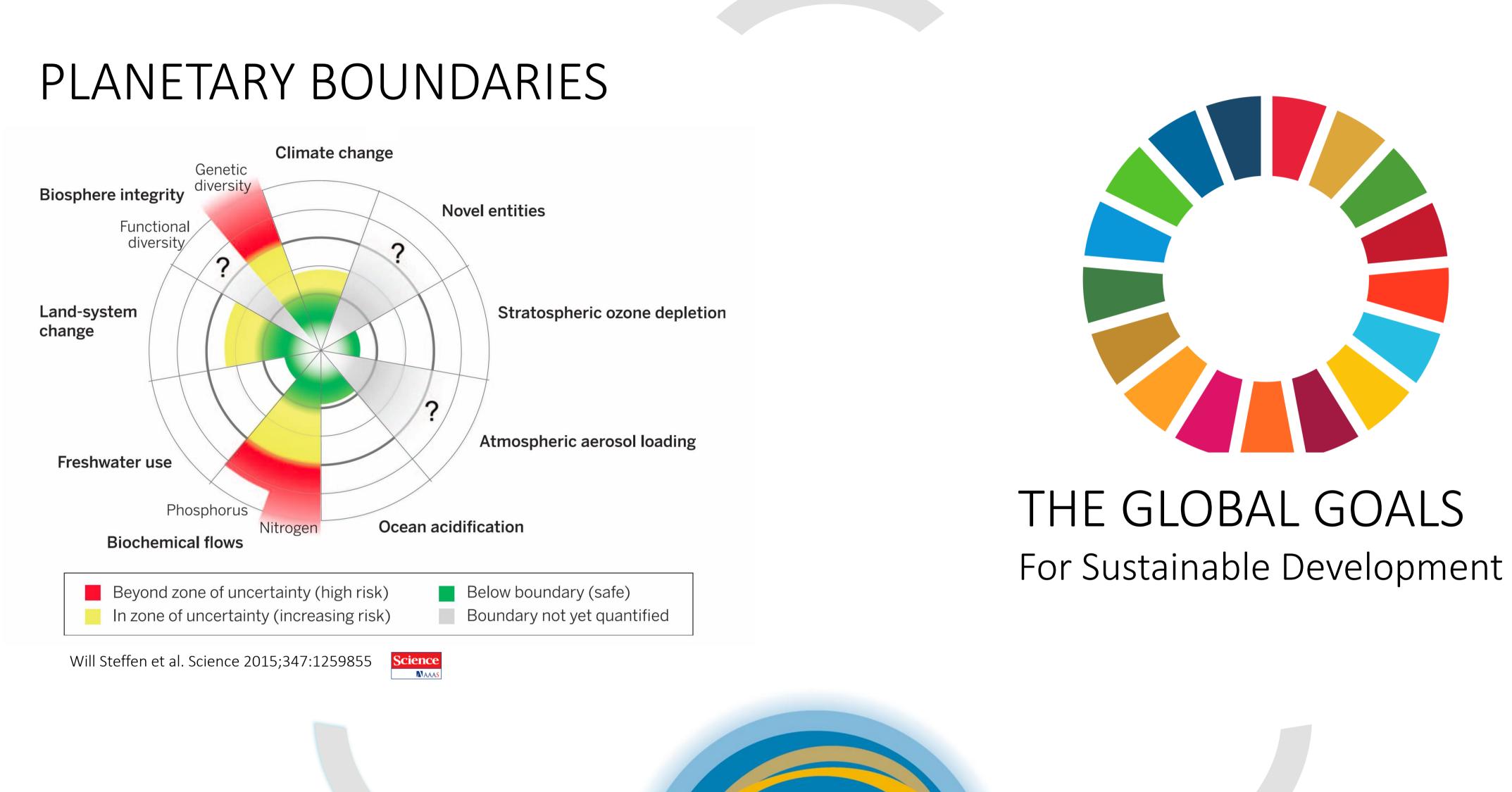
# Towards a well-connected, global, interdisciplinary research community for rational decision making in the Anthropocene Florian Rauser & the council of the Young Earth System Scientists community (YESS)





## EARTH SYSTEM SCIENCE FRONTIERS

"The Earth system science community has accepted the challenge of creating tangible products for the benefit of society. A coordinated, interdisciplinary and truly global approach is the best means to develop applicable tools to confront the challenges facing society, both now and in the future." (adapted from YESS White Paper 2016)

