



Universidade de Vigo

Universidade de Santiago de
Compostela



Influence of 7-year old *Eucalyptus globulus* plantation in the low flow of a small basin

Effects of afforestation

1. Environmental quality

Soil quality: organic matter, hydraulic properties...

Water conservation: water chemistry quality, water temperature

2. Modification of hydrological regimes

Increase of evapotranspiration

Reduce flood risk

Decrease water yield

Objective:

To study the impacts of afforestation with *Eucalyptus globulus* in low flow

The study area

Small watershed of 10.7 ha in A Coruña (NW Spain)

General characteristics

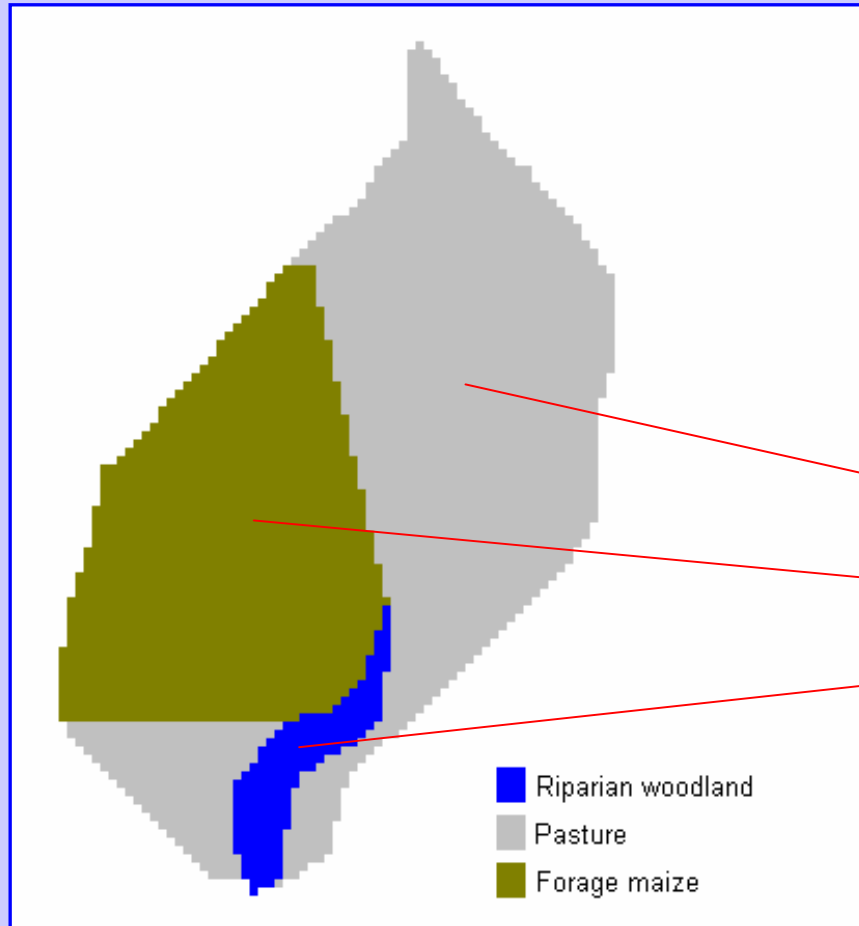
Altitude: 375-450 masl

Parent material: Schist

Organic matter content: 9.5%

Soil texture: loam, silty loam

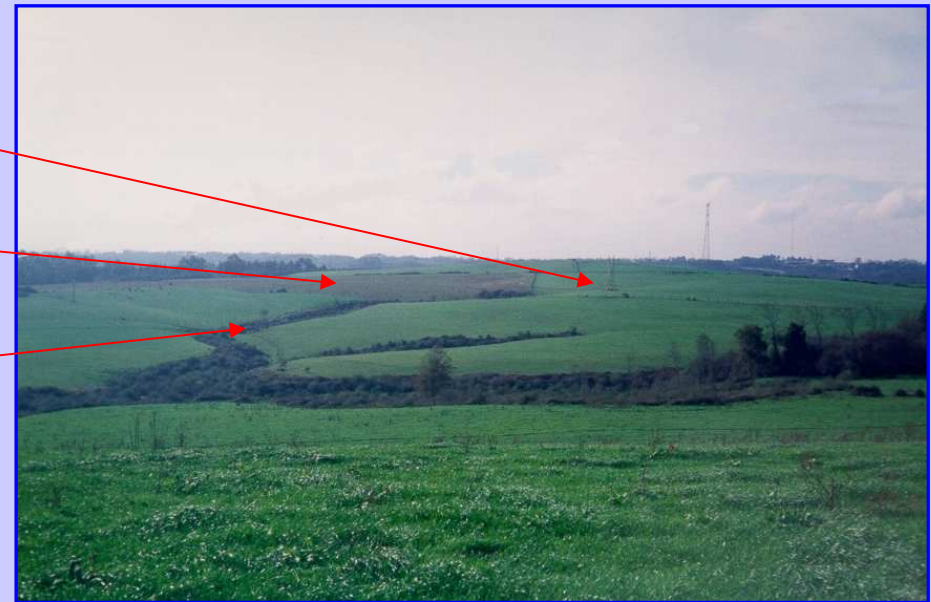
Land use distribution-1997



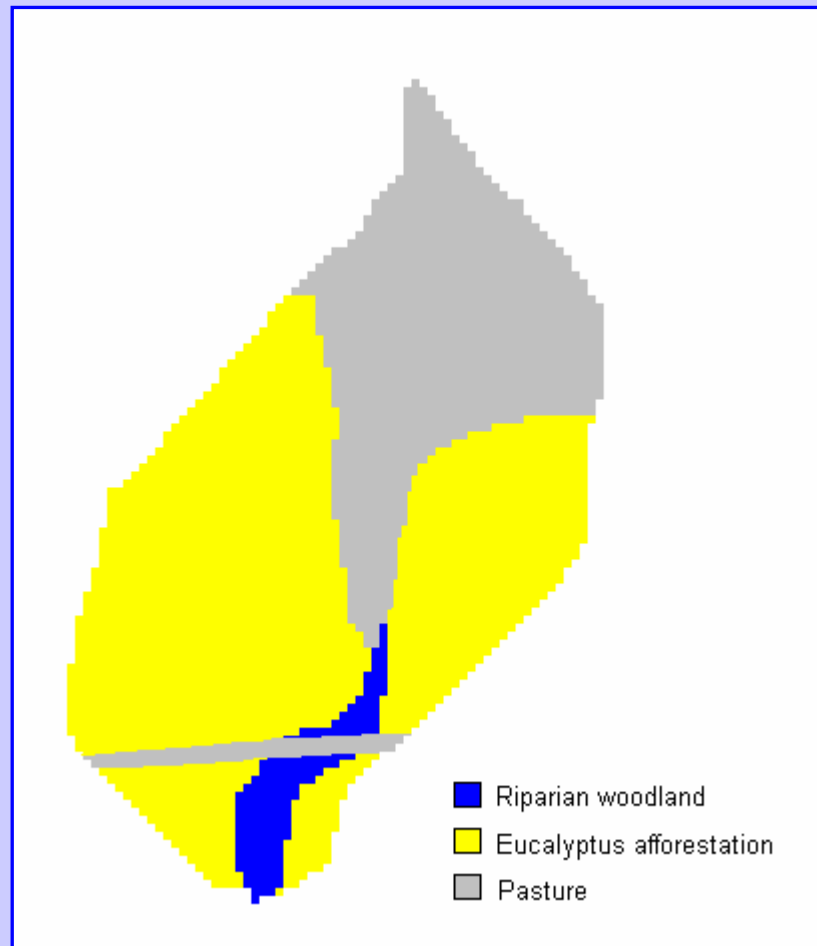
58 % pasture

37% forage maize

5% riparian woodland



Land use distribution-1998



