



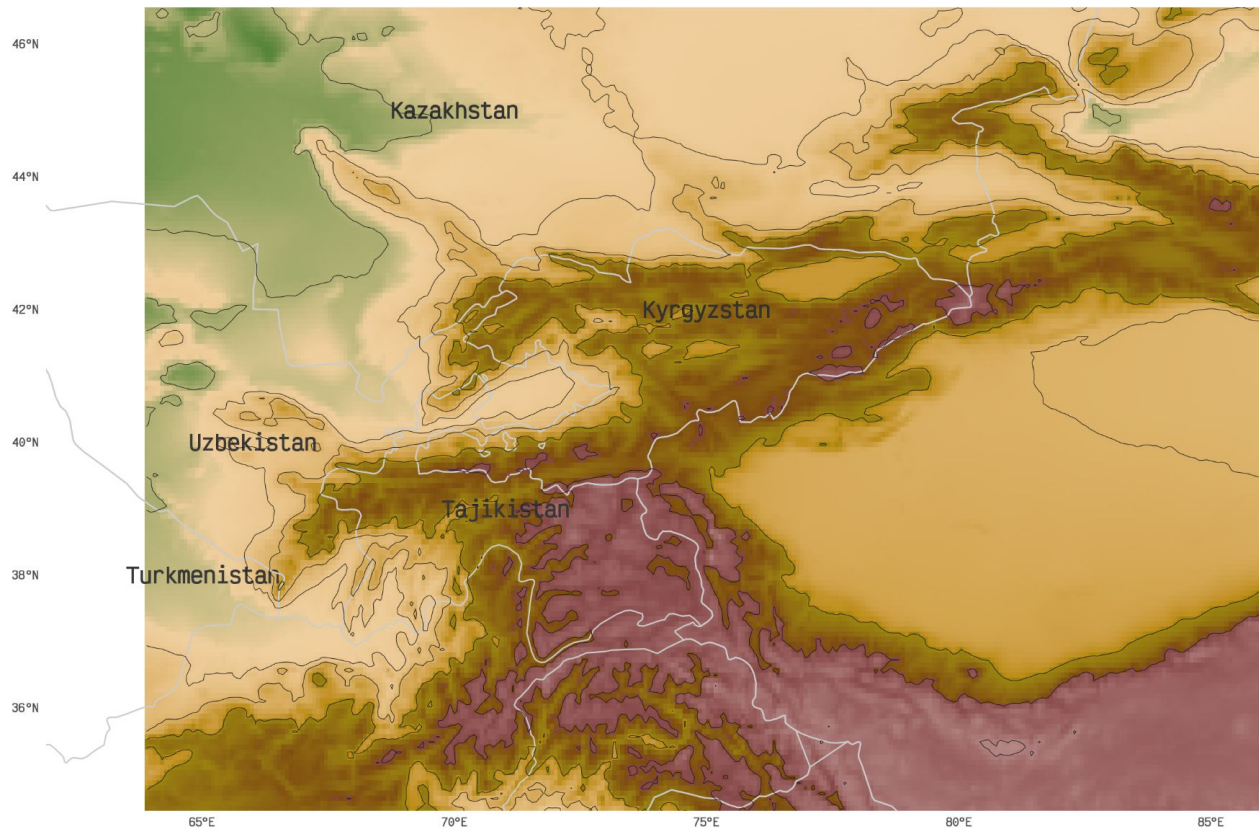
Addressing Gender inequality in STEM: Cryospheric Excursions in Central Asia

10th EARSeL workshop on Land Ice and Snow | Educational programs and activities
Dilara Kim, Helga Weber, Martina Barandun | 08.02.2023



Extent of the Cryosphere in Central Asia

Topographic map of Central Asia



Over
25,000
Glaciers

15%
of total
permafrost
in N.H.

