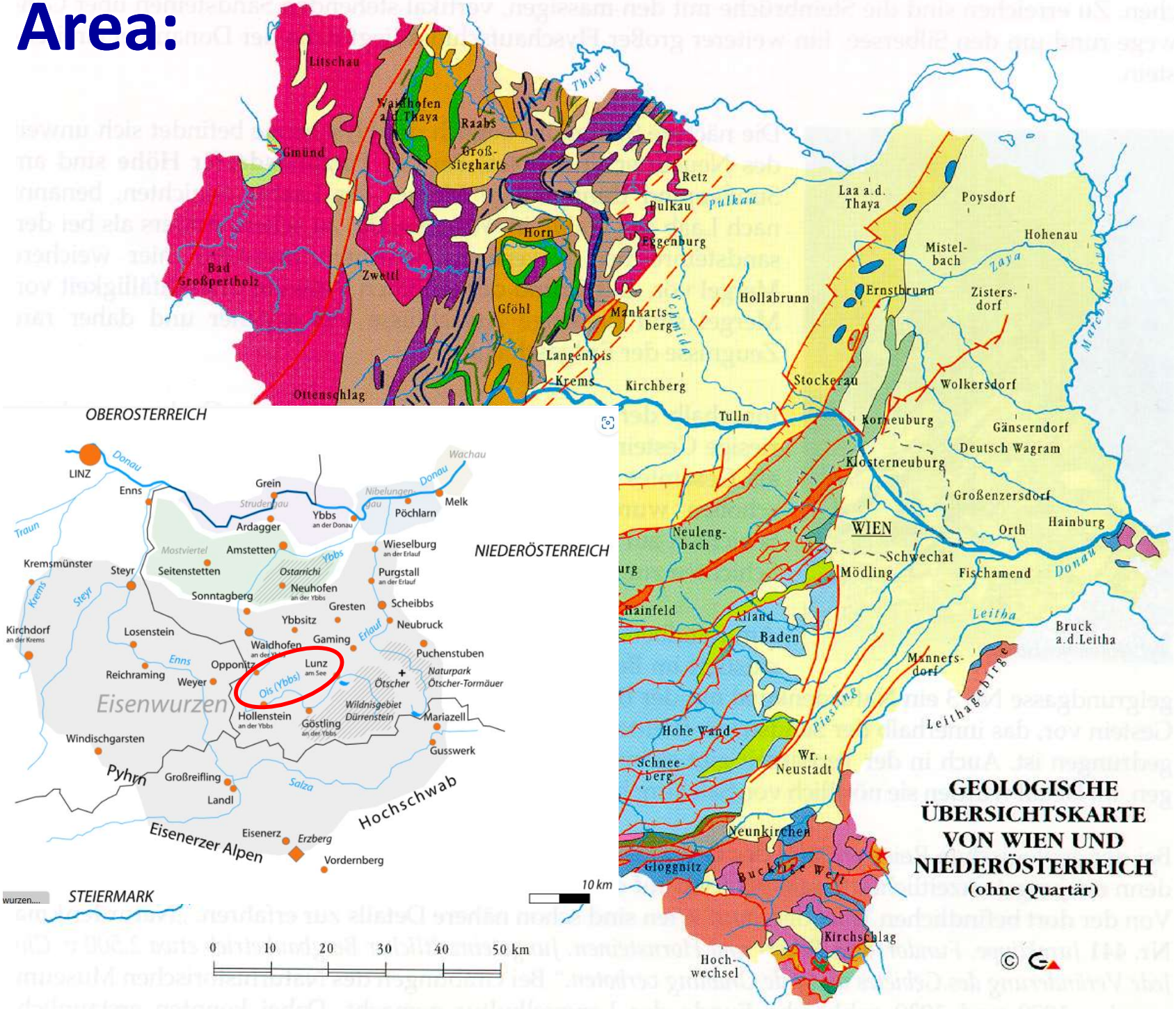
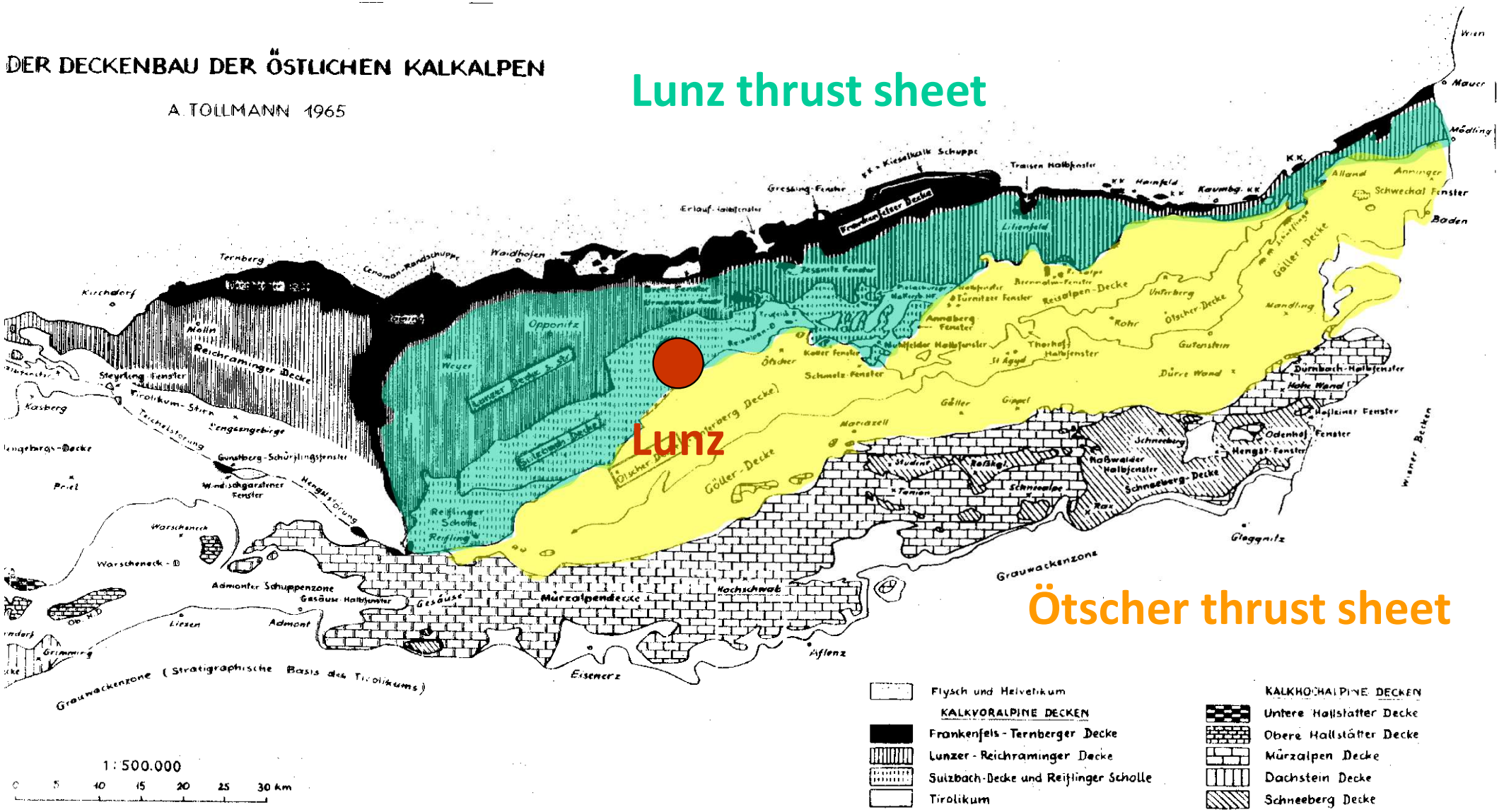
The Lunz Area

The Lunz Area: Geology

Limestone (Kalkalpen)



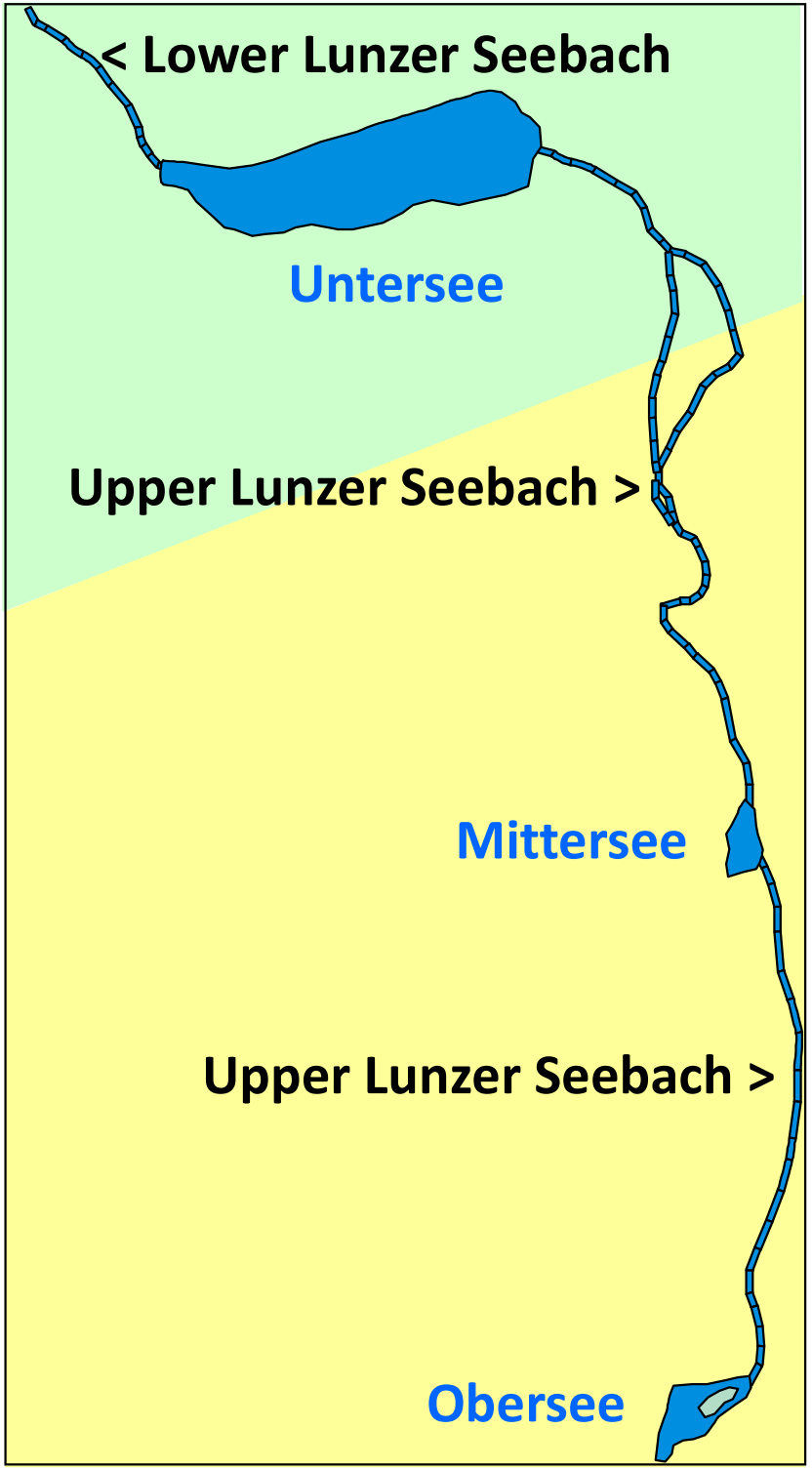
The Lunz Area: Geology



The Lunz Area: lakes & streams

Lunz thrust sheet

Ötscher thrust sheet



The Lunz Area: Geology of Seebach catchment

Lunz thurst sheet:

