Tree Growth Response Across an Hydrological Gradient at Four Holes Swamp, South Carolina

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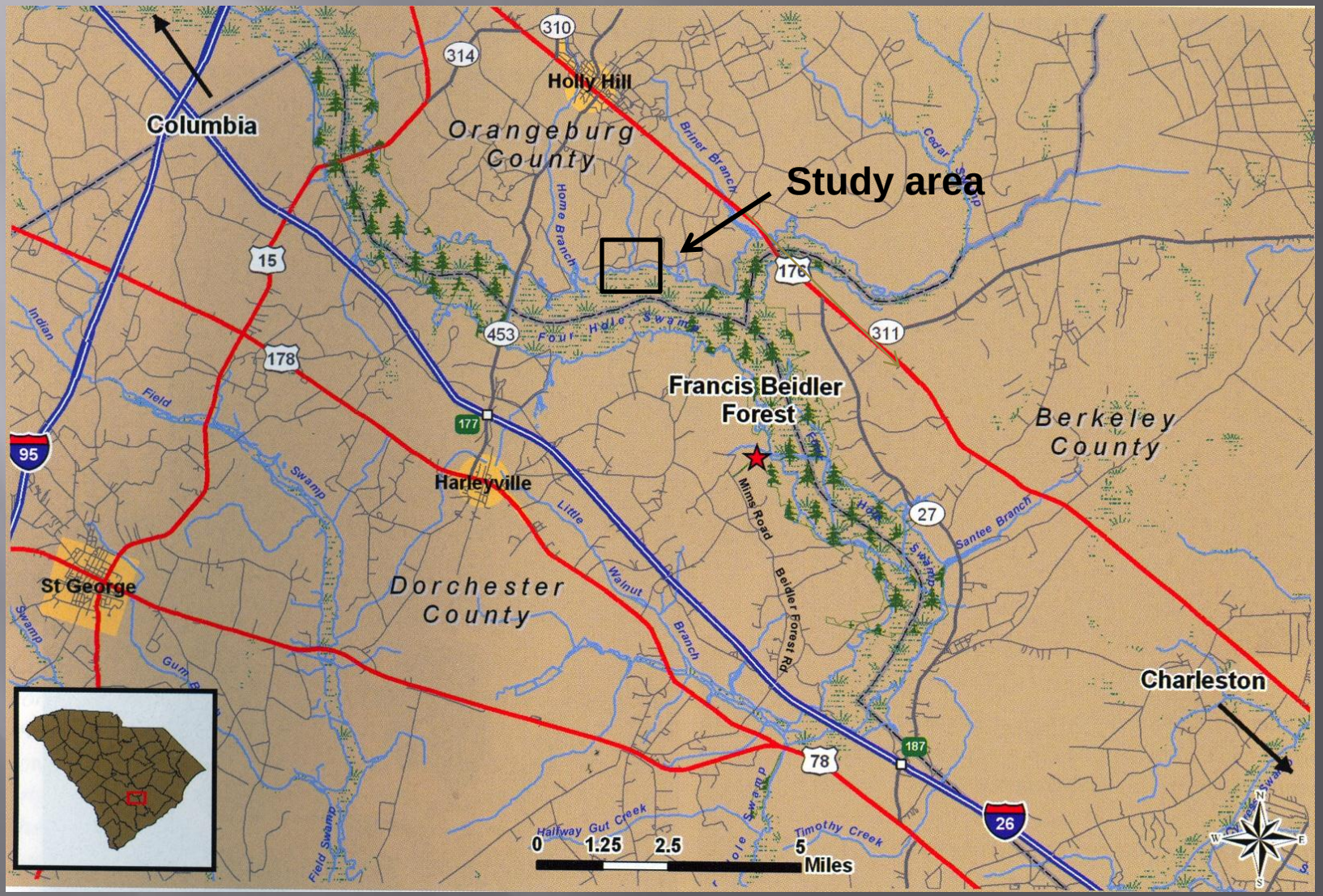
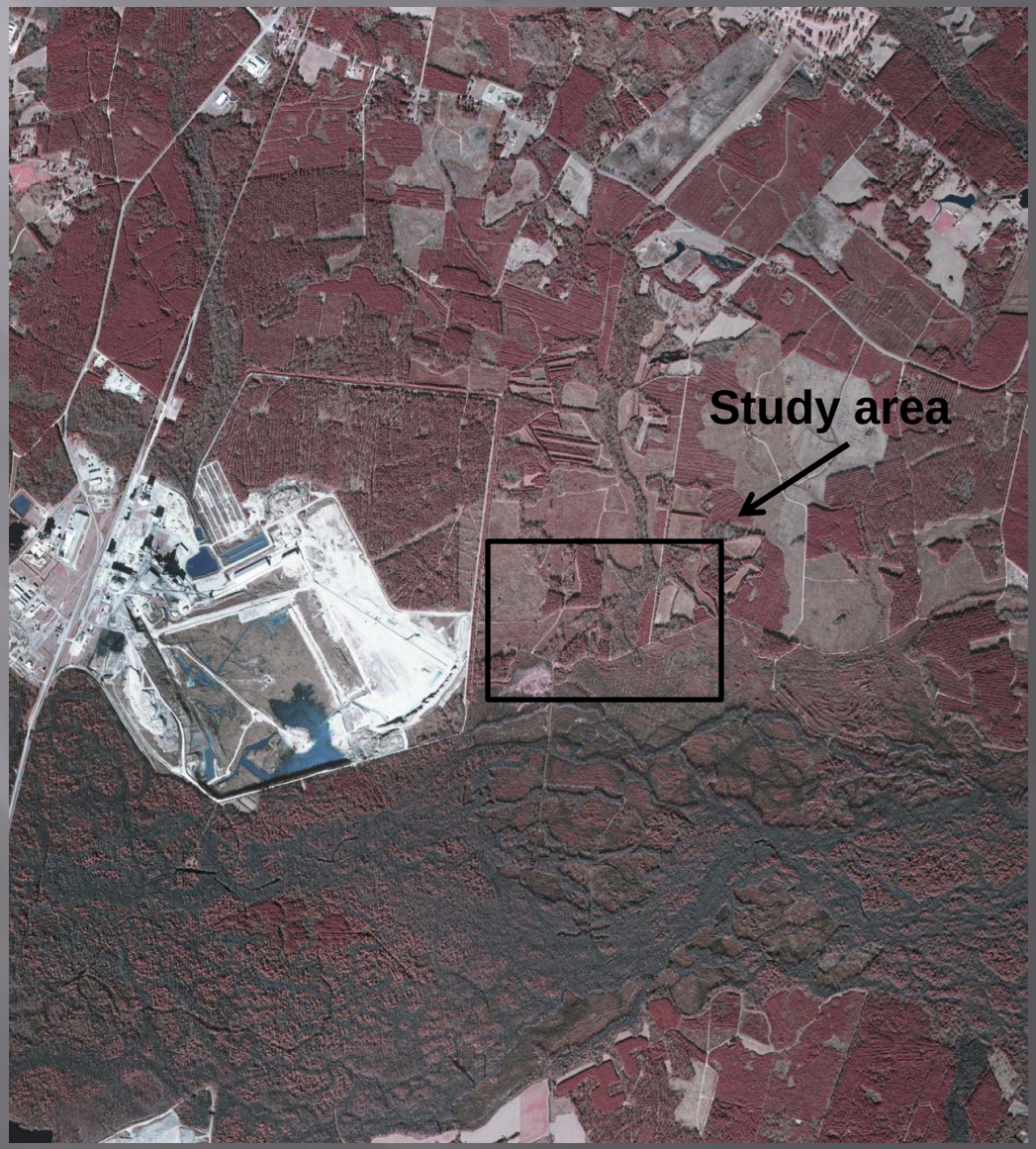
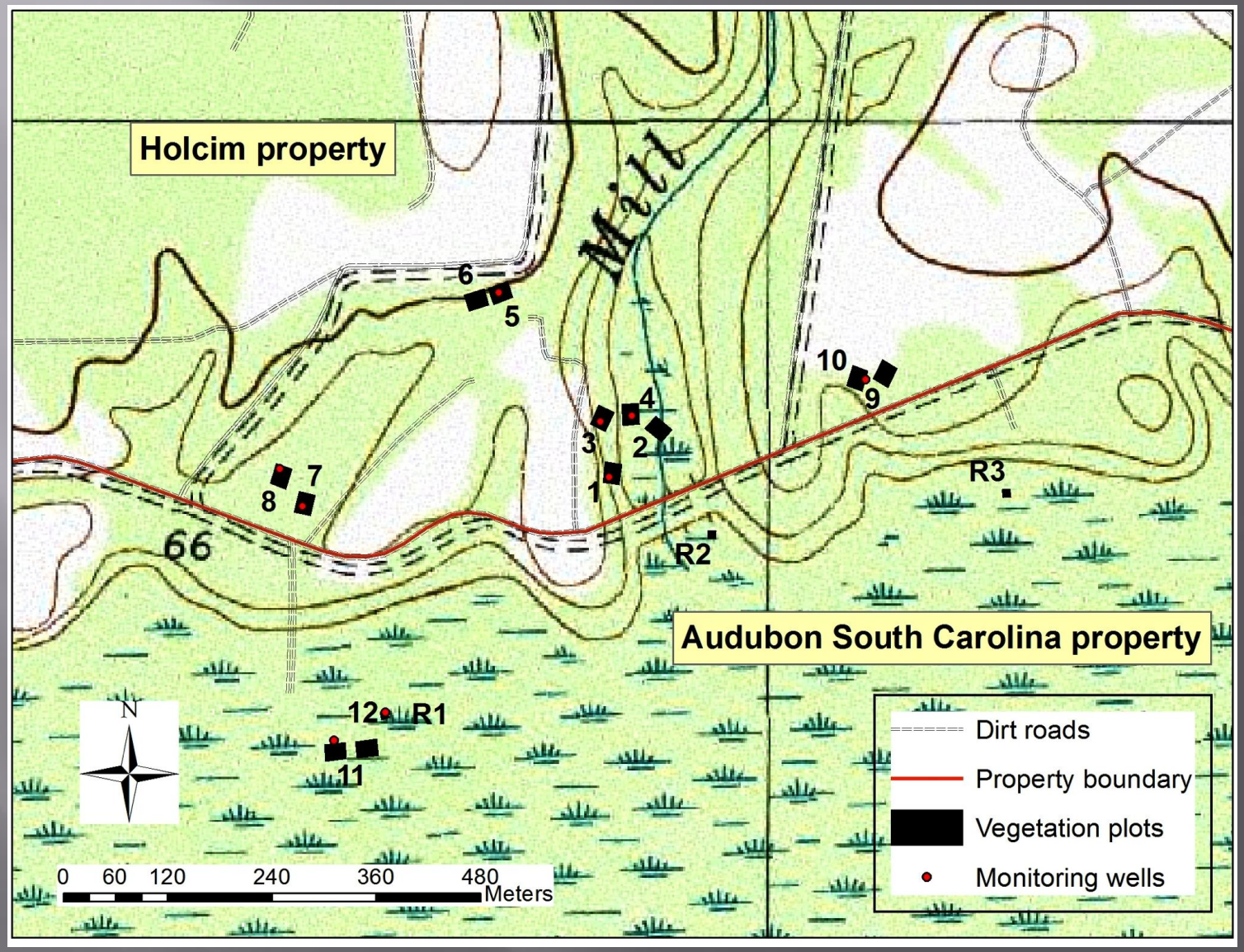
Study Area


