



Microsoft

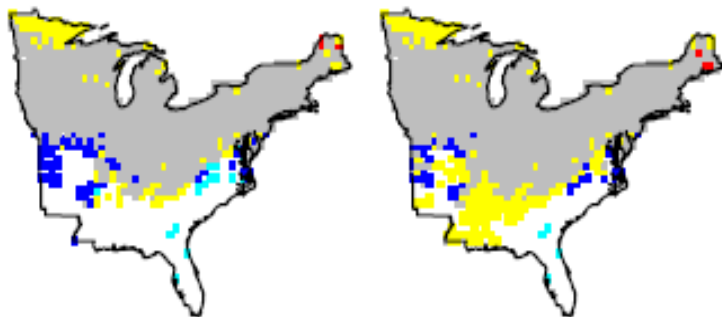
CEES webpage

<http://research.microsoft.com/en-us/groups/ecology/>

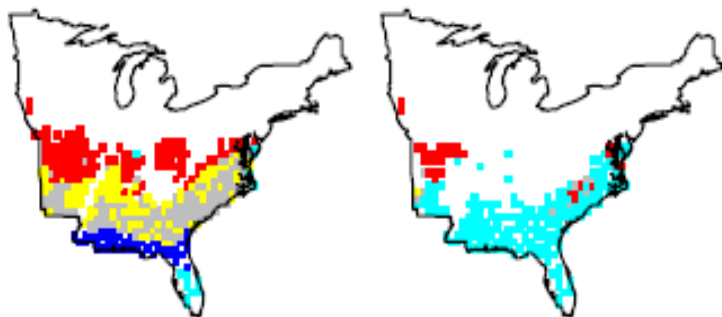
Forest Demo

<http://research.microsoft.com/en-us/um/people/vassilyl/ForestDistributions/>

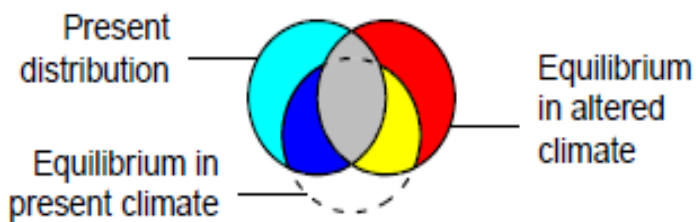
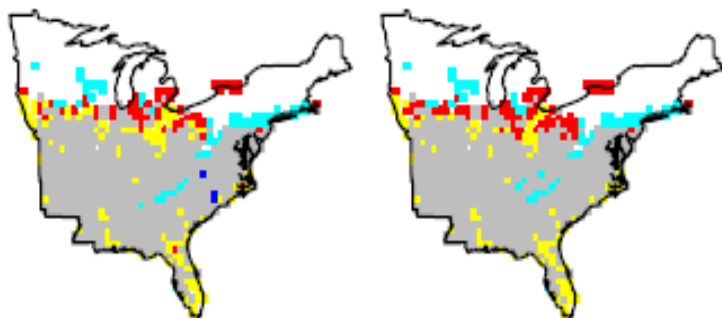
Northern
Temperate
Hardwood



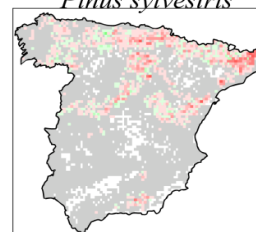
Southern
Temperate
Conifer



Southern
Temperate
Hardwood



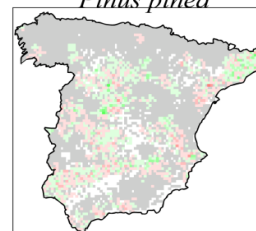
Pinus sylvestris



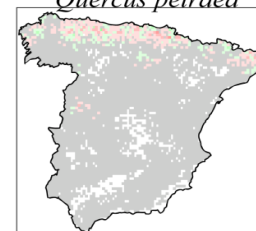
Quercus robur



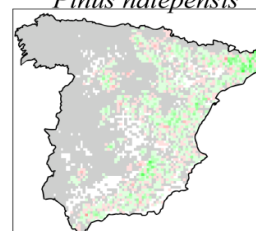
Pinus pinea



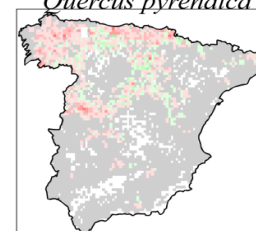
Quercus petraea



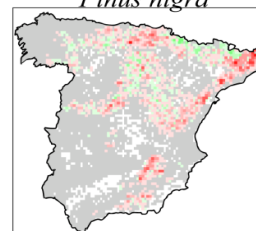
Pinus halepensis



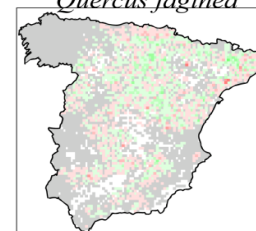
Quercus pyrenaica



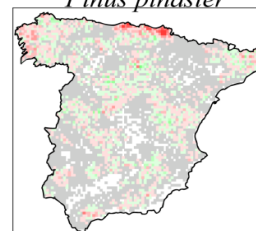
Pinus nigra



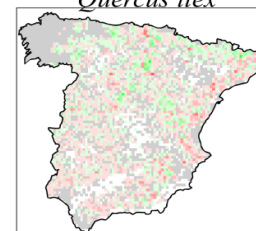
Quercus faginea



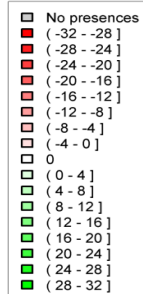
Pinus pinaster

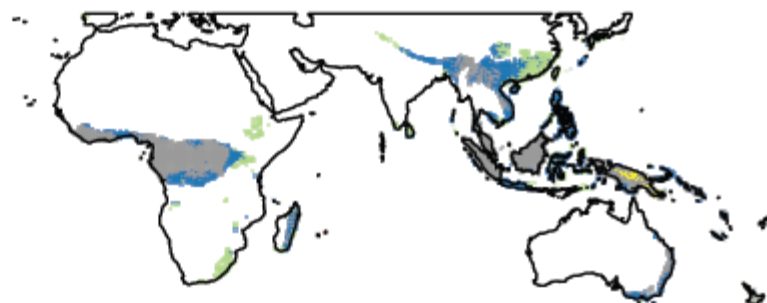
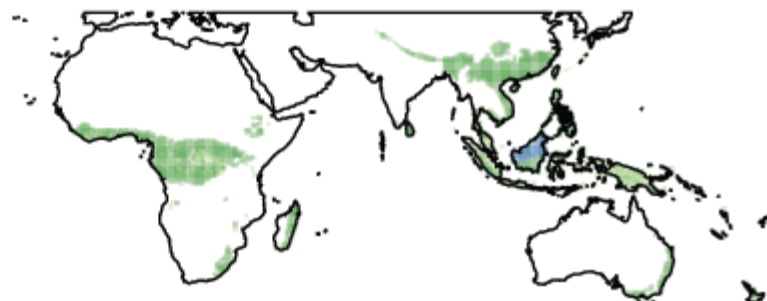
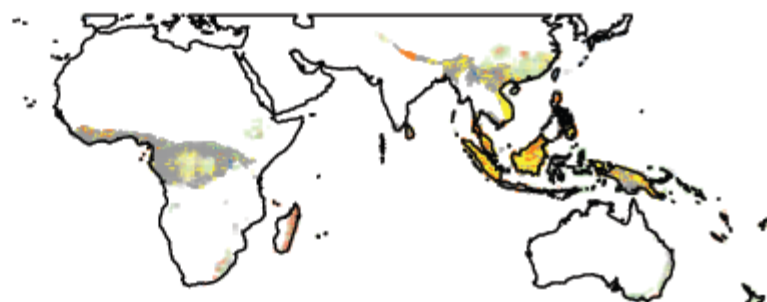
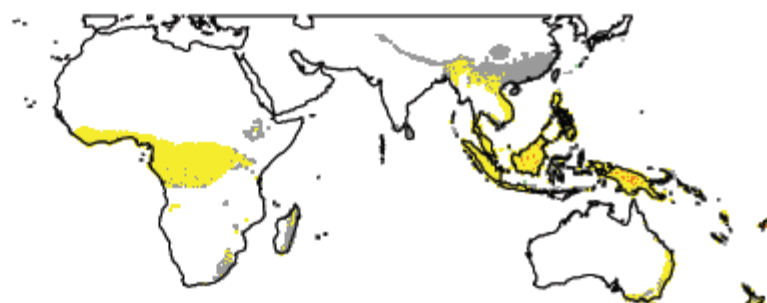
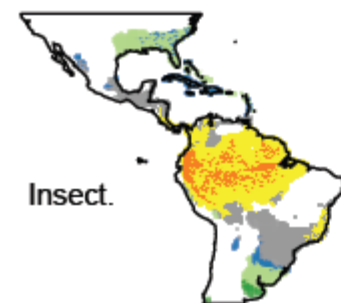
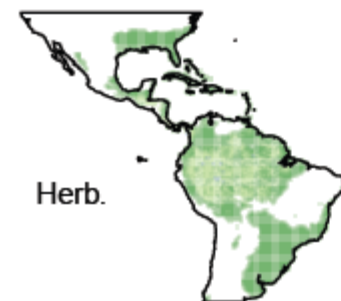
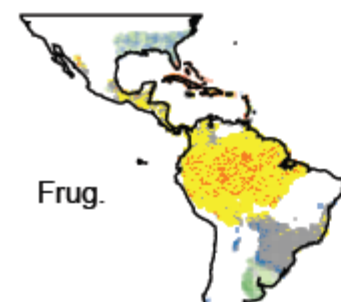
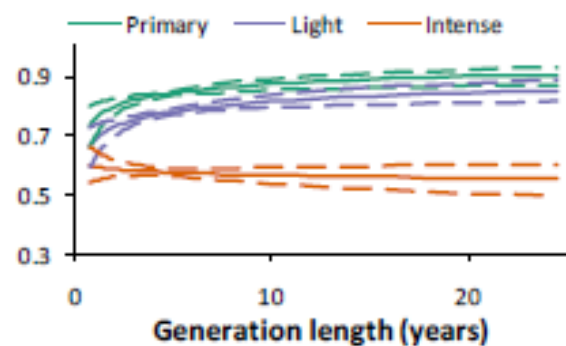
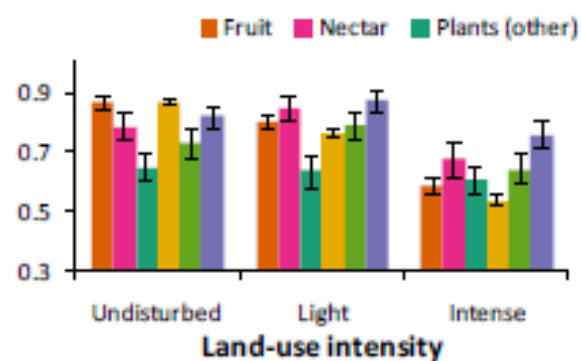
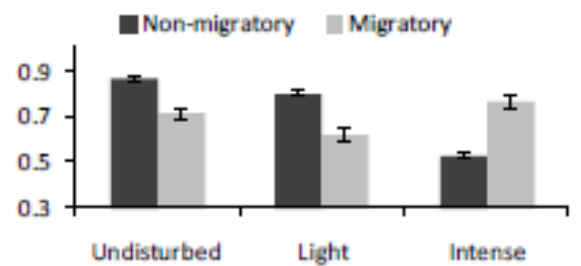


