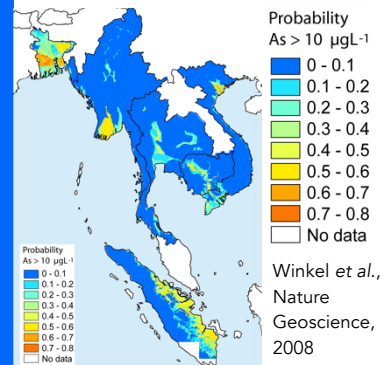


Factsheet DeltAs project

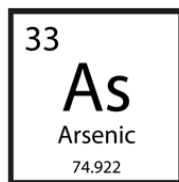
Evaluating delta-wide changes in geogenic (As) contamination under anthropogenic pressures: An integrated approach to assess groundwater vulnerability in Vietnam (DeltAs)

Brief summary of the project

Arsenic contamination in groundwater, affecting millions mainly in South and Southeast Asia, is influenced by both natural processes and human activities like groundwater pumping, but large-scale impacts are not well understood. Our project aims to study these changes over time in Vietnam's Mekong and Red River Deltas, providing insights for future research and aiding policy decisions to secure safe water in these rapidly evolving and vulnerable regions.



Motivation



Arsenic (As) is a toxic element. Consumption of groundwater with elevated As levels poses serious health risks, affecting 90-220 million people worldwide (Podgorski and Berg, *Science*, 2020), with most living in South and Southeast Asia. Past research has identified the Red River and Mekong Deltas as regions vulnerable to As contamination.

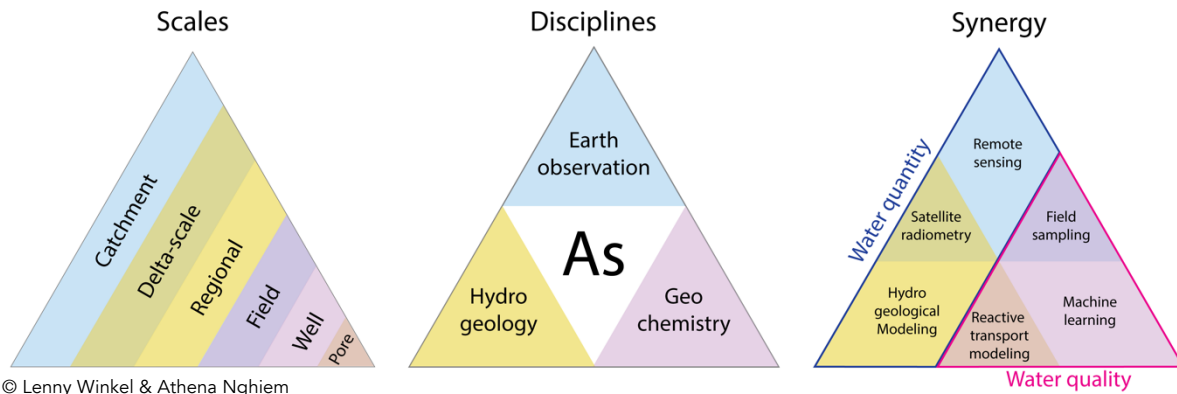
Arsenic gets into groundwater mainly through natural processes occurring in aquifers. Results from small-scale field studies suggest that also human perturbations such as groundwater pumping influence As distributions in groundwater aquifers. However, there is still a lack of detailed studies documenting these changes over time and it is unknown how pumping affects As distributions over larger scales.

Project team and goals

Our project team, including experts from Switzerland and Vietnam, as well as the US and Australia, integrates knowledge from different research fields to study changes in As contamination patterns over time, and their causes, in the Mekong and Red River Deltas in Vietnam. These areas, where people are affected by As-contaminated groundwaters, are quickly changing due to urban growth, and changes in water management and climate. These changes could significantly impact the distribution of As.

Our project has the following goals:

- Assess how As contamination has changed over time and investigate underlying causes.
- Study if knowledge on As contamination obtained from smaller field-scale studies also applies to larger regions.
- Test how future human activities and climate change might As contamination.



In our collaborative research, we will integrate spatial scales, disciplines & water quality and quantity.

Scientific and societal context of the research project

Our approach serves as a model for future research that integrates both water quantity and quality. Since the deltas are key management areas in Vietnam, our project is aimed at helping guide policy- and decision-makers to ensure safe water resources for the increasing population in these at-risk delta areas. To ensure fair scientific collaboration, we will adopt the TRUST code of conduct for equitable research partnerships, which is based on the values of fairness, respect, care and honesty.¹

Duration of the project | Funding source

February 2024 – January 2028 | Swiss National Science Foundation (SNSF), Sinergia grant

Main partners



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Further collaborators

<p>NASA Jet Propulsion Laboratory (United States)</p> <ul style="list-style-type: none"> Dr. Son Nghiem <p>Ho Chi Minh City University of Technology (HCMUT) (Vietnam)</p> <ul style="list-style-type: none"> Dr. Quang-Khai Ha <p>University of Western Australia (Australia)</p> <ul style="list-style-type: none"> Prof. Dr. Henning Prommer 	
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¹ https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/global-code-of-conduct-for-research-in-resource-poor-settings_he_en.pdf