(Barandun et al, 2020)

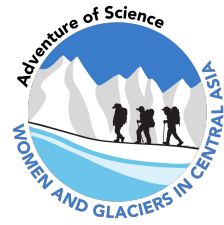
Cryosphere exploration during Soviet Period



Expedition to Pamir 1968

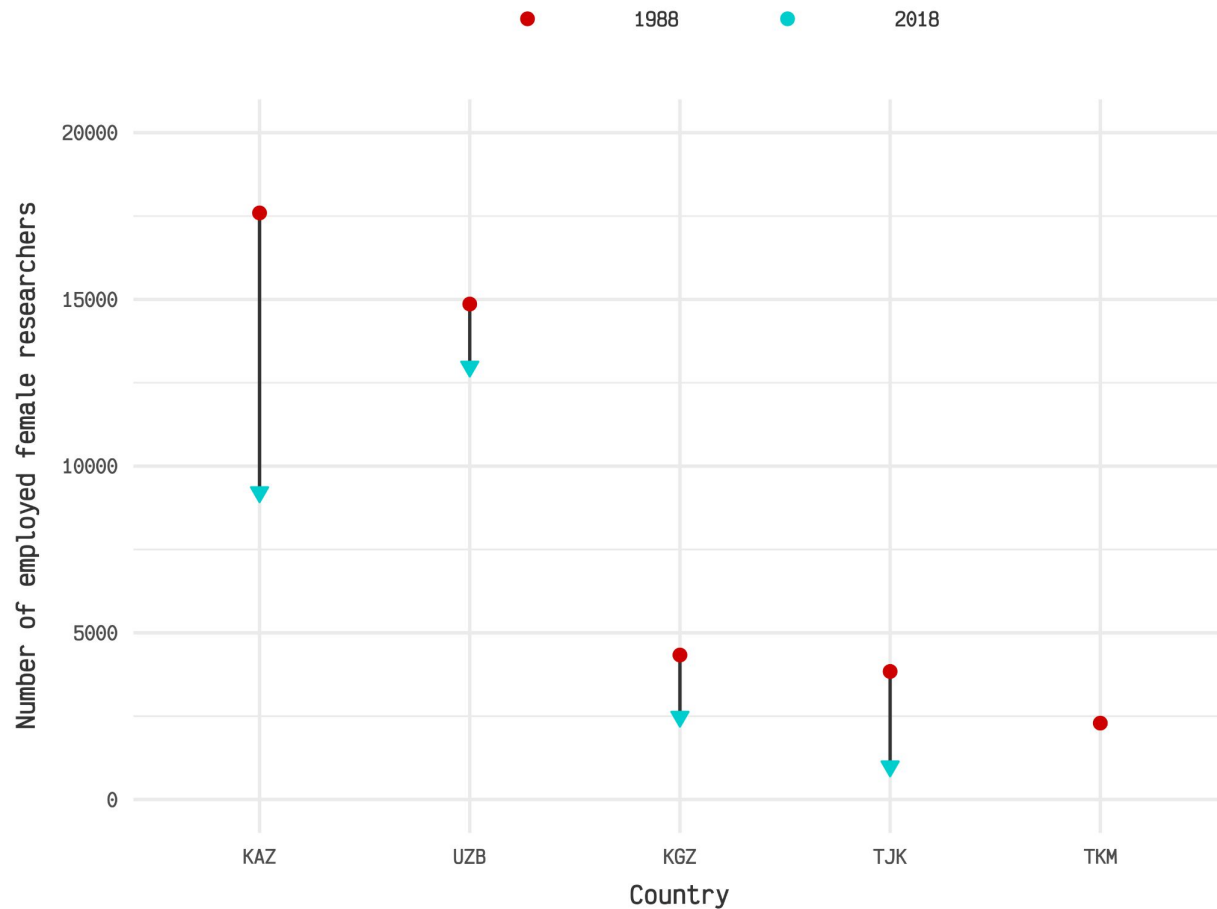
(Kotlyakov, 2003)

