Anthropogenic factors of occurrence instability in the biosphere

Koishymanov Salman

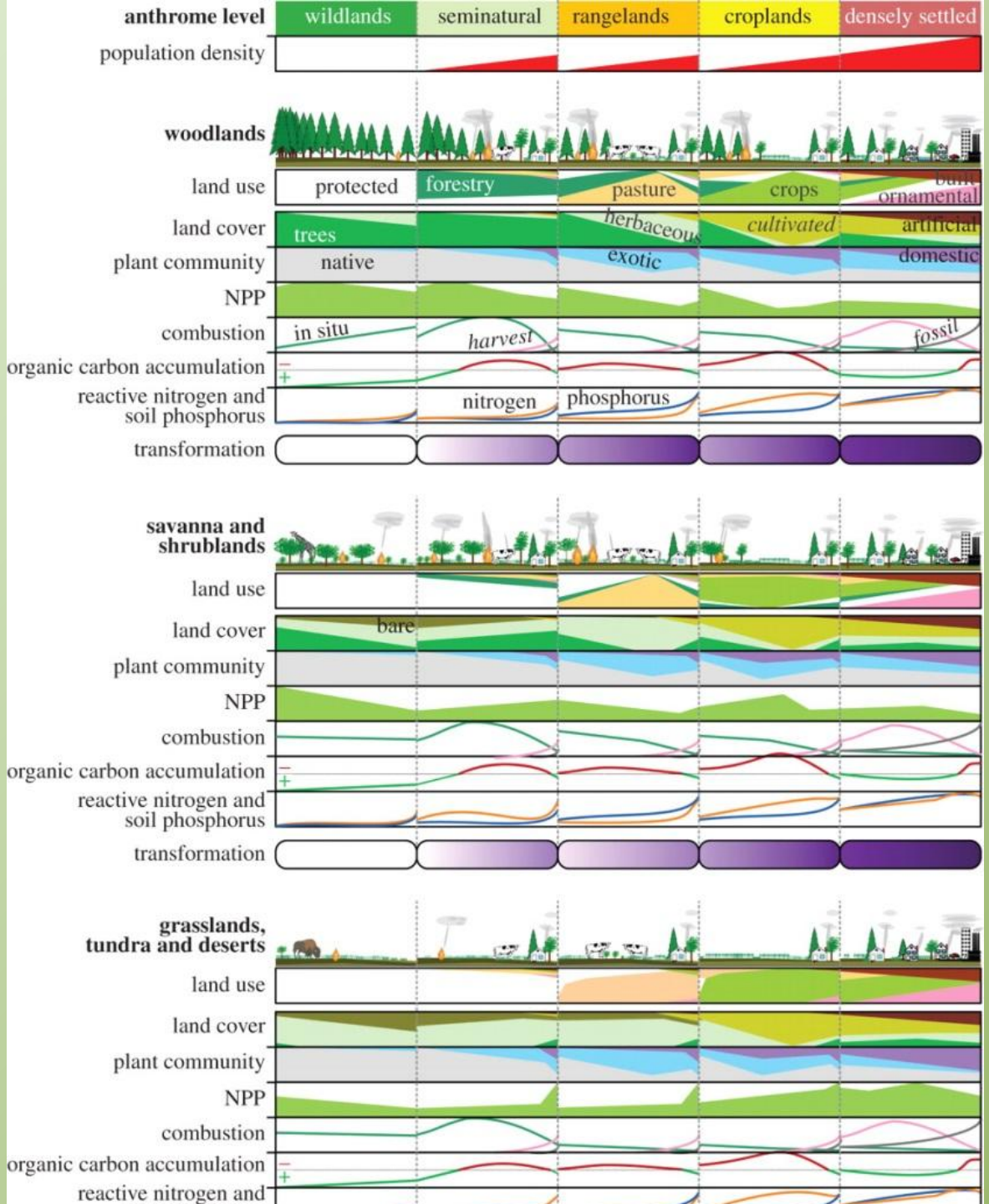
Abstract

- Human populations and their use of land have transformed most of the terrestrial biosphere into anthropogenic biomes (anthromes), causing a variety of novel ecological patterns and processes to emerge. To assess whether human populations and their use of land have directly altered the terrestrial biosphere sufficiently to indicate that the Earth system has entered a new geological epoch, spatially explicit global estimates of human populations and their use of land were analysed across the Holocene for their potential to induce irreversible novel transformation of the terrestrial biosphere.

Anthropogenic changing

- Anthropogenic changes in global climate may ultimately drive changes in the biosphere that are far greater than any of the direct effects investigated here [19]. However, massive changes in the biosphere mediated by climate change are not novel in the Earth system. For example, the biogeographic shifts caused by glacial cycles are rarely considered sufficiently novel to merit distinct epochs in the geologic record

- Anthropogenic changes in selected terrestrial ecosystem variables and their potential geological indicators at landscape scale. Terms in bold are included in **figure 1**; novel anthropogenic ecological forms, processes, proximate causes and types of geological indicators are in italics.


anthrome level
wildlands
seminatural
rangelands
croplands
densely settled
population density
woodlands
land use
protected
forestry
pasture
crops
ornamental
land cover
trees
herbaceous
cultivated
artificial
plant community
native
exotic
domestic
NPP
combustion
in situ
harvest
fossil
organic carbon accumulation
reactive nitrogen and soil phosphorus
nitrogen
phosphorus
transformation
savanna and shrublands
land use
land cover
bare
plant community
NPP
combustion
organic carbon accumulation
reactive nitrogen and soil phosphorus
transformation
grasslands, tundra and deserts
land use
land cover
plant community
NPP
combustion
organic carbon accumulation
reactive nitrogen and

Ecology in the Anthropocene

- It seems clear that the terrestrial biosphere is now predominantly anthropogenic, fundamentally distinct from the wild biosphere of the Holocene and before. From a philosophical point of view, nature is now human nature; there is no more wild nature to be found, just ecosystems in different states of human interaction, differing in wildness and humanness [132]. As evolution and other ecological processes now occur primarily within human systems, biology and ecology must incorporate human systems into their mainstream research and educational paradigms

Conclusions

- All species have complex interactive effects on ecosystems. Humans, with their unrivalled capacity for ecosystem engineering, have outsized effects and add even greater complexity and novelty by acting both as individual agents of change and collectively as human systems with adaptive social learning networks. A single human being can intentionally transform a pristine forest to pasture using fire and livestock or unintentionally by introducing an invasive species. Human systems can sustain cities in the desert and convert factories to woodlands. Yet human transformation of terrestrial ecology is always incomplete: some native species flourish even in the mostly densely populated cities.

Thank for attention!!!