Columbia
Holly Hill
Orangeburg County
Study area
Francis Beidler Forest
Berkeley County
Harleyville
Dorchester County
St George
Charleston
310
314
15
178
453
177
176
311
27
95
78
187
26
Briner Branch
Home Branch
Four Hole Swamp
Indian Field Swamp
Little Walnut Branch
Mims Road
Beidler Forest Rd.
Santee Branch
Hell Hole Swamp
Halfway Gut Creek
Timothy Creek
0 1.25 2.5 5 Miles

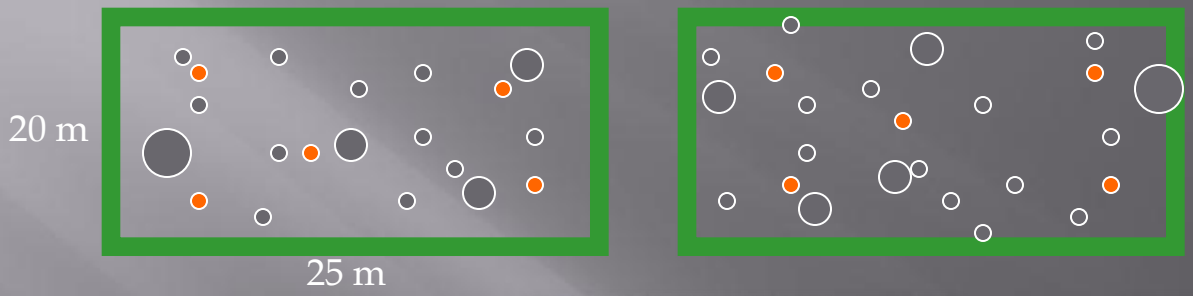
Study Area



Study Area


Holcim property
Mill
6
5
10
9
4
3
2
1
7
8
66
R3
R2
Audubon South Carolina property
12
R1
11
N
0 60 120 240 360 480
Meters
Dirt roads
Property boundary
Vegetation plots
Monitoring wells

Data Collected



- Trees
  - Diameter, Basal area (annually)
  - Diameter Growth (monthly)

- Litterfall (once/month)