Quercus ilex

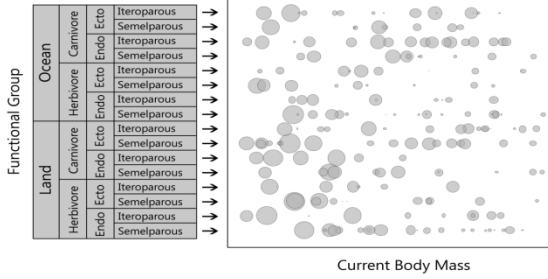


Differences in nr.
of occupied plots

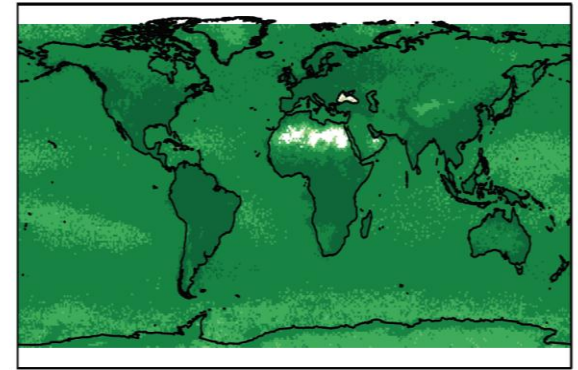
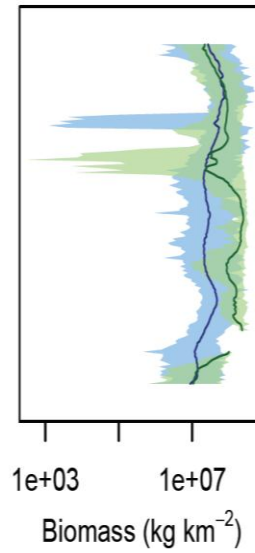
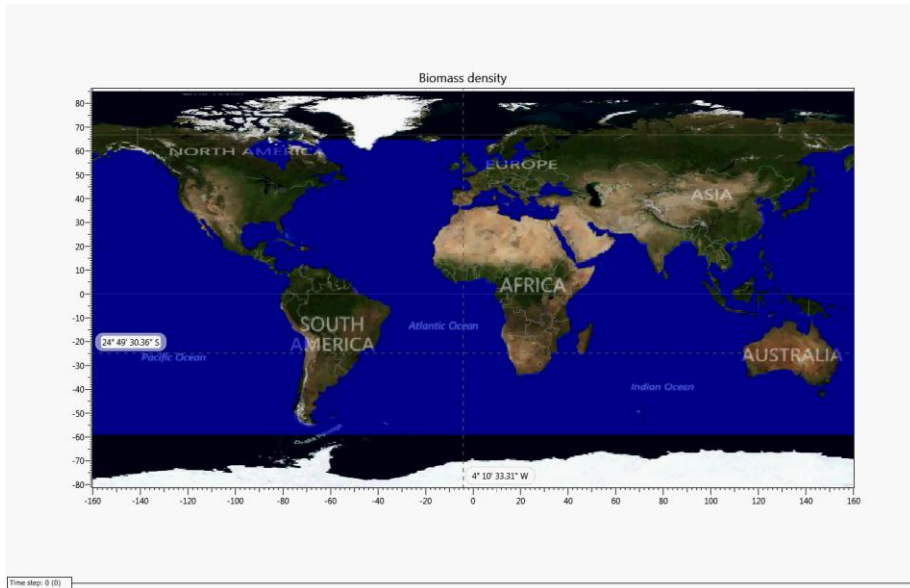
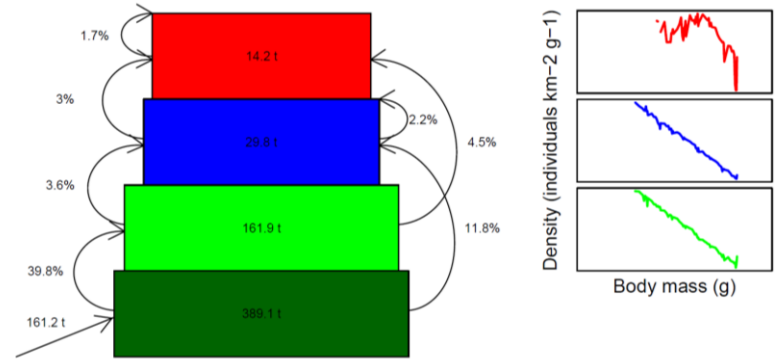
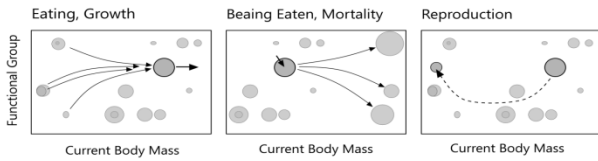




