



International Max Planck Research School
for Global Biogeochemical Cycles

OSTRACODA AS PALAEO-ENVIRONMENT INDICATORS

CASE STUDY : AQUATIC ECOSYSTEM OF TIBET

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Research interests:

- Marine benthic ecology
- Ecology of bivalves
- Aquatic ecosystems and water quality
- Environmental effects on benthic ecosystems (focus Ocean acidification)
- Palaeo-ecology, palaeo-climate and environmental education



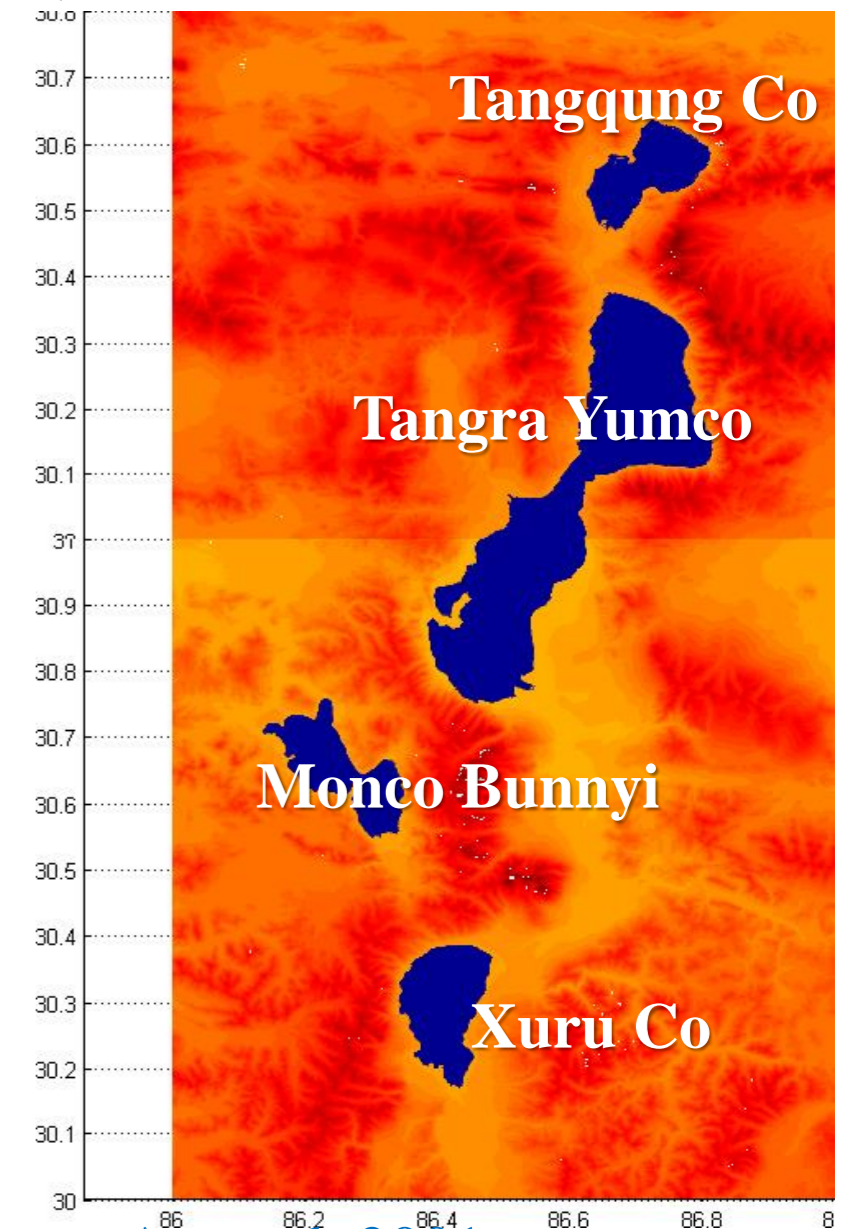
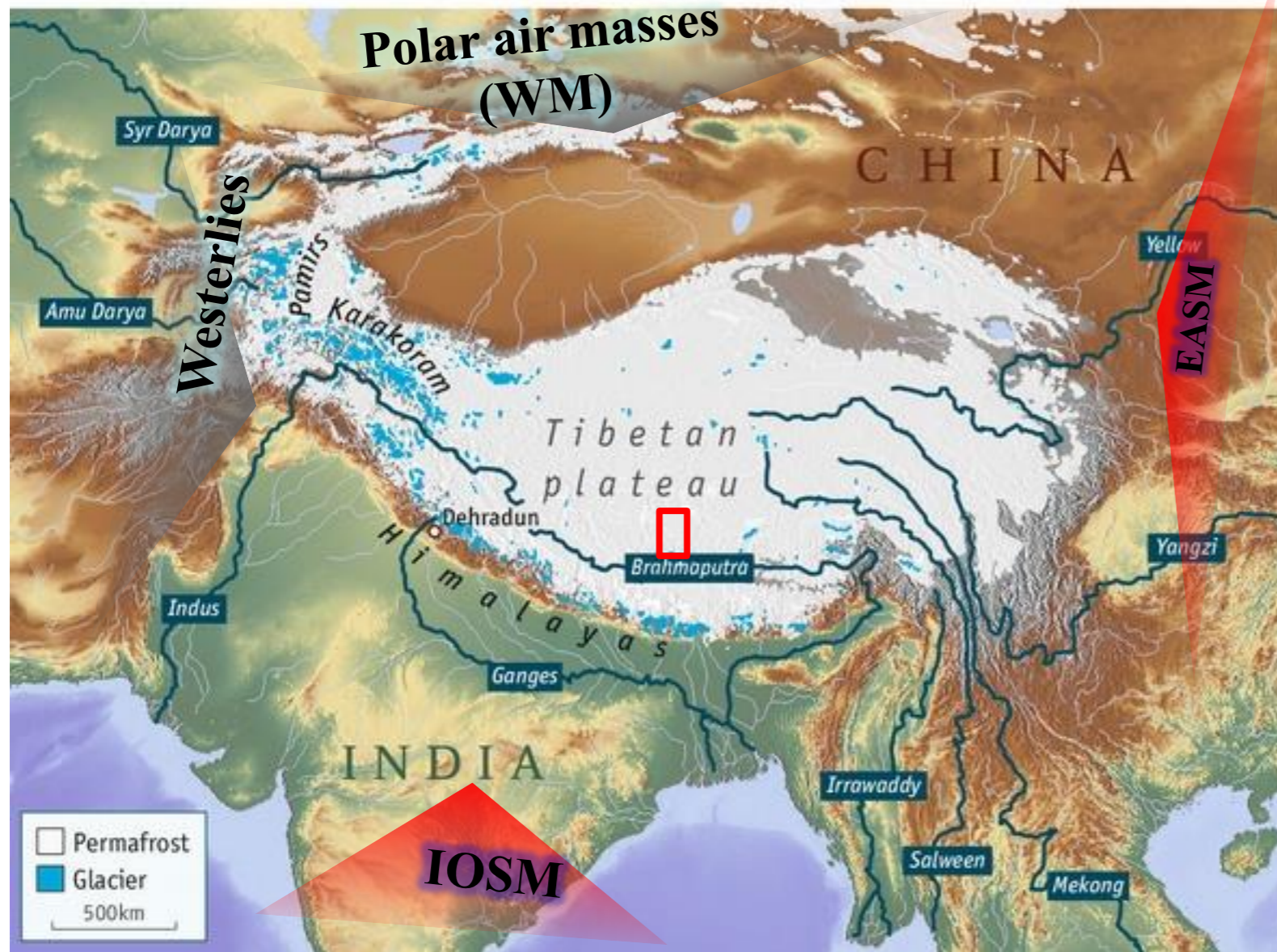
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high peaks pure earth / 高峰净土

