

Supplementary material. A1. Global-scale drivers of ploidy state in aquatic macrophytes by Tatiana Lobato-de Magalhães, Kevin Murphy, Andrey Efremov, Victor Chepinoga, Thomas A. Davidson, Eugenio Molina-Navarro

Supplementary material. A1. Maps of global environmental, landscape variables, and biotic variables.

- i. **Spatial:** ALT: area of high altitude land per gridcell as % gridcell area >1000 m above sea level, a.s.l.;
- ii. **Environmental:** ET0 (mm): potential evapotranspiration; AI (ratio between precipitation and ET0 x 10,000): aridity index; TYR (°C): average annual temperature; TMX (°C): maximum temperature of warmest month; TRG (°C): max. of warmest month – min. of coldest month; TDRY (°C): average temperature of driest quarter; PCP (mm): annual precipitation; PCPDR (mm): precipitation of driest quarter; PCPS: precipitation seasonality (coefficient of variation of monthly precipitation); CCV (m year⁻¹): historic (Late Quaternary) climate change velocity (displacement rate);
- iii. **Landscape:** grAH (km²): area of aquatic habitat present per gridcell; CROP (% agricultural land cover per gridcell).
- iv. **Biotic:** S_{tot}, all=species macrophyte species richness; S_{end}, species richness of ecozone-endemic macrophytes, both as number of species per gridcell.

Data sources and methodologies to obtain gridcell values are described in manuscript.

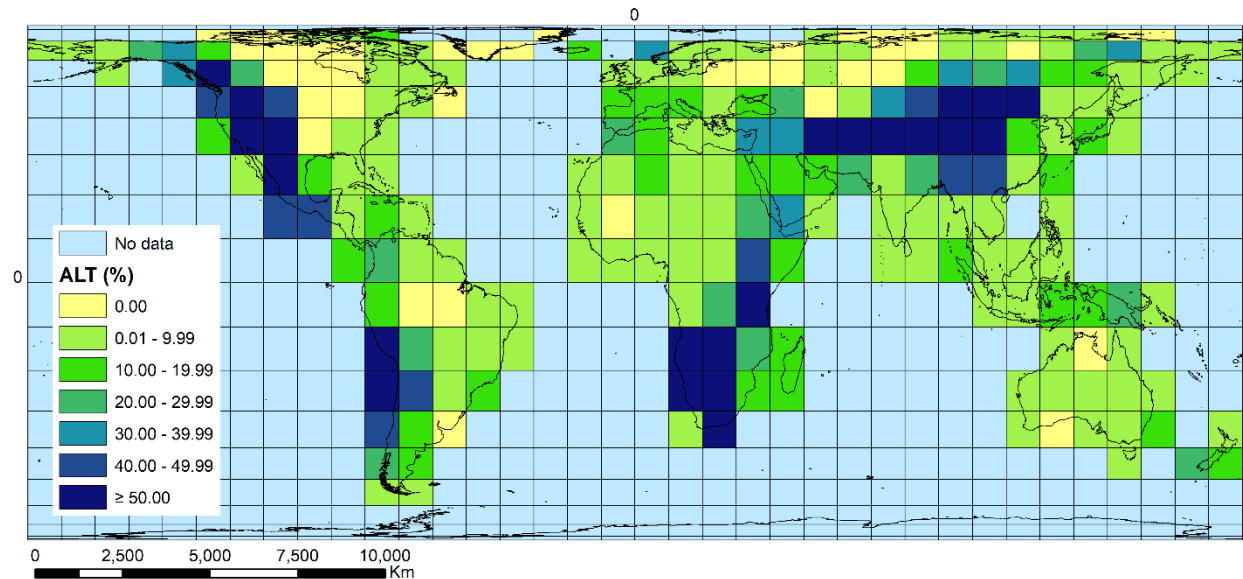


Figure A1.1. World map for the area of high-altitude land (ALT) in 10×10° latitude x longitude gridcells (% of gridcell land area >1000m a.s.l., Murphy et al. (2019)). Position of Greenwich Meridian (0° longitude) and Equator (0° latitude) marked as “0”. Scale bar is indicative only, referring to average longitudinal distance on the map.

