrauch weltweit und in der Schweiz. Faktenblatt Nr. 4. (PDF: <https://pubdb.bfe.admin.ch/de/publication/download/7976>).

ERZ Entsorgung und Recycling Stadt Zürich (2007): Bäche. (PDF: https://www.stadt-zuerich.ch/content/dam/stzh/ted/Deutsch/taz/Hochwasserschutz/Publikationen_und_Broschueren/AB_W_Broschuere_Baeche_0709.pdf).

ERZ Entsorgung und Recycling Stadt Zürich (2013a): Das Bachkonzept im Überblick. 25 Jahre Bachkonzept der Stadt Zürich. (PDF: <https://s1c56daba8dcc83be.jimcontent.com/download/version/1390415055/module/8993190497/name/DasBachkonzept%20Stadt%20Z%C3%BCrich.pdf>).

ERZ Entsorgung und Recycling Stadt Zürich (2013b): Stadtbäche - entdecken Sie Zürichs grüne Oasen. Bachspaziergänge. (PDF: https://www.stadt-zuerich.ch/content/dam/stzh/ted/Deutsch/erz/Sauberes_Wasser/Publikationen_und_Broschueren/SW_Bachkonzept_1306.pdf).

EWZ Elektrizitätswerk der Stadt Zürich (2020): Organisation und Geschäftsleitung des EWZ - Tradition und Fortschritt seit 1890. (Homepage: https://www.ewz.ch/de/ueber-ewz/portrait/unternehmen/organisation_und_geschaeftsleitung.html).

Hefti D. (2012): Wiederherstellung der Fischauf- und -abwanderung bei Wasserkraftwerken. Checkliste Best practice. Bundesamt für Umwelt, Bern. Umwelt-Wissen Nr. 1210, 79 S.

Liechti, K., Oplatka, M., Eisenhut, N. & Zappa, M. (2016): Early flood warning for the City of Zurich. Evaluation of real-time operations since 2010. In G. Koboltschnig (Hrsg.), 13ter INTERPRAEVENT-Kongress 2016. «Living with natural risks», S. 944-951.

Loetscher H. (1981): Die Sihl, der mindere Fluss. In: NZZ am Wochenende, 29./30.8.1981. (PDF: https://static.nzz.ch/files/5/5/2/Z%C3%BCrich+Quartiere+die+Sihl_1.18308552.pdf).

Näf-Huber, D., Scherrer, S., Wetter, O., Specker, Th., Oplatka, M. & Eisenhut, N. (2016): Hochwasserschutz Zürich - Seestände und Abfluss. Heute mit dem Schiff ins Zürcher Fraumünster? Wasser Energie Luft, 108. Jahrgang, Nr. 2, S. 109-114. (PDF: http://www.scherrer-hydrol.ch/pdf/naef/wel_2_2016_hochwasserschutz_zuerich.pdf).

NZZ Neue Zürcher Zeitung (2010): Fischtreppe für Kraftwerk Letten. In: NZZ, 21.5.2010. (Artikel: https://www.nzz.ch/fischtreppe_fuer_kraftwerk_letten-1.5768415).

Schraner, R. (2016): Kraftwerke an der Limmat - von Zürich bis Untersiggenthal. Limmat-Clübler, 6/2016. (PDF: http://ig-limmat.ch/wordpress/wp-content/uploads/LCZ_Kraftwerke_Serie_1_KW_Letten_Z%C3%BCrich_HD.pdf).

SRF Schweizer Radio und Fernsehen (2017a): Es werde Licht - Seit 125 Jahren Strom in Zürich. In: Regionaljournal Zürich-Schaffhausen, 15.8.2017. (Artikel: <https://www.srf.ch/news/regional/zuerich-schaffhausen/seit-125-jahren-strom-in-zuerich>).

SRF Schweizer Radio und Fernsehen (2017b): Seegfrörni - wie lange noch? So gefriert ein See. In: Meteo-Stories, 29.01.2017. (Artikel: <https://www.srf.ch/meteo/meteo-news/seegfroerni-wie-lange-noch#:~:text=Ein%20See%20beginnt%20an%20den,4%20Grad%20Wassertemperatur%20erreicht%20hat.>).

SRF Schweizer Radio und Fernsehen (2019): Zürcher Gemüsebrücke soll komplett ersetzt werden. Alles neu. In: Regionaljournal Zürich-Schaffhausen, 20.05.2019. (Artikel: <https://www.srf.ch/news/regional/zuerich-schaffhausen/alles-neu-zuercher-gemuesebruecke-soll-komplett-ersetzt-werden>).

Stadt Zürich (2018): Endenergiebilanz. (Homepage: https://www.stadt-zuerich.ch/gud/de/index/umwelt_energie/energie-in-zahlen/endenergiebilanz.html#).

Stadt Zürich (2020): Rathausbrücke. (Homepage: <https://www.stadt-zuerich.ch/ted/de/index/taz/gestalten/rathausbruecke.html>).

Wasserversorgung Stadt Zürich (2009): Brunnenguide Altstadt Kreis 1. (PDF: https://www.stadt-zuerich.ch/content/dam/stzh/dib/Deutsch/BILDERwasserversorgung/4-Publikationen_Broschueren/Brunnenguide%20Kreis%201-2016.pdf).

WSL Eidgenössische Forschungsanstalt für Wald, Schnee und Landschaft (2013): Informationsplattform Sihl - Vorhersagen PREVAH/FLORIS Modellsystem Sihl-Zürich.