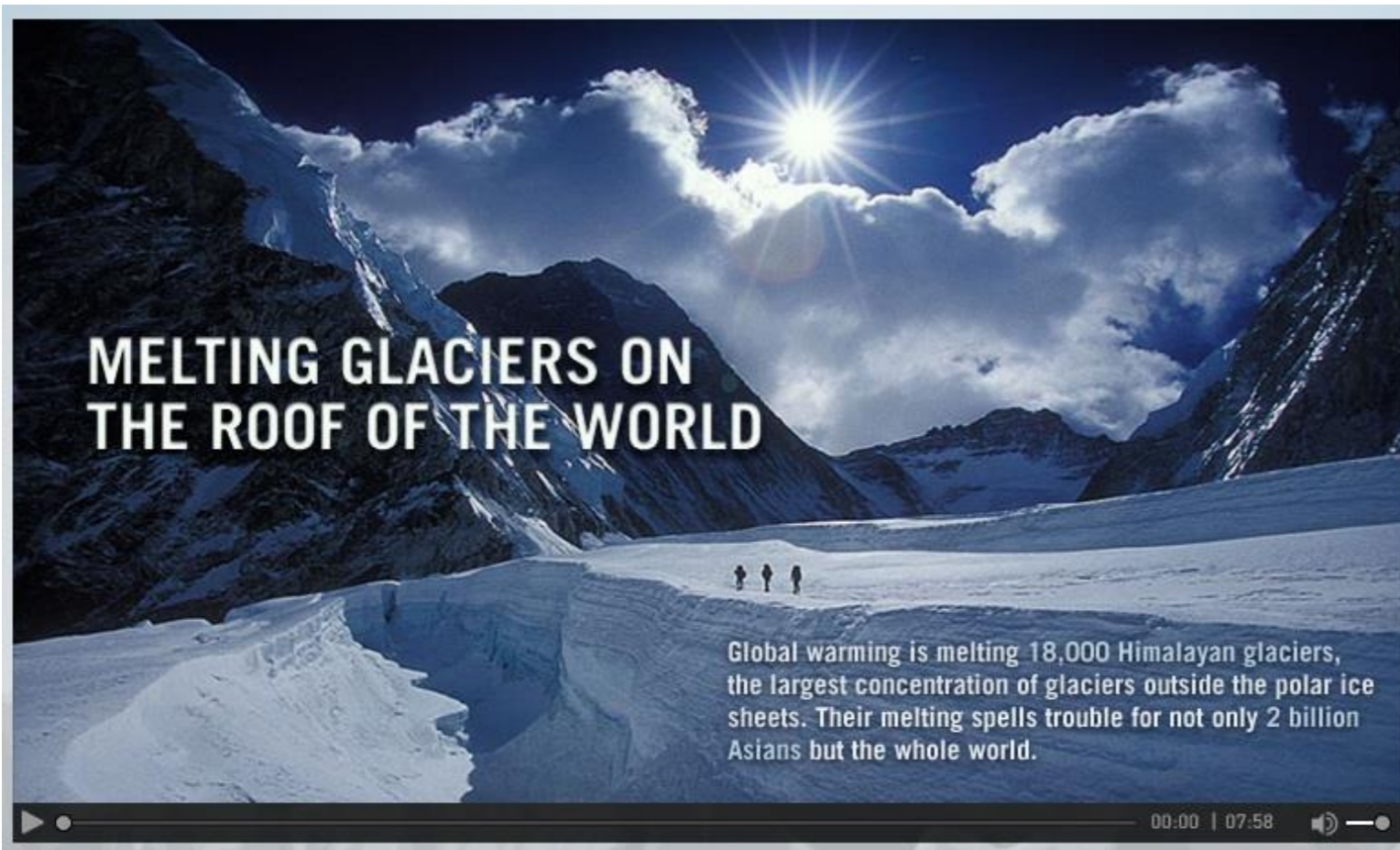
Why Tibetan Plateau?