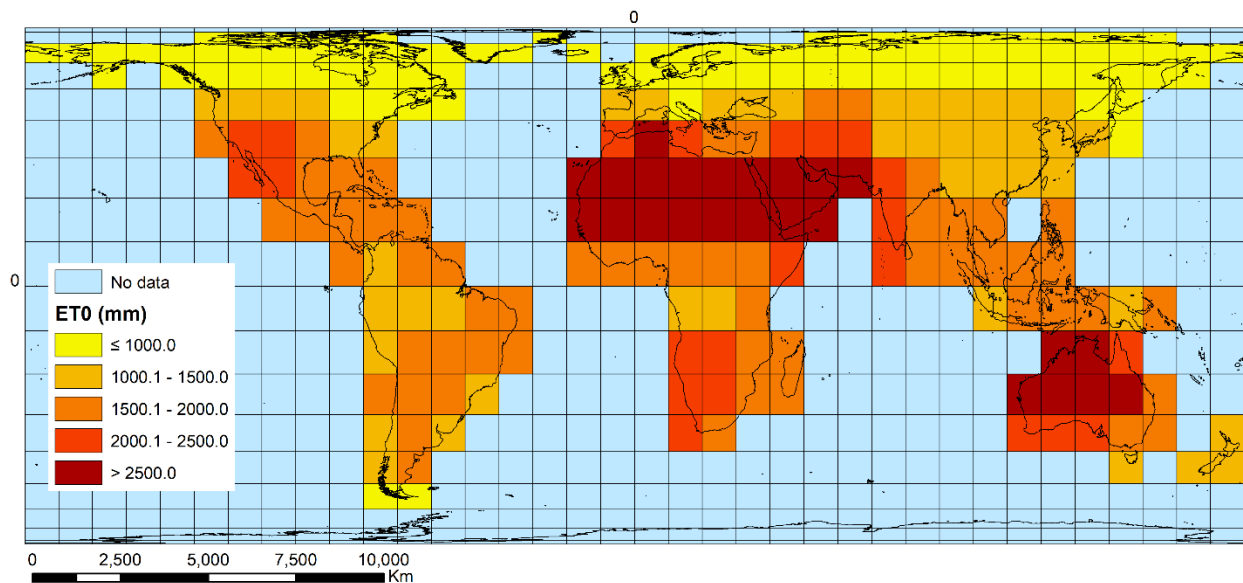


Figure A1.2. World map for the average potential evapotranspiration (ET0) in 10×10° latitude x longitude gridcells. Position of Greenwich Meridian (0° longitude) and Equator (0° latitude) marked as “0”. Scale bar is indicative only, referring to average longitudinal distance on the map.

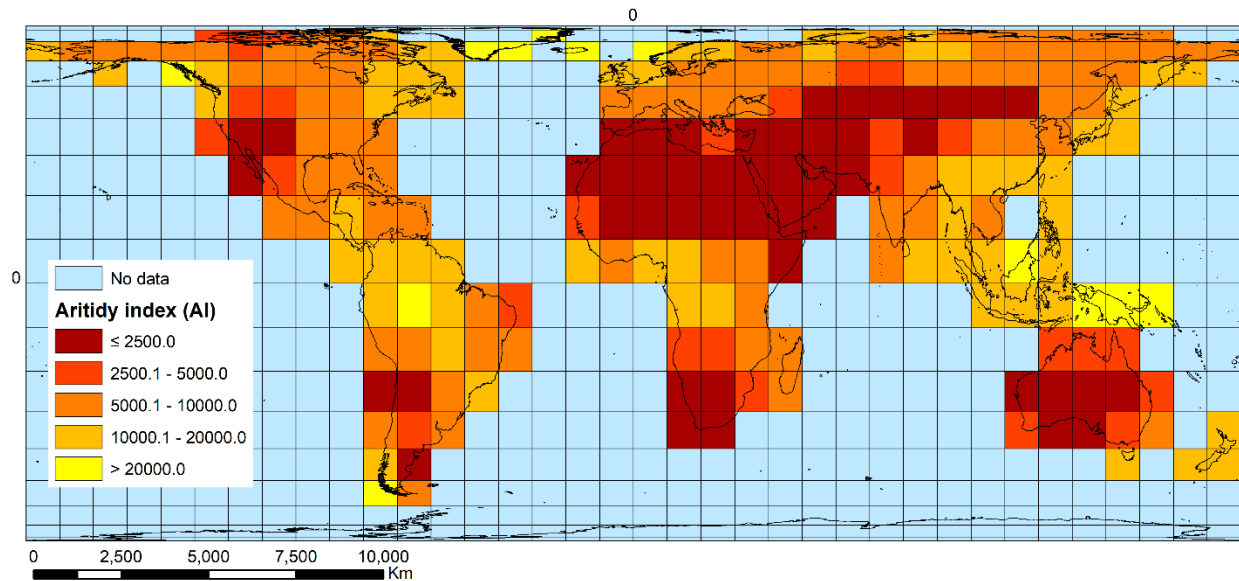


Figure A1.3. World map for the average aridity index (AI) in 10×10° latitude x longitude gridcells (ratio between precipitation and ET0 x 10,000). Position of Greenwich Meridian (0° longitude) and Equator (0° latitude) marked as “0”. Scale bar is indicative only, referring to average longitudinal distance on the map.

