

Habitat Heterogeneity Metrics

9/24/2013

Heterogeneity Metrics

- Metrics derived from MODIS EVI (250m)
 - First-order texture measures
 - range, std, cv, skewness
 - Second-order texture measures
 - ASM, CON, COR, DIS, ENT, GLCM_MAX, GLCM_VAR, HOM
- Metrics derived from land cover data
 - Consensus land cover (1km), GlobCover (300m), MODIS (500m)
 - Class richness, Shannon, Simpson, Evenness

Heterogeneity Metrics

- Metrics derived from DEM
 - DEM from Natalie
 - dem_range, dem_std, dem_cv, dem_skew

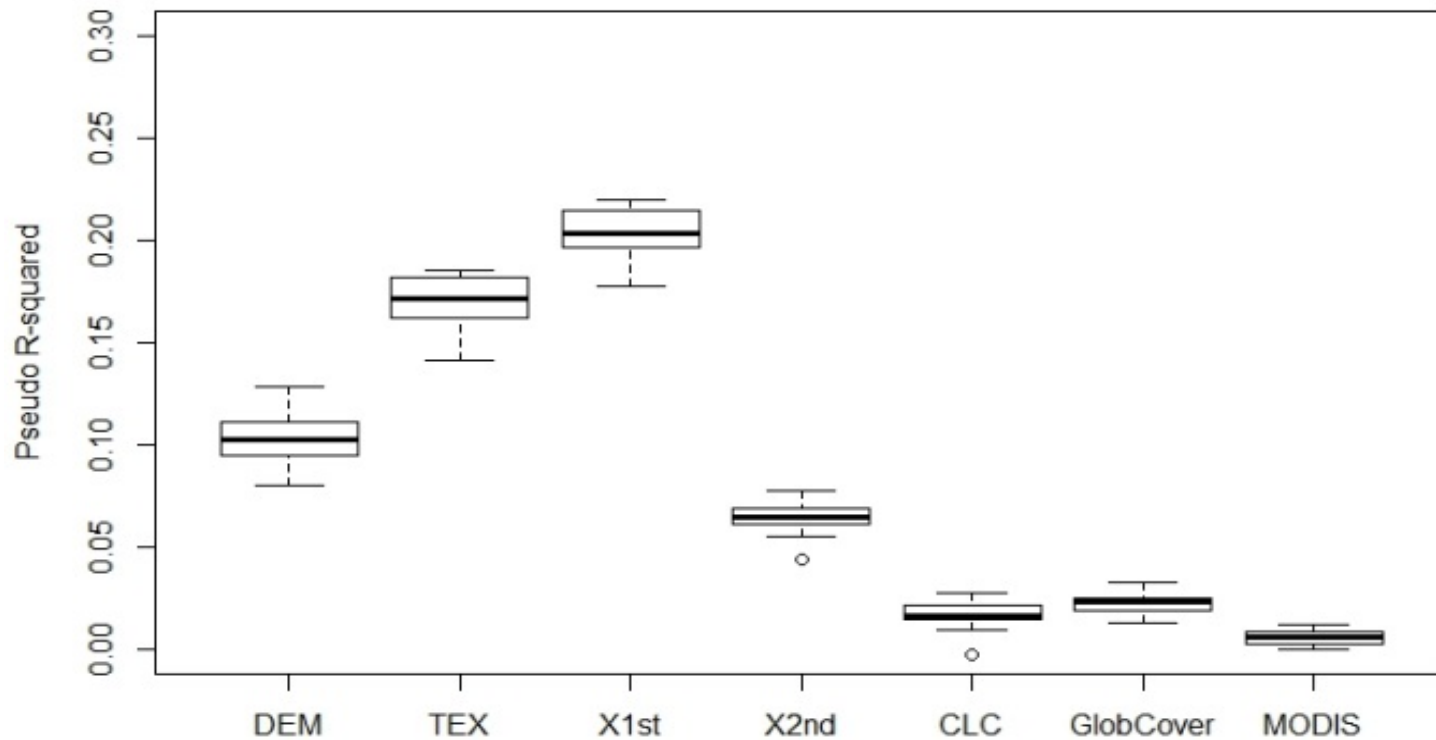
Autoregressive Error Models

- Bird species richness from BBS stop-level data
- 7 sets of metrics
 - DEM (4 variables), 1st (4), 2nd (8), TEX (12), CLC (4), GlobCover (4), MODIS (4)
 - Log transformed for those with skew frequency distribution
- PCA
 - 4 PCs with the highest correlation with the response variable
- 20 sets of training and test datasets
 - One survey stop randomly selected from each survey route