End of Soviet Era

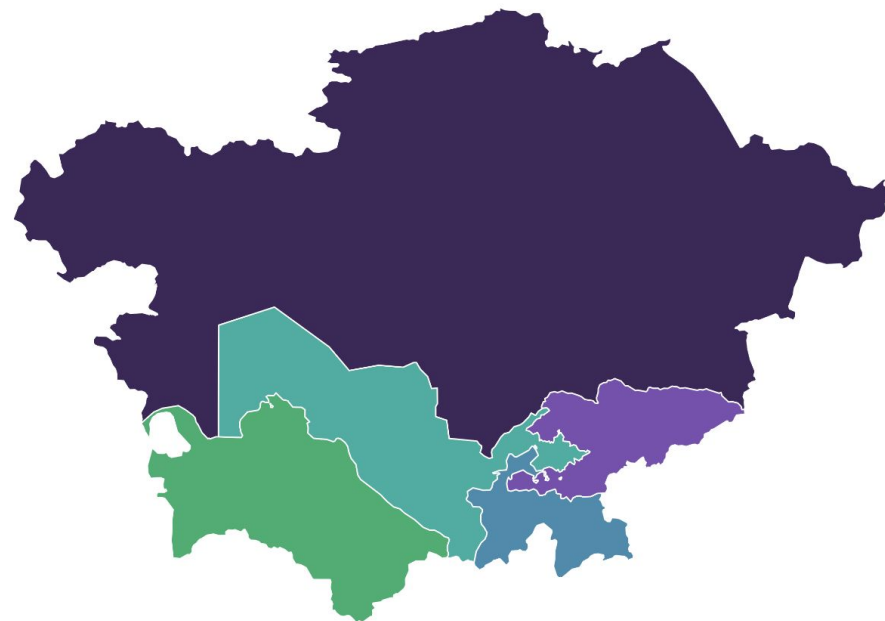
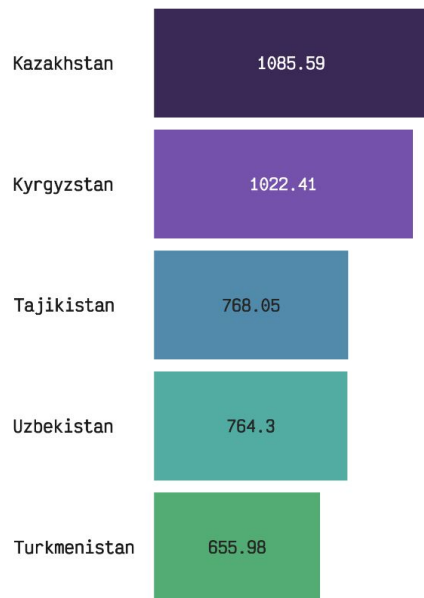


(Hoelzle et al, 2017)

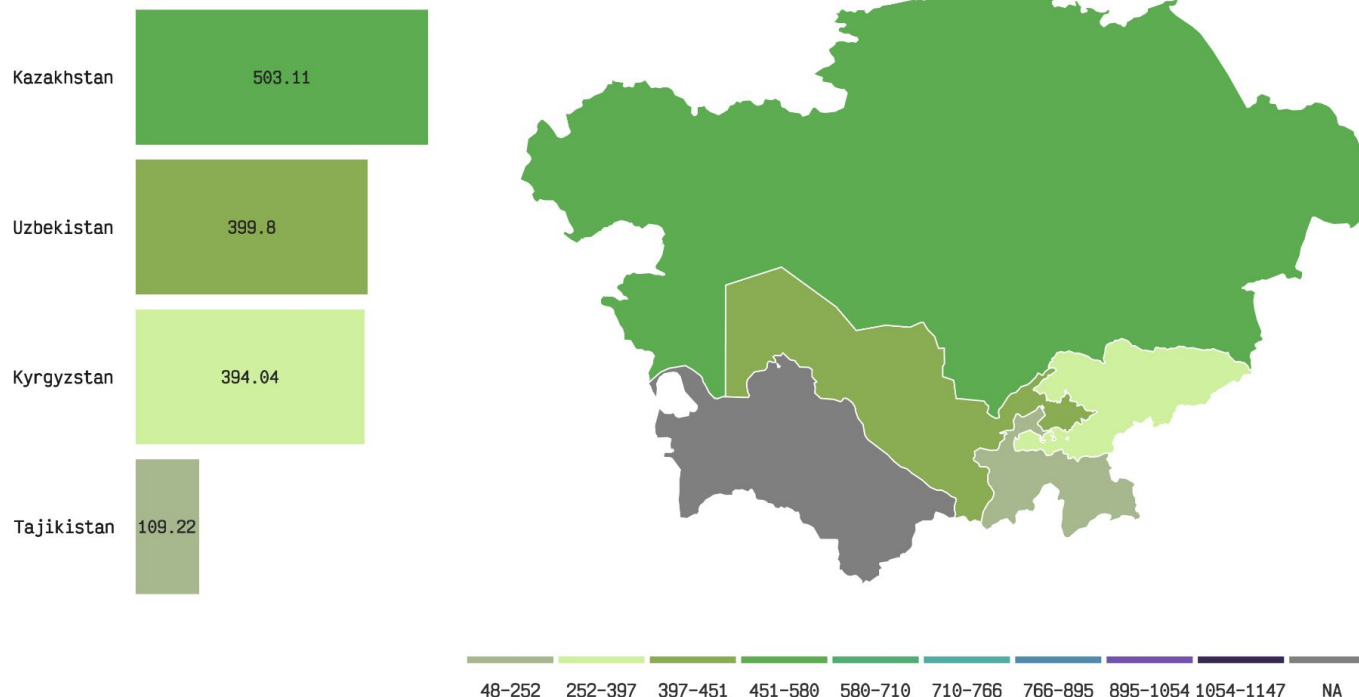
How USSR disintegration affected number of female researchers in Central Asia?