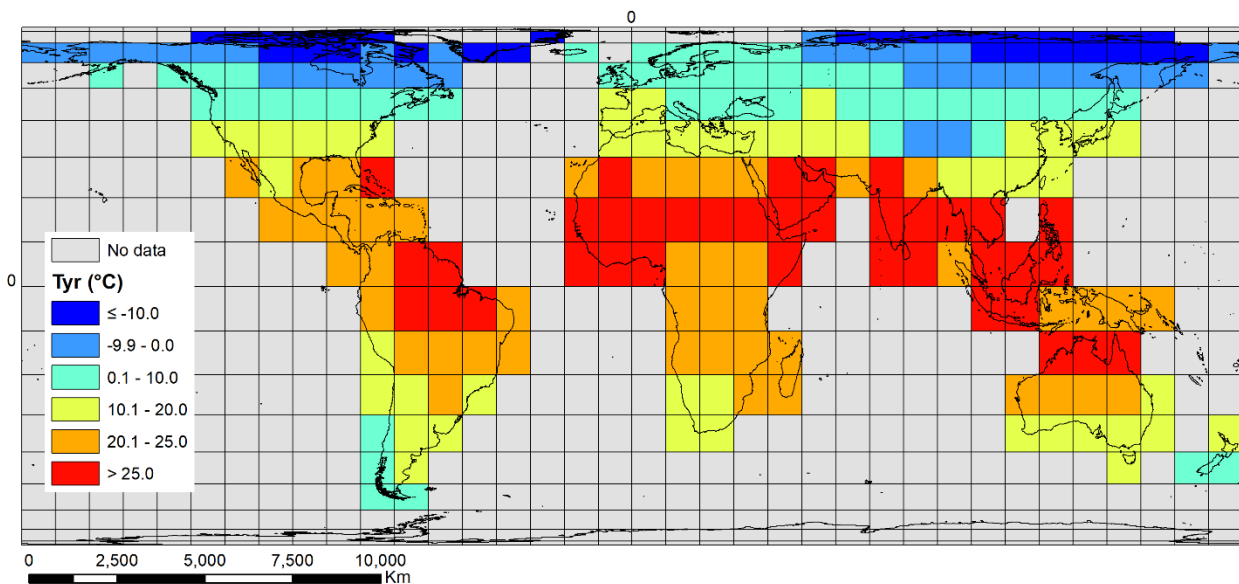


Figure A1.4. World map for the average annual temperature (TYR, °C) in 10×10° latitude x longitude gridcells. Position of Greenwich Meridian (0° longitude) and Equator (0° latitude) marked as “0”. Scale bar is indicative only, referring to average longitudinal distance on the map.

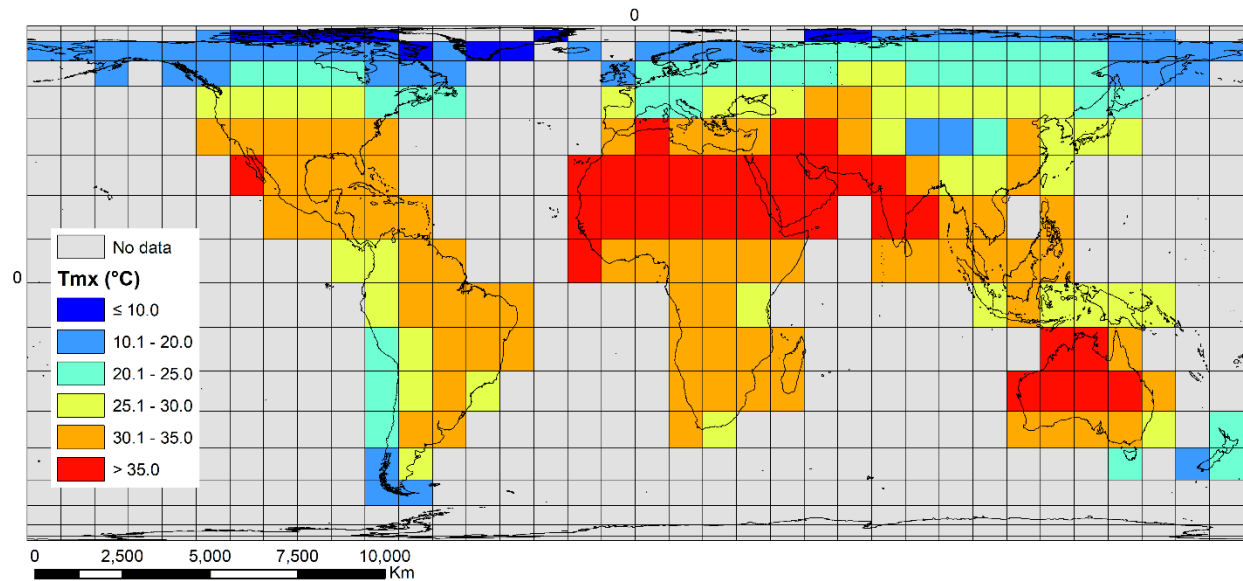


Figure A1.5. World map for the average maximum temperature of the warmest month (TMX, °C) in 10×10° latitude x longitude gridcells. Position of Greenwich Meridian (0° longitude) and Equator (0° latitude) marked as “0”. Scale bar is indicative only, referring to average longitudinal distance on the map.