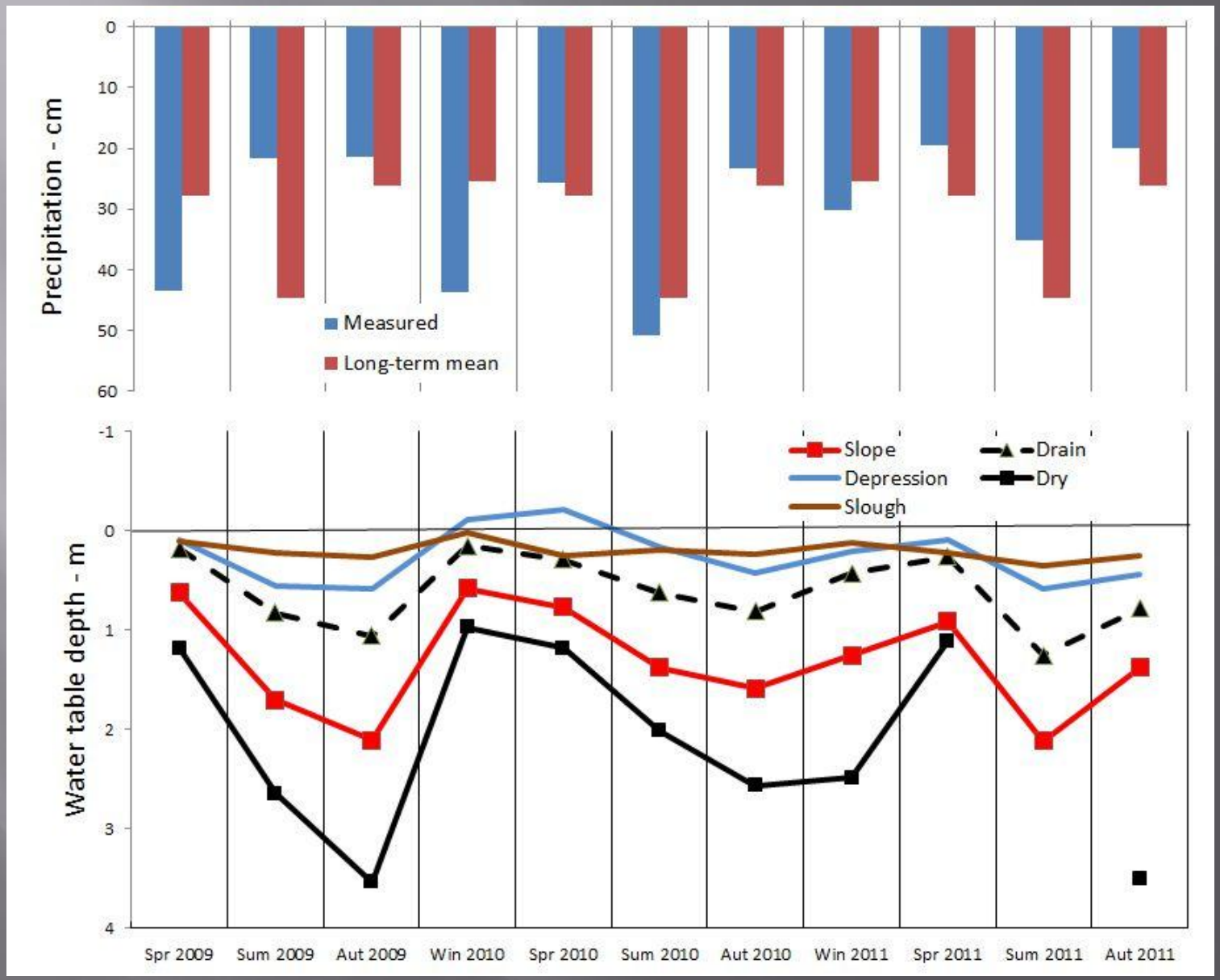
Data Collected

Water table monitoring
- Installed 10 wells
- Deployed water level loggers
    - Hourly recording interval
- (Also monitored WQ field parameters)

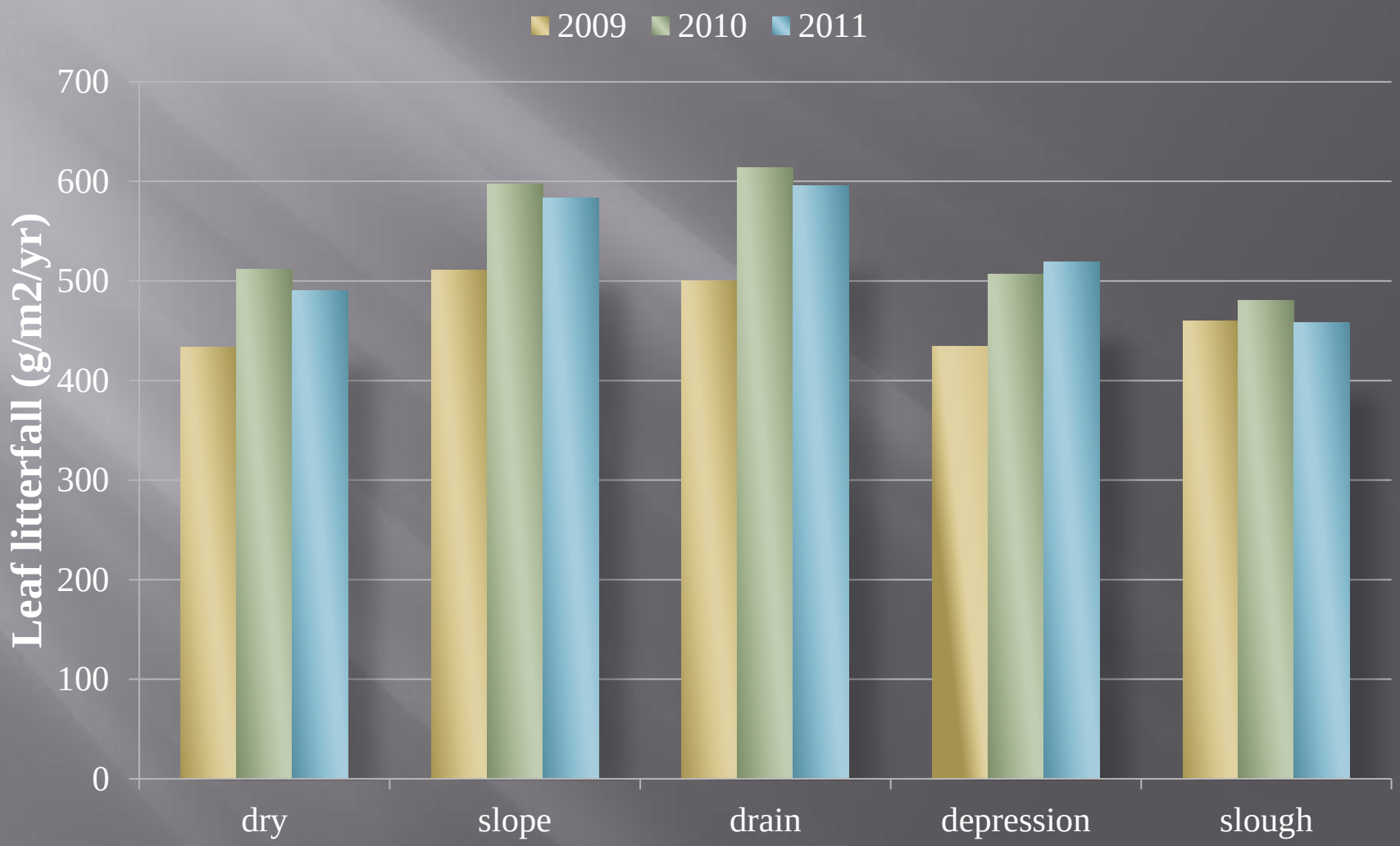
Precipitation
- Tipping bucket recording gauge
- In Beidler Forest
    - near study site

Surveyed well elevations
- Meters above mean sea level
- Water table depth (not elevation) used in this analysis