# Earth System Science Frontiers in the 21st century

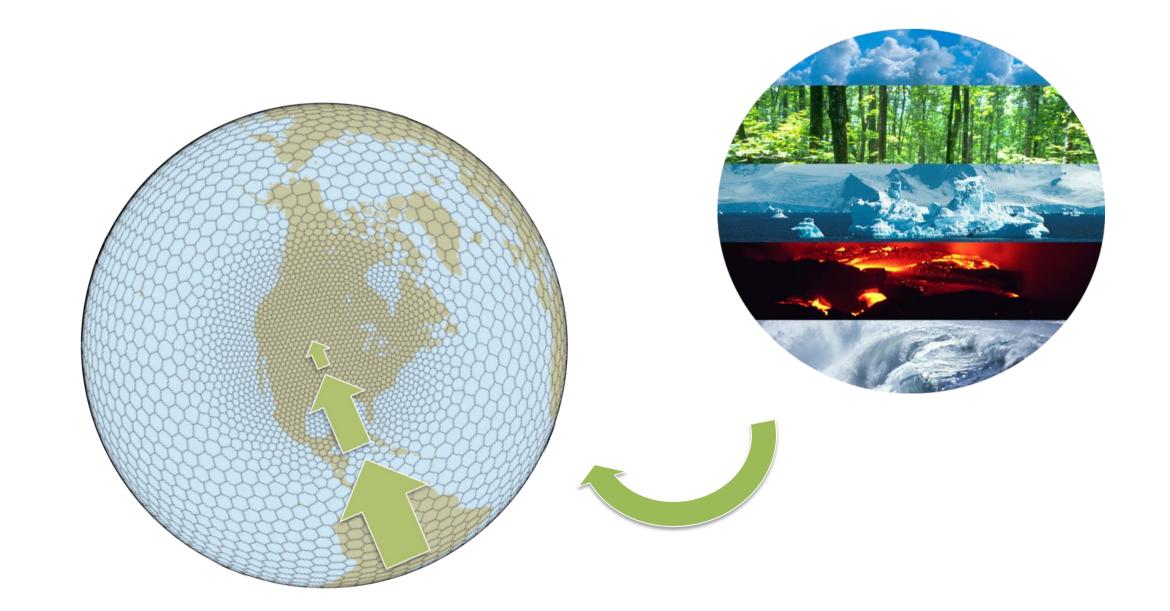
#### User-driven and regional

A fundamental frontier of all basic research is the struggle for sustainable balance between short-term, user-driven agendas and long-term, problem-based fundamental research. This balance between societal pressures to focus on urgent regional problems and the necessity to focus on long-term global issues must be created and adapted very carefully to allow for robust policy and decision making.



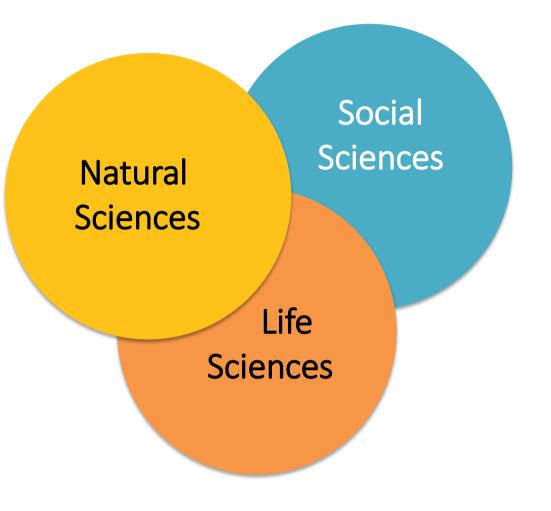
#### Scale-aware

The integration of all facets of Earth system understanding and modelling will hopefully help create seamless environmental prediction frameworks that provide information on time scales ranging from minutes to decades. For long-term management of humanity's footprint on the Earth system, the question of how to develop more efficient coupling between the natural Earth system and humanity as a driver must be further explored.



### Interdisciplinary

Earth system analysis is the science of observing and understanding Earth System processes and their interactions, including explicitly taking into account the interactions with mankind. We need an interdisciplinary community to fully understand the governance of Earth's limited resources and humanity's physical footprint on the planet, including planned and unplanned attempts to control the Earth system in the Anthropocene.



#### Robust communication

A key frontier of Earth system science is the ability of the scientific community to communicate our knowledge sufficiently to establish a rational discourse with society about the right choice of research priorities. Furthermore, it is unclear if user needs are communicated regularly and explicitly enough to the scientific community in order to guide our research priorities adequately. In a time of human control over large aspects of the Earth system, this communication must be substantially improved.