(<http://www.economist.com/news/science-and-technology/21577341-worlds-third-largest-area-ice-about-undergo-systematic>)

Source: Fürstenberg unpubl.



- **Tibetan Plateau** is the interaction zone for **different air masses** (e.g., [An et al. 2001](#); [Immerzeel & Biekens 2010](#)).
- **Freshwater-Asia's rivers** ([Chellaney, 2011](#)).
- **Natural sensor to ecological and climate changes** ([Zhuang et al 2010](#); [Wei & !\[\]\(4c660a3c4ce1da3313488b7854f55083_img.jpg\)g, 2013](#)).



Glaciers are sentinels of climate change.

<http://www.wildchina.com/blog/wp-content/uploads/2009/11/melting-glaciers.jpg>

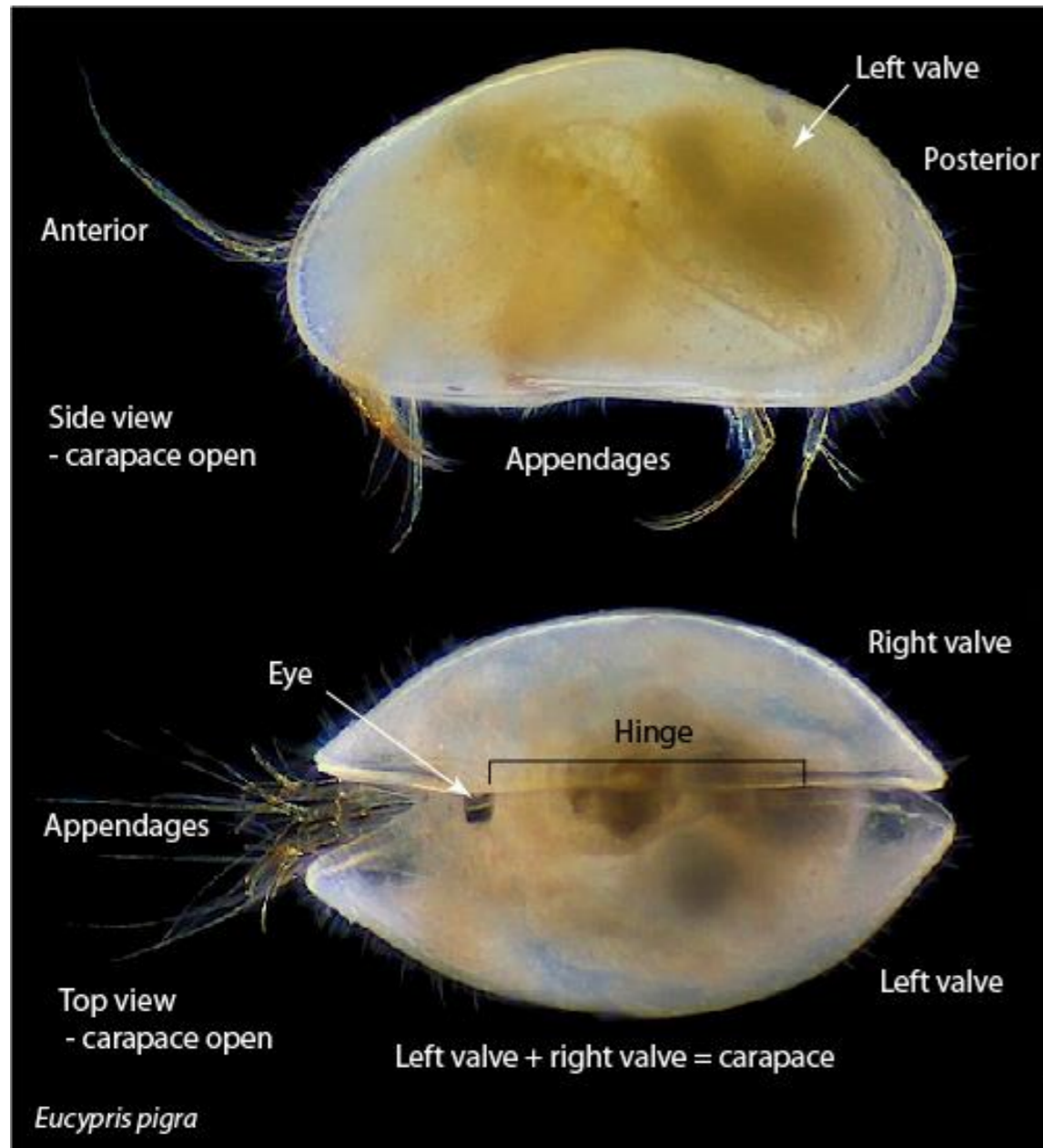


More than a billion people rely on drinking water fed by Himalayan glaciers such as Khumbu in Nepal. This supply could be at risk unless glacial retreat is stopped.

CLIMATE CHANGE

Measuring the meltdown

Ostracoda as biological climatic proxies



http://www.lbm.go.jp/smith/images/expl_1.jpg

- **Fresh** and **marine** habitats (e.g., [Horne et al. 2002](#) ; [Külköylüoğlu , 2004](#)).
- **Good indicators of environment** and hence **indirect climate sensors** (e.g., [Park & Smith 2003](#)).
- **Crustacea** – large **fossil record** (e.g., [Holmes & Chivas, 20023](#)).