(a) State of the ecosystem

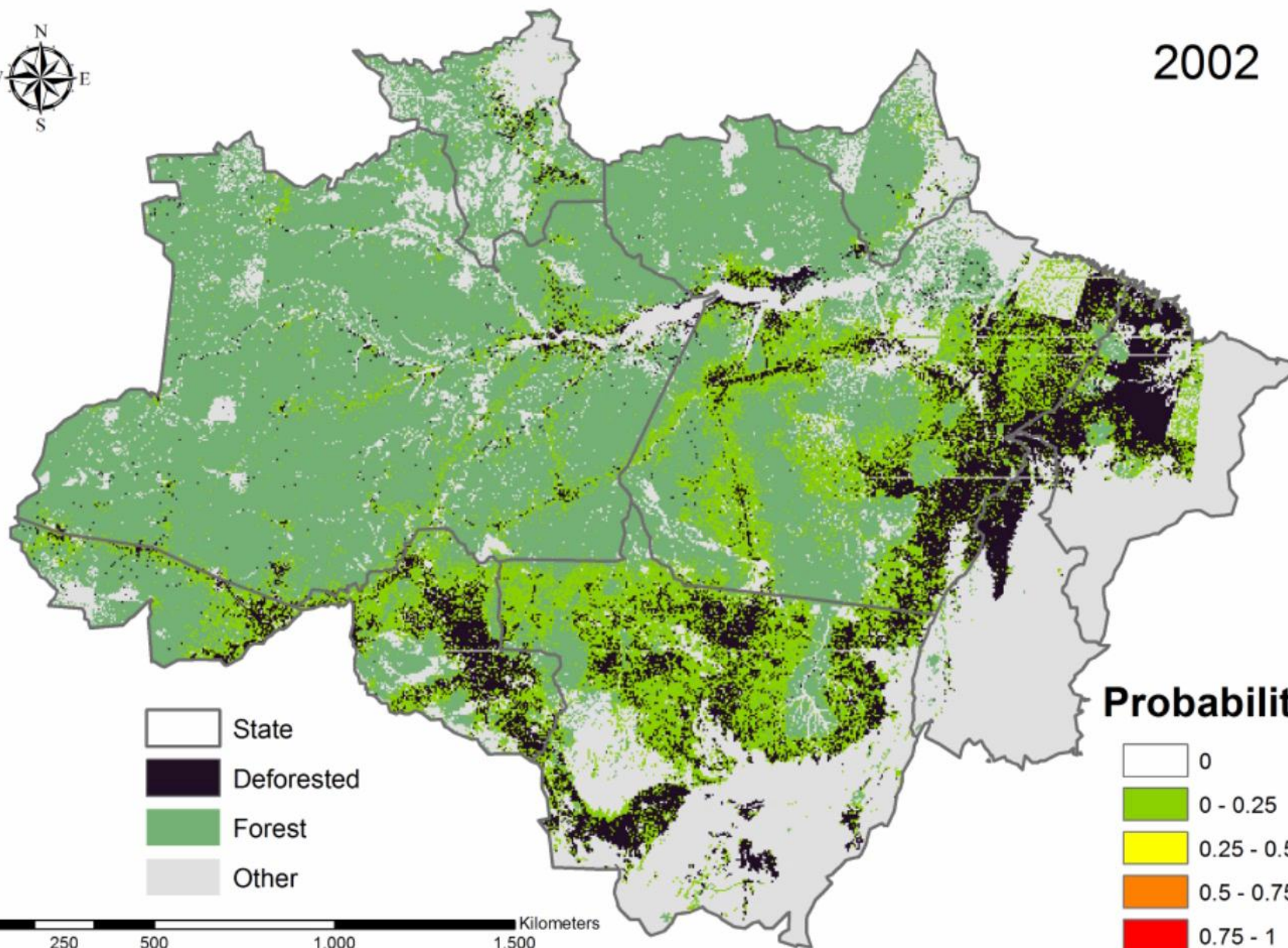


(B) Processes and dynamics





2002



0 250 500 1,000 1,500 Kilometers

Food

為什麼會這樣？

為什麼會這樣？

為什麼會這樣？

為什麼會這樣？

How can we feed
more people, on
the same amount
of land, with fewer
inputs?



Hypotheses



Data



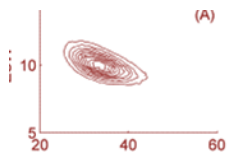
Bayesian
inference



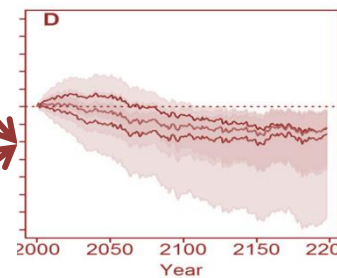
Model structure



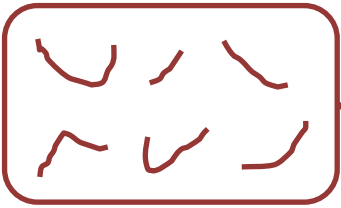
Parameter
distribution



Predictions with
uncertainty



Hypotheses



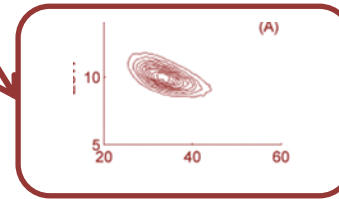
Bayesian
inference



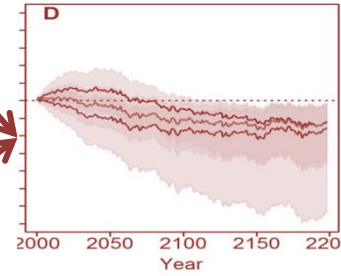
Model structure



Parameter
distribution



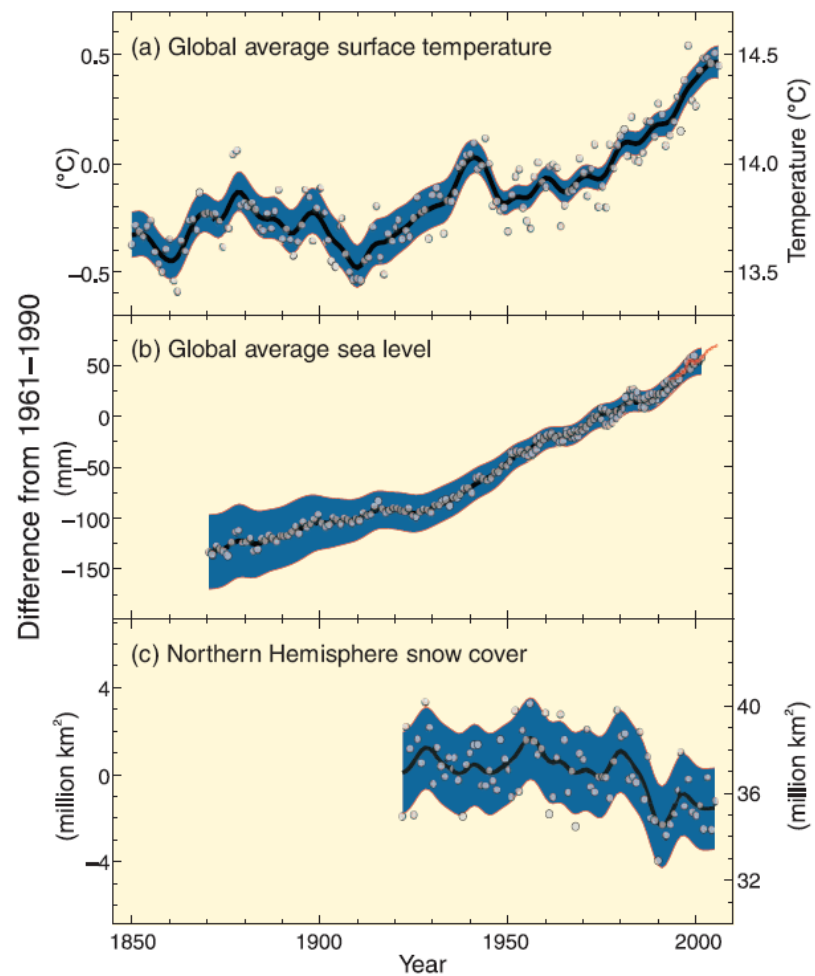
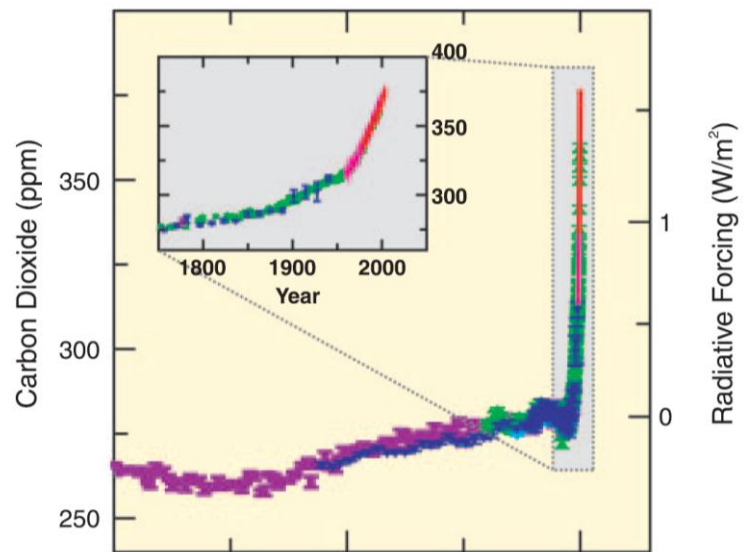
Predictions with
uncertainty