Hauptdolomit

Opponitzer Kalk

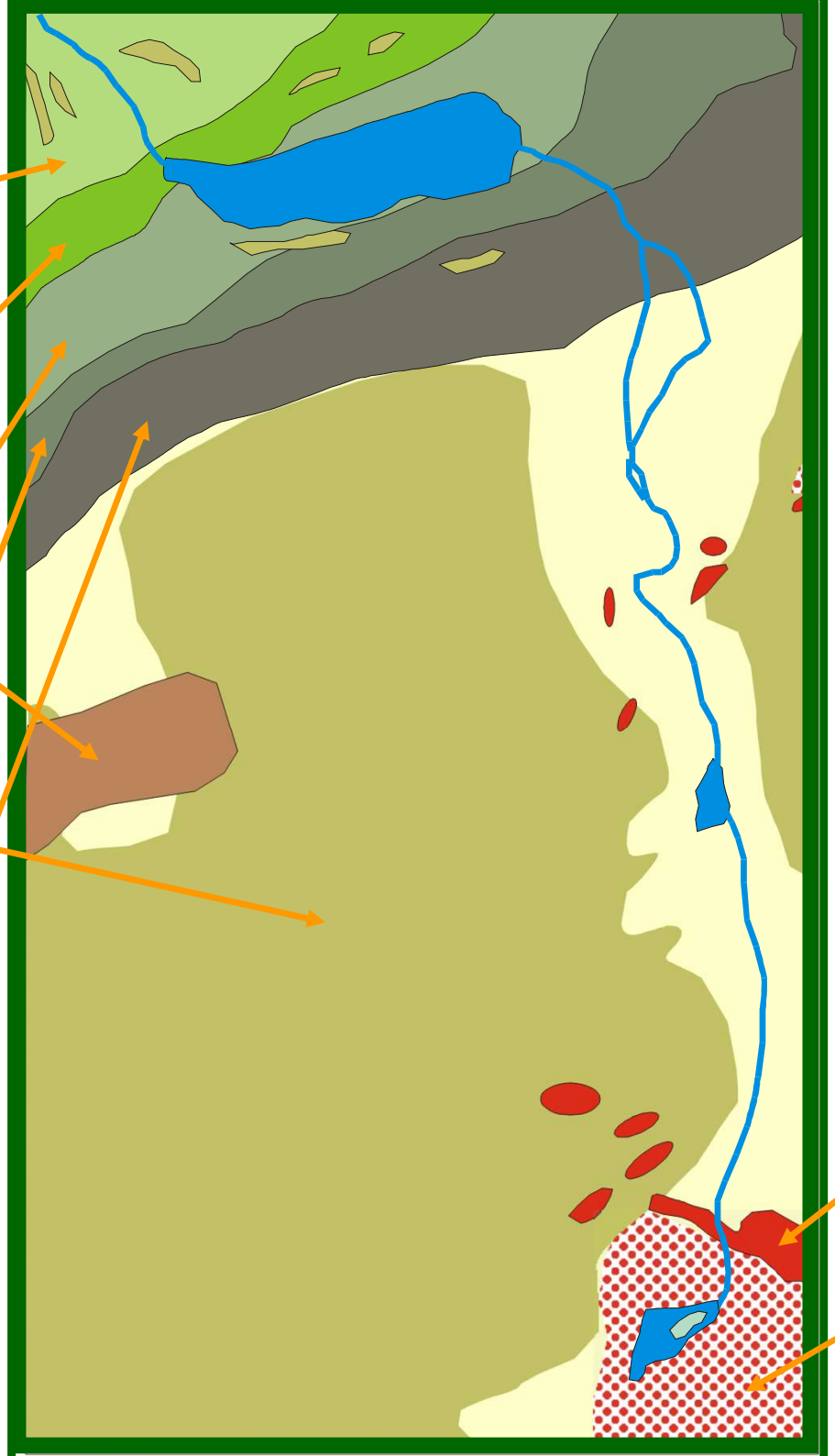
Lunzer Sandstein (coal)

Ramsau-Dolomit

Reiflinger Kalk

Dachsteinkalk, Dachsteindolomit

Gutensteiner Kalk

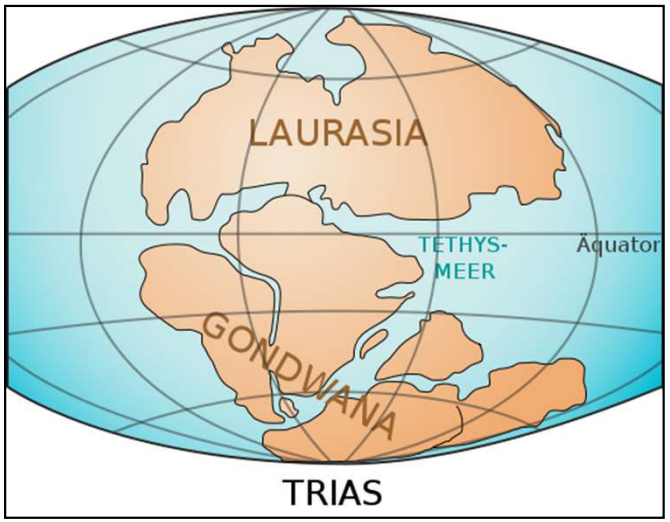


Ötscher thrust sheet:

Hierlatzkalk

Obersee-Breckzie

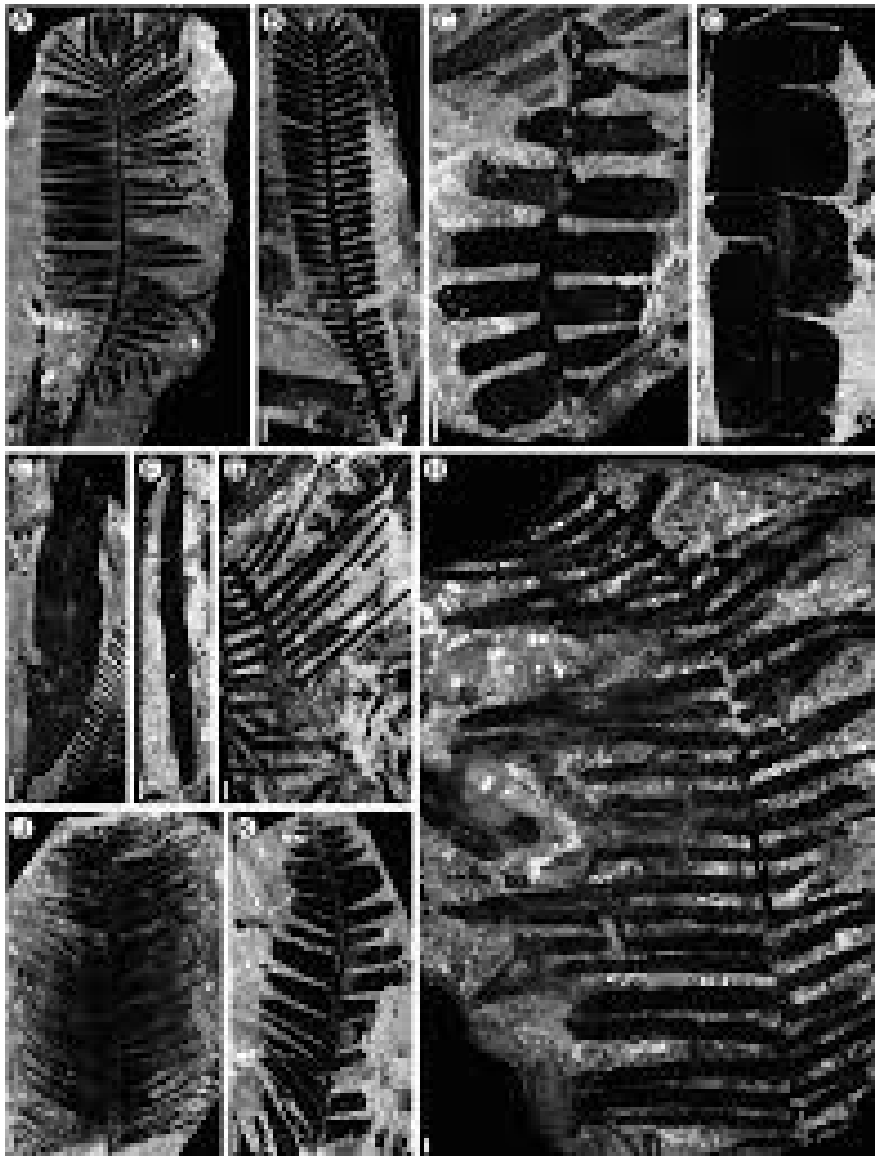
Lunzer Schichten: 233 MY, upper Triassic



Hauptdolomit, Opponitzer Schichten: 228-227 MY, upper Triassic

Dachsteinkalk, -dolomit: 217-200 MY, upper Tr.