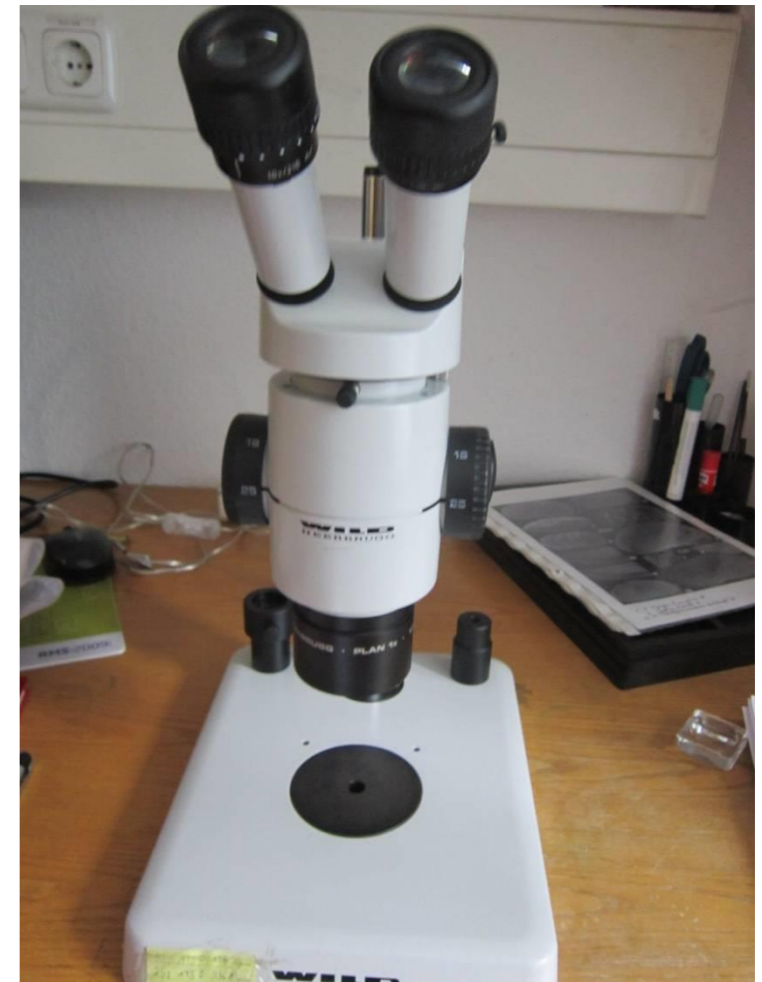
➤ **Research Aim:**
Assessment of environment history of Tangra Yumco.