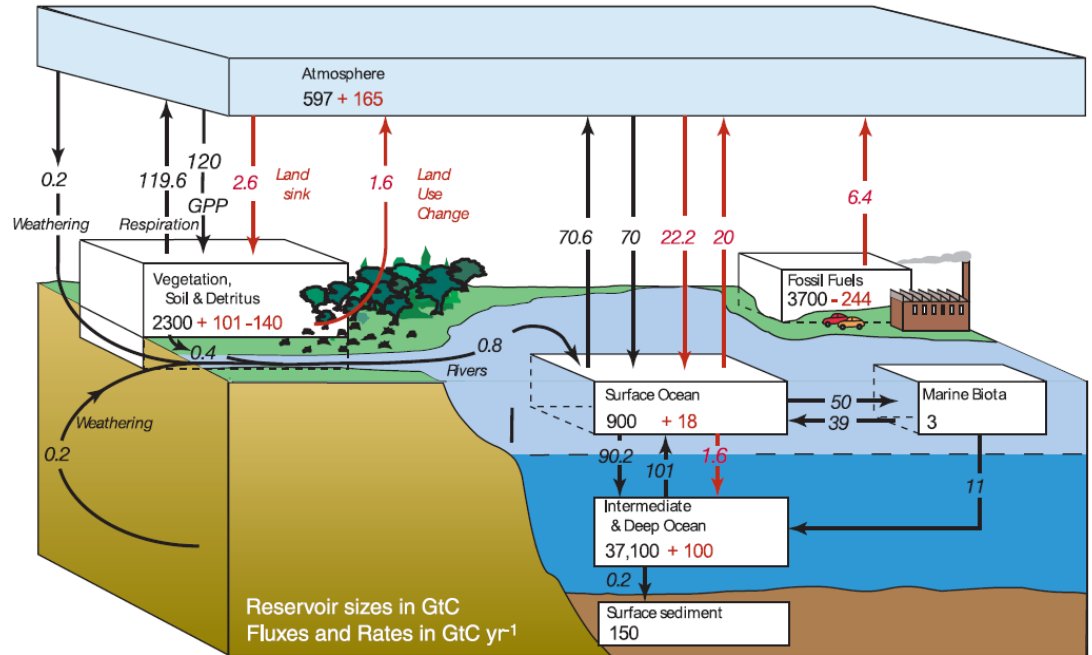
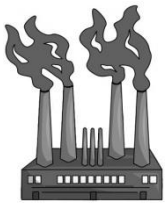
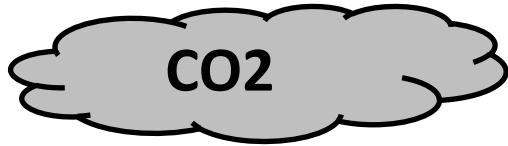