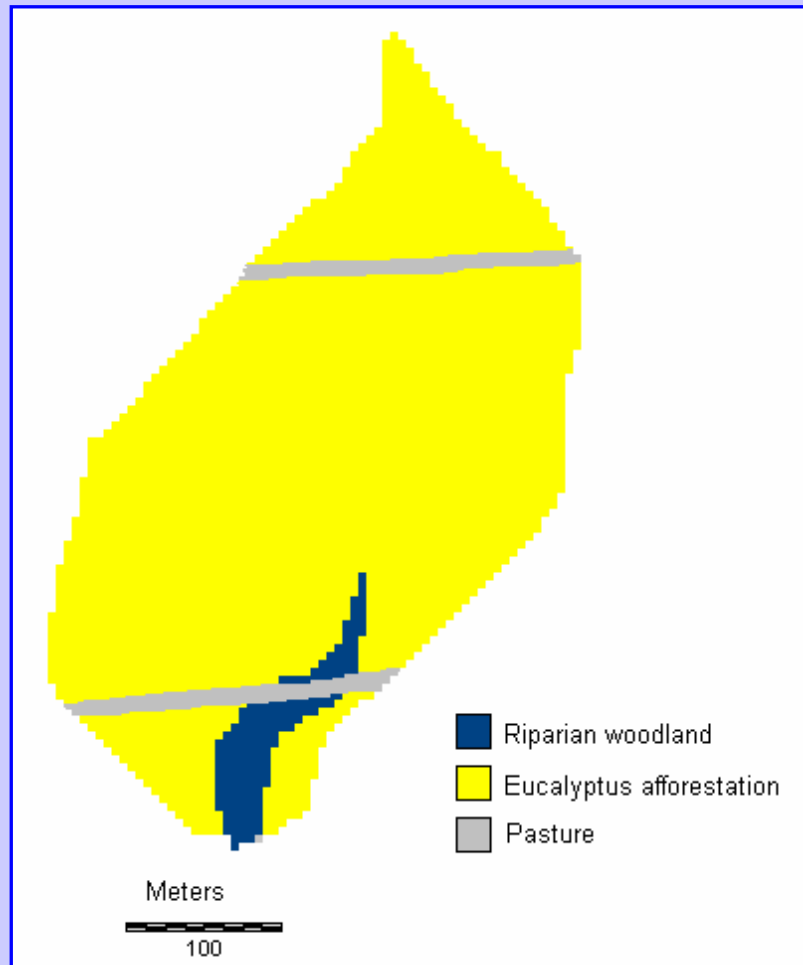
35% pasture

61% eucalyptus

4% riparian woodland



Land use distribution-1999 to present



7 % pasture

89% eucalyptus

4% riparian woodland



Parameters measured from 1997

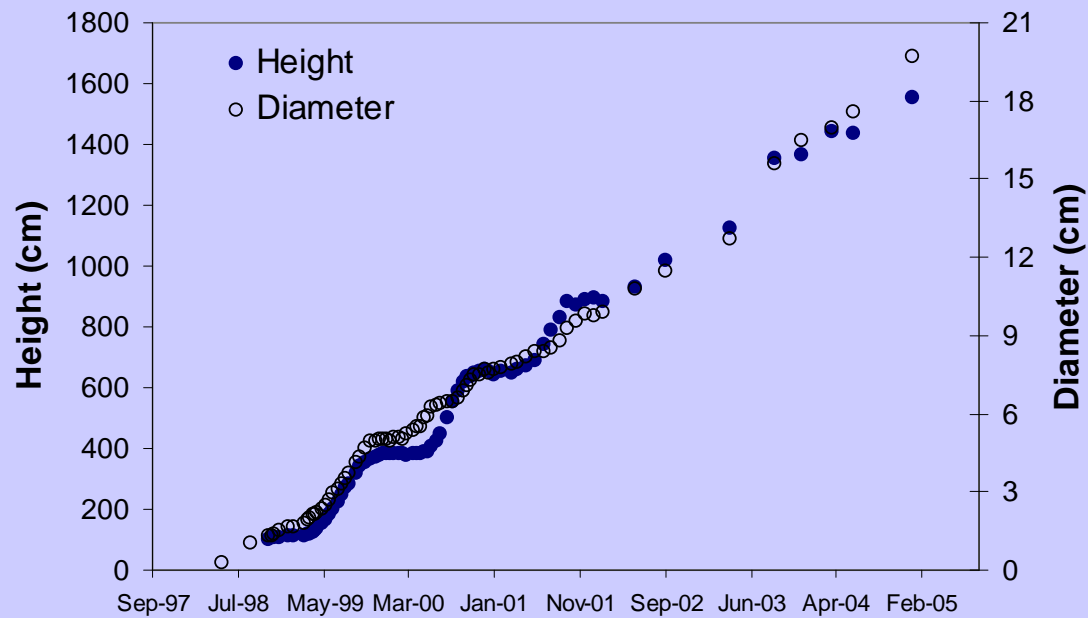
Hydro-meteorological

- Weather
 - *Rainfall*
 - *Temperature*
 - *Relative humidity*
 - *Radiation*
 - *Wind velocity*
- Stemflow
- Throughfall
- Water table depth (1999)
- Discharge
- Soil moisture
- Soil and water temperature