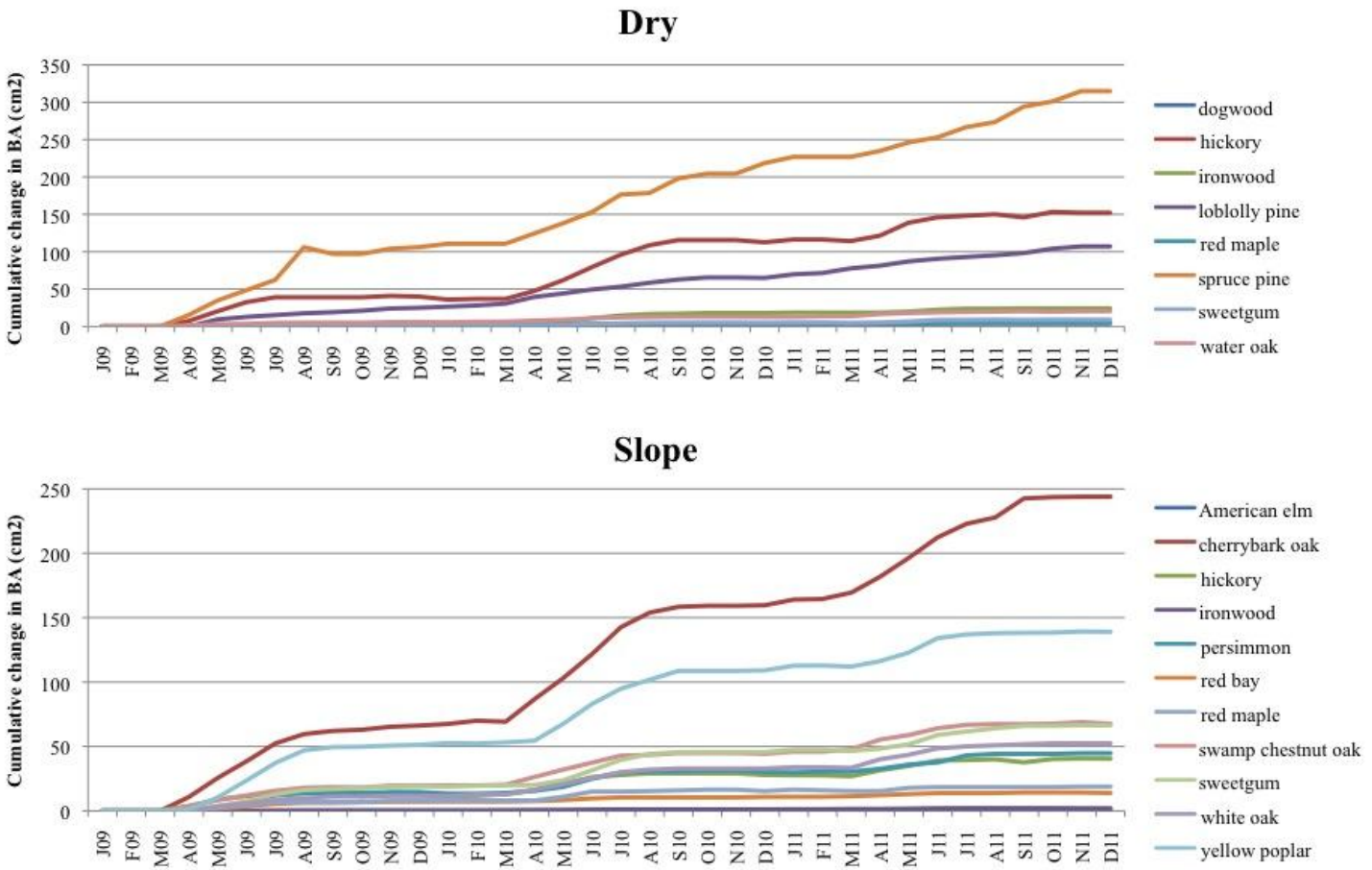
Results: Hydrology



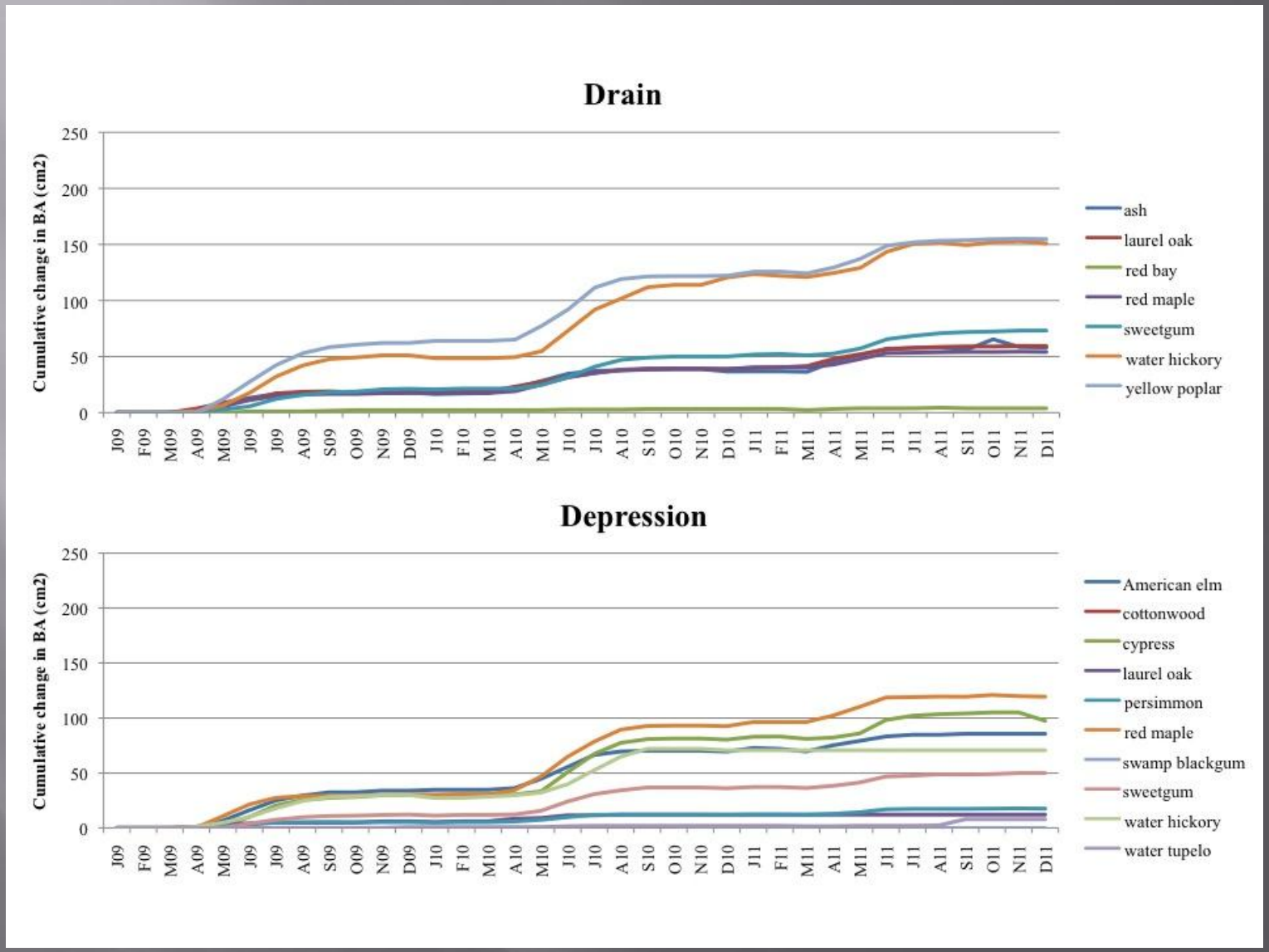
Results: Litterfall



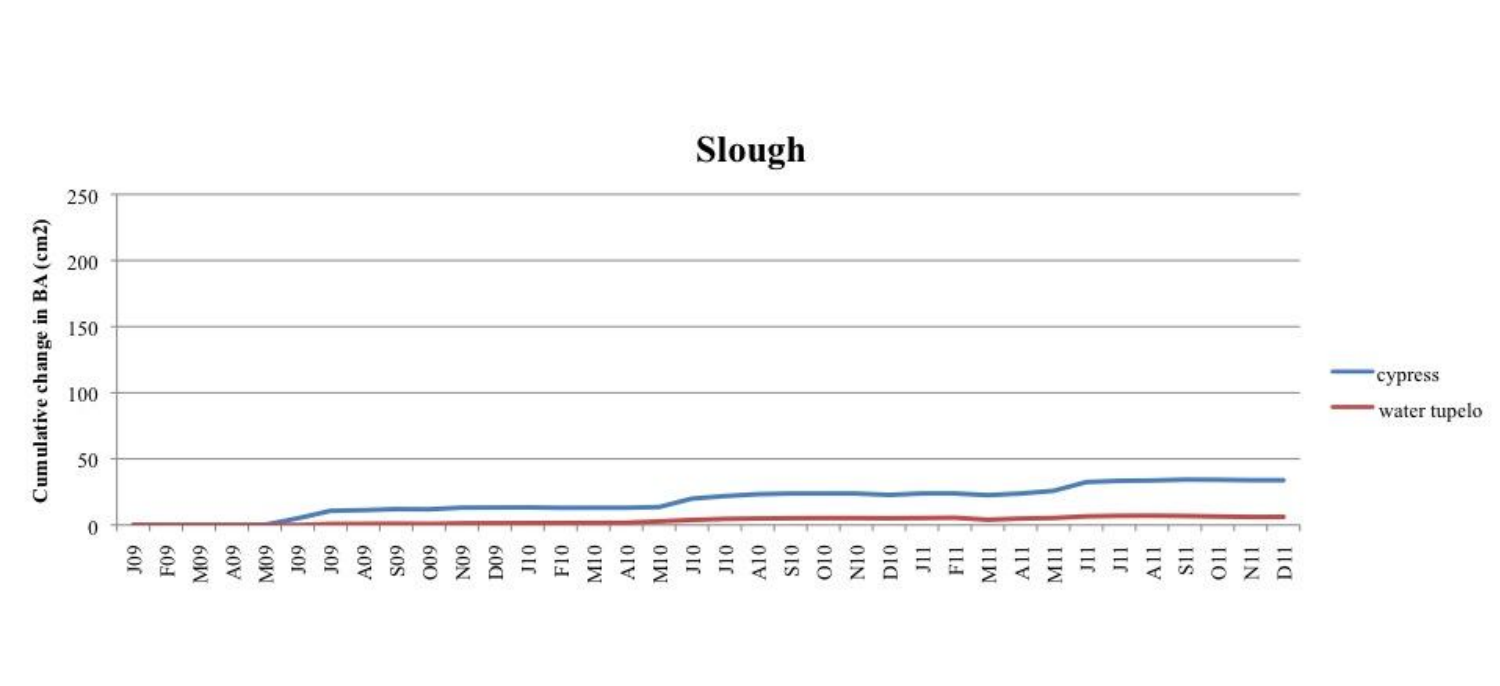