Female researchers per million inhabitants in 1988



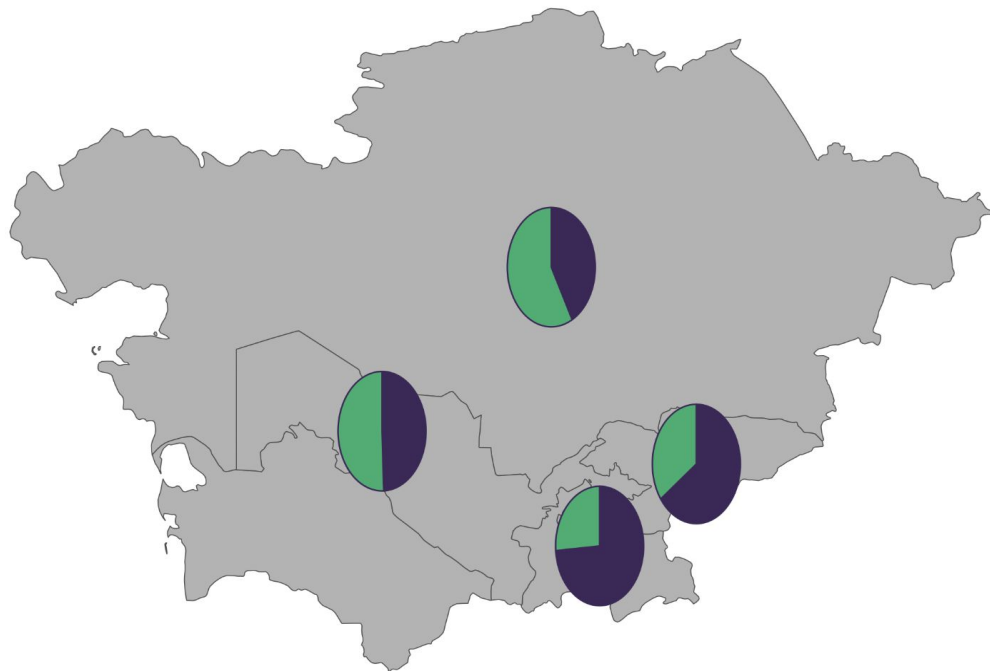
Female researchers per million inhabitants in 2018