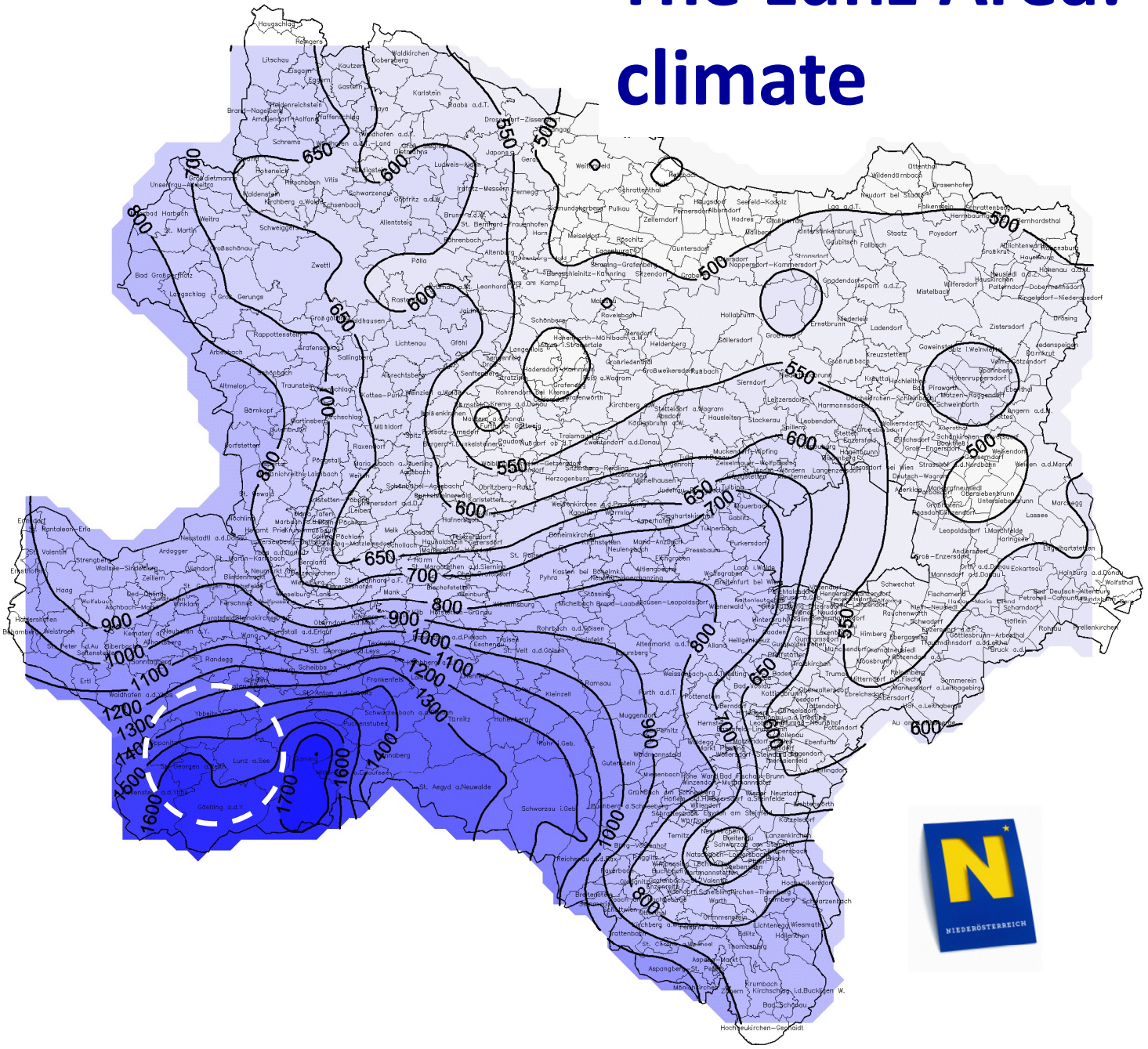
The Lunz Area: Geology



Lunzer coal flora

Banked Dachsteinkalk

The Lunz Area: climate

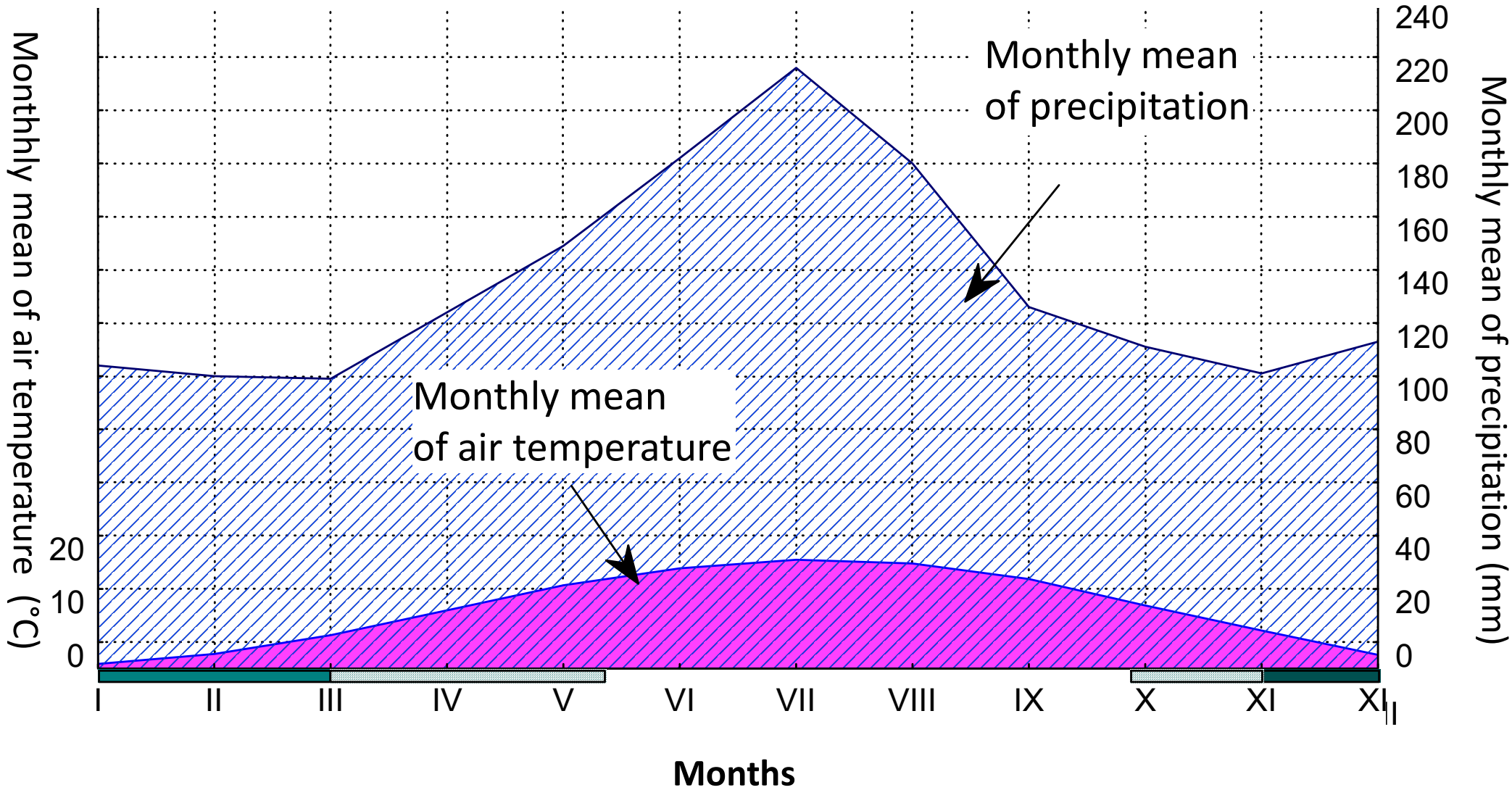


The Lunz Area - climate

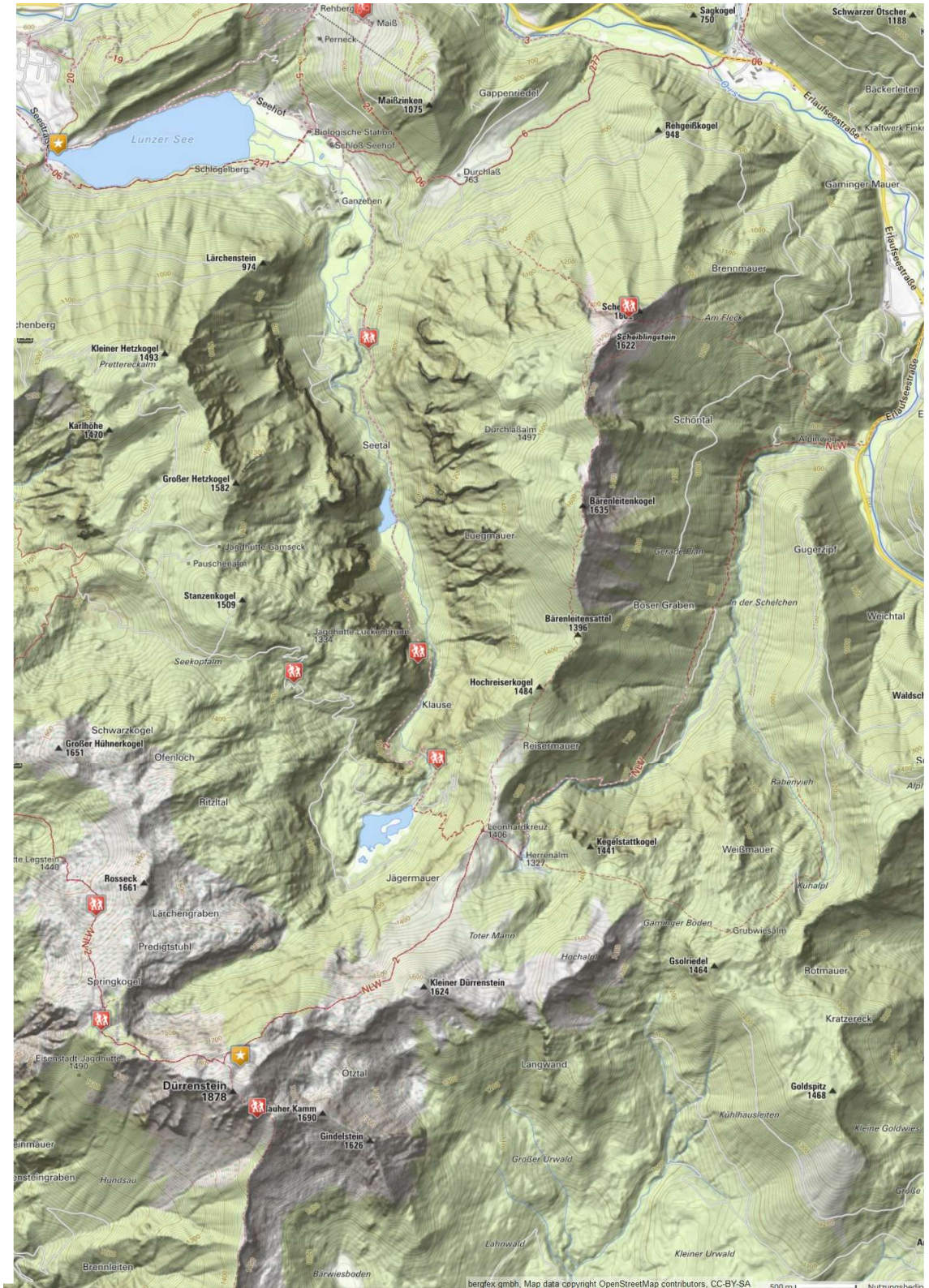
Lunz am See (47°51' N, 15°00'E, altitude: 612 m a.s.l.)

