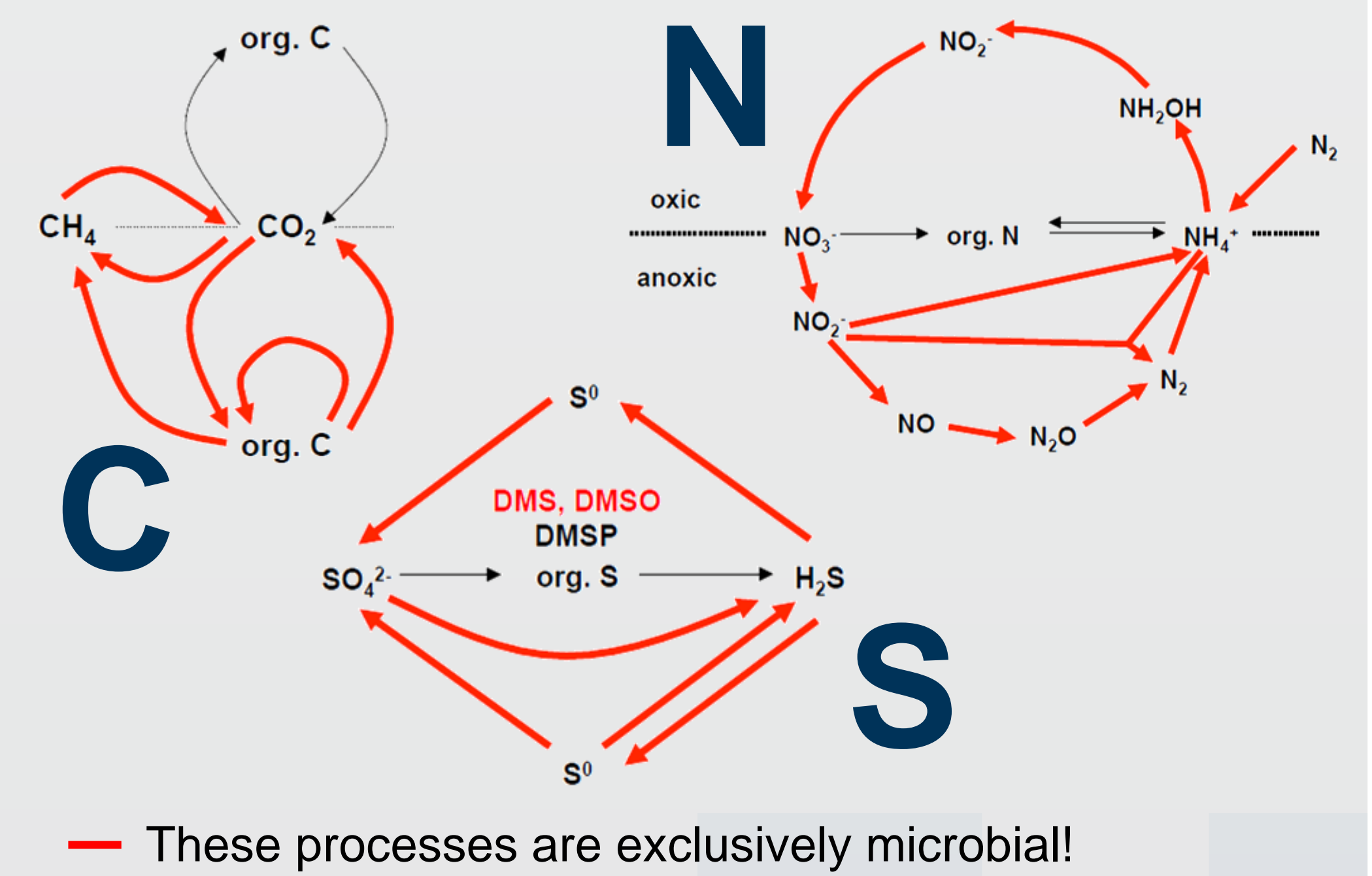


Geomicrobiology of surface and deep environments

Contacts: Julia R. de Rezende (j.de.rezende@hw.ac.uk), Thomas Wagner

Microbial communities play a key role in nutrient cycling, resource formation and ecosystem maintenance.

- The “microbial loop”, recycling organic compounds back to inorganic compounds, is essential to maintain ecosystems. We study the metabolic versatility of key players and responses of the microbial community to environmental changes.
- We also investigate microbial biodegradation of oil compounds for pollution mitigation.



Diverse microorganisms are able to survive and thrive in the deep, anoxic, energy-limited subsurface.

- Sedimentation processes, fluid transport, microbial migration and anthropogenic activity connect the surface and the subsurface.
- Oil reservoirs are exceptional environments in the deep subsurface. Our research explores:
 - the dynamics of “slow life” in subsurface environments,
 - the origin of the microbiota in reservoirs,
 - the role of microbes in the formation of heavy oil,
 - the ecophysiology of microbial populations associated to industrial problems such as souring and biofouling.
- Our research helps us understand past and present processes in the deep biosphere, and informs reservoir management strategies to reduce the environmental impact of energy production.



We aim to understand the role of microbial communities in surface and deep environments, and to develop bioengineering solutions for a responsible industrial use of Earth’s resources.