Demographic Indicators



2018 Proportion of urban/rural citizens in Central Asia

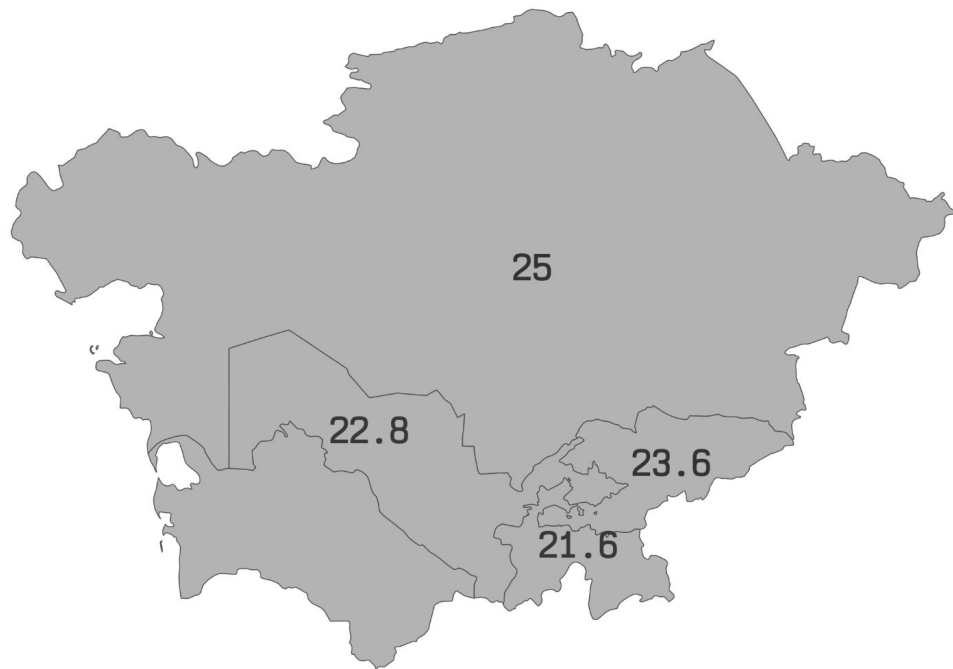


65 and 74% of people are living in the villages in Kyrgyzstan and Tajikistan respectively.

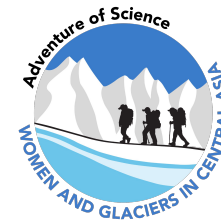
Half or more of citizens live in the cities in Uzbekistan and Kazakhstan.

Demographic Indicators

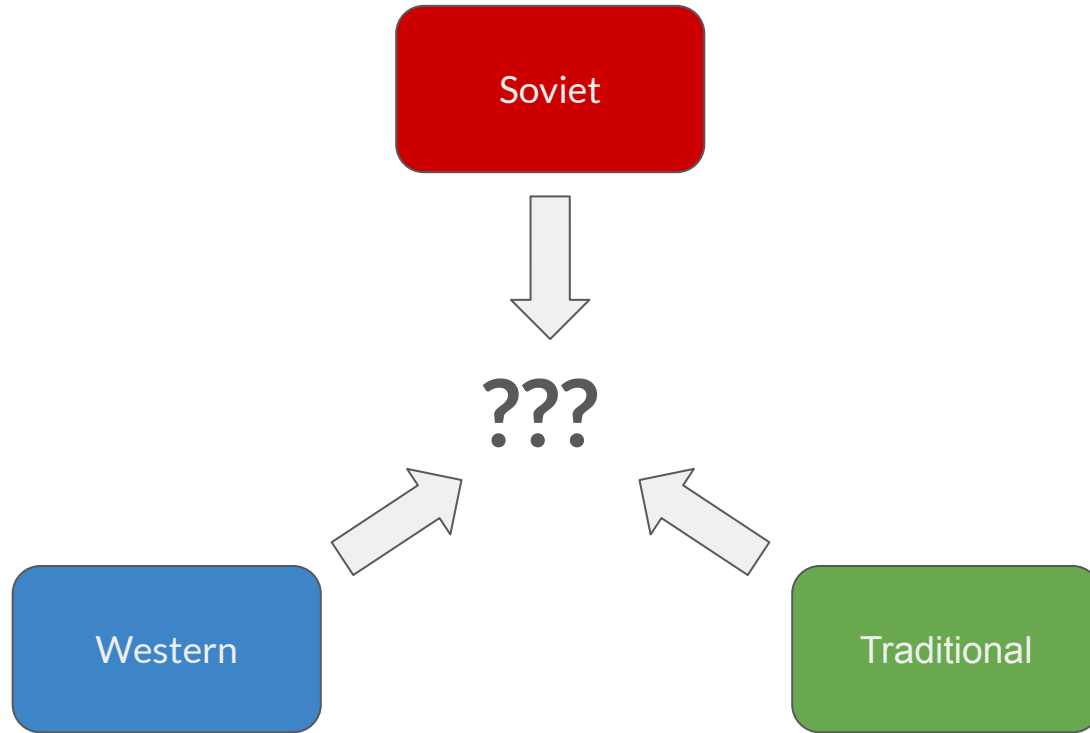
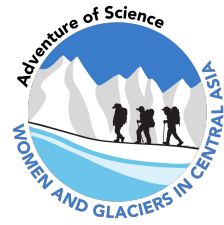
2018 average age at first marriage in Central Asia