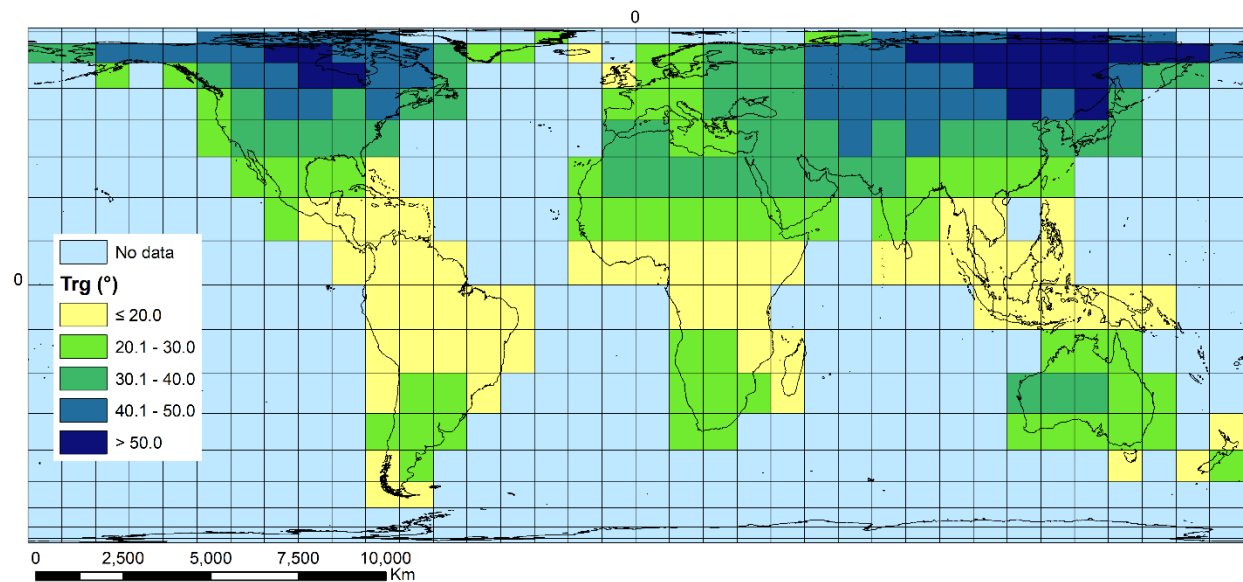


Figure A1.6. World map for the average temperature range (TRG, °C) in 10×10° latitude x longitude gridcells (difference between the average maximum temperature of the warmest month and the minimum temperature of the coldest month). Position of Greenwich Meridian (0° longitude) and Equator (0° latitude) marked as “0”. Scale bar is indicative only, referring to average longitudinal distance on the map.

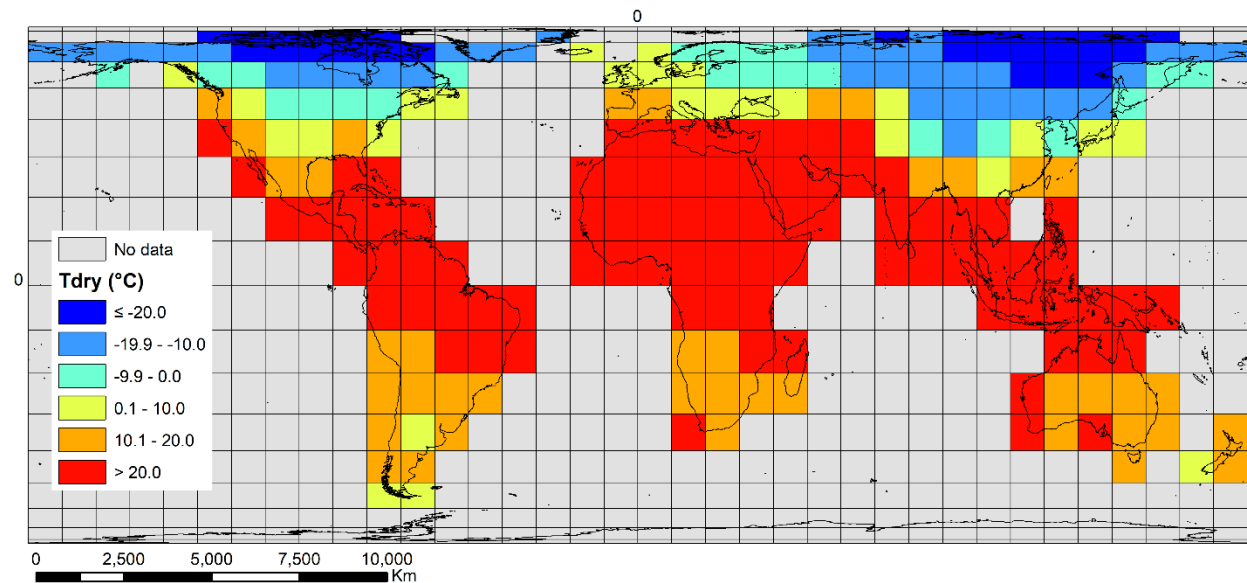


Figure A1.7. World map for the average temperature of the driest quarter (TDRY, °C) in 10×10° latitude x longitude gridcells. Position of Greenwich Meridian (0° longitude) and Equator (0° latitude) marked as “0”. Scale bar is indicative only, referring to average longitudinal distance on the map.

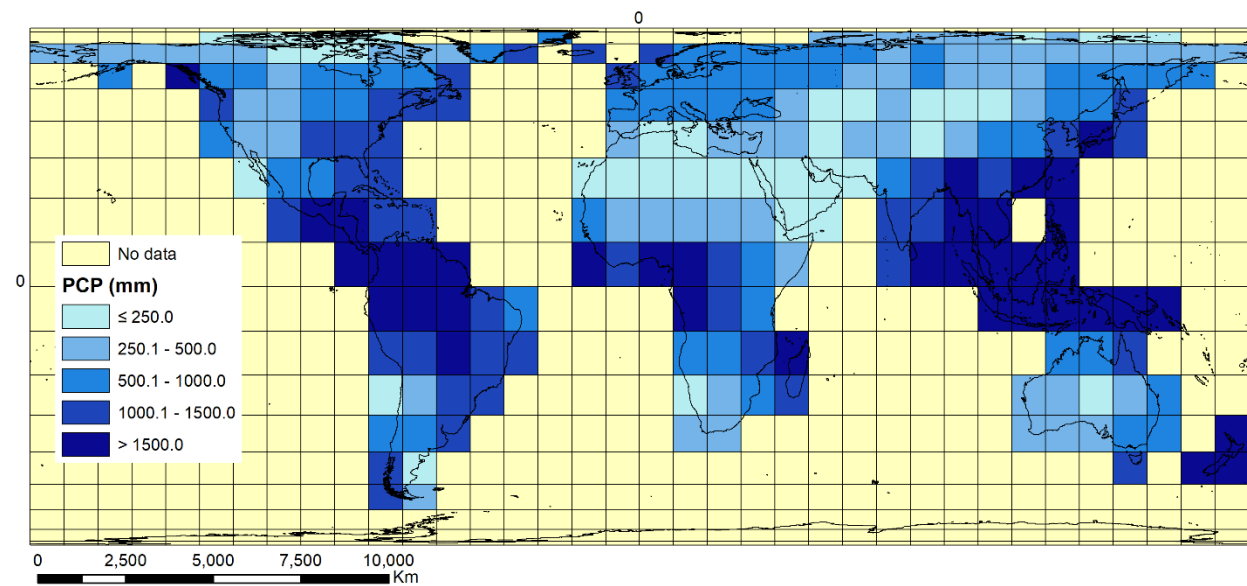


Figure A1.8. World map for the average precipitation (PCP, mm) in 10×10° latitude x longitude gridcells. Position of Greenwich Meridian (0° longitude) and Equator (0° latitude) marked as “0”. Scale bar is indicative only, referring to average longitudinal distance on the map.

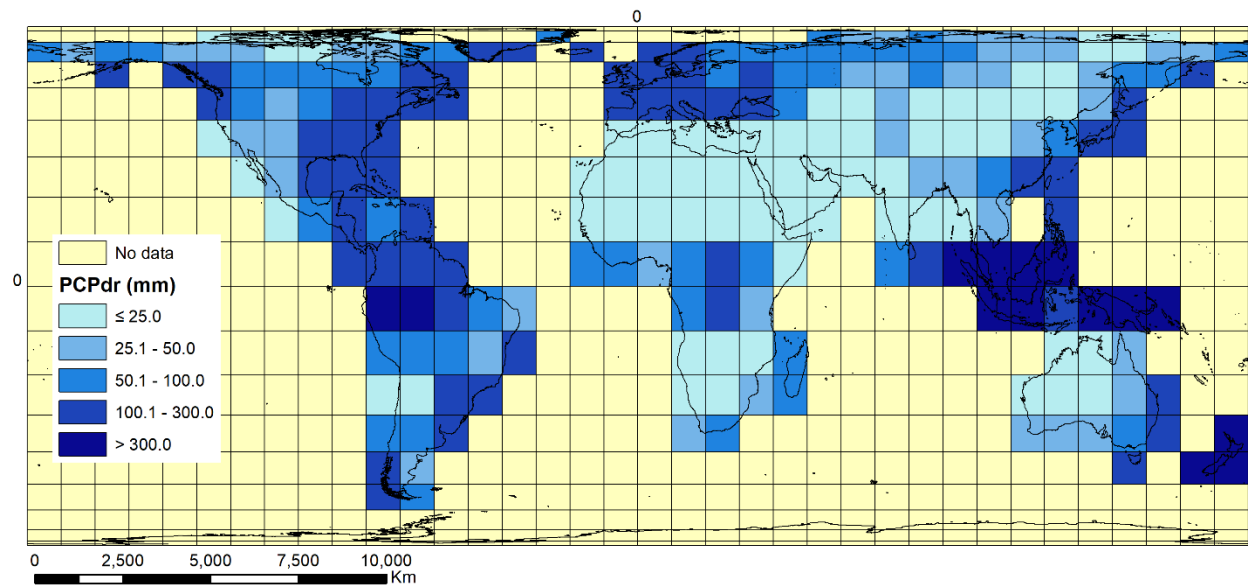


Figure A1.9. World map for the average precipitation of the driest quarter (PCPDR, mm) in $10 \times 10^\circ$ latitude x longitude gridcells. Position of Greenwich Meridian (0° longitude) and Equator (0° latitude) marked as "0". Scale bar is indicative only, referring to average longitudinal distance on the map.

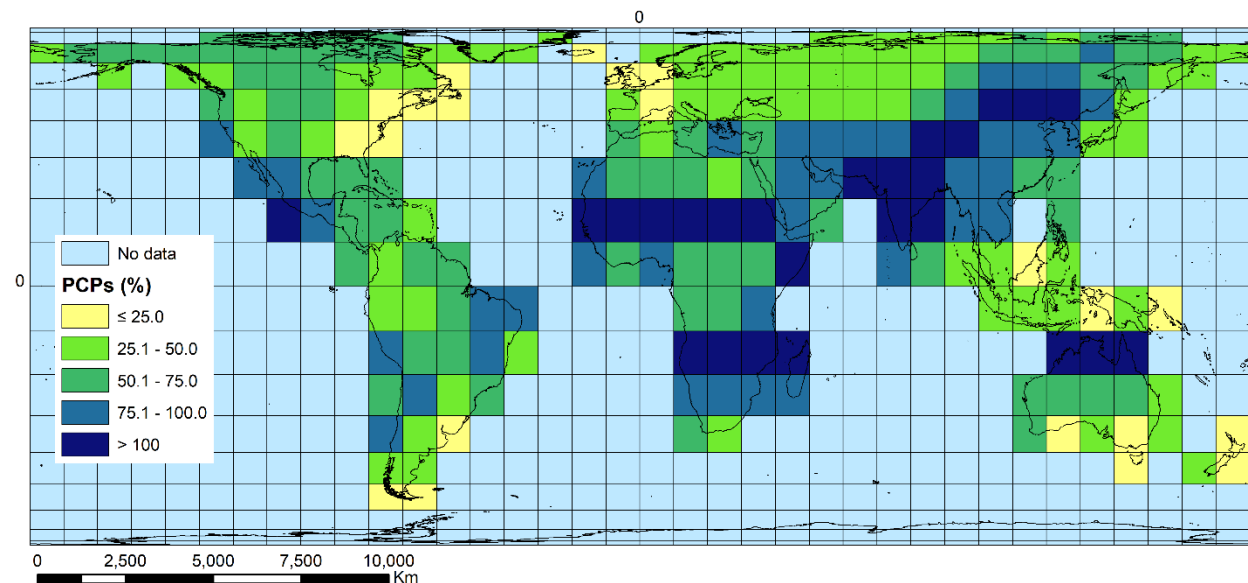


Figure A1.10. World map for the precipitation seasonality (PCPS, %) in $10 \times 10^\circ$ latitude x longitude gridcells (coefficient of variation of monthly precipitation). Position of Greenwich Meridian (0° longitude) and Equator (0° latitude) marked as "0". Scale bar is indicative only, referring to average longitudinal distance on the map.

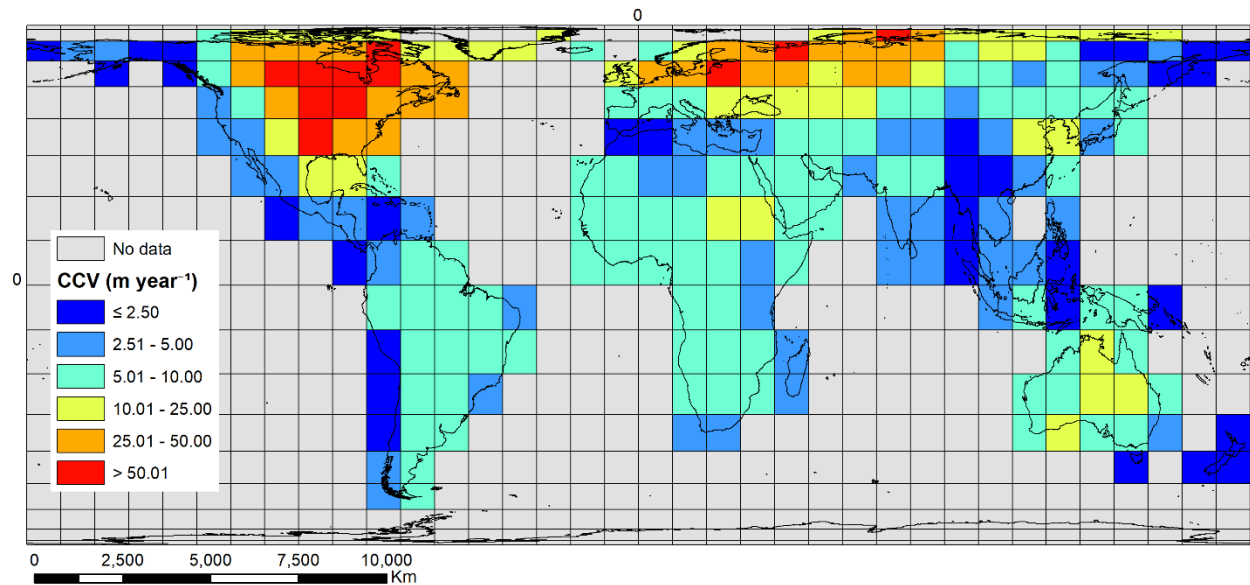


Figure A1.11. World map for the average climate change velocity (CCV, m year⁻¹) in 10×10° latitude x longitude gridcells (historic – Late Quaternary – climate change velocity or displacement rate). Position of Greenwich Meridian (0° longitude) and Equator (0° latitude) marked as “0”. Scale bar is indicative only, referring to average longitudinal distance on the map.

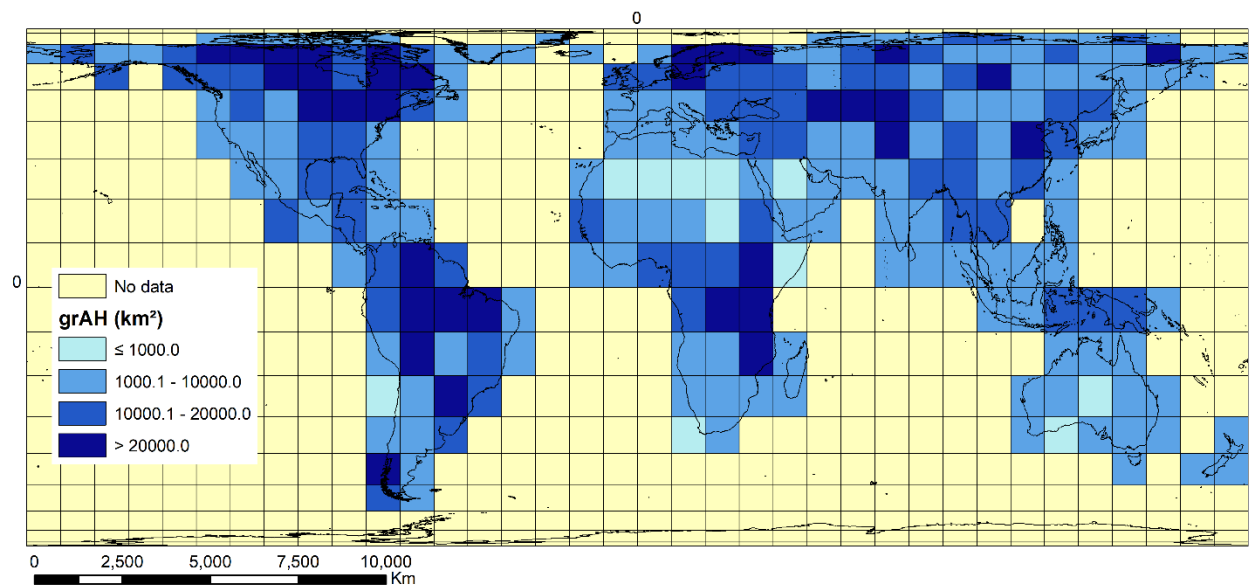


Figure A1.12. World map for the area of aquatic habitat (grAH, km²) in 10×10° latitude x longitude gridcells. Position of Greenwich Meridian (0° longitude) and Equator (0° latitude) marked as “0”. Scale bar is indicative only, referring to average longitudinal distance on the map.

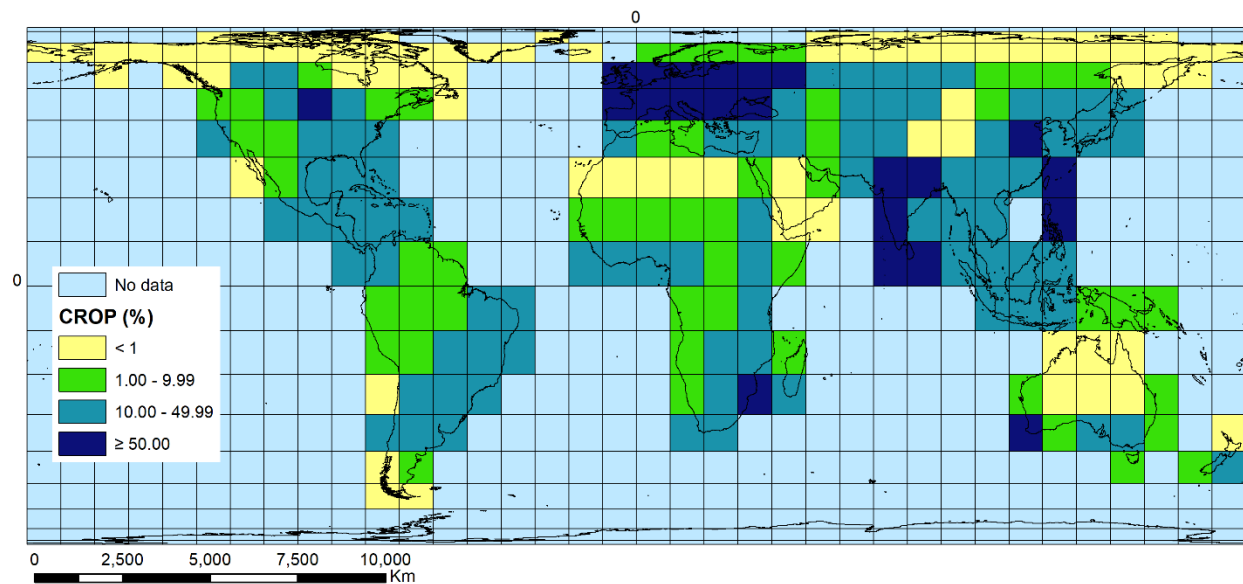


Figure A1.13. World map for the agricultural land cover (CROP, %) in 10×10° latitude x longitude gridcells (% gridcell occupied by agricultural land use). Position of Greenwich Meridian (0° longitude) and Equator (0° latitude) marked as “0”. Scale bar is indicative only, referring to average longitudinal distance on the map.

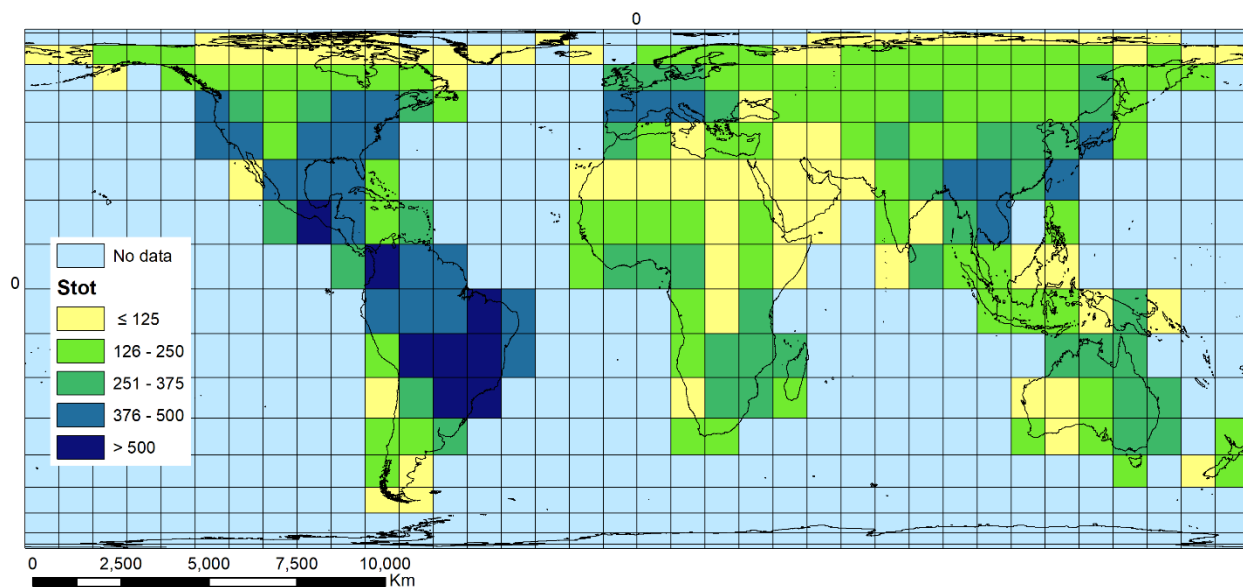


Figure A1.14. World map for the all-species macrophytes species richness (S_{tot} , number of species) in 10×10° latitude x longitude gridcells. Position of Greenwich Meridian (0° longitude) and Equator (0° latitude) marked as “0”. Scale bar is indicative only, referring to average longitudinal distance on the map.

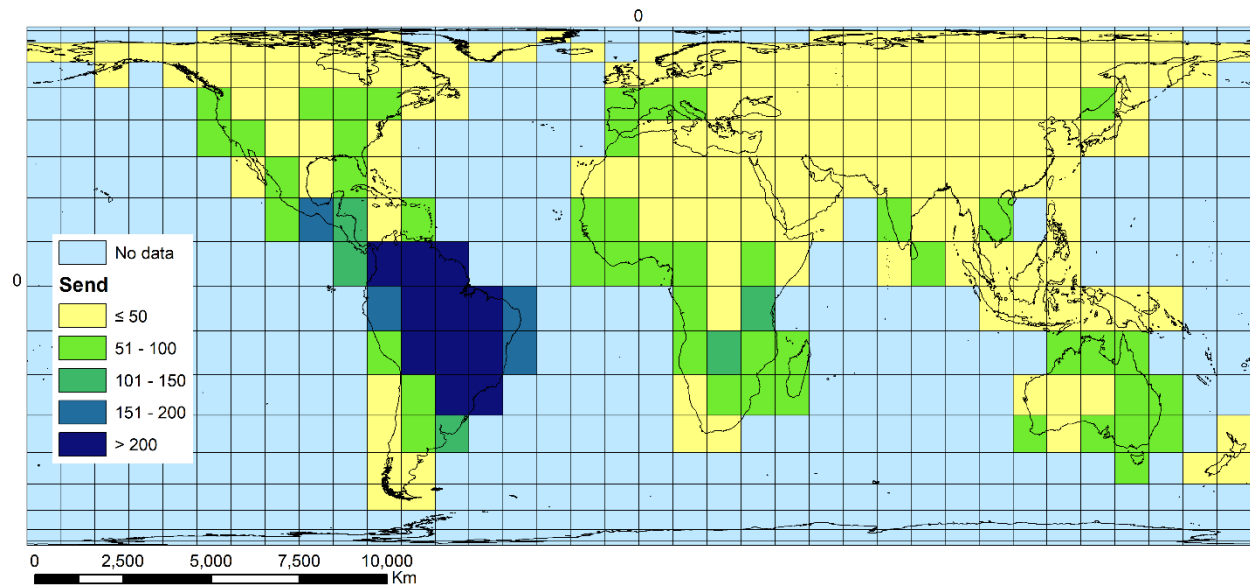


Figure A1.15. World map for the species richness of ecozone-endemic macrophytes (S_{end} , number of species) in $10 \times 10^\circ$ latitude x longitude gridcells. Position of Greenwich Meridian (0° longitude) and Equator (0° latitude) marked as "0". Scale bar is indicative only, referring to average longitudinal distance on the map.