Longterm mean of air temperature: 6.2°C

Longterm mean of precipitation: 1605 mm

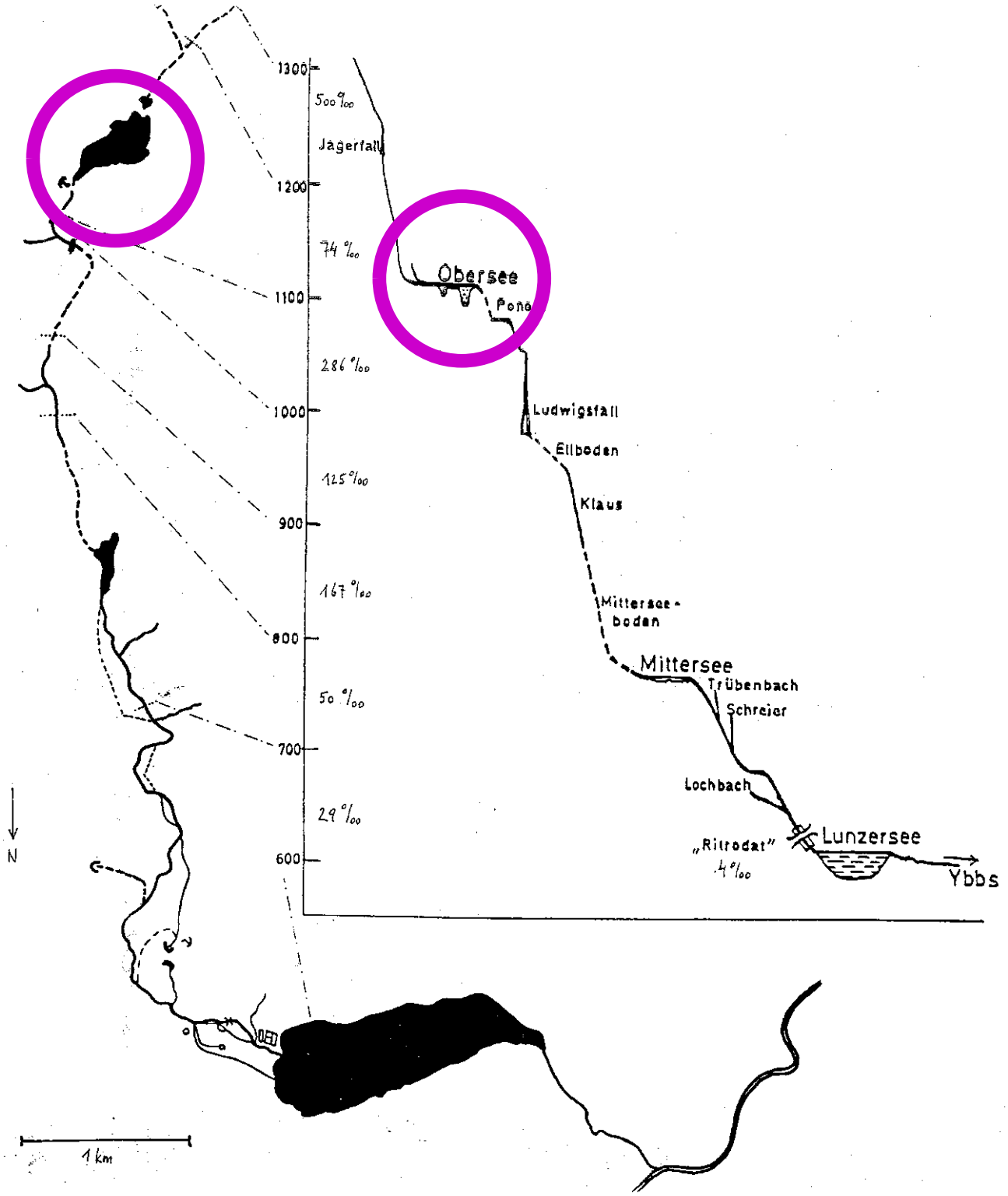


The Lunz Area – a virtual excursion to the Seebach valley

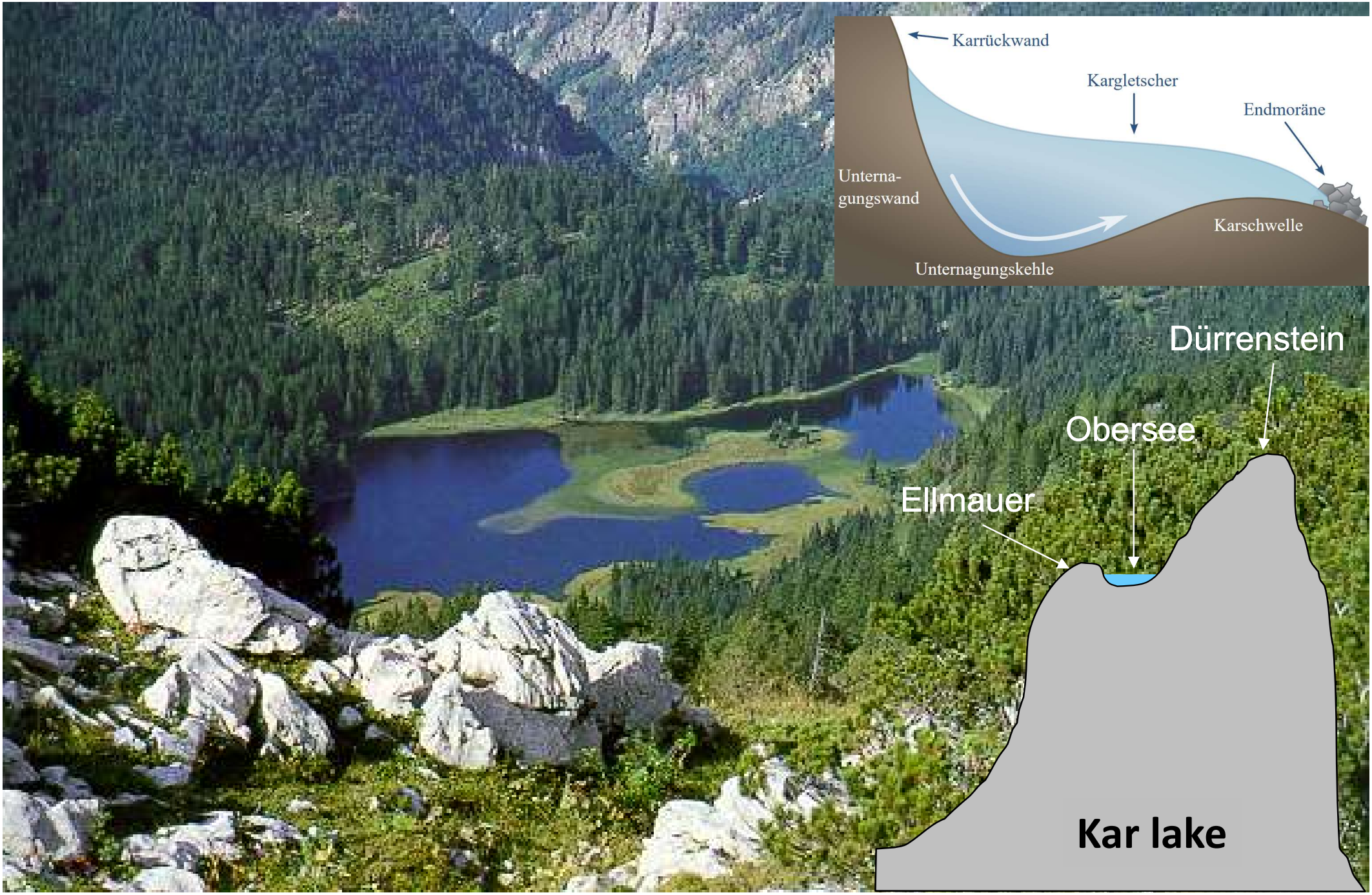


The Lunz Area: Obersee

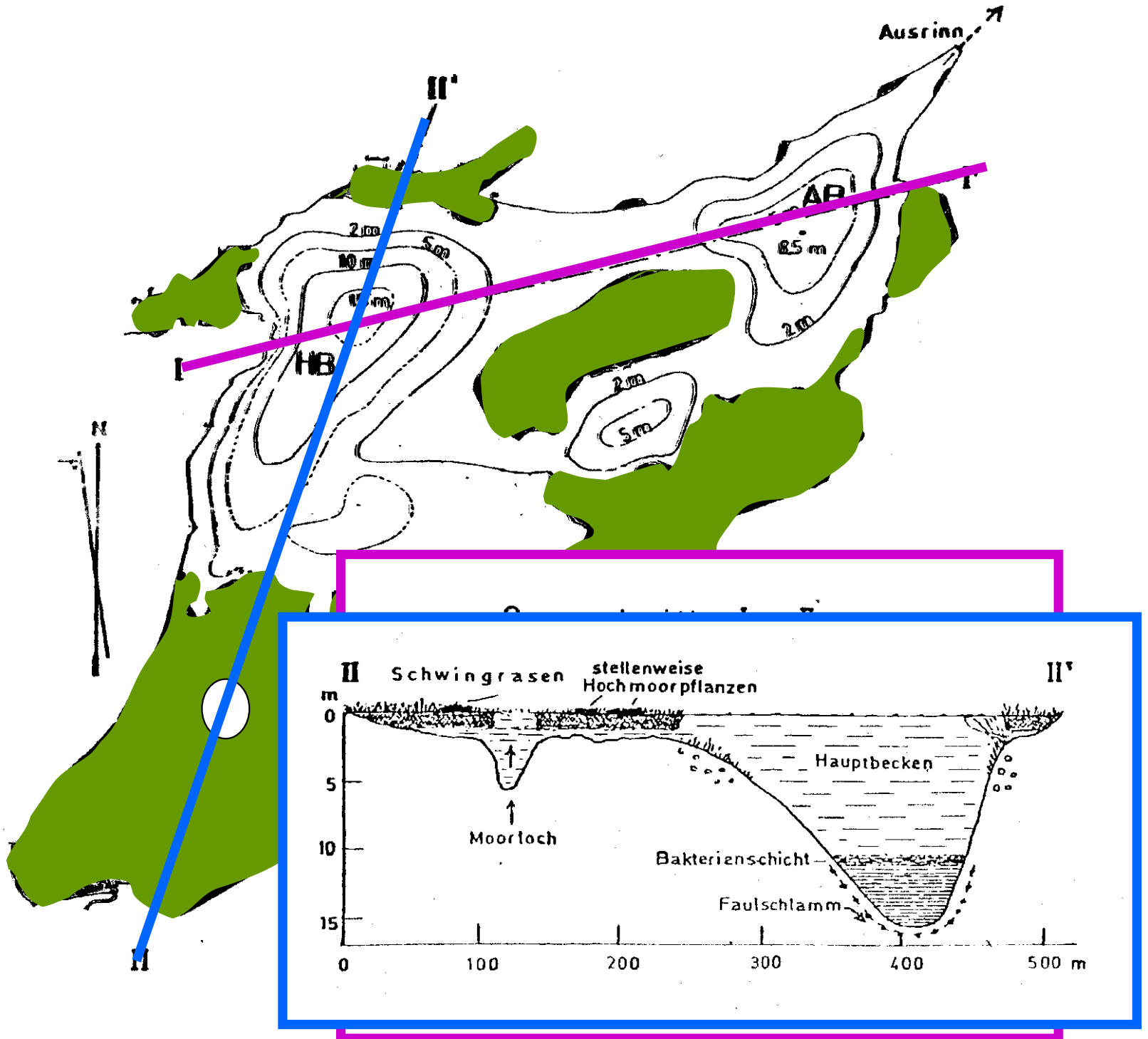
- a small meromictic and dystrophic mountain lake



The Lunz Area: Obersee



The Lunz Area: Obersee

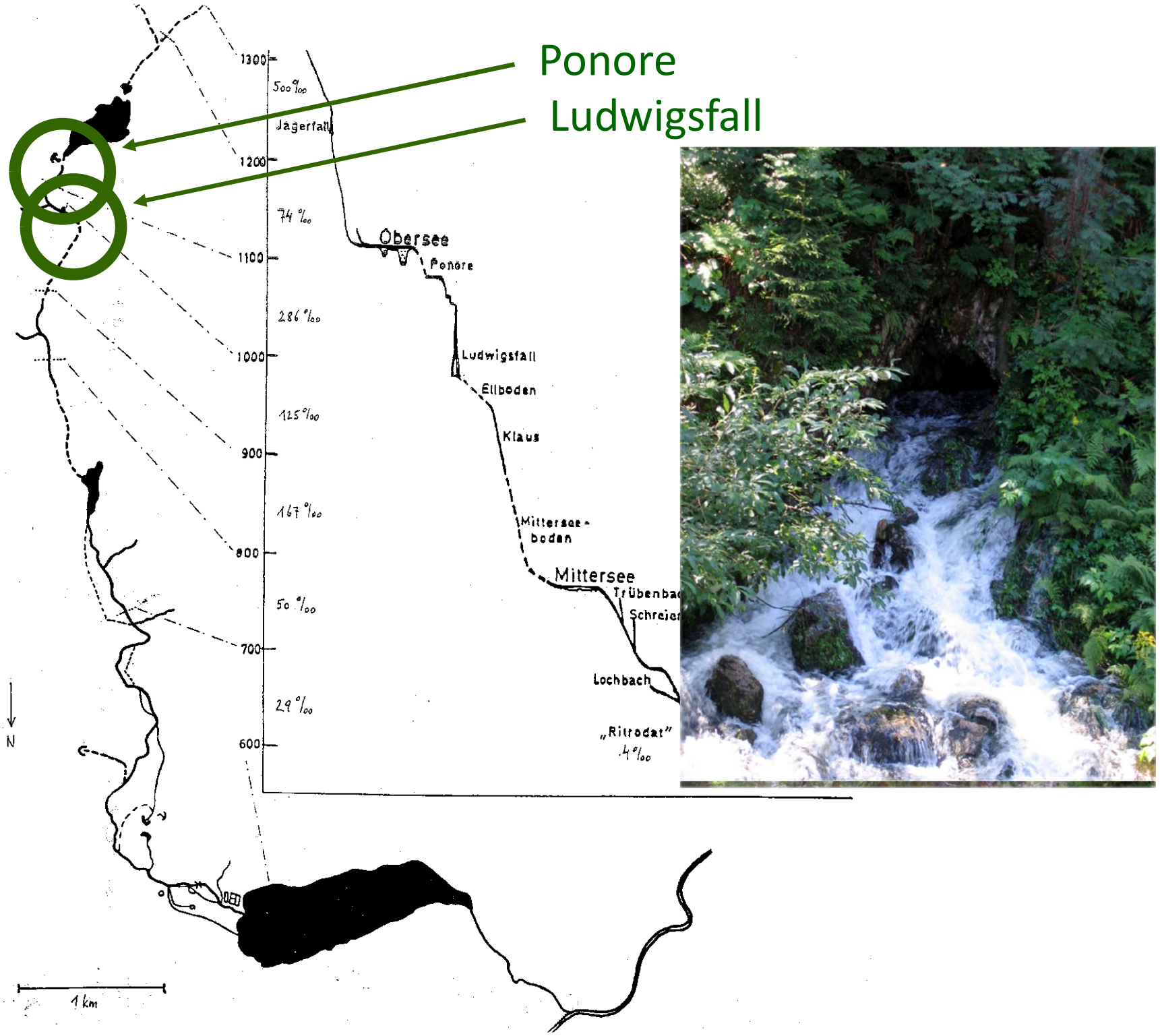


The Lunz Area: Obersee

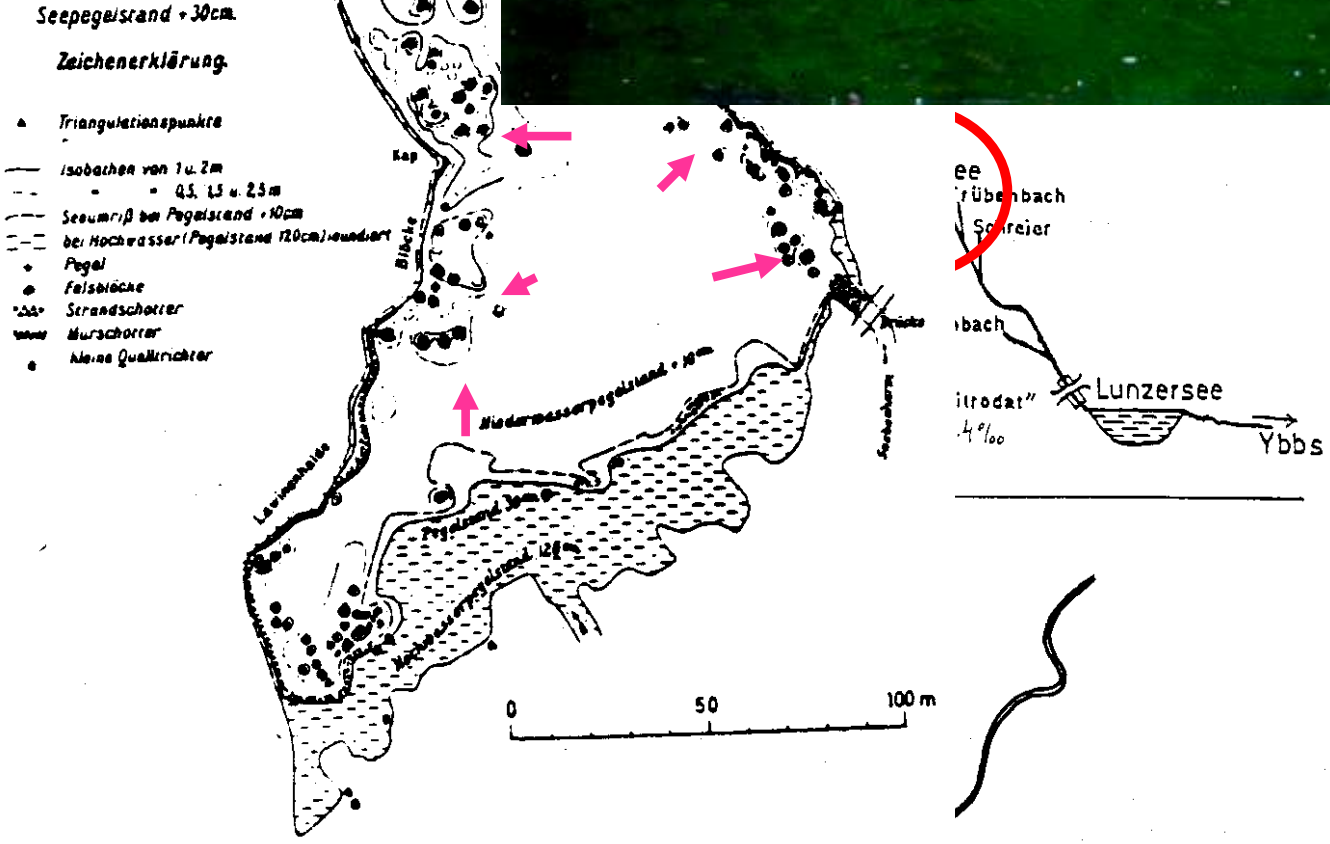
Peat moss (Sphagnum spp.)