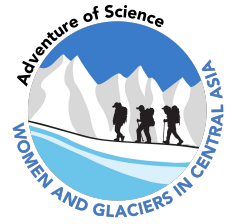
Women in Central Asia tend to marry and create a family early in their 20th.



Women in higher education: cognitive dissonance



Factors increasing retention of women in STEM



- exposure to successful women in STEM
- supportive learning environment
- and mentors

(Almukhambetova & Kuzhabekova 2021)

Role models and mentors



**TAMARA
MATHYS**

Glaciologist, Onsite
Coordinator



**MARLENE
KRONENBERG**

Glaciologist, Founder and
Co-director Adventure of
Science



**MARTINA
BARANDUN**

Glaciologist, Founder and
Co-director Adventure of
Science



**ANASTASIA
CHEREMNYKH**

Mountain Guide,
Adventure of Science



**DILOROM
DJOLOLOVA**

Adventure of Science
Program Coordinator -
Tajikistan



LAURA NIGGLI

Geographer, Instructor



ANOUK VOLERY

Geography Student,
Adventure of Science
Instructor



**AIZIREK
MEDERBEK KYZY**

Adventure of Science
Instructor 2022, Alumna



**PERIZAT
IMANALIEVA**

Adventure of Science
Program Coordinator -
Kyrgyzstan



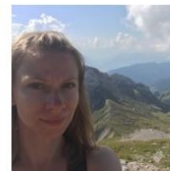
**MUHABBAT
SODIKOVA**

Adventure of Science
Instructor - Uzbekistan



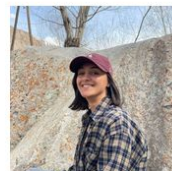
HELGA WEBER

Adventure of Science
Instructor



**CASSANDRA
KOENIG**

Adventure of Science
Instructor



**SABRINA
MUZAFARI**

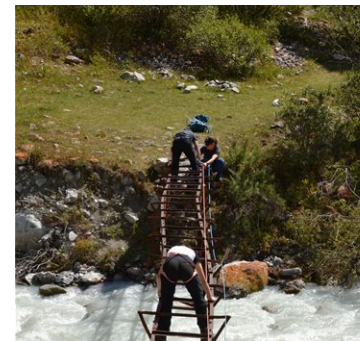
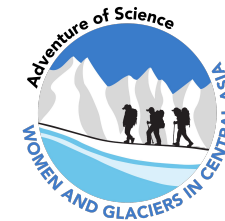
Adventure of Science
2022 Instructor,
Adventure of Science
Alumna



DILARA KIM

Earth Observation
Student, Adventure of
Science Instructor 2022

Supportive learning environment



Adventure of Science empowers young women in Central Asia through the direct outdoor experience and subsequent scientific/artistic project work with support and supervision during and after the expedition.



Thank you!



References

1. Hulbe, C. L. et al. (2010). Women in glaciology, a historical perspective. *Journal of Glaciology*, 56(200), 944–964.
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2. Barandun, M., et al. (2020). The state and future of the cryosphere in Central Asia. *Water Security*, 11, 100072.
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3. Almukhambetova, A., & Kuzhabekova, A. (2021). Negotiating conflicting discourses. Female students' experiences in STEM majors in an international university in Central Asia. *International Journal of Science Education*, 43(4), 570–593.
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