Methodology : Field and Laboratory work



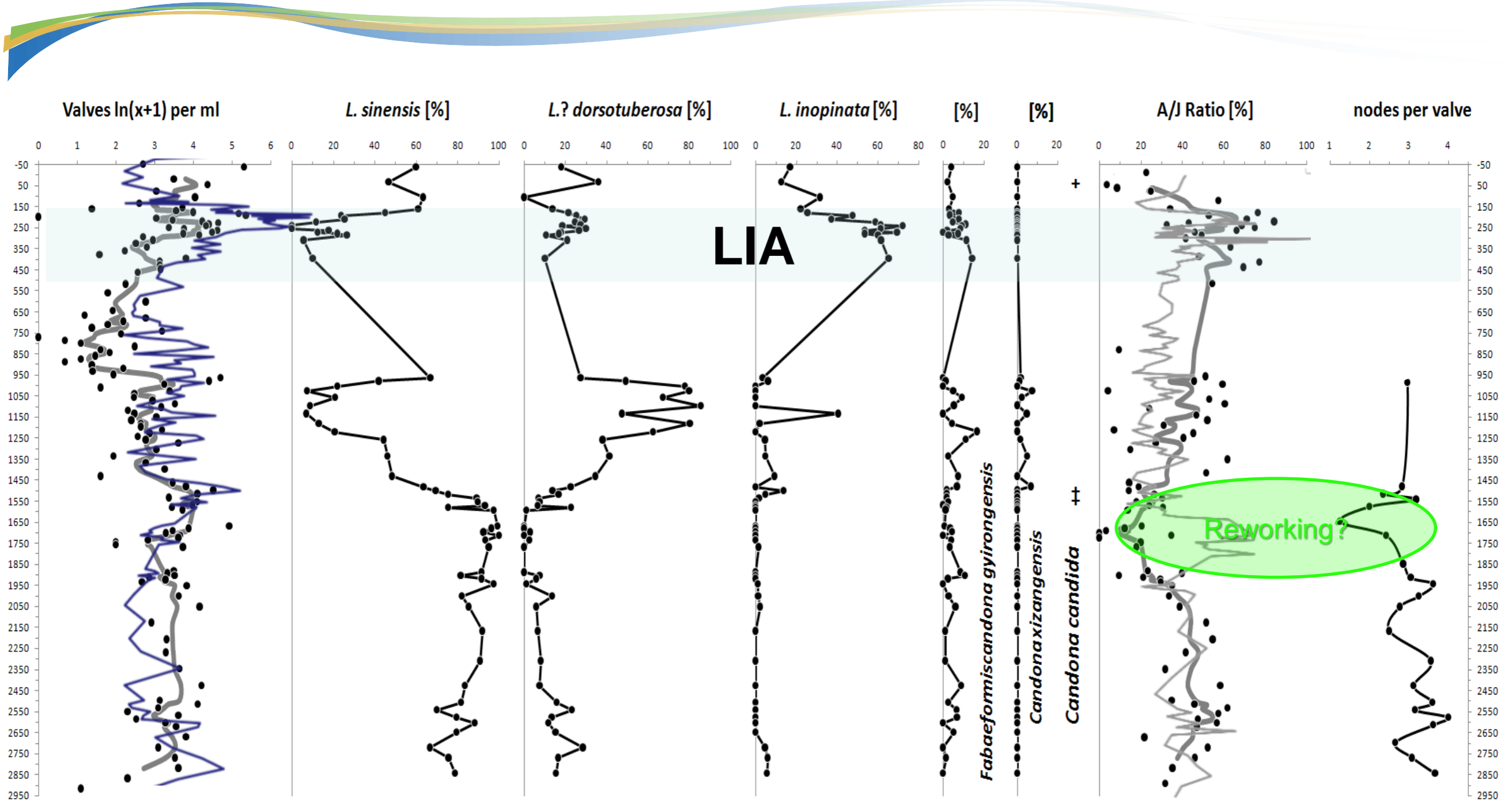
Lake Sediment core

Wet Sieves
63 μm and 200 μm



Identification of ostracods

Results: Ostracod abundance and associations



opportunistic brackish

saline

shallow

Productivity

Water depth

Salinity



lake level

Conclusion and outlook



- **Ostracoda are good biological proxies for reconstruction.**
- **Ostracoda changes coincides with climatic transitions (incl. *Little Ice Age*).**
- **Need for comparisons with other proxies.**

Mussel Shrimp

http://cfb.unh.edu/cfbkey/html/Organisms/otherarthropods/COstracoda/Ostracoda_03_360x360.jpg

Time to take action

**Care for
earth**



**The best way to protect us
from climate change?
Save our ecosystems**

http://www.nasa.gov/centers/goddard/images/content/638831main_globe_east_2048.jpg

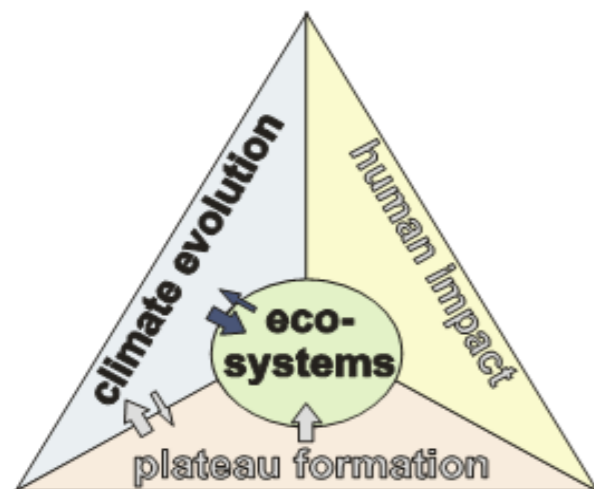
**Source: February 11, 2016 7.00pm
GMT <https://theconversation.com/the-best-way-to-protect-us-from-climate-change-save-our-ecosystems-54110>**

References

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MULTI-PROXY TiP RESEARCH TEAM