Species Richness

- Pseudo R2 calculated from test datasets

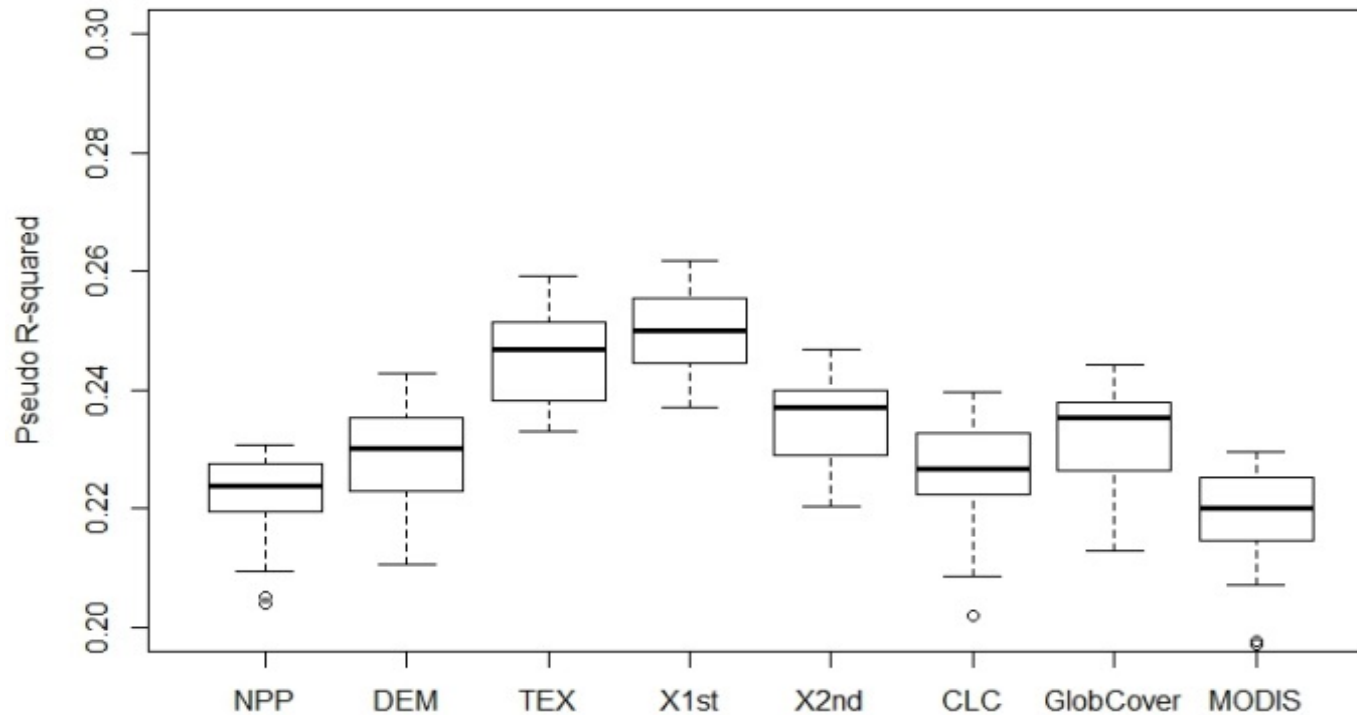
Without NPP



Species Richness

- Pseudo R2 calculated from test datasets

With NPP



Functional Diversity

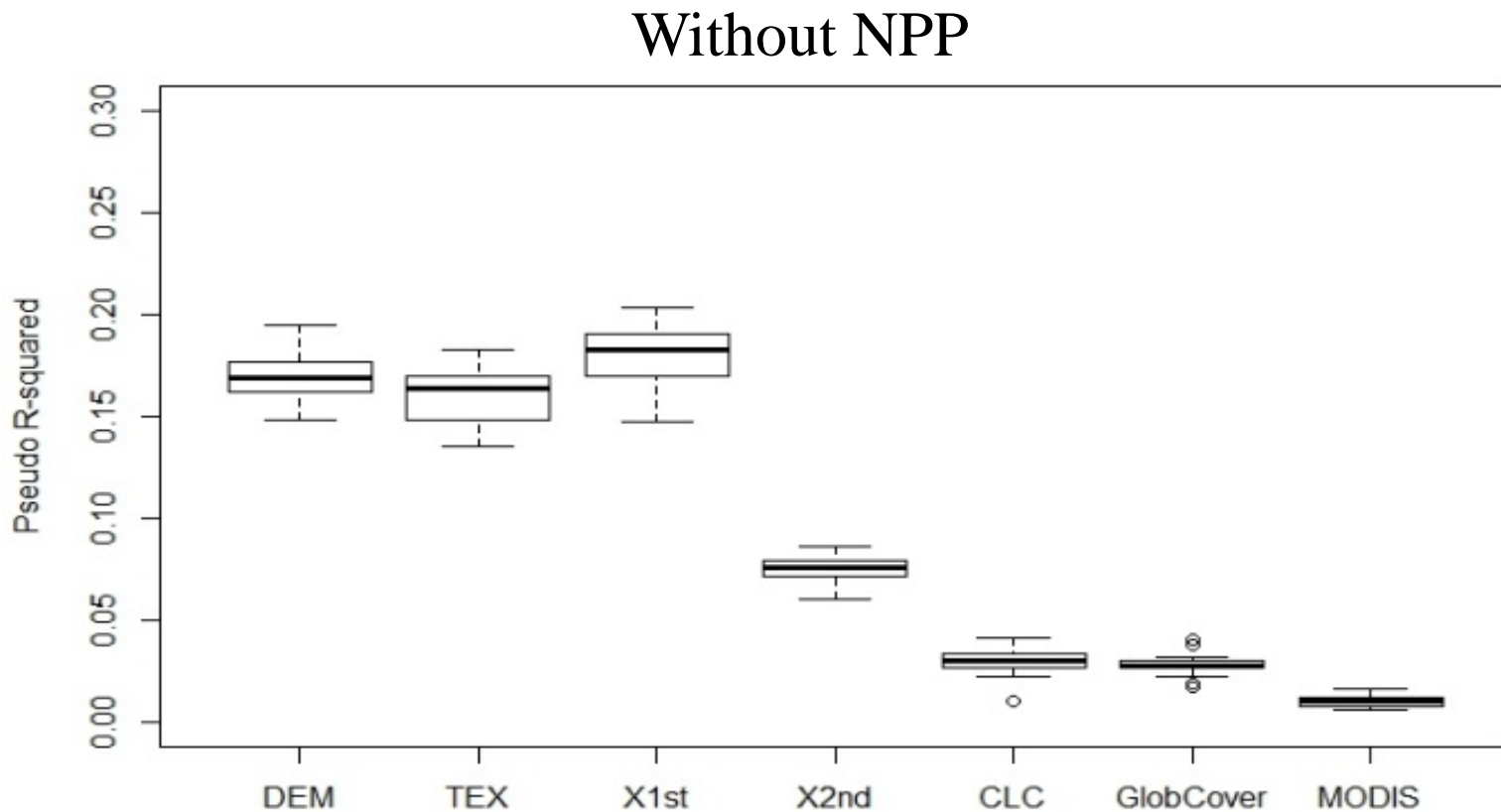
- Traits
 - Diet (Invertebrates, vertebrates, carrion, fruits, nectar and pollen, seeds, other plant materials)
 - Body Mass (log transformed)
 - Activity Time (nocturnal, diurnal)
 - Foraging Niche (in water below surface, in water on surface, terrestrial ground level, understory, mid canopy, upper canopy, aerial)
 - Pelagic or not

Functional Diversity

- Clustering based on dissimilarity of functional traits
- FD – branch length of a clustering tree