Results: Tree Growth



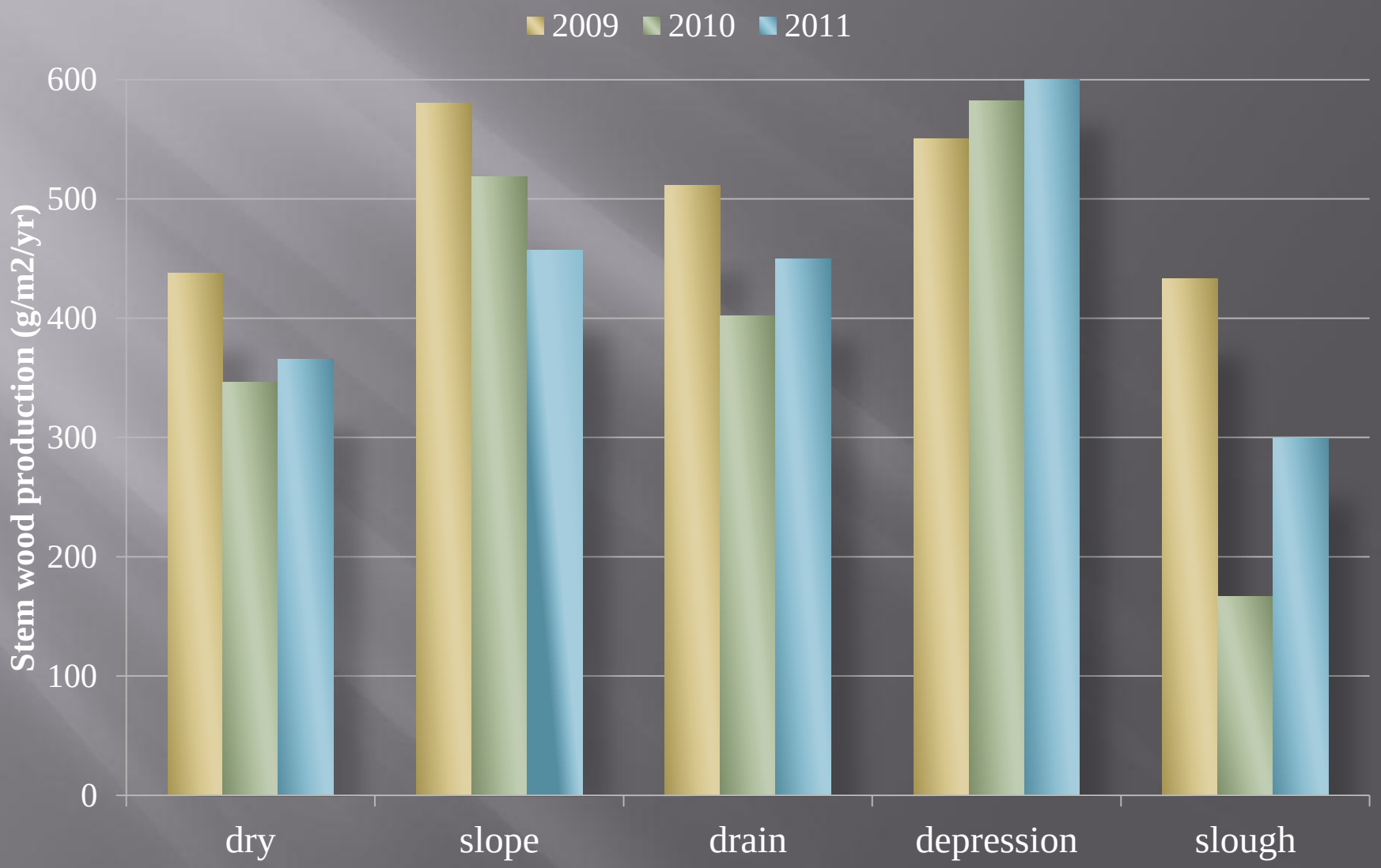
Results: Tree Growth



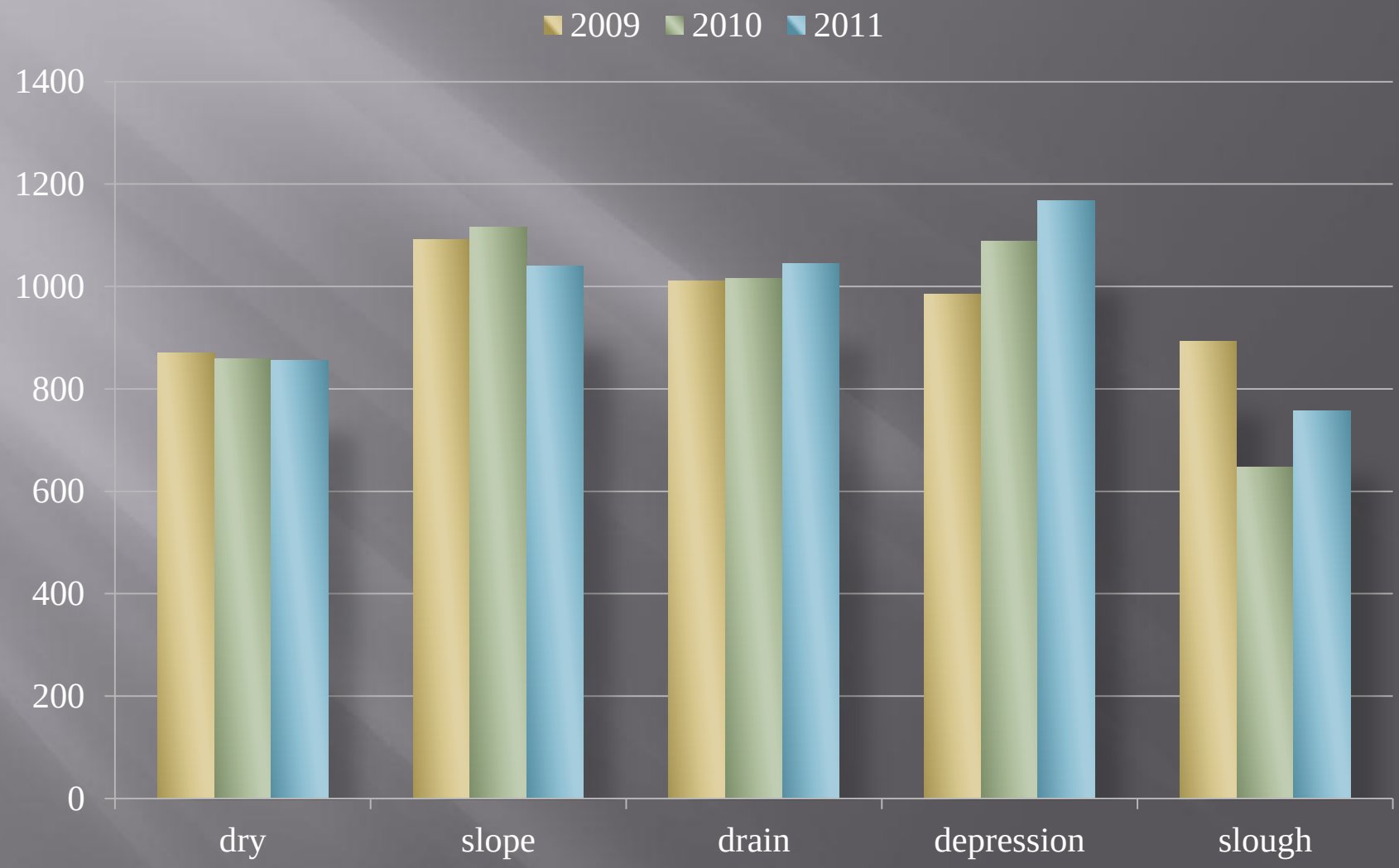
Results: Tree Growth



Results: Tree Growth