Floating vegetation mat

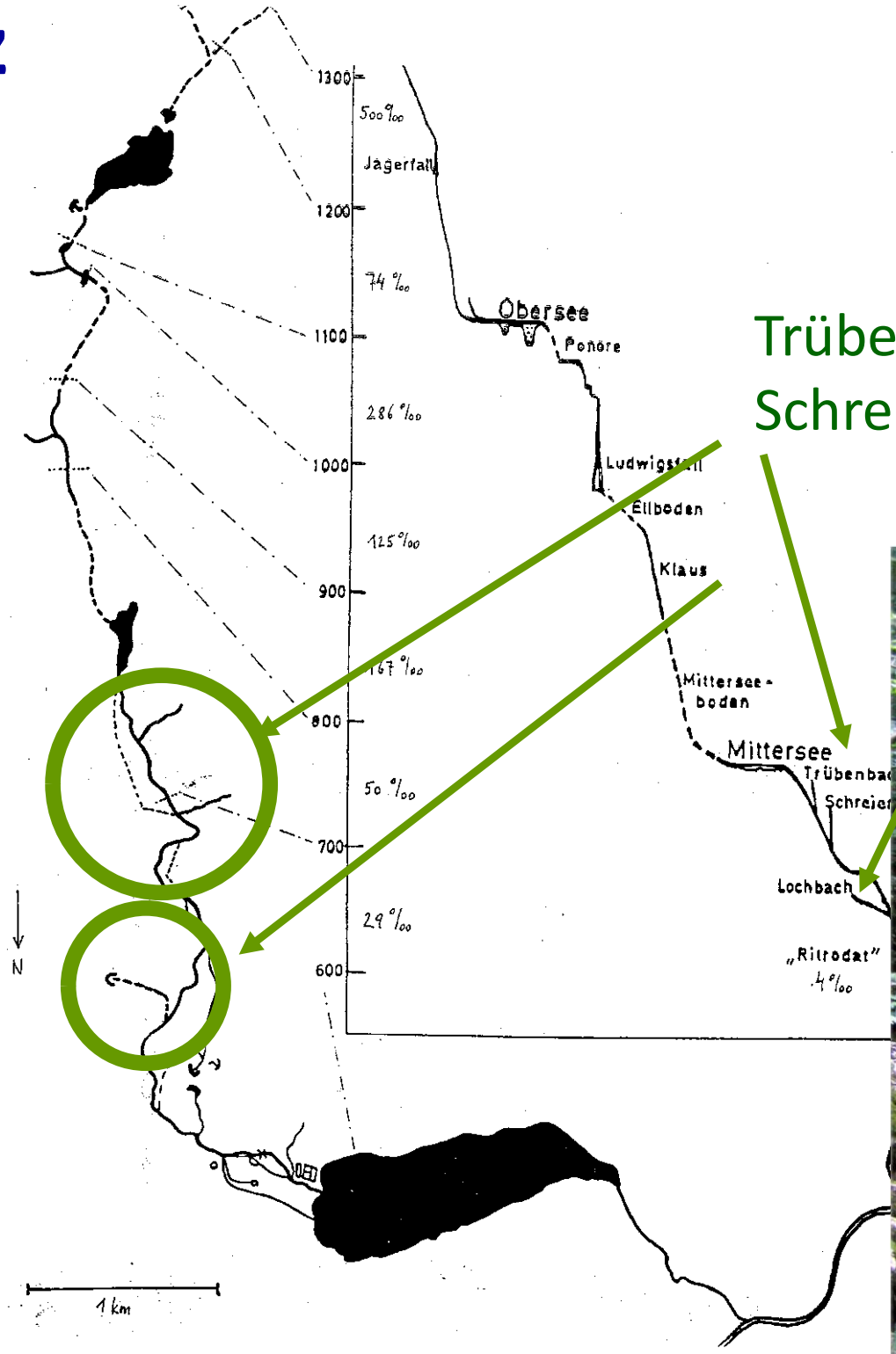
The Lunz Area: Obersee



The Lunz Area: Mittersee

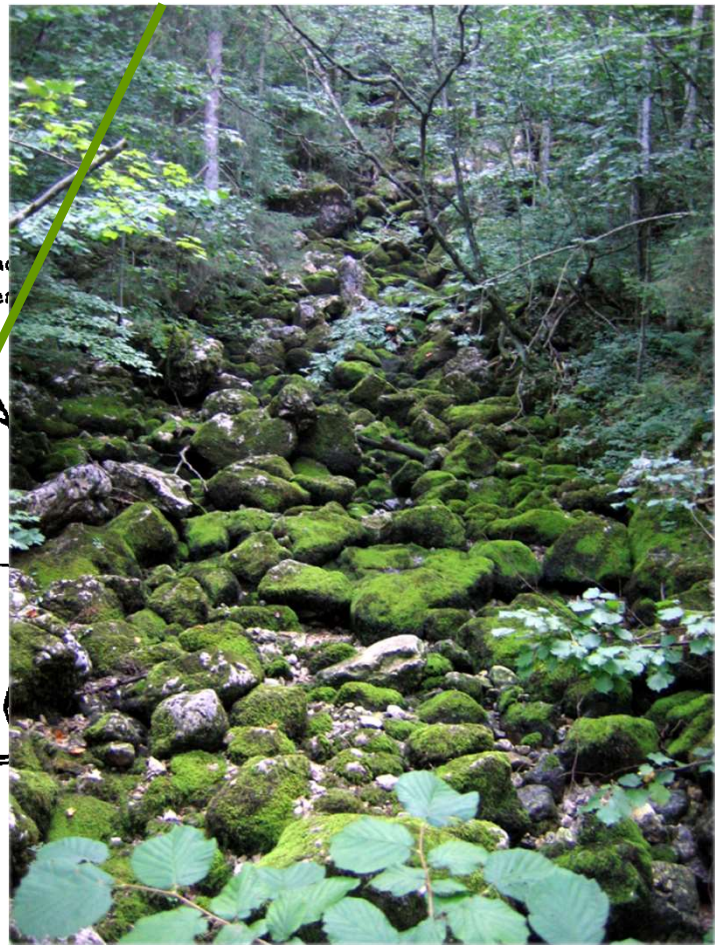


The Lunz Area



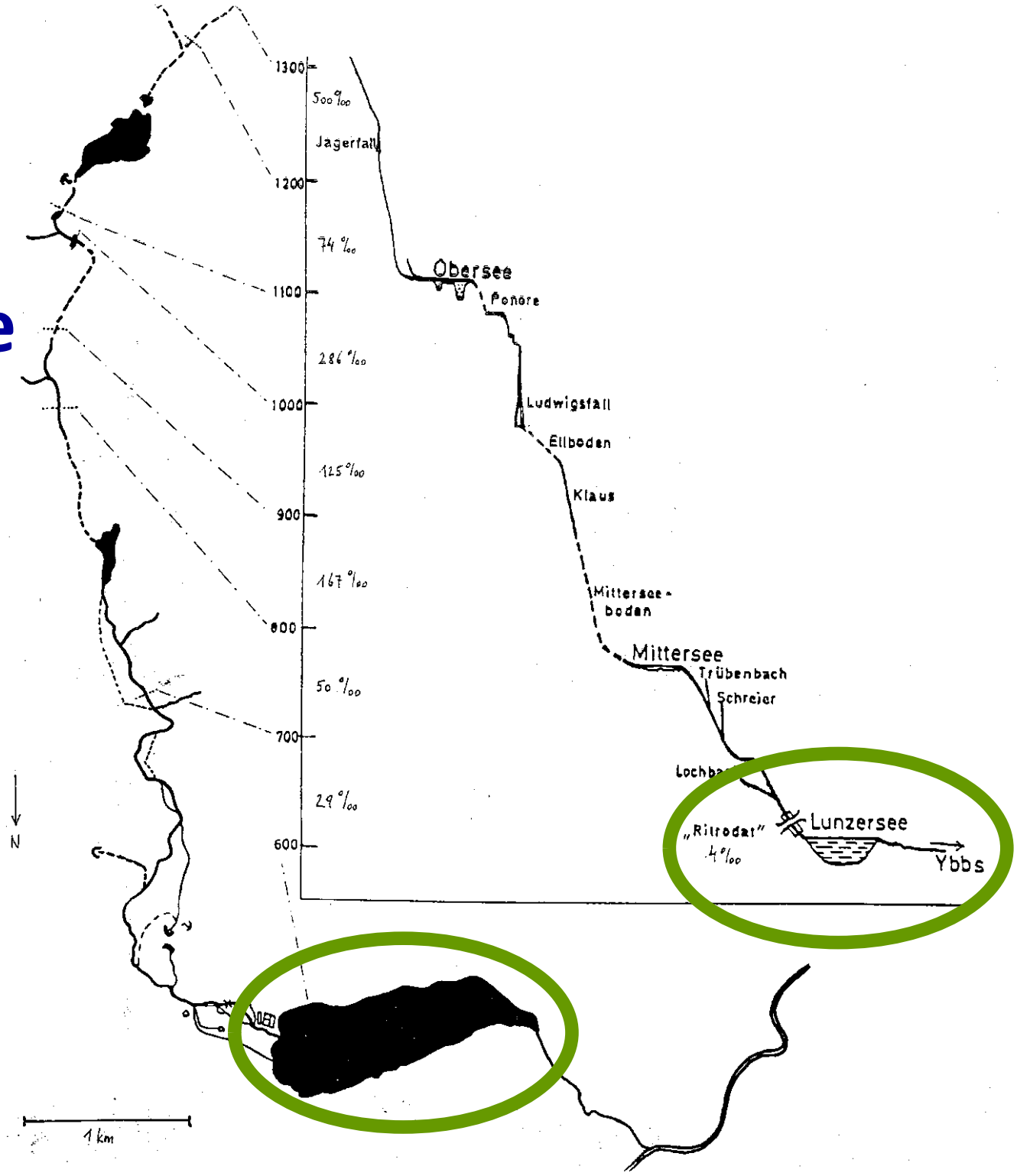
Trübenbach,
Schreierbach

Lochbach



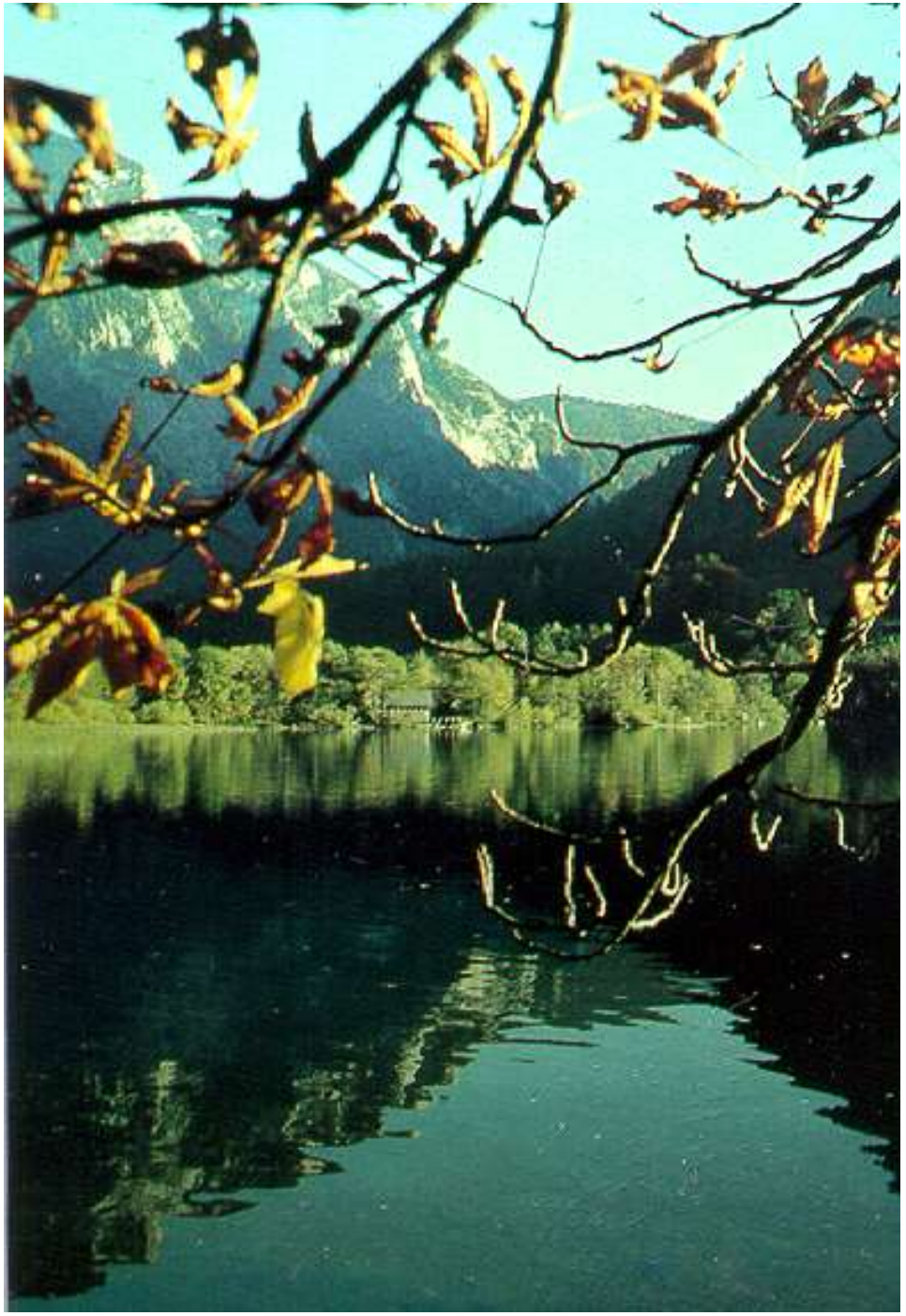
The Lunz Area

Untersee

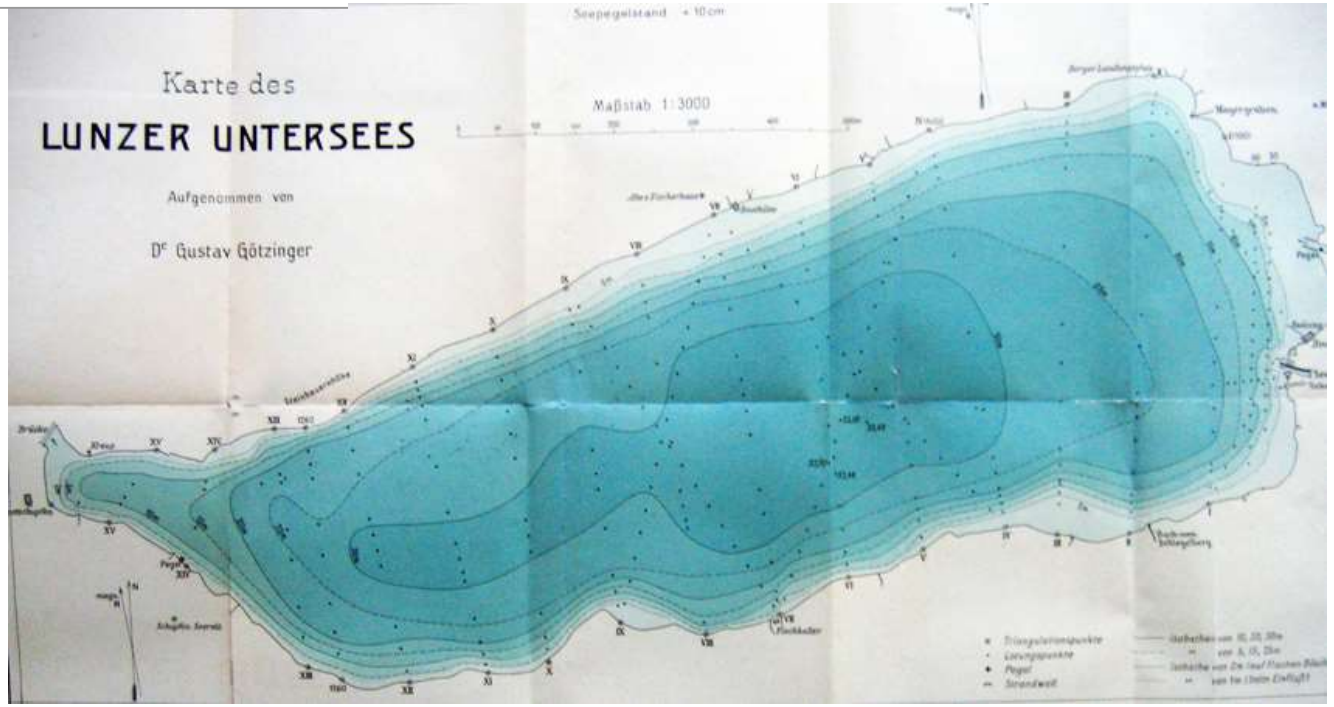


Lunzer Untersee

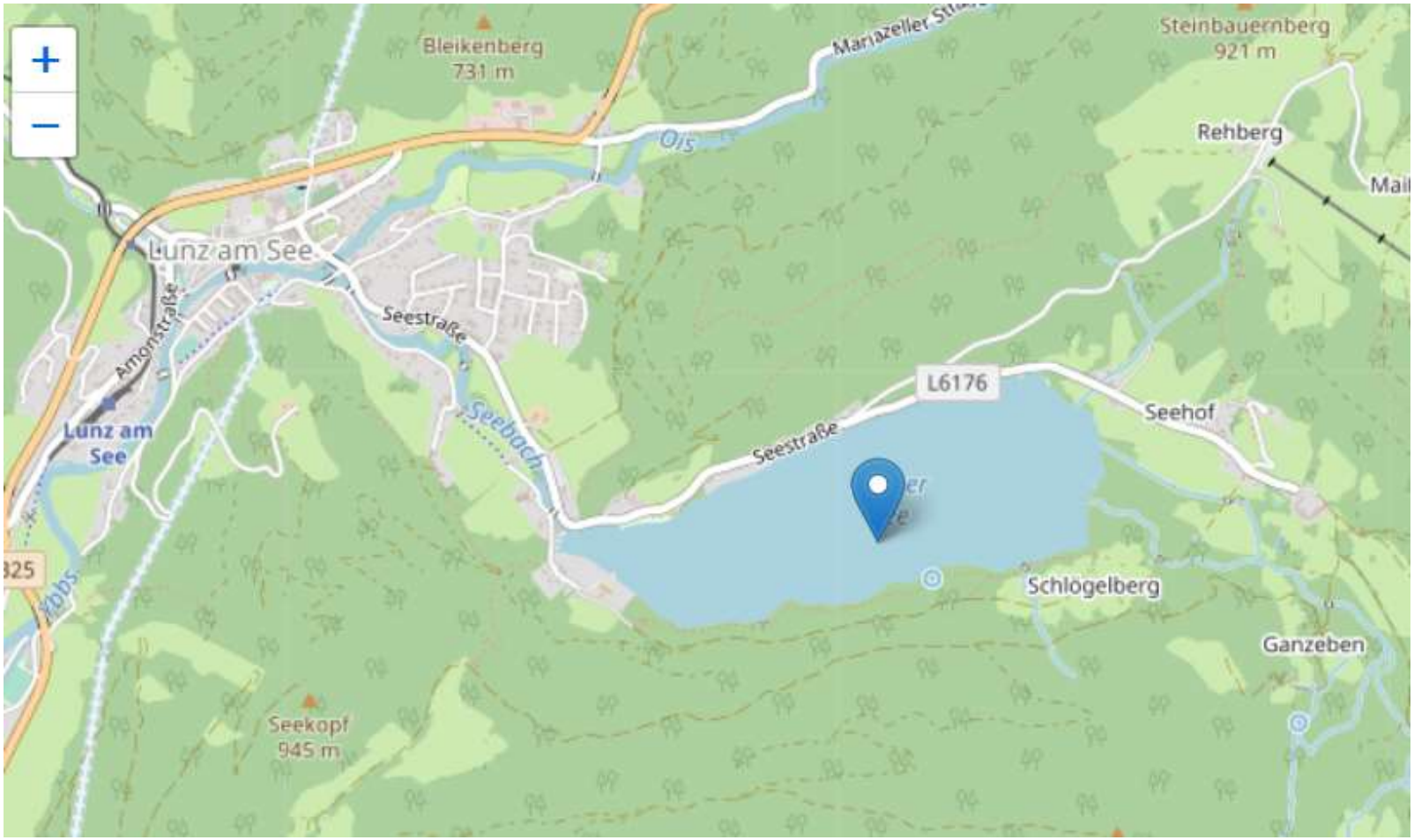
- oligotrophic, subalpine, dimictic lake of glacial origin, steep bathymetry -> few shallow littoral areas -> pelagic processes dominate