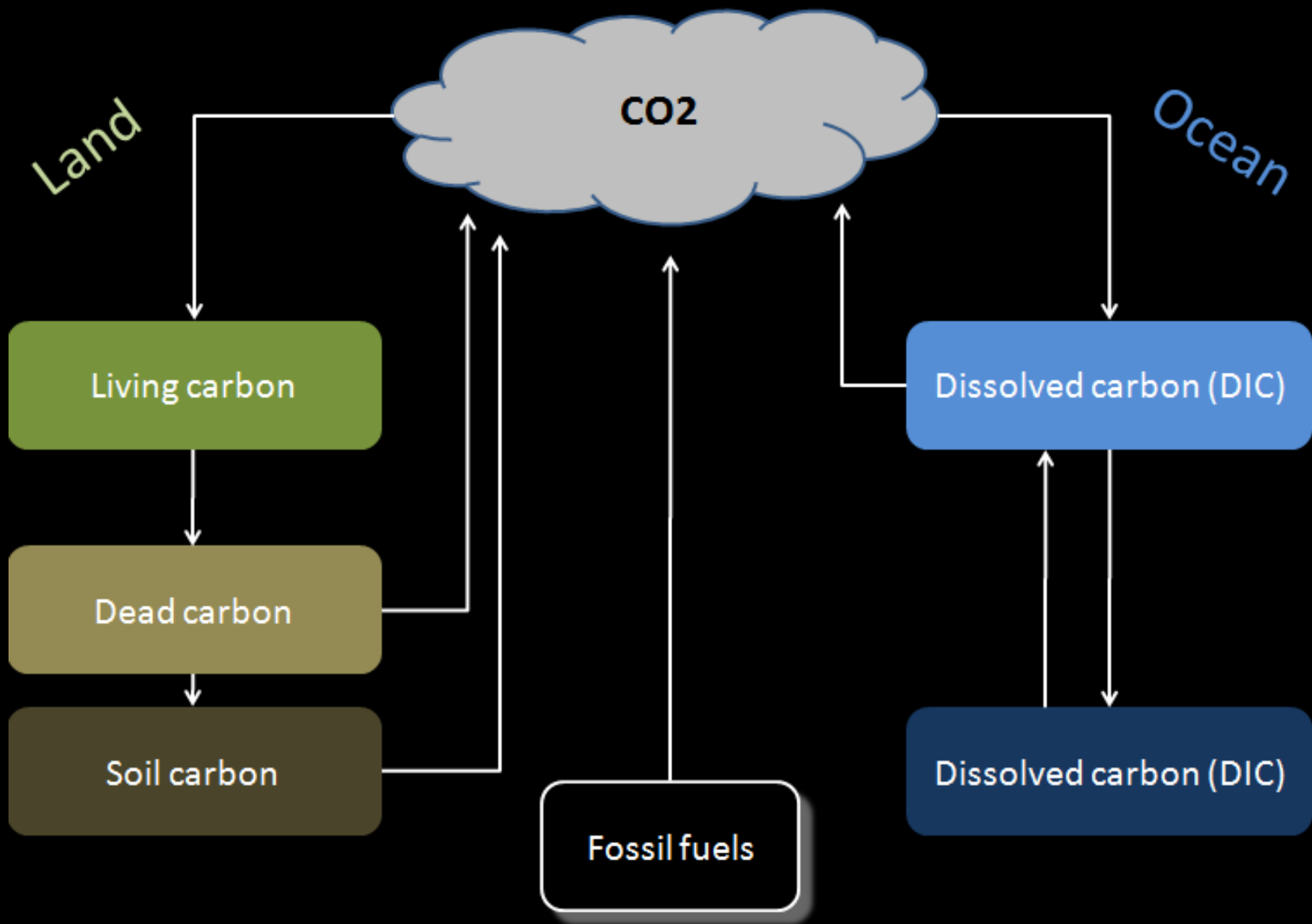
Data

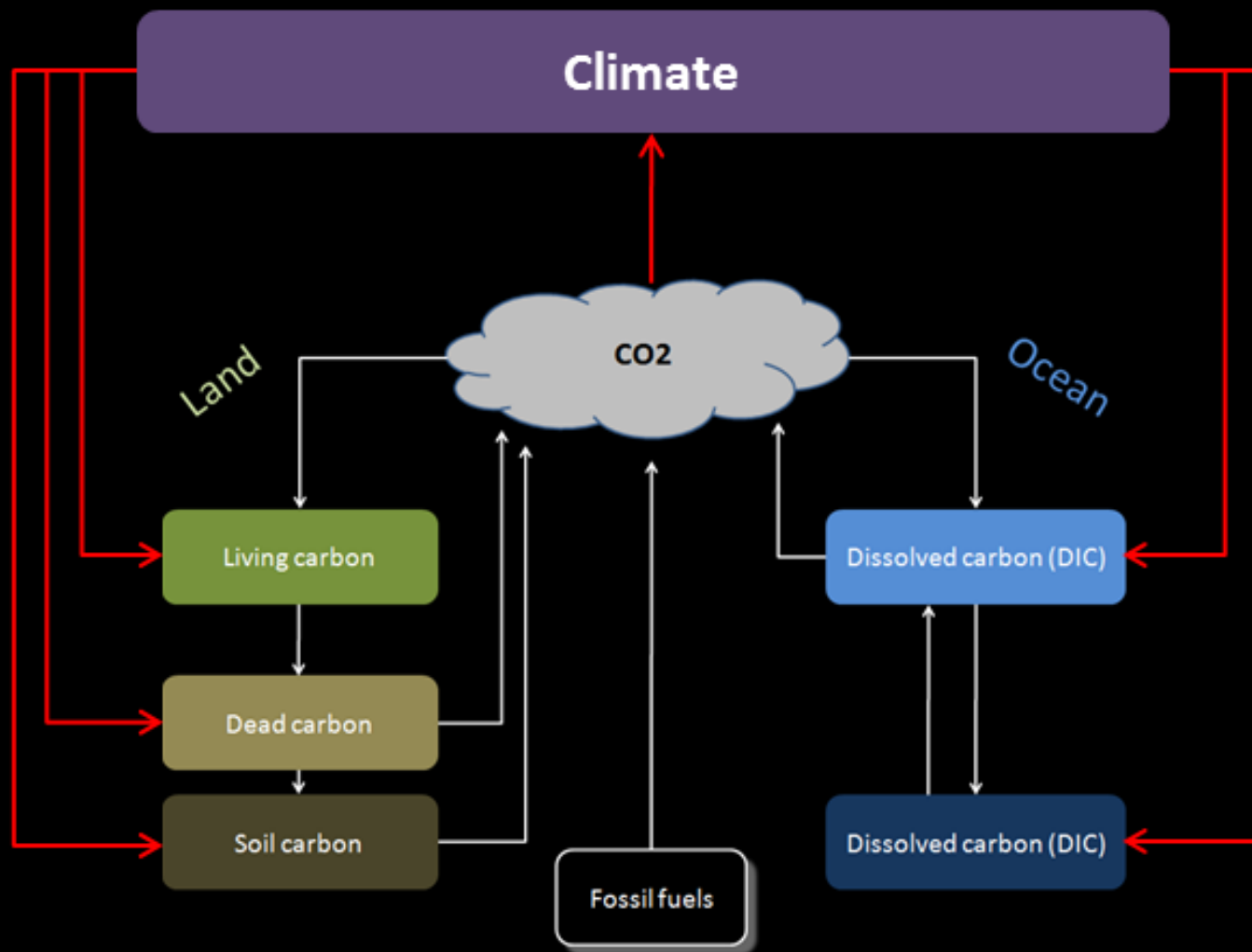


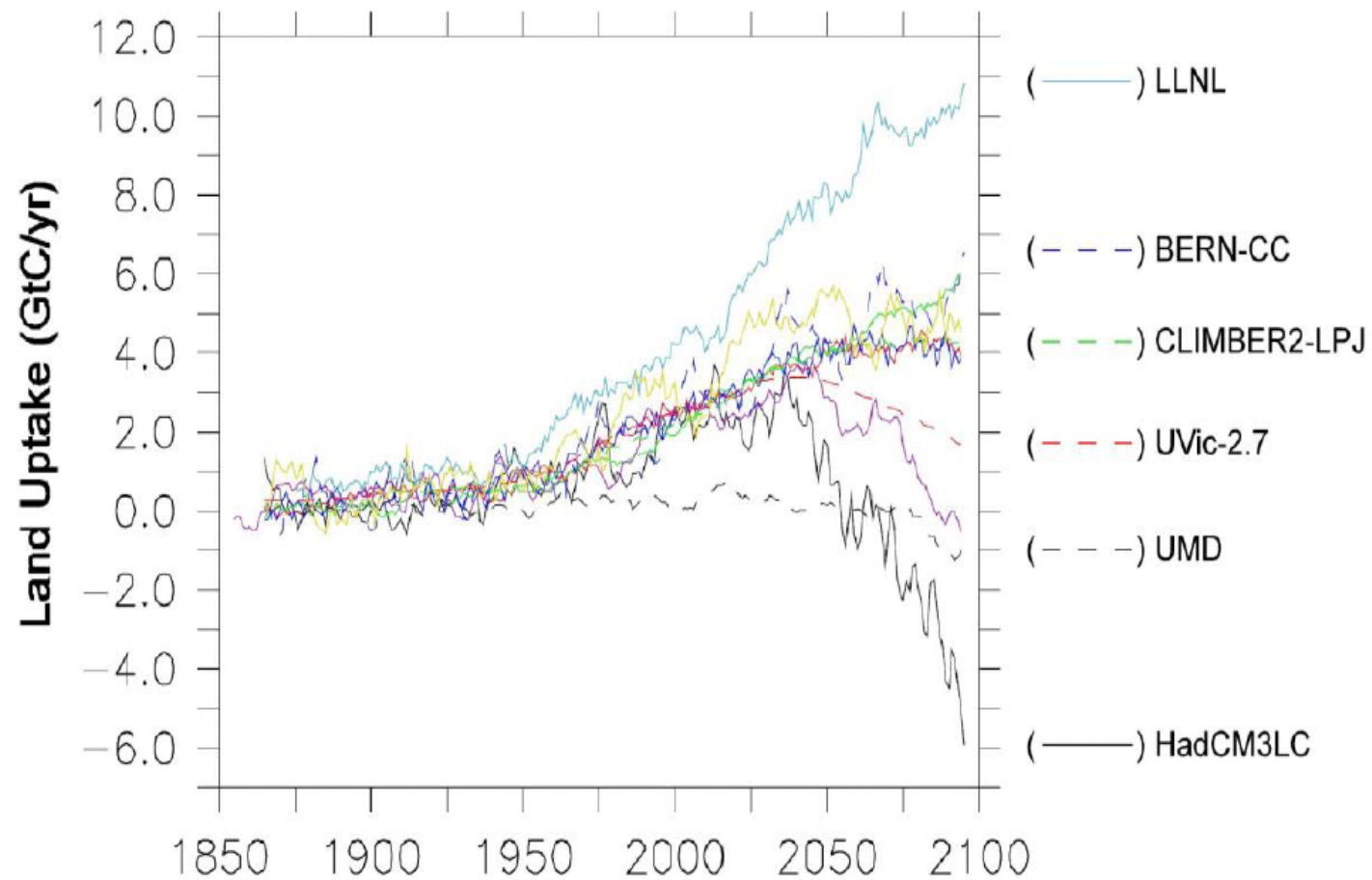