Growth of Eucalyptus

- Height
- Canopy area
- Diameter of trunk

Eucalyptus growth



	Annual increment (cm)	
	Height	Diameter
1998/99	147	2.19
1999/00	242	3.75
2000/01	283	2.16
2001/02	243	2.36
2002/03	244	3.37
2003/04	260	3.44

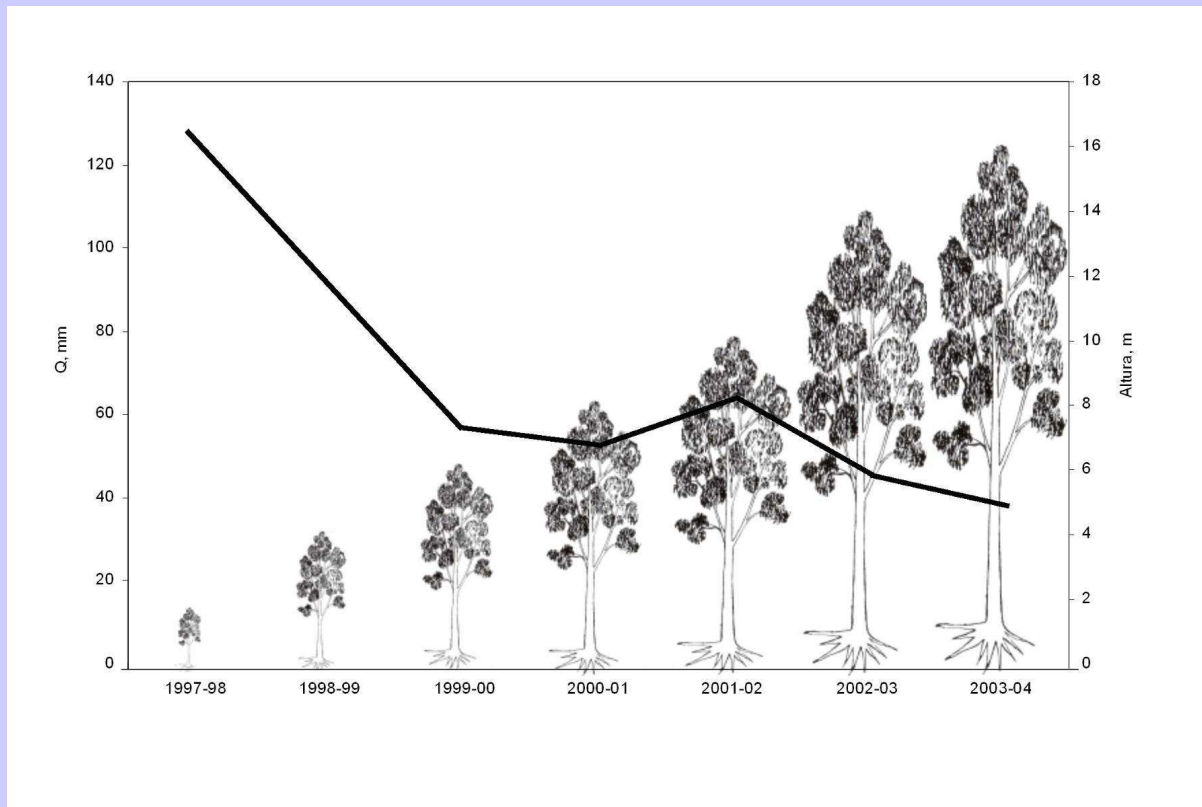
Rainfall analysis

Year	Total (mm)	% of annual rainfall		
		Oct-Jan	Feb-May	Jun-Sep
1997/98	1432	43	35	22
1998/99	1523	32	35	34
1999/00	1647	42	40	18
2000/01	2839	59	31	10
2001/02	1149	40	42	18
2002/03	2114	62	24	13
2003/04	1444	63	22	14
Mean	1735	49	33	18

Streamflow analysis

Year	Total (mm)	% of annual discharge		
		Oct-Jan	Feb-May	Jun-Sep
1997/98	1009	53	34	13
1998/99	887	27	63	10
1999/00	1108	56	39	5
2000/01	2757	64	34	2
2001/02	374	27	56	17
2002/03	1654	76	21	3
2003/04	607	69	27	4
Mean	1199	53	39	8

Streamflow analysis



Discharge from June to September

Year	(mm)
1997/98	128
1998/99	91
1999/00	57
2000/01	53
2001/02	64
2002/03	46
2003/04	25

Groundwater analysis

Maximum depth of water table