Functional Diversity

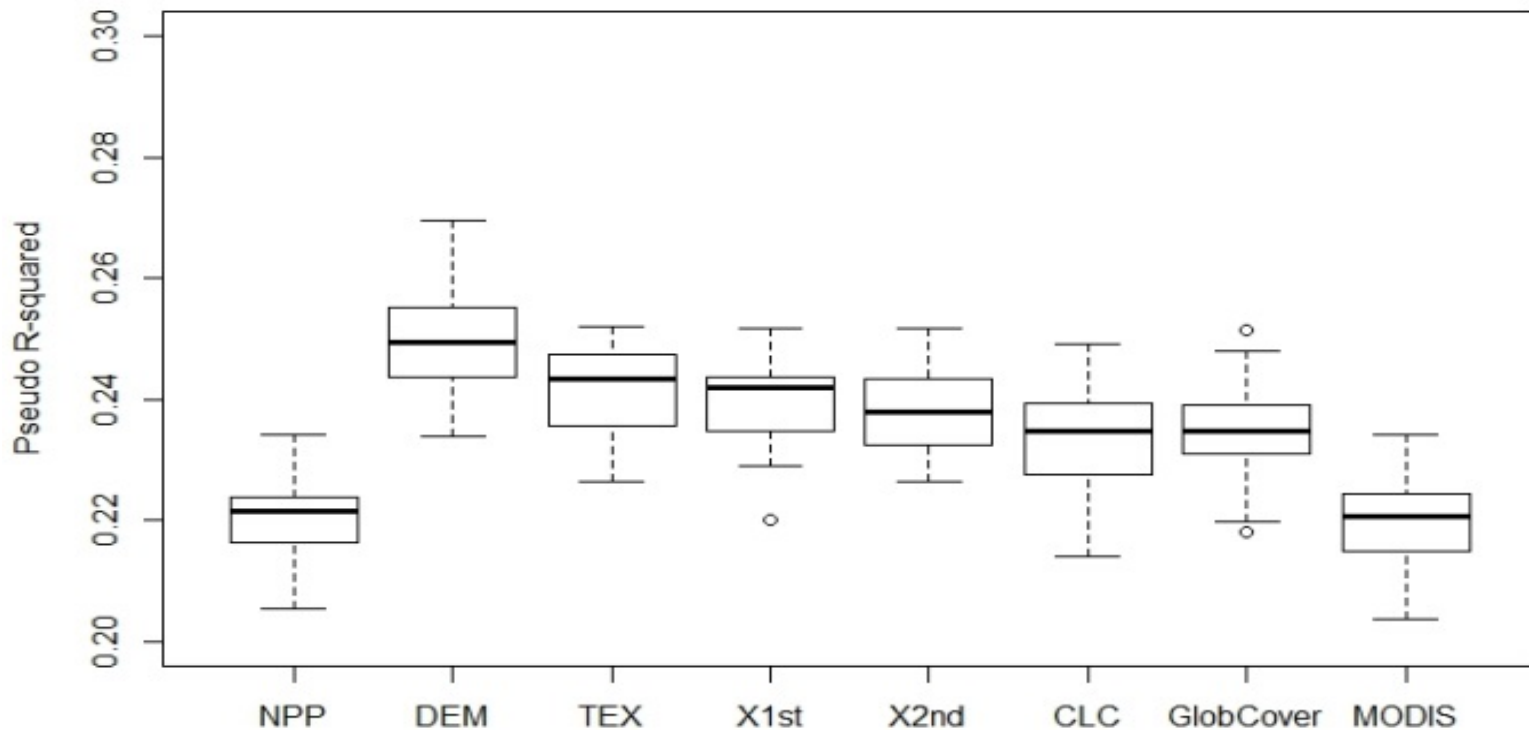
- Pseudo R2 calculated from test datasets



Functional Diversity

- Pseudo R2 calculated from test datasets

With NPP



Other Functional Diversity Indices

- FRic: functional richness (Villegger et al., 2008)
- FEve: functional evenness (Villegger et al., 2008)
- FDiv: functional divergence (Villegger et al., 2008)
- FDis: functional dispersion (Laliberte and Legendre 2010)
- RaoQ: Rao's quadratic entropy (Botta-Dukat 2005)

Next Steps

- Different scales
 - Buffer areas
 - Route level
- Temporal heterogeneity metrics