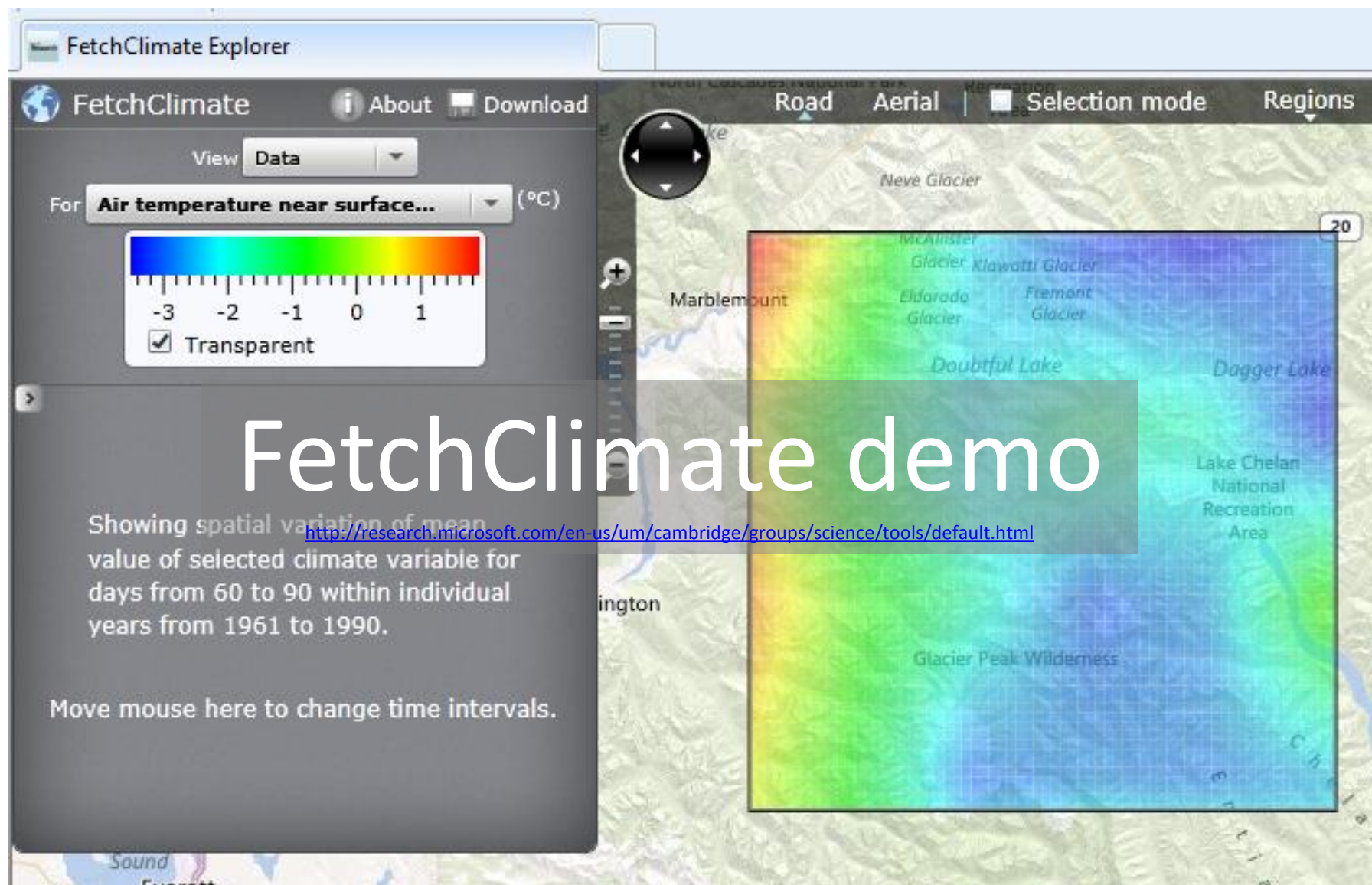


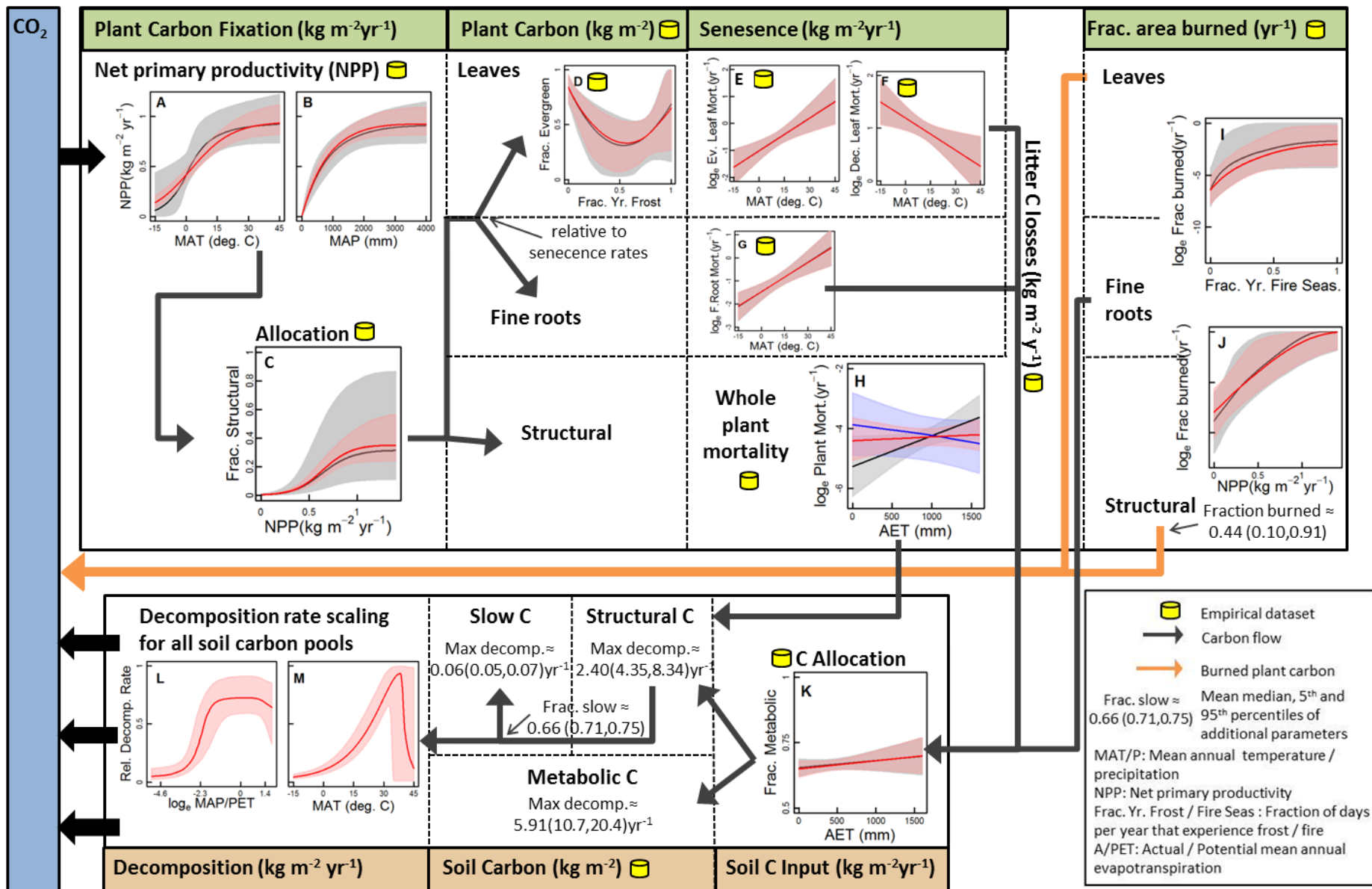


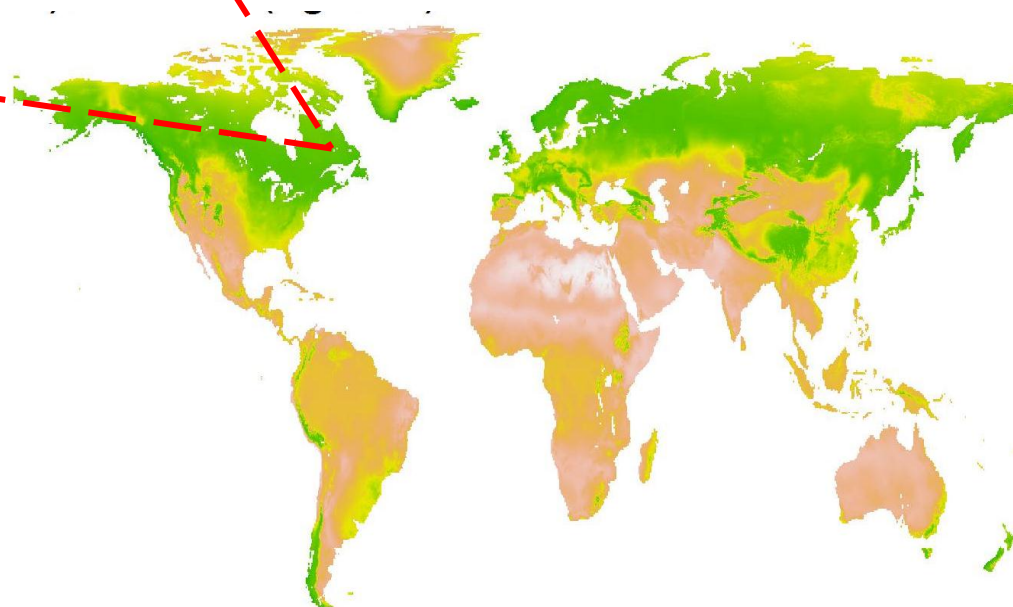
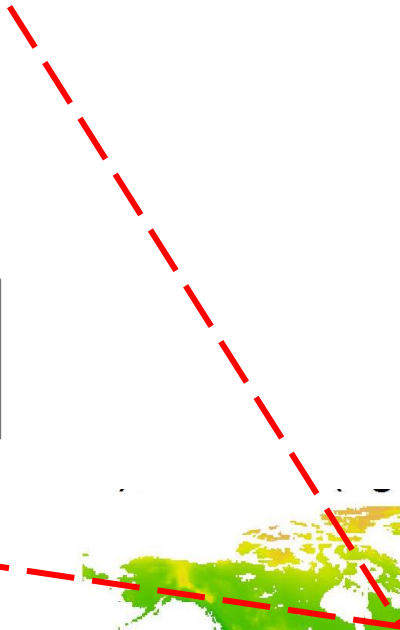