Surface area [km2]	0.7
Volume [km3]	0.013
Maximum depth [m]	33.7
Mean depth [m]	20.0
Water level	Unregulated
Length of shoreline [km]	4.2
Residence time [yr]	0.3
Catchment area [km2]	23.4

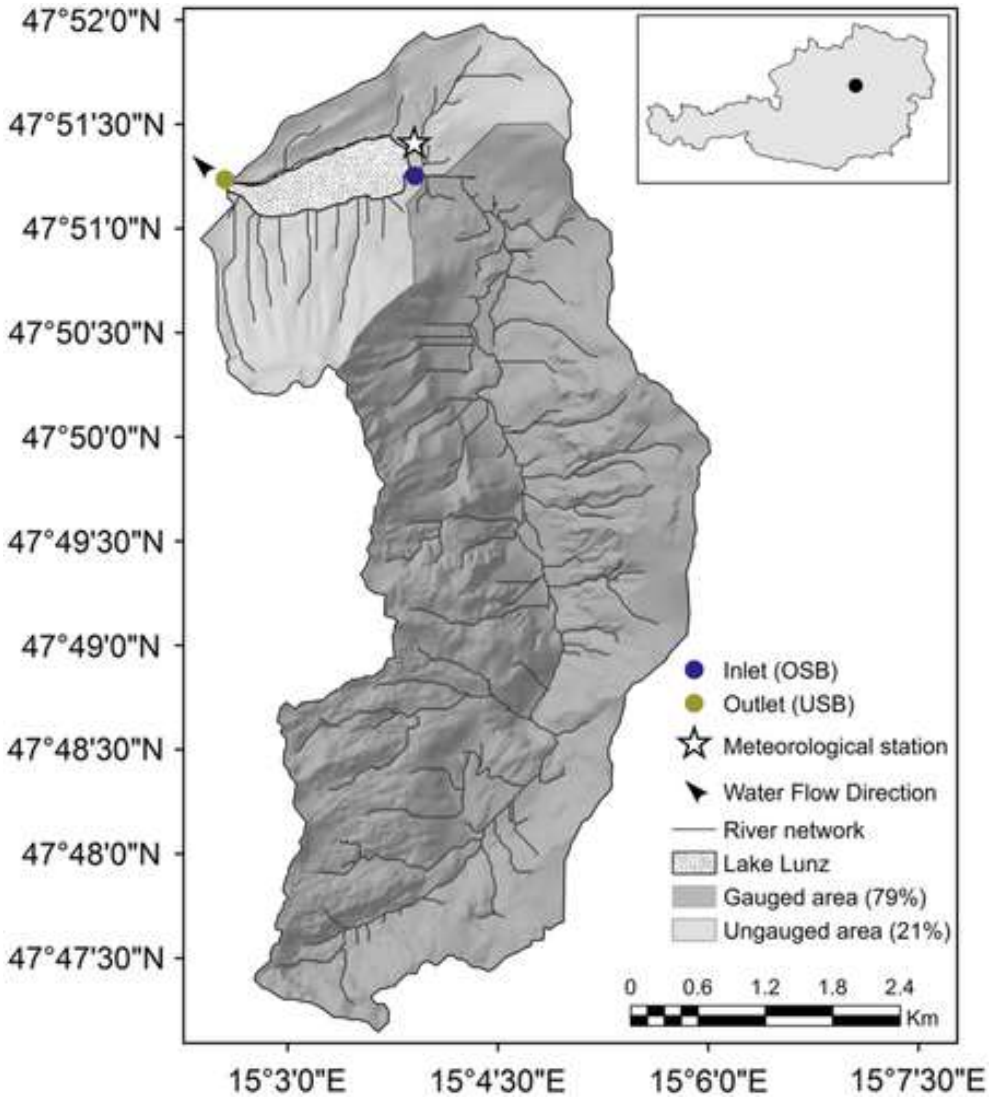


- limestone catchment (23,4 km^2), forested with spruce (*Picea abies*), common beech (*Fagus silvatica),* sycamore (*Acer pseudoplatanus*), and larch (*Larix decidua*), meadows (~6%) and covered with shallow, humic-rich soils

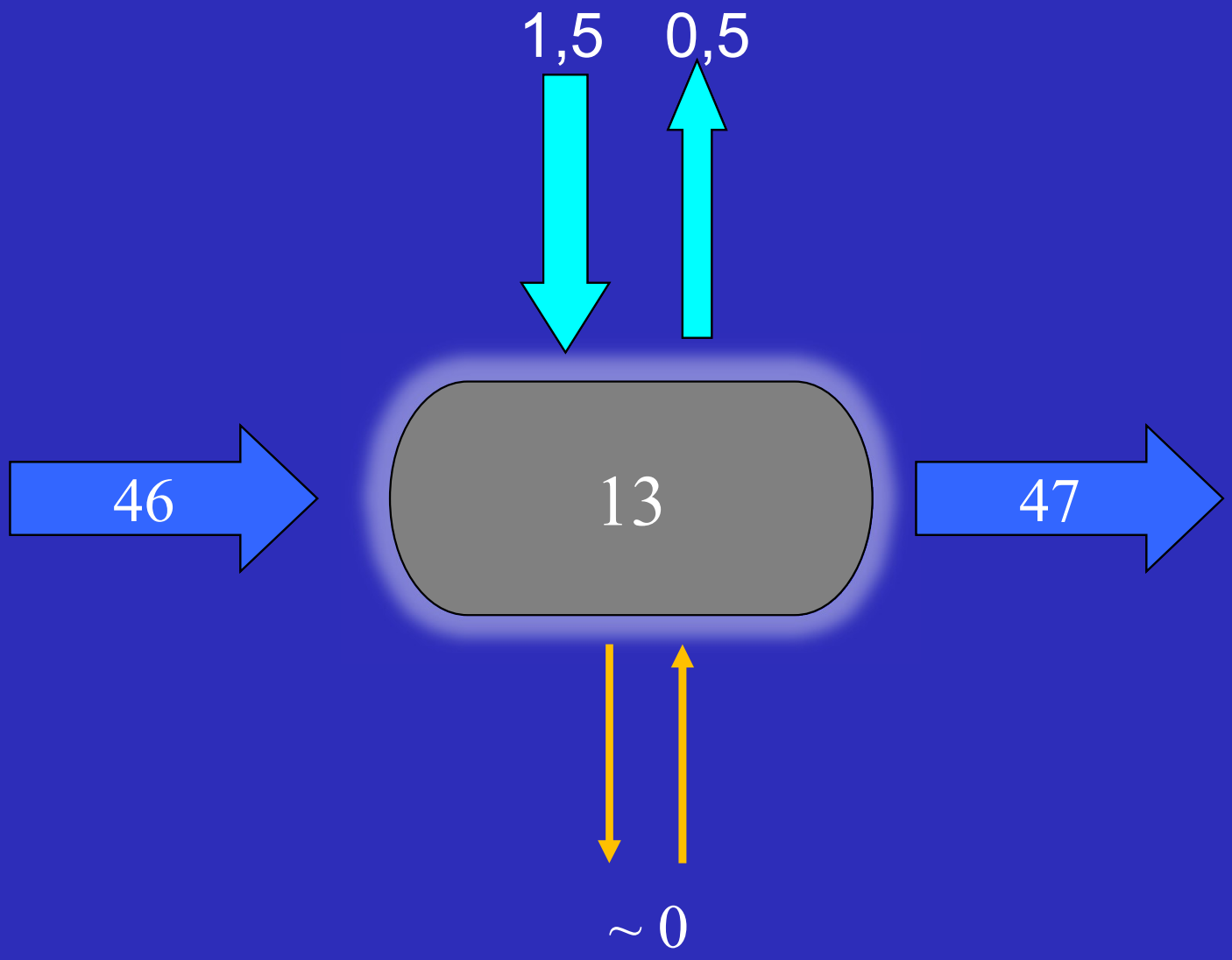


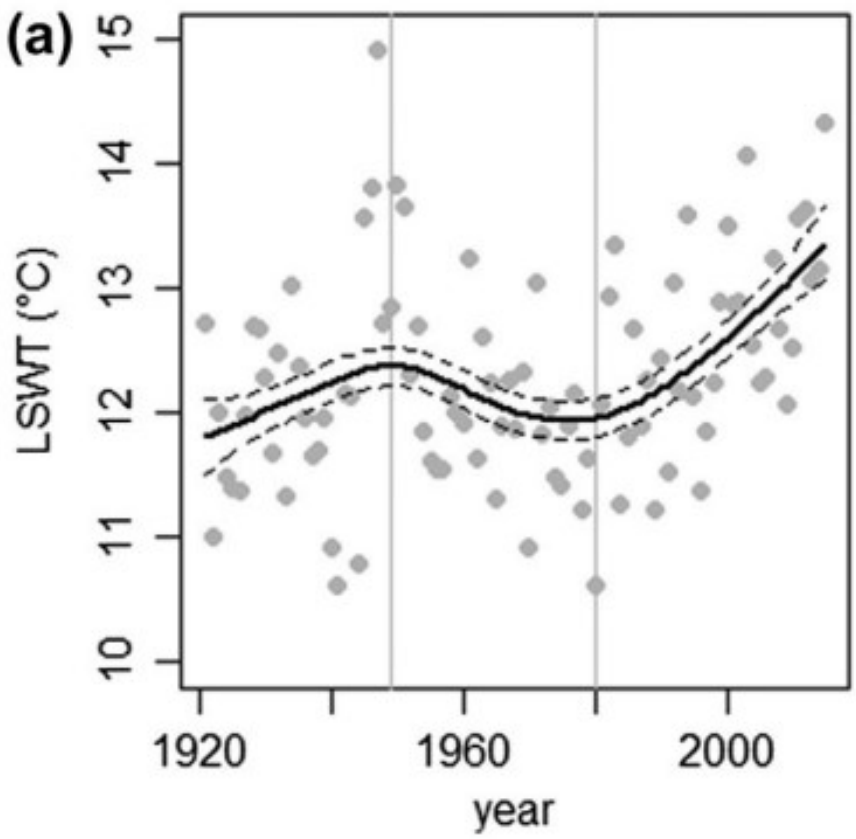
Lake utilization: Tourism and recreation