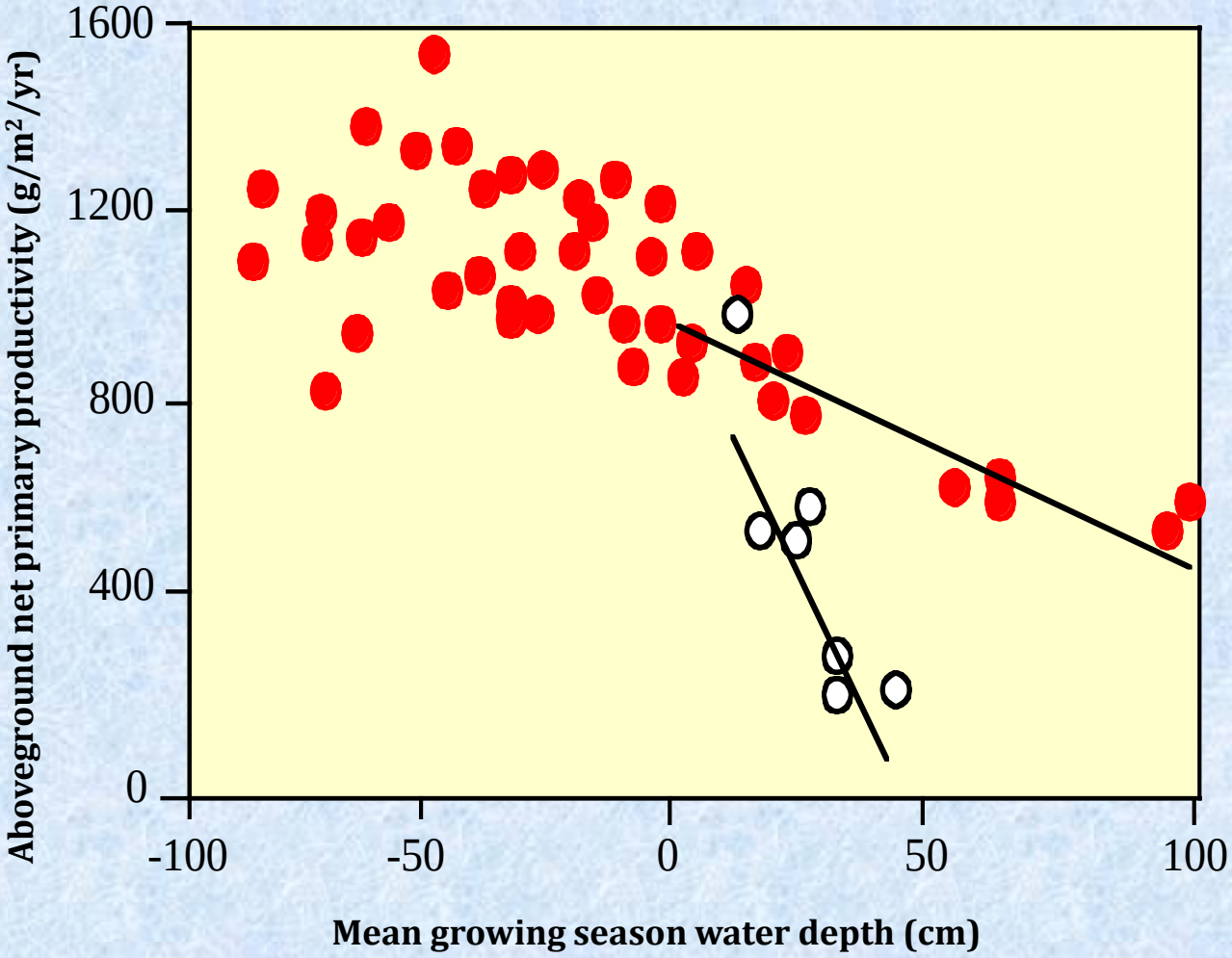


Results: NPP


2009
2010
2011
1400
1200
1000
800
600
400
200
0
dry
slope
drain
depression
slough

Relationships between forest productivity and hydrology

Southeastern U.S. floodplain and swamp forests



Megonigal et al. 1997





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