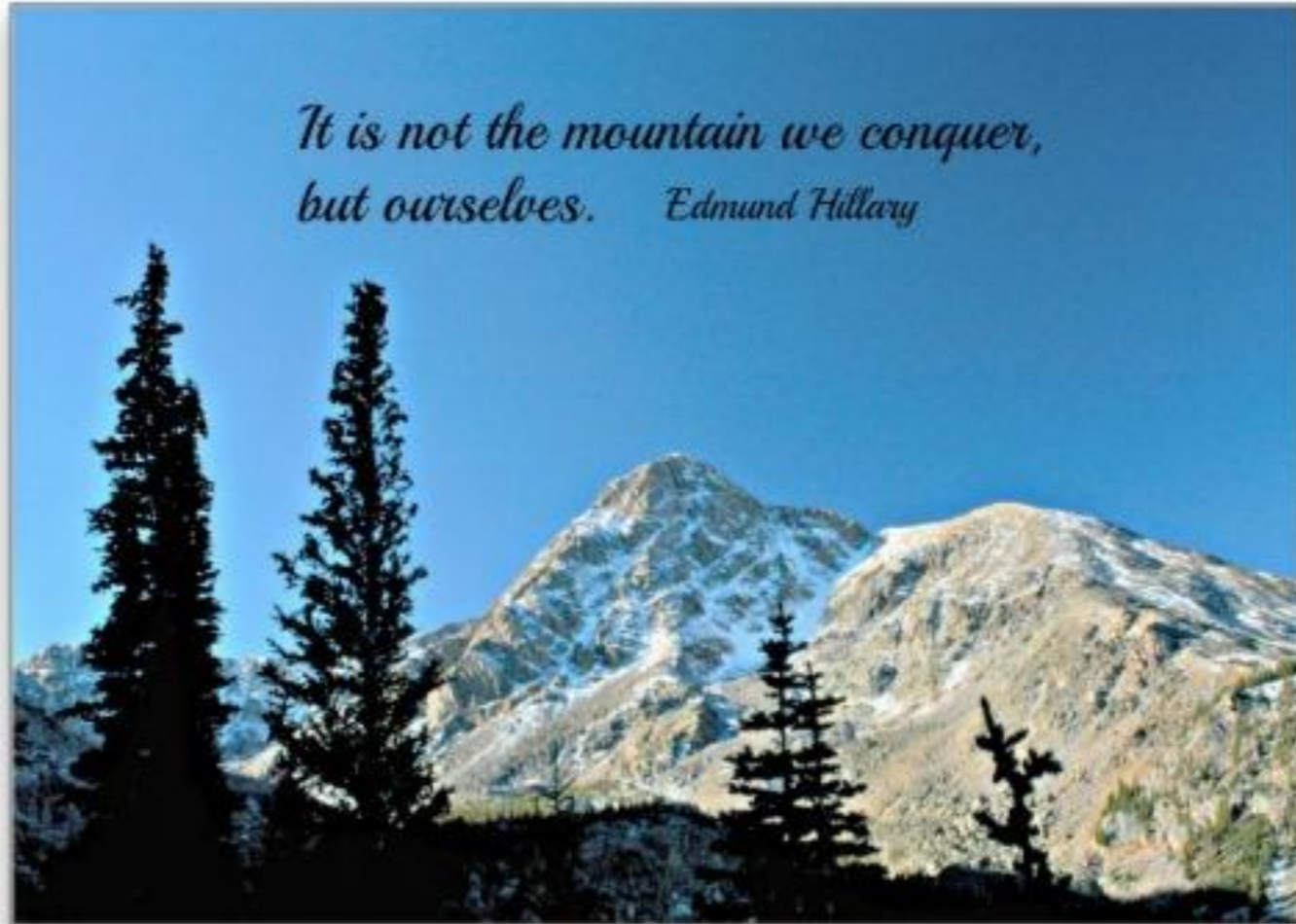


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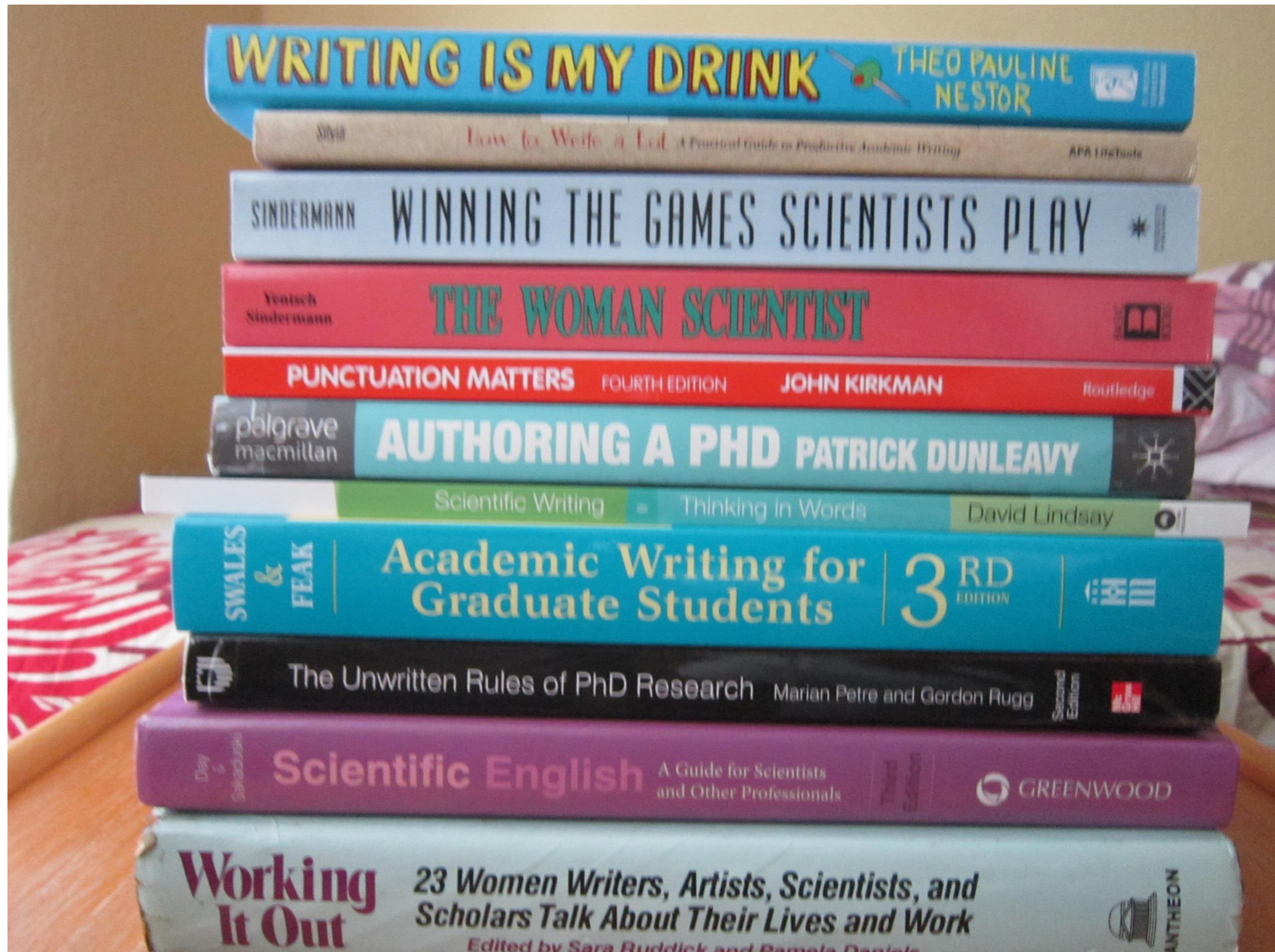
*It is not the mountain we conquer,
but ourselves. Edmund Hillary*



: Biomonitoring



Essential reading





Acknowledgements

Sponsors of **Ghana Summer School in the Coastal Ocean Environment : 2016**



UNIVERSITY OF GHANA - LEGON



Ongoing Summer Schools:

Joint AWI-SAHFOS summer school

The importance of timeseries observations for the assessment of biological and societal impacts of climate change

IMBER- Intergrated Marine Biogeochemistry and Ecosystem Research

<http://imber.info/Early-Career/IMBER-Summer-Schools>

<http://imber.info/News/e-News/n-99-July-2016#early>

[ICTP - International Centre for Theoretical Physics](https://www.ictp.it/)

<https://www.ictp.it/>

The Nippon Foundation-POGO Centre of Excellence (NF-POGO CofE) and Alfred Wegener Institute

<https://www.awi.de/en/about-us/sites/helgoland/visiting-scientists/centre-of-excellence-nf-pogo.html>