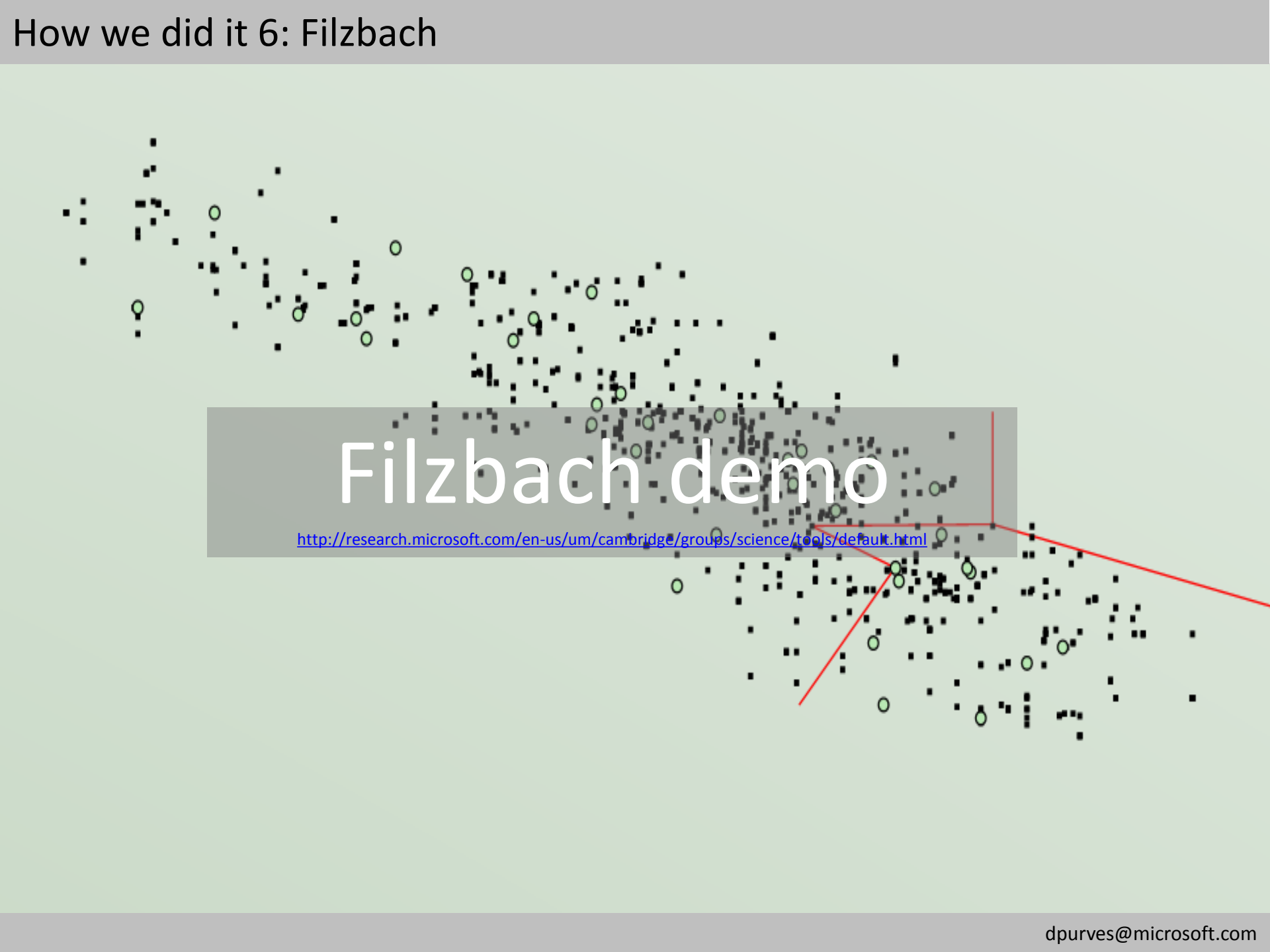
Short data and model name	Full Dataset Name	Data and typical units	Data provider	No. data	No. model params*	References
NPP	"Class B site" net primary productivity (NPP)	Net primary productivity kg carbon m ² yr ⁻¹	Oak Ridge Nat. Lab. Distrib. Active Archive Center (ORNL DAAC) http://daac.ornl.gov/	933	5	Olson et al. (2001)
SoilC	Global gridded surfaces of selected soil characteristics (IGBP-DIS)	Soil carbon density (kg/m ²) at a depth interval of 0-100 cm.	ORNL DAAC	800	13	Batjes (1995)
Fire	Global map of fraction area burned per year, 1900-2000	Percentage of a grid cell burned per year for 100 years (1900-2000)	Florent Mouillot	1400	5	Mouillot F. & Field C.B., (2005)
FRootMort	Non-coarse root turnover (lifespan)	Mean root turnover (yr ⁻¹)	Gill and Jackson (2000)	100	3	Gill & Jackson (2000)
FracEvergreen	Fraction leaves evergreen	Categorical classification of leaves as "Evergreen" or "Deciduous"	GLOPNET Authors	155	4	Wright et al. (2004)
LeafMortDeciduous	Deciduous leaf turnover (lifespan)	Estimated lifespan (in months) of deciduous leaves	GLOPNET Authors	30	3	Wright et al. (2004)
LeafMortEvergreen	Evergreen leaf turnover (lifespan)	Estimated lifespan (in months) of evergreen leaves	GLOPNET Authors	46	3	Wright et al. (2004)
LitterC	Litter production rate	Litter production rates, dry matter per square metre per year	Matthews (1997)	800	1	Matthews (1997)
FracAlloc	Metabolic fraction of litter	The fraction of carbon allocated to leaves and fine roots that can be decomposed relatively quickly by soil organisms.	Ise & Moorcroft (2006)	299	3	Ise, T. & Moorcroft, P.R. (2006).
PlantC	Global biomass carbon map in the year 2000	The amount of carbon held in terrestrial vegetation, tonnes carbon per hectare (which we convert into kg m ²)	Carbon Dioxide Information and Analysis Centre (CDIAC - http://cdiac.ornl.gov/)	700	1	Reusch & Gibbs (2008)
StructuralMort	Forest tree turnover (lifespan)	Forest turnover rates (yr ⁻¹) from different sites worldwide.	Stephenson & van Mantgem (2005)	191	3	Stephenson & van Mantgem (2005)
FracStruct	Global land cover in the year 2000	Discrete classifications of land cover types represented as integer codes.	European Commission	600	3	EC 2003

How we did it 4: the data, climate



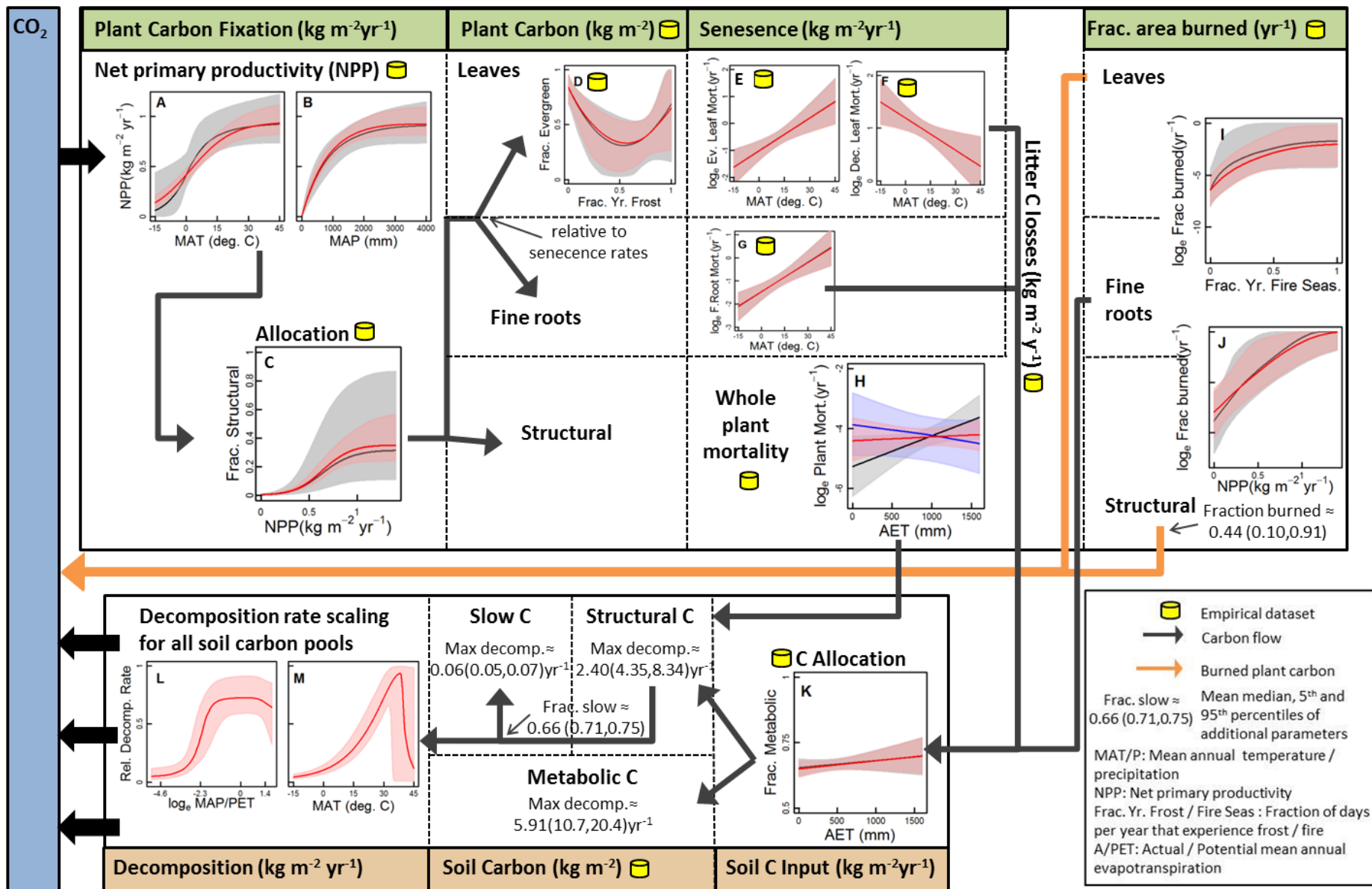




A scatter plot on a light green background. It contains numerous small black squares and several larger green circles. A semi-transparent gray rectangle is centered over the plot, containing the title and a URL. A red line forms a bounding box around the right side of the gray rectangle, extending towards the right edge of the image.