- low residence time (0.3 yr) due to a straight connection between inlet (Oberer Seebach, draining 79% of the lake catchment) and outlet (Unterer Seebach)

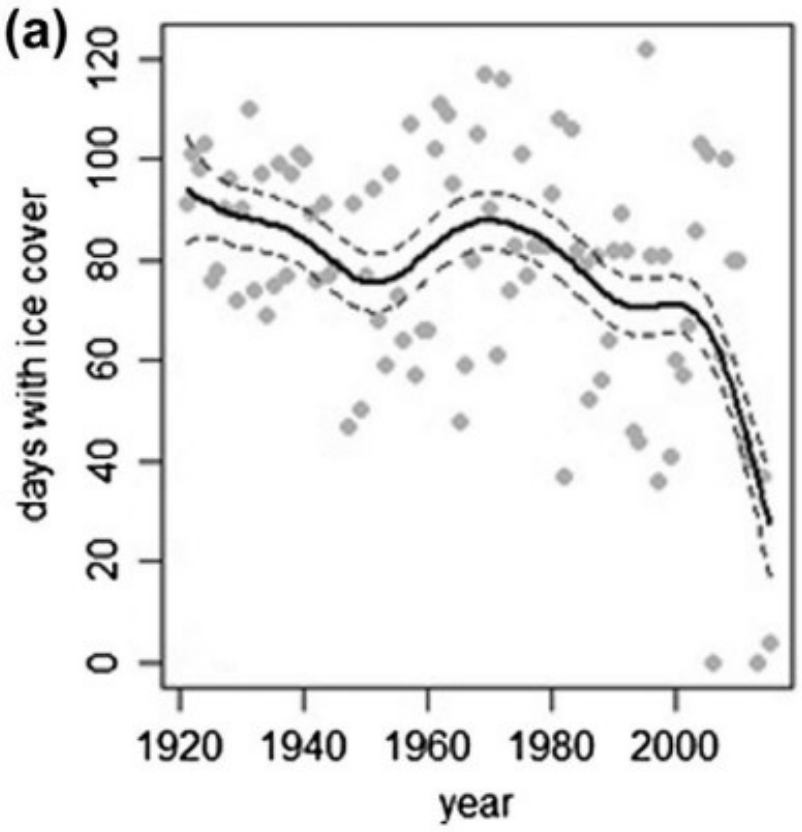


Water balance of the Untersee, a typical drainage lake (10^6 m³)



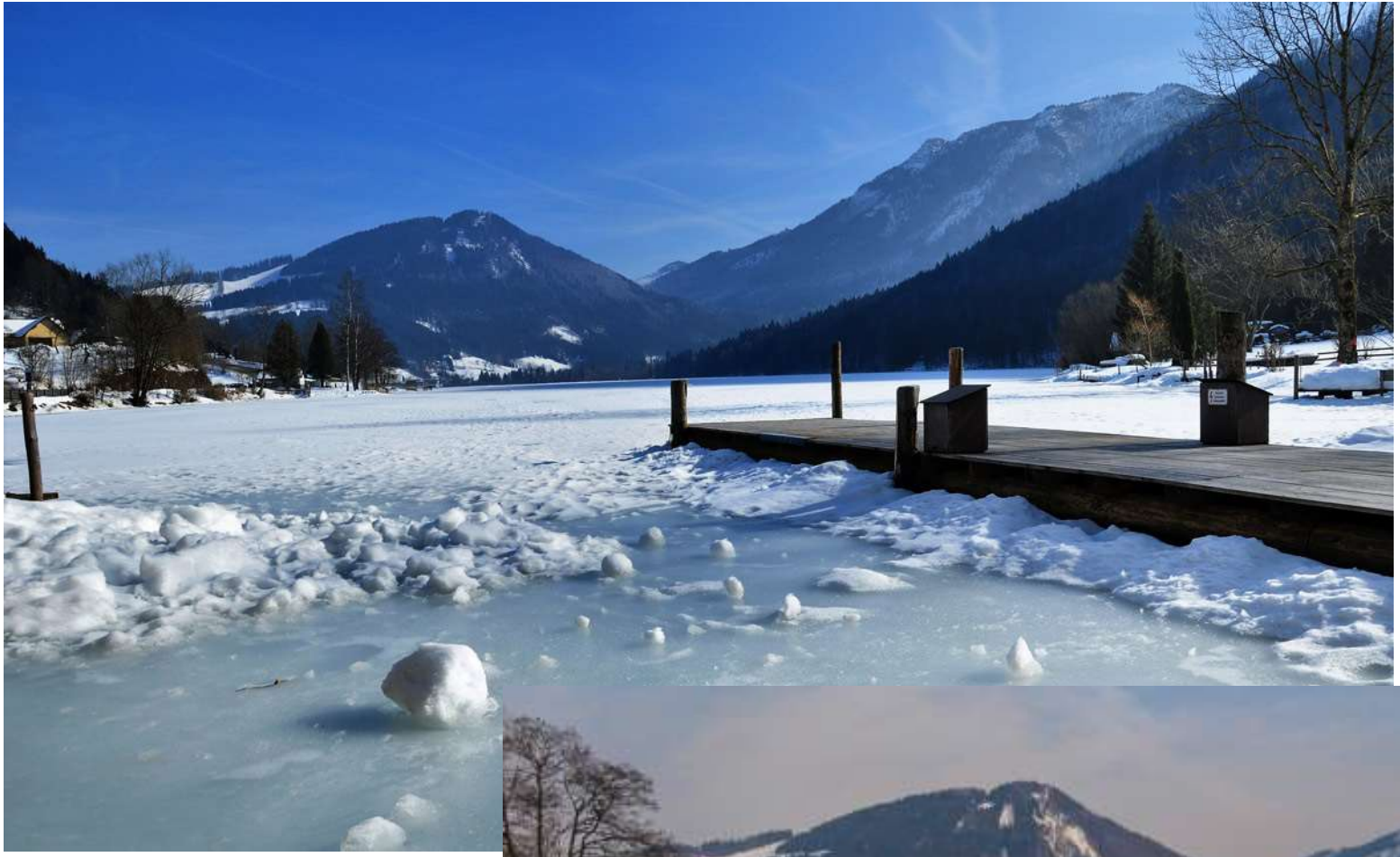


Lake surface water temperature



Duration of lake ice coverage

(Kainz et al.2017)



Biological Station
and
Wassercluster Lunz

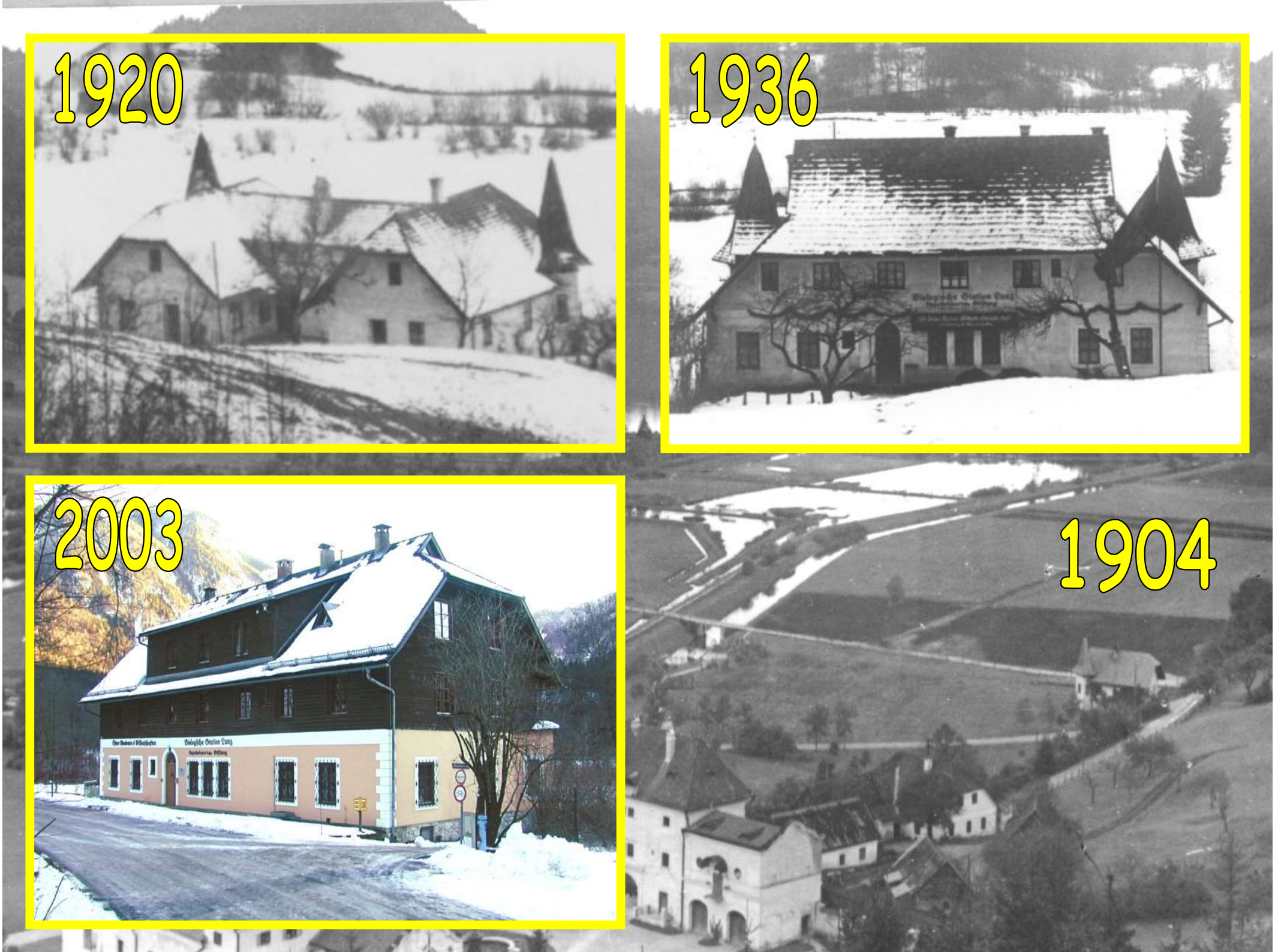
Founding: 1905 by Dr. Carl Kupelwieser

Dr. Carl Kupelwieser
1841 - 1925

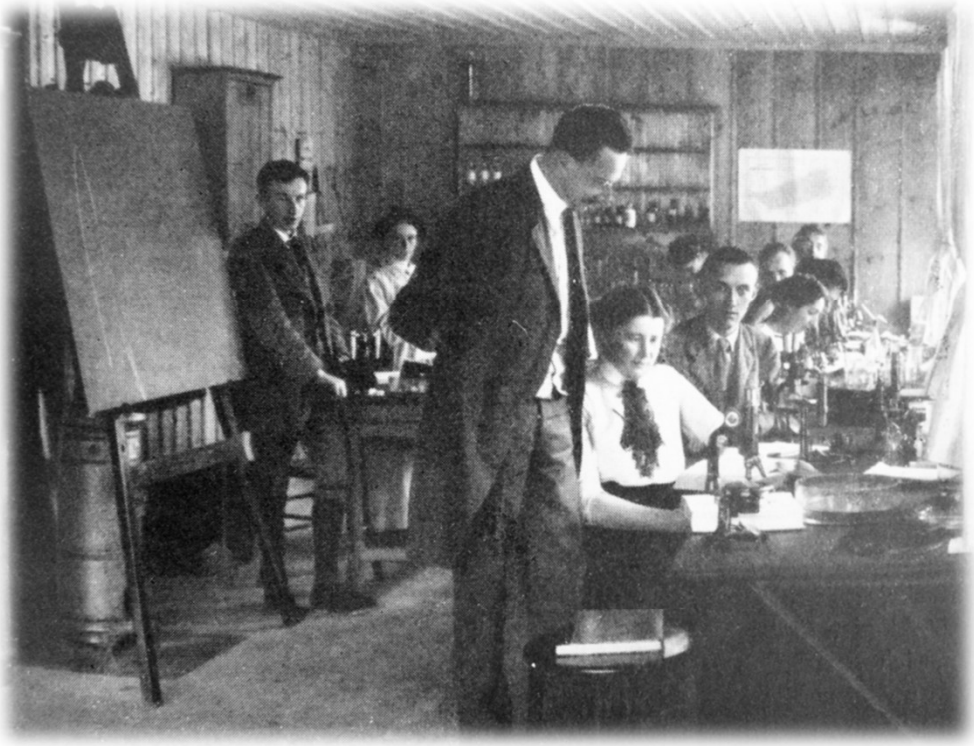
Biological station

Research vessel „Elodea“

Boathouse of the
Biologischal station
at Lunzer Untersee


1920
1936
2003
1904

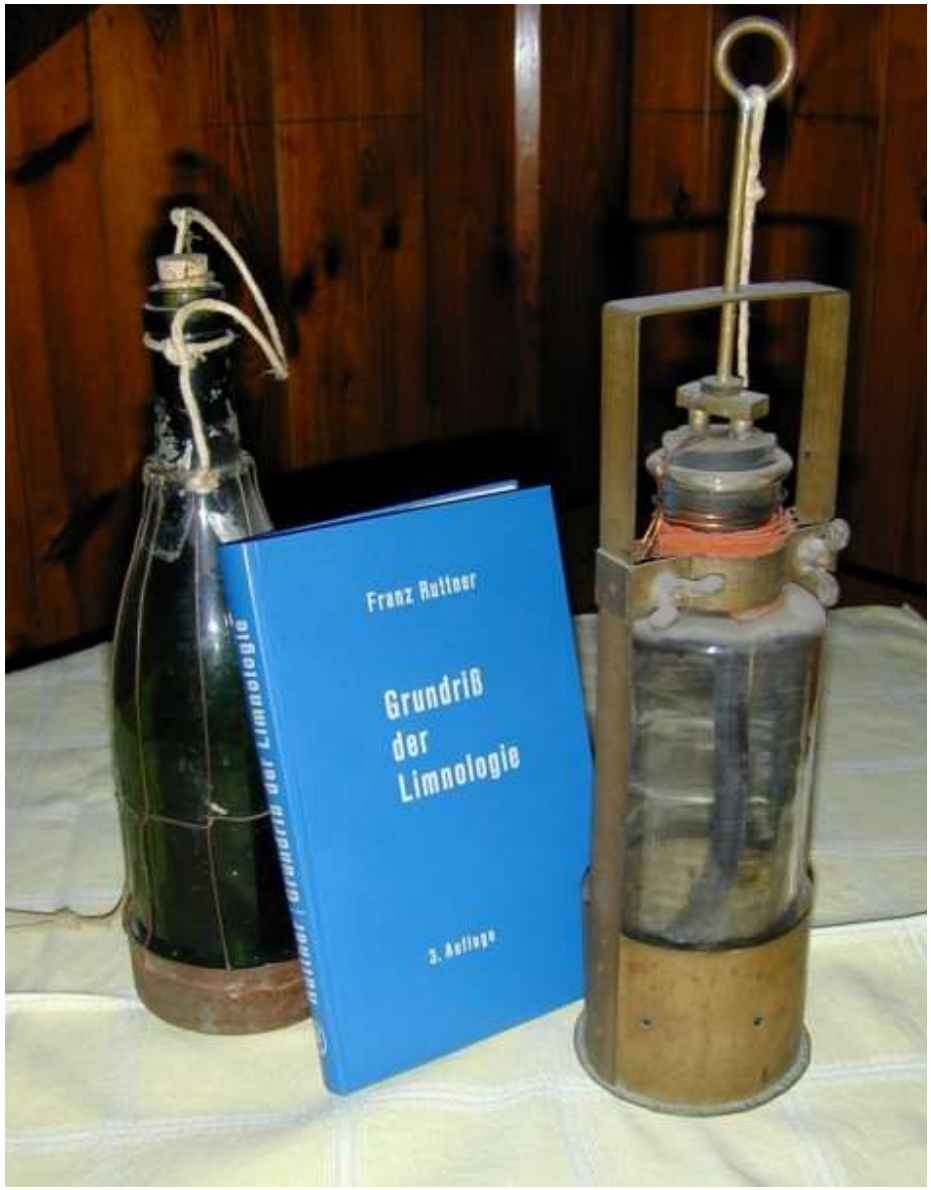
Limnology courses started back in 1912 and continue up to now…..



One of the first courses in the station boathouse

Sampling on board of research vessel „Elodea“

Franz Ruttner Head of the station 1924-1957



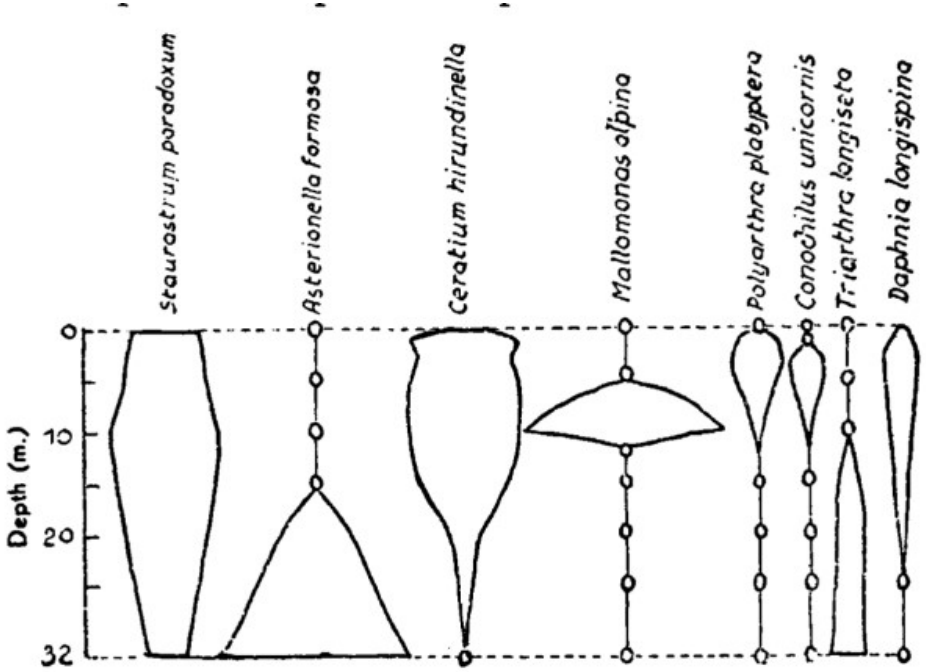


FIGURE 35. Examples of the distribution of planktonic species in Lunzer Untersee. The diameter of the "spherical curves" corresponds to the cube root of the number of individuals per litre, hence to the number of individuals occurring along the diameter of a cylinder of water (or a sphere) or along an edge of a cube containing 1 litre.

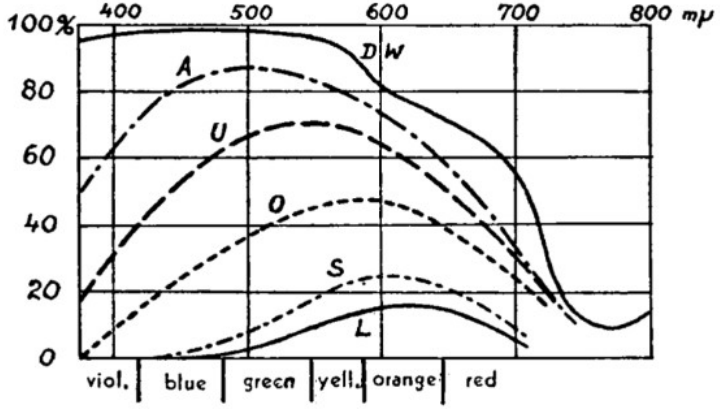


FIGURE 2. The transparency of a stratum of water 1 m. thick with respect to different regions of the spectrum. *DW*, distilled water (after James); *A*, Achensee (Tyrol), *U*, Lunzer Untersee; *O*, Lunzer Obersee (Lower Austria), after Sauberer; *S*, Skärshultsjön (South Sweden), after Åberg and Rodhe); *L*, Lammen.

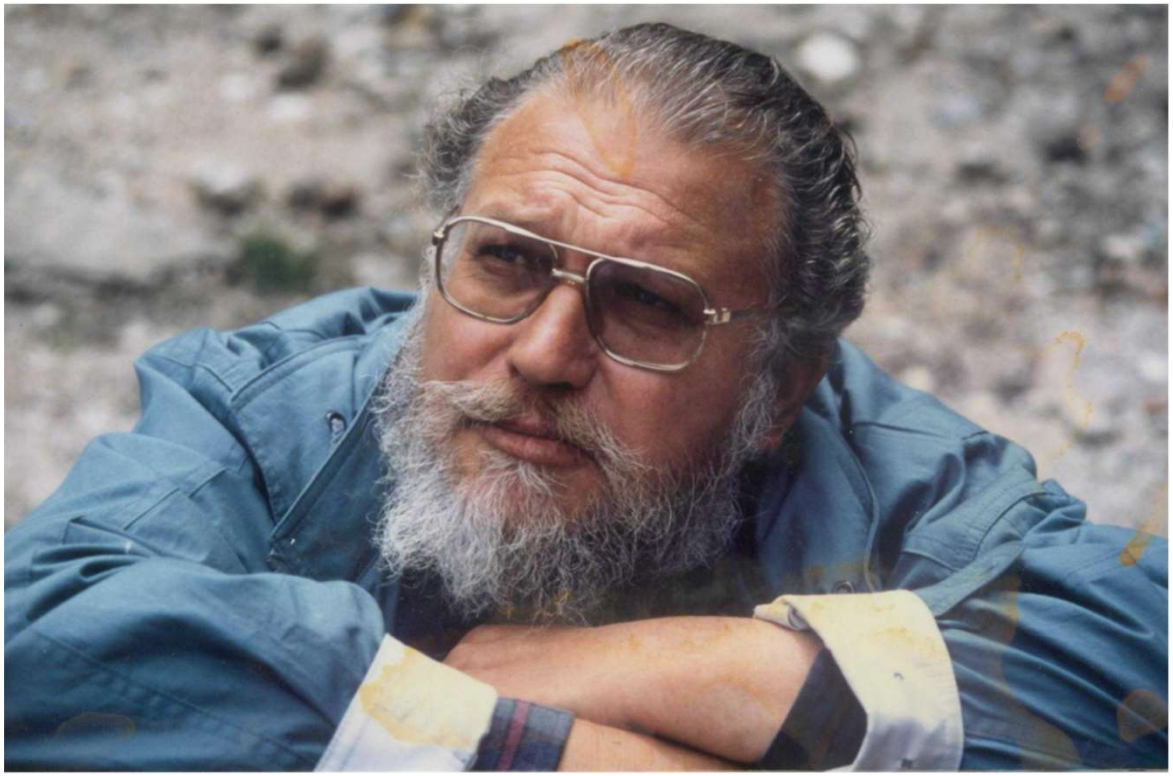
up on shore, whence they repopulate the open water upon the occurrence of more favourable environmental conditions. In Lunzer Untersee 39 per cent of the phytoplankters and 50 per cent of the zooplankters (although only one-fourth of the rotifers, compared with three-fourths of the crustaceans) are perennial. The periodicity curves of the individual species show, as a rule, more or less well-marked maxima, which in Lunzer Untersee, for example, occur 52 per cent of the time during the high summer period of the lake (July to September). But even in the apparently unfavourable winter months from January to March, 10 per cent of the species attain their highest numbers of individuals. For the majority of species the peak of development in different years occurs at the same time of the year. In our example, 67 per cent of the species had their maxima in the same quarter of the year, and 23 per cent (for example, *Ceratium*) repeatedly in the same month. There are other species that do not show such regularity, and in a few extreme cases, for example several rotifers (*Polyarthra*) and *Bosmina* in Lunzersee, development appears to be completely independent of the time of year. Moreover, many species either regularly or else in most years show bimodal curves, the peaks of which are sometimes separated by an interval in which the species is completely

Heinz Löffler Head of the station 1967-1977

Univ.Prof. Dr. Heinz Löffler
1927 - 2006

1968: Founding of
Limnological Institute in Vienna

Gernot Bretschko Head of the station 1977-2002



Focus on stream ecology

RITRODAT

RHITHRAL

(gr. rheĩthron = Bach, Fluss)

+

Data

University of Vienna

Wasserkluster
Lunz

University of
Natural Resources
and Life Sciences
Vienna

Danube
University
Krems

Mission Statement

….WCL is an inter-university center for aquatic ecosystem research dedicated to the advancement and teaching of freshwater ecosystem sciences, at fundamental and applied research levels. WCL is committed to providing innovative research on structure and function of freshwater ecosystems, and to safeguard the sustainable use of their resources. Ranging from microbial ecology to biogeochemistry, from restoration ecology to aquatic ecosystem management, and from ecotoxicology to aquatic food web research, WCL has established links with the partner universities to address current problems and identify potential future problems for freshwater ecosystems and their sustainable use.