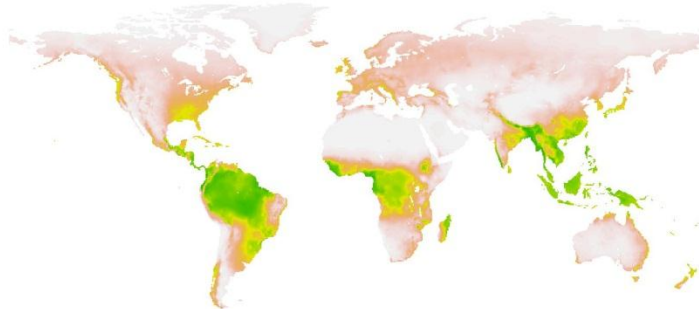
Filzbach demo

<http://research.microsoft.com/en-us/um/cambridge/groups/science/tools/default.html>



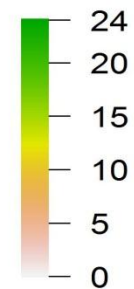
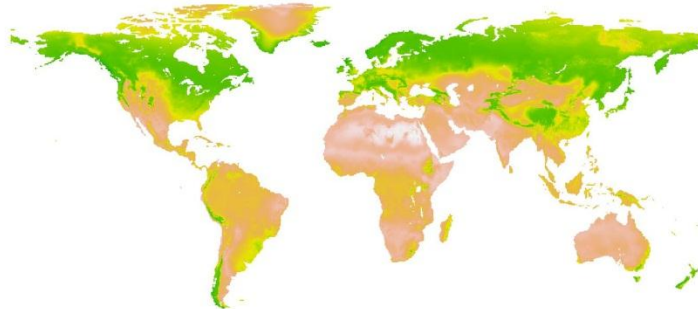
Plant Carbon

A) median (kg m^{-2})

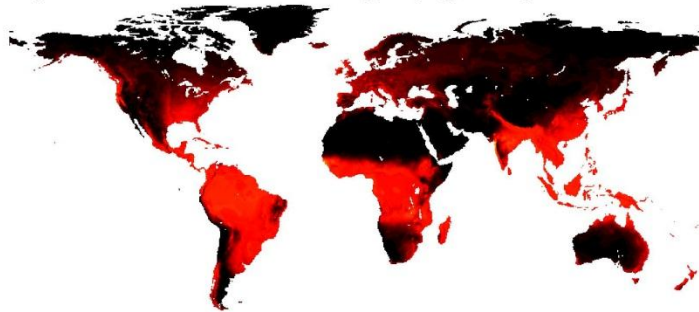


Soil Carbon

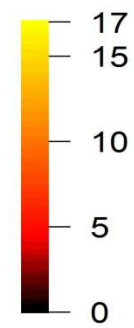
B) median (kg m^{-2})



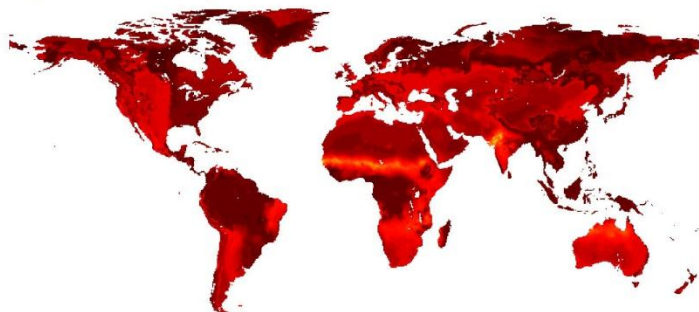
C) 90% confidence range (kg m^{-2})



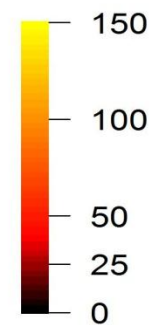
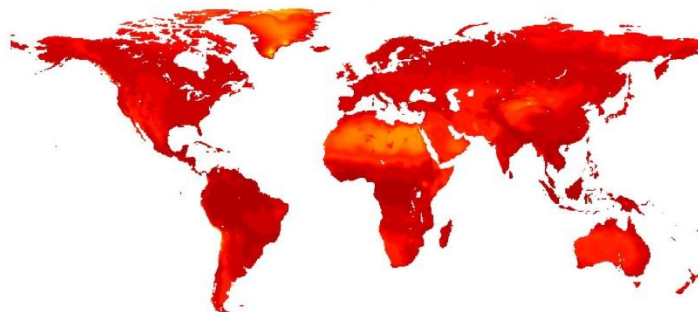
D) 90% confidence range (kg m^{-2})

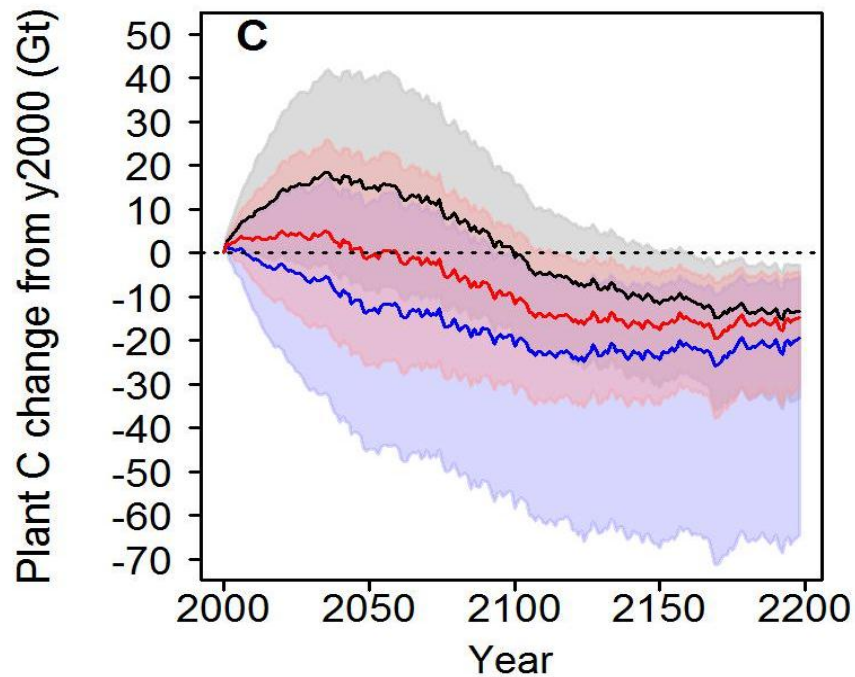


E) uncertainty relative to median

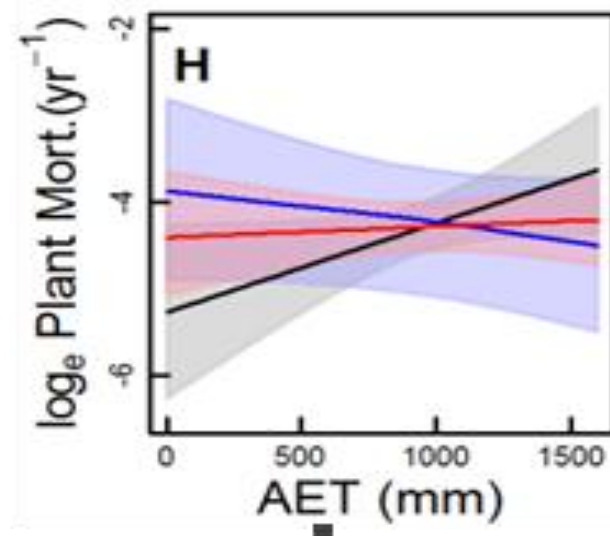


F) uncertainty relative to median





**Whole
plant
mortality**



WWT

Big Demo

<http://research.microsoft.com/en-us/um/cambridge/groups/science